

System Automation for OS/390

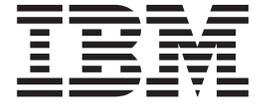


# Planning and Installation

*Version 2 Release 1*



System Automation for OS/390



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*Version 2 Release 1*

**Note!**

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

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**UNIX** UNIX is a registered trademark of The Open Group in the United States and other countries.

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## About This Book

This book describes **System Automation for OS/390** (SA OS/390), which runs on OS/390. Its contents tell how to plan for and install the SA OS/390 product.

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## Who Should Use This Book

Installing, maintaining and using SA OS/390 is done by personnel from the user groups defined in "SA OS/390 User Groups". This information is primarily for system programmers and automation programmers who plan for systems management and who install or oversee installation of this product.

### SA OS/390 User Groups

There are the following primary SA OS/390 user groups:

- **System programmers** are responsible for:

- **product installation**

- This is basically taking the product from tape and moving it into system libraries.

- **system configuration**

- This is basically allocating data sets and configuring individual systems to run the product. At the end of this process, a ready to use installation of the customization dialog and NetView is available to be used by further SA OS/390 user groups. Additional work may be required to help set up processor operations and the NMC workstation.

- **maintenance**

- This is the task of applying APARs to the base code and performing whatever system actions are required afterwards.

- **Automation programmers** are responsible for:

- **policy migration**

- If your enterprise uses policy for earlier SA OS/390 releases, this information needs to be migrated to the new release.

- **policy definitions and distribution**

- Using the customization dialog, automation programmers will, with help from specialist system programmers and operators, define the automation policy for the enterprise. This includes the definition of all automated resources and the individual definitions required for each resource. Thus they are creating the knowledge base that SA OS/390 will use to run their applications and systems. As the creation of this knowledge base can be done centrally on a system where the customization dialog is installed, the policy files that are created need to be distributed to the appropriate target systems before they can be used.

- **automation customization**

- This covers writing and modification of customer automation procedures that run alongside SA OS/390. Existing automation procedures may need modifying to take account of changes that have been made with the current SA OS/390 release.

- **workstation setup and configuration**

- This task will also often fall upon the automation programmers. It is

concerned with getting a workstation set up to run the SA OS/390 workstation, the NMC workstation and for the workstation user to be able to issue commands from it.

- **Operators** are the end users of the product, as it aims to simplify their jobs. They are responsible for:

**ensuring application availability**

This basically means starting applications when they need to be started, picking them up if they break down and stopping them when required.

**monitoring systems and applications**

Operators are responsible for detecting any problems that might occur with the systems or with the application software running upon them. When they find one, they will generally try a few standard fixes and then contact a system programmer.

**IPLs and shutdowns**

Operators are responsible for ensuring the orderly shutdown of systems and applications when they need to be stopped, and for their successful restarting afterwards.

**special operations**

This covers all of the things that the operators are asked to do that are not a part of their scheduled (or planned) activities. Examples might be keeping an application available until later in the day, changing the time that a particular event will happen, recycling applications to pick up fixes, or issuing special commands after an application has been started.

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## Notes on Terminology

**MVS:**

References in this book to "MVS" refer either to the MVS/ESA™ product or to the MVS™ element of OS/390.

**PS/2:**

The *Processor Operations PC* often is referred to as *Processor Operations PS/2* in both SA OS/390 panels and SA OS/390 documentation.

**NetView:**

The term *NetView* used in this documentation stands for *Tivoli NetView for OS/390*.

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## The System Automation for OS/390 Library

The SA OS/390 books (except Licensed Program Specifications) are also available on CD-ROMs as part of the following *IBM Online Library Collections*:

- SK2T-6700: OS/390 CKit

These softcopy collections include the IBM Library Reader™, a program that enables customers to read softcopy books.

### System Automation for OS/390 Homepage

You can find more related and up-to-date information in the internet on the System Automation for OS/390 homepage: <http://www.s390.ibm.com/sal>

## Using LookAt to look up message explanations

LookAt is an online facility that allows you to look up explanations for z/OS messages and system abends.

Using LookAt to find information is faster than a conventional search because LookAt goes directly to the explanation.

LookAt can be accessed from the Internet or from a TSO command line.

You can use LookAt on the Internet at:

<http://www.ibm.com/servers/eserver/zseries/zos/bkserv/lookat/lookat.html>

To use LookAt as a TSO command, LookAt must be installed on your host system. You can obtain the LookAt code for TSO from the LookAt Web site by clicking on **News and Help** or from the *z/OS Collection*, SK3T-4269.

To find a message explanation from a TSO command line, simply enter: **lookat message-id** as in the following example:

```
lookat iec192i
```

This results in direct access to the message explanation for message IEC192I.

To find a message explanation from the LookAt Web site, simply enter the message ID. You can select the release if needed.

**Note:** Some messages have information in more than one book. For example, IEC192I has routing and descriptor codes listed in *z/OS MVS Routing and Descriptor Codes*. For such messages, LookAt prompts you to choose which book to open.

Title	Order Number
<i>System Automation for OS/390 General Information</i>	GC33-7036
<i>System Automation for OS/390 Planning and Installation</i>	SC33-7038
<i>System Automation for OS/390 Defining Automation Policy</i>	SC33-7039
<i>System Automation for OS/390 User's Guide</i>	SC33-7040
<i>System Automation for OS/390 Messages and Codes</i>	SC33-7041
<i>System Automation for OS/390 Programmer's Reference</i>	SC33-7043
<i>System Automation for OS/390 Operator's Commands</i>	SC33-7042
<i>System Automation for OS/390 Customizing and Programming</i>	SC33-7035
<i>System Automation for OS/390 CICS Automation Programmer's Reference and Operator's Guide</i>	SC33-7044
<i>System Automation for OS/390 IMS Automation Programmer's Reference and Operator's Guide</i>	SC33-7045
<i>System Automation for OS/390 OPC Automation Programmer's Reference and Operator's Guide</i>	SC33-7046

## Related Publications

<b>Title</b>	<b>Order Number</b>
<i>ISPF User's Guide</i>	SC34-4484
<i>ISPF Dialog Management Guide and Reference</i>	SC34-4266
<i>MQSeries for OS/390 System Management Guide</i>	SC34-5374
<i>z/OS ISPF Planning and Customizing</i>	GC34-4814
<i>Console Automation Using NetView: Implementing</i>	LY43-0007
<i>MVS/ESA Planning: Operations</i>	GC28-1441
<i>MVS/ESA Operations: System Commands</i>	GX22-0013
<i>MVS/ESA SP V5 System Commands</i>	GC28-1442
<i>MVS Service Aids</i>	GC28-0674
<i>z/OS MVS System Messages, Vol 1 (ABA-AOM)</i>	SA22-7631
<i>z/OS MVS System Messages, Vol 2 (ARC-ASA)</i>	SA22-7632
<i>z/OS MVS System Messages, Vol 3 (ASB-BPX)</i>	SA22-7633
<i>z/OS MVS System Messages, Vol 4 (CBD-DMO)</i>	SA22-7634
<i>z/OS MVS System Messages, Vol 5 (EDG-GFS)</i>	SA22-7635
<i>z/OS MVS System Messages, Vol 6 (GOS-IEA)</i>	SA22-7636
<i>z/OS MVS System Messages, Vol 7 (IEB-IEE)</i>	SA22-7637
<i>z/OS MVS System Messages, Vol 8 (IEF-IGD)</i>	SA22-7638
<i>z/OS MVS System Messages, Vol 9 (IGF-IWM)</i>	SA22-7639
<i>z/OS MVS System Messages, Vol 10 (IXC-IZP)</i>	SA22-7640
<i>z/OS MVS System Commands</i>	SA22-7627
<i>z/OS MVS Initialization and Tuning Reference</i>	SA22-7592
<i>OS/390 Information Transformation</i>	GC28-1985
<i>z/OS MVS Routing and Descriptor Codes</i>	SA22-7624
<i>z/OS MVS Setting Up a Sysplex</i>	SA22-7625
<i>z/OS JES2 Commands Summary</i>	SA22-7527
<i>Planning for the 9032 Model 3 and 9033 Enterprise Systems Connection Director</i>	SA26-6100
<i>System Display and Search Facility General Information</i>	GC23-0406
<i>System Display and Search Facility Guide and Reference</i>	SC23-0408
<i>Tivoli Global Enterprise Manager User's Guide</i>	GC31-8474
<i>Tivoli Global Enterprise Manager Adapter Guide</i>	GC31-8545
<i>Tivoli Enterprise Console User's Guide Volume I</i>	GC31-8334
<i>Tivoli Enterprise Console User's Guide Volume II</i>	GC31-8335
<i>Tivoli Enterprise Console Event Integration Facility Guide</i>	GC31-8337
<i>Tivoli Management Platform Reference Guide</i>	SC31-8324
<i>S/390 Managing Your Processors</i>	GC38-0452
<i>S/390 Hardware Management Console Guide</i>	GC38-0453
<i>S/390 Hardware Management Console Operations Guide</i>	GC38-0459

<b>Title</b>	<b>Order Number</b>
<i>Support Element Operations Guide</i>	GC38-3108
<i>Multiplatform APPC Configuration Guide</i>	GG24-4485
<i>MVS/ESA Planning: Security</i>	GC28-1440
<i>Tivoli NetView for OS/390 Automation Guide</i>	SC31-8225
<i>Tivoli NetView for OS/390 Tivoli NetView for OS/390 Planning Guide</i>	GC31-8226
<i>Tivoli NetView for OS/390 Command Reference</i>	SC31-8227
<i>Tivoli NetView for OS/390 Customization Guide</i>	SC31-8228
<i>Tivoli NetView for OS/390 Customization: Using REXX and the NetView Command List Language</i>	SC31-8055
<i>Tivoli NetView for OS/390 Tuning Guide</i>	SC31-8240
<i>Tivoli NetView for OS/390 Security Reference</i>	SC31-8606
<i>NetView for MVS Automation Implementation</i>	SC31-8050
<i>Tivoli NetView for OS/390 Graphic Monitor Facility User's Guide</i>	GC31-8234
<i>Tivoli NetView for OS/390 Installation and Administration Guide</i>	SC31-8236
<i>Tivoli NetView for OS/390 Resource Object Data Manager and GMFHS Programmer's Guide</i>	SC31-8233
<i>Tivoli NetView for OS/390 User's Guide</i>	SC31-8241
<i>Tivoli NetView for OS/390 MultiSystem Manager User's Guide</i>	GC31-8607
<i>NetView Management Console User's Guide</i>	GC31-8665
<i>Tivoli NetView for OS/390 Automated Operations Network User's Guide</i>	GC31-8661
<i>Network Security Product Program Guide</i>	SC31-6500
<i>Network Security Product Secured Network Gateway Guide</i>	SC31-8113
<i>Personal Communications Reference</i>	SC31-8477
<i>Personal Communications Access Feature</i>	SC31-8526
<i>Communications Server and OS/2 Access Feature: Up and Running</i>	GC31-8189
<i>SAA Procedures Language/REXX</i>	GX24-5277
<i>VSE/ESA Unattended Node Support</i>	SC33-6512
<i>3172 Interconnect Controller Planning Guide</i>	GA27-4002
<i>3174 Establishment Controller Planning Guide</i>	GA27-3862
<i>MVS/ESA MVS Configuration Program Guide and Reference</i>	GC28-1817
<i>MVS/ESA Planning: Dynamic I/O Configuration</i>	GC28-1674
<i>z/OS HCD User's Guide</i>	SC33-7988
<i>MVS/ESA Support for the Enterprise Systems Connection</i>	GC28-1140
<i>MVS/ESA Planning: APPC Management</i>	GC28-1110
<i>MVS/ESA Application Development Macro Reference</i>	GC28-1822
<i>Resource Access Control Facility (RACF) Command Language Reference</i>	SC28-0733
<i>Resource Access Control Facility (RACF) Security Administrator's Guide</i>	SC23-3726
<i>Resource Measurement Facility User's Guide</i>	GC33-6483
<i>System Display and Search Facility (SDSF) Guide and Reference</i>	SC23-0408
<i>S/390 MVS Sysplex Overview – An Introduction to Data Sharing and Parallelism</i>	GC28-1208
<i>S/390 MVS Sysplex Systems Management</i>	GC28-1209

<b>Title</b>	<b>Order Number</b>
<i>S/390 Sysplex Hardware and Software Migration</i>	GC28-1210
<i>S/390 MVS Sysplex Application Migration</i>	GC28-1211
<i>OS/390 MVS Setting Up a Sysplex</i>	GC28-1779
<i>TSO/E REXX/MVS User's Guide</i>	SC28-1882
<i>TSO/E REXX/MVS Reference</i>	SC28-1883
<i>VTAM Resource Definition Reference</i>	SC31-6438
<i>VTAM Version 3 Release 4 Network Implementation Guide</i>	SC31-6434

## Accessing licensed books on the Web

OS/390 licensed documentation in PDF format is available on the Internet at the IBM Resource Link Web site at:

<http://www.ibm.com/servers/resourceLink>

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5. Click on **OS/390**.
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## Part 1. Planning



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# Chapter 1. SA OS/390 Prerequisites and Supported Equipment

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## SA OS/390 Components

Please note that SA OS/390 consists of the following three components:

- system operations, sometimes also abbreviated as *SysOps*
- processor operations, sometimes also abbreviated as *ProcOps*
- I/O operations, sometimes also abbreviated as *I/O Ops*

You will find a detailed component description in section “Component Description” on page 17.

SA OS/390 also provides special automation facilities for the following products:

- CICS®
- DB2™,
- IMS®
- OPC

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## Hardware Requirements

IBM has tested SA OS/390 on IBM® processors. SA OS/390 uses the S/390 interfaces that vendors of other processors capable of running OS/390® have stated they support. Check with your vendor for details.

The target system can run in any hardware environment that supports the required software.

### SA OS/390 Processor Operations

The processor operations base program can run on any processor supported by NetView.

### SA OS/390 System Operations

The system operations base program can run on any processor supported by NetView.

### SA OS/390 I/O Operations

The I/O operations base program can run on:

1. Any 3090™ (model J) or 3090 - 9000T processor that has at least one ESCON® channel installed and defined to the IOCP.

## SA OS/390 Prerequisites and Supported Equipment

**Note:** If an ESCON channel is not installed and defined then I/O operations will recover from an ABEND 0C1, issue message IHVD014E, and terminate startup.

2. Any ES/9000<sup>®</sup> or higher processor

ESCON Multiple Image Facility (EMIF) is required for enhanced status support.

To utilize the SA OS/390 I/O operations Delete File, Query File, and Write File functions, the following ESCON Director microcode EC levels are required.

- D/T9032-2 = EC C95785
- D/T9033-1 = EC C95780

The following Licensed Internal Code (LIC) hardware patches are required for operation of the SA OS/390 I/O operations on these processors. Contact your IBM hardware service representative to determine the latest patch information for your environment.

*Table 1. Licensed Internal Code requirements.*

Processor	SEC Level	LIC Patch
3090-J and 3090-9000T	227574 227576 227578	IOPE0129 IOPE0128 none
9021(<=720)	229905 229910 229914	IOPE0129 IOPE0127 none
9021 (>720)	228104A	none
9121	C23074B C22822	IOPE0127 IOPE0127

## Workstation Components and Processor Operations

- the NMC exploitation used by SA OS/390 can run on all software supported by Tivoli NetView for OS/390 Release 3.
- LAN passthru PC and processor operations PC operate on a programmable workstation supported by OS/2<sup>®</sup> Warp 3.0 or higher.

---

## Software Requirements

This section describes the environment of the target system required to install and use SA OS/390.

**Notes:**

1. SA OS/390 cannot run on the same NetView as Automated Operations Network (AON). So if you are using AON, you have to use two NetViews.
2. For I/O operations only: To properly invoke the Japanese language version of this product, a Japanese language version host must be connected to a Japanese language workstation. If an English language workstation is connected to a Japanese language host, some messages may be unreadable.
3. Check with IBM Service for required product service levels in addition to the base product releases. Certain service levels may be required for particular product functions.
4. SA OS/390 processor operations is enabled on a focal-point system, from which it monitors and controls SA OS/390 processor operations target systems. The SA OS/390 processor operations target system may also have SA OS/390

## SA OS/390 Prerequisites and Supported Equipment

installed for its system operations and I/O operations but the processor operations will not be enabled. This section does not describe the SA OS/390 Processor Operations target system.

Unless otherwise noted, subsequent versions or releases of products can be substituted.

### Mandatory Prerequisites

A mandatory prerequisite is defined as a product that is required without exception; this product either **will not install** or **will not function** unless this requirement is met. This includes products that are specified as REQs or PREs.

Table 2. Mandatory Prerequisites

Product Name and Minimum VRM/Service Level
OS/390 Version 2 Release 6 or higher
Tivoli NetView for OS/390 Release 3

### Functional Prerequisites

A functional prerequisite is defined as a product that is **not** required for the successful installation of this product or for the basic function of the product, but is needed at run time for a specific function of this product to work. This includes products that are specified as IF REQs.

Table 3. Functional Prerequisites

Product Name and Minimum VRM/Service Level	Function
<b>The SA OS/390 host component exploits as optional prerequisites:</b>	
OS/390 Version 2 Release 6 and 7	For single system automation with certain OpenEdition® restrictions (see “OpenEdition Restrictions and Considerations” on page 6.
OS/390 Version 2 Release 8	For single system automation with certain OpenEdition considerations (see “OpenEdition Restrictions and Considerations” on page 6.
OS/390 Version 2 Release 9	For sysplex automation with certain OpenEdition considerations (see “OpenEdition Restrictions and Considerations” on page 6.
<b>OS/390 base elements or optional features:</b>	
Security Server (root: RACF V2R2 and OpenEdition DCE Security Server), optional feature in OS/390 V2R6	For sysplex-based authorization and RACF-based NetView authorization.
<b>Other program products:</b>	
MQSeries Version 2 Release 1	For running in single system mode
MQSeries Version 5 Release 2	For sysplex automation
BookMaster® Release 4.0	For customization reports.
<b>Workstation Prerequisites:</b>	
Tivoli NetView for OS/390 Release 3 MultiSystem Manager	For SA OS/390 topology manager functions

## SA OS/390 Prerequisites and Supported Equipment

Table 3. Functional Prerequisites (continued)

Product Name and Minimum VRM/Service Level	Function
NetView Management Console Server and Client	For the NMC workstation
NetView 3270 Management Console	For the NMC workstation
OS/2 Warp 4.0 or higher with REXX support	For LAN passthru PC and processor operations PC
Personal Communications/3270 Version 4.2 for OS/2 with Access Feature or:	For APPC functions used by the LAN passthru PC and processor operations PC
Communications Manager/2 1.11.	For APPC functions used by the LAN passthru PC and processor operations PC

### OpenEdition Restrictions and Considerations

If you do not want to have JES automated by SA OS/390 then there are no restrictions and you can skip the information in this section.

However, a possible deadlock may occur if you want your OpenEdition kernel (OMVS kernel) to create colony address spaces for use by a physical file system (PFS), for example the network file system (NFS). This address space requires JES, but JES will not yet be started, because it is automated by SA OS/390 and SA OS/390 in return has a dependency on OpenEdition.

**Note:**

This deadlock cannot be resolved for OS/390 releases 6 and 7. That is, you cannot automate JES by SA OS/390 if you want to use PFS in a colony address space, or the other way round, you cannot use any PFS if it is started as a colony address space.

In OS/390 release 8 or higher you can resolve this conflict in the following way:

1. Remove all FILESYSTYPE statements from the BPXPRMxx member that is used to start the OMVS kernel and that have the parameter ASNAME(...). Then OpenEdition will initialize completely except the PFS.
2. Create a new BPXPRMyy member which will contain the FILESYSTYPE statements. If the BPXPRMyy member used to start OMVS contains statements like

```
FILESYSTYPE TYPE(NFS)
                    ENTRYPOINT(GFSCINIT)
                    ASNAME(MVSNFS)
```

then OMVS tries to start colony address spaces due to the ASNAME(...) parameter.

3. After SA OS/390 and JES2 initialization, issue the command  
SETOMVS RESET=(yy)

where yy refers to the BPXPRMyy member.

You can automate this process by means of SA OS/390 automation policy as described in *System Automation for OS/390 Defining Automation Policy*. For this purpose, you can let message BPXI004I (OMVS INITIALIZATION COMPLETE)

## SA OS/390 Prerequisites and Supported Equipment

trigger the SETOMVS RESET=(yy) command. Anyway, you must await message BPXI004I before issuing the SETOMVS RESET=(yy) command.

---

### Supported Hardware

SA OS/390 processor operations supports monitoring and control functions for any of the following processors:

- Screen-oriented processors (9121, 9021, 3090, 308x, and 4381)
- System/390 microprocessor-based processors (9672, 9674, 2003, and 3000)
- All CMOS processors supporting Operations Command Facility (OCF) not mentioned in the above list item are supported by processor operations with limited functionality.

SA OS/390 processor operations also supports logical partitioning of any of those processors.

SA OS/390 provides a wide range of I/O configuration information and control functions for various types of hardware other than processors, though it does not require any of them. The hardware can include channels, control units and devices (both ESCON and non-ESCON), ESCON Directors (they are not required), and hardware used for sysplex coordination such as coupling facilities and External Time Reference (ETR) devices.

### Operator Terminals

SA OS/390 supports any display supported by Tivoli NetView for OS/390 Release 3. This is required for access to SA OS/390 system operations and processor operations functions through NetView.

SA OS/390 supports any display supported by ISPF 4.2 or higher. This is required for access to SA OS/390 I/O operations functions and the SA OS/390 customization dialogs.

### Operating Systems Supported by Processor Operations

SA OS/390 processor operations monitors and controls target systems with the following operating systems:

- OS/390, MVS/ESA, MVS/XA™ (MVS/SP 2.2 or higher)
- Transaction Processing Facility (TPF) 3.1.  
This requires a TPF 3270 interface or an ASCII asynchronous interface.
- VM/SP 6.0, VM/XA 2.1, VM/ESA® 1.1.0
- VSE/SP 4.1, VSE/ESA™ 1.1.0 or higher

**Note:** The above products might not be serviced any more.

## SA OS/390 Prerequisites and Supported Equipment

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## Chapter 2. What is New in SA OS/390 2.1

This chapter contains an overview of the most important changes brought about by the new design and the resulting behaviour of the product.

Use the information presented here to check the impact on your user-written programming interfaces, such as automation procedures.

SA OS/390 2.1 presents a new and advanced approach for automating the resources of your enterprise to ensure a solid resource maintenance and a high availability of systems and applications.

Key aspects of the new design are:

- Grouping of resources to be automated as an entity, for example, a group of correlated applications can be started or stopped with a single command, or can be scheduled to be made automatically available or unavailable.
- The scheduling concept has been reworked; scheduling is now more adept at providing automation without manual interaction.
- New dependency relationships for automatic propagation of availability requests to supporting resources if dependent resources are to be made available. Over a hundred of combinations of action/condition combinations for dependencies are available, for example, *MAKEAVAILABLE/WhenAvailable* means that SA OS/390 should make the dependent resource available, as soon as the supporting resource is available. Dependencies can also be defined between groups of resources in a way that SA OS/390 automatically makes available the supporting groups before making available the dependent groups.
- Automatic application move from one system to another in case of system failure, or a planned move for workload balancing or because of system maintenance
- Goal driven automation, where goals are defined for resources by the automation programmer. SA OS/390 will attempt to fulfil these goals until they are satisfied. This contrasts to the earlier command driven automation.
- Cross system dependency management (thus achieving system boundary elimination); you can have dependencies between resources running on different systems
- Completely reworked graphical interface (NMC) with:
  - more flexibility to adapt the graphical monitoring to your needs
  - target RODMs are no longer needed
  - dynamic RODM load: no need to generate RODM loader files
  - preselected command offering for interactive operation on the NMC
- The new *Product Automation* policy object in the customization dialog provides automation for the following products (formerly called *features*):
  - DB2
  - CICS
  - IMS
  - OPC
- Processor Operations Resource Automation with:
  - XCF message automation

## What is New in SA OS/390 2.1

- processor operations integration into system operations: Monitor and control processor operations resources with system operations commands

---

## Changed Conceptual Product Behaviour

This section introduces the most important changes in the behaviour of the product in comparison to earlier releases.

- **Goal Driven Automation**

In contrast to earlier SA OS/390 releases, where automation was mostly command driven, SA OS/390 2.1 implements goal driven automation. That means, that your interactive command which you issue against a resource, for example, to make a resource available, is only processed, if it is in compliance with the goal of the resource as defined by the automation programmer in the customization dialog.

This can have as consequence that your command (which SA OS/390 actually treats as a request against a resource), is executed with a great delay, only after the resource's goal is in compliance with your interactively issued request. In some cases, this may never happen.

So note the difference between a command in earlier releases and a request in SA OS/390 2.1: A request is *persistent* until it is either processed, overridden or revoked. A command in earlier releases was either successfully processed immediately or rejected as unsuccessful.

If a resource is started by an operator outside of SA OS/390, but its SA OS/390 goal is defined as being unavailable, then it is stopped again by SA OS/390.

The characteristics and consequences of this new design, for example the methods to define goals and to issue interactive requests, or to override and revoke requests, and the priority of eventually conflicting requests is discussed in detail in *System Automation for OS/390 Defining Automation Policy* and *System Automation for OS/390 User's Guide*.

- **SA OS/390 2.1 Initialization**

The initial NetView message automation table AOFMSG00 and the initialization exec AOFRANTL have changed. Do not specify the SA OS/390 NetView message automation table AOFMSG00 as a parameter to CNME1034 in the NCCFIC statement of DSIDMKN and do not include it in any other NetView message automation table.

SA OS/390 will manage all of its initialization internally. This includes the loading of NetView message automation table AOFMSG00.

Since NetView provides the possibility of having multiple NetView message automation tables active at a time, you can load the NetView message automation table(s) of your choice at any time. SA OS/390 will not modify or replace them.

**Note:**

It is highly recommended that you do not modify the SA OS/390 initialization NetView message automation table AOFMSG00.

For supported NetView below 1.4 the SA OS/390 automation agents' initialization is triggered from the NetView CLIST CNME1034 (written in REXX). This means that you have to add the following statement to the end of the CNME1034 exec at the end of the file:

```
EXCMD AUTO1,AOFRANTL AUTO1 AUTO2
```

For NetView 1.4 and above AOFRANTL is now driven from the DSIPARM AOFSTY0 member (CNME1034 no longer exists).

- **Dynamic Allocation of the Automation Manager Configuration File at Load Time**

During automation control file load or refresh, the automation manager configuration file is dynamically allocated. It can be maintained while SA OS/390 is running.

Operators issuing an ACF command to load or refresh the automation control file must have read access to the automation manager configuration file. You can disable dynamic allocation of the automation manager configuration file if you add the automation control file into the DSIPARM concatenation of your NetView.

- **Changed Defaults**

All WTOs issued by system operations contain descriptor code 13. That means that all WTOs coming from system operations are flagged as *already automated* and do not flow back to NetView again.

- **XCF Group Specification**

The specification of XCF groups has been moved. For more information on this installation topic refer to the description of the INGXINIT member of the NetView DSIPARM library in “Step 7B — Customize NetView DSIPARM Data Set” on page 114 and to the description of the HSAPRMxx member of the automation manager parmlib in “Step 8A — Customizing HSAPRMxx” on page 122.

- **Startup and Shutdown Flexibility**

Startup and shutdown processing for applications now behaves in the same way. This processing is done in three phases: Prepare, Make, Postprocessing. Users can now specify flexible startup and shutdown commands (types) for applications according to these phases.

Additionally, the message processing during startup and shutdown will take the startup/shutdown type into account.

---

## Changes in the Design of the Policy Database

In SA OS/390 2.1 it is mandatory to define all automation policy using the customization dialog, thus creating a policy database and then use the appropriate functions of the customization dialog to build the automation configuration, that is, the system operations control files.

As in SA OS/390 2.1 the processing of automation is distributed between a sysplex’s automation manager and its automation agents on the systems (and so are the various system operations control files), it is absolutely necessary to build these files in one coherent process, especially as SA OS/390 checks the consistency of the automation information stored on the automation manager and the automation agents. You can consider this process as a sysplex-wide, consistent automation configuration refresh.

**Note:**

**Without consistent system operations control files, you will not be able to initialize SA OS/390. It is therefore no longer possible to manually edit automation control files.**

## What is New in SA OS/390 2.1

Additionally, a large number of enhancements have been added to the customization dialog, resulting in a restructuring and re-design of the customization dialog. An overview of these functional enhancements is given in chapter *Summary of Changes* in *System Automation for OS/390 Defining Automation Policy*.

Furthermore, the entry type *Includes* (ICL) is no longer supported. Such policy objects are available only for down-level SA OS/390 systems. The BUILD function will still include this data set member into the automation control file, but SA OS/390 2.1 will ignore all user defined members and issue an error message.

To enable you to use policy databases from earlier SA OS/390 releases, the customization dialog provides extensive functions and features to convert and migrate them to the SA OS/390 2.1 format. This topic is also described in *System Automation for OS/390 Defining Automation Policy*.

---

## Changes with Commands

Changes to commands in SA OS/390 2.1 comprise: deleted commands, renamed commands and commands with changed behaviour. Check your user-written CLISTS whether these changes have an impact on them.

### Deleted Commands

This section lists the deleted commands and what substitutes/replacements are available.

Deleted Command	Command with equivalent function
\$RESTART (1)	INGREQ REQ=DOWN RESTART=YES
ACFPLOAD	ACF REFRESH
AOCSTART	NetView START TASK=
AOCSTOP	NetView STOP TASK=
BOUNCE (1)	INGREQ REQ=DOWN RESTART=YES
CICSSEC	
CICSTRCE	AOCTRACE
CLEARSYS	INGVOTE and CANCEL
DISPSHUT	DISPSTAT status=5
DISPVPL	INGSCHED outmode=line
DOWN (1)	INGREQ REQ=DOWN
EVESROUT	AOCFILT
EVISROUT (2)	AOCFILT
FPRESYNC	INGTOPO REBUILD
IMSSEC (2)	
IMSTIMED (2)	INGSCHED REQ=REPL
IMSTIMEU (2)	INGSCHED REQ=REPL
INGHELP	NetView HELP
STARTIMS (2)	INGREQ REQ=START
SHUTIMS	INGREQ REQ=STOP
UP (1)	INGREQ REQ=UP

Deleted Command	Command with equivalent function
UPDTRODM	INGTOPO REBUILD
RESTART	This command does not perform any operations (nop). Use INGREQ REQ=START as substitute.
<b>Notes:</b> <ol style="list-style-type: none"> <li>1. These commands are no longer shipped with OPC Product Automation.</li> <li>2. These commands are no longer shipped with IMS Product Automation.</li> <li>3. These commands are no longer shipped with CICS Product Automation.</li> </ol>	

## Renamed Commands

- SETNTFY has been renamed to ---> INGNTFY
- SETAUTO has been renamed to ---> INGAUTO
- SETTHRES has been renamed to ---> INGTHRES
- GETPW has been renamed to ---> INGPW
- SENDCMD has been renamed to ---> INSEND

For a description of these commands, refer to *System Automation for OS/390 Operator's Commands*.

## Commands with Changed Behaviour

- If you issue SETSTATE, you will get the INGREQ REQ=START functionality, which is the goal driven request to make a resource available. Note that the behaviour of a request is different to the behaviour of a conventional command.
- If you issue SHUTSYS, you will get the INGREQ REQ=STOP functionality, which is the goal driven request to make a resource unavailable. Note that the behaviour of a request is different to the behaviour of a conventional command.
- If you issue DISPSVP, you will get the INGSCHED functionality, which is a schedule override.
- MONITOR: More specific monitoring is enabled by specifying the resources that you want to monitor as parameters to the MONITOR command.
- INGNTFY: New message classes have been implemented for messages coming from the automation manager.
- The RESTART command will not process any operations (nop).
- AOFCMD member changes: All undocumented command synonyms have been removed from the AOFCMD member. You can no longer use them.

---

## Changes with Common Routines and Generic Routines

Changes to common routines and generic routines in SA OS/390 2.1 comprise: deleted routines and routines with changed behaviour. Check your user-written CLISTS whether these changes have an impact on them.

### Deleted Routines

- The FPRESYNC common routine has been withdrawn.
- FTERMMSG has been withdrawn. It is recommended to use TERMMSG instead.
- UPMSG has been withdrawn.

## Routines with Changed Behaviour

The complete functionality of the routines listed here is described in *System Automation for OS/390 Programmer's Reference*.

### AOFTREE

Due to the fact that the parent-child information is no longer available on the automation agent, the AOFPCCHILD.n contents has changed to the following format (the tree-level is no longer available and is replaced by a "0" as placeholder). AOFTREE can now be called from within a NetView pipe. The following shows an example of what will be returned.

#### AOFTREE Output

```
AOFPCCHILD.0 = n
AOFPCCHILD.1 = subsystem_name  jobname  0  position_in_tree
:
:
```

### AOCUPDT Routine

AOCUPDT can no longer be used to change subsystem configuration data. All parameters that deal with subsystem configuration data are removed.

- JOB
- JOBTYP
- DESC
- SPARM
- STRTCMD
- RSTOPT
- SHUTOPT
- SHUTDLY

### CHKSUBS

This routine does not perform any operations (nop).

### AOCQRY

The following task globals will no longer be provided:

- SUBxSESS
- SUBxSHUTOPT
- SUBxSTRTCMD
- SUBxSHUTID

### ACTIVMSG UP=YES

- issue POSTSTART commands with the start type that was requested if the subsystem's status is set to UP or RUNNING.
- clear the startup processing variables

### ISSUECMD and ISSUEREP

- If AUTOTYP=START is specified as parameter, these routines will issue the commands/replies associated with the start type that the resource was started with.
- If PASSES=YES is specified, the start type selection is disabled.

### TERMMSG FINAL=YES

- Issue SHUTFINAL commands with the stop type that was requested.
- Clear the shutdown processing variables.

**ISSUECMD and ISSUERE**

- If AUTOTYP=TERMINATE is specified as parameter, these routines will issue the commands/replies associated with the shutdown type that the resource is stopped with.
- If PASSES=YES is specified, the shutdown type selection is disabled.

---

## Changes with Global Variables

Changes with global variables in SA OS/390 2.1 comprise: deleted variables, new variables and variables with changed behaviour or meaning. Check your user-written CLISTS whether these changes have an impact on them.

**Deleted Variables**

- AOFSMARTACF
- AOFUSERKEYS
- AOFSTARTCHAIN
- AOFSTATUSCMDS
- AOFEARLYINIT
- AOFDELETEOVERRIDESDELAY
- AOFRESTARTTRIGGERCHECK
- EHKDEBUG
- EHKSYSNAME
- EHKSYSTEM

**New Variables**

- AOFINITIALSTARTTYP
- AOFEXPLAIN\_USER
- AOF\_INIT\_MCSFLAG
- AOF\_INIT\_ROUTCDE
- AOF\_INIT\_SYSCONID

---

## Changes with User Exits

User exits have been removed and new exits have been added to SA OS/390. The new user exits are documented in *System Automation for OS/390 Customizing and Programming*.

**New User Exits:**

- AOFEXI01 (at ACF load)
- AOFEXI02 (at ACF load)
- AOFEXC00 (starting point for user-provided local functions (AOFPOPER panel))
- AOFEXC01 (invoked during INGREQ processing)
- INGEX01 (Customization Dialog exit for BUILDF processing)
- INGEX02 (Customization Dialog exit for BUILDF processing)
- INGEX03 (Customization Dialog exit for COPY processing)
- INGEX04 (Customization Dialog exit for COPY processing)
- INGEX05 (Customization Dialog exit for DELETE processing)
- INGEX06 (Customization Dialog exit for DELETE processing)

## What is New in SA OS/390 2.1

### Removed User Exits:

- AOFEXDYN
- AOFEXRLD
- AOFEXACF

### User Exits with changed Processing:

- AOFEXDEF: can no longer be used to switch the save/restore cache.

---

## Loss of Data from the Automation Status File

Since the automation status file (ASF) needs to be recreated during SA OS/390 2.1 initialization, all data contained in earlier ASFs is lost. This comprises for example:

- service period overrides
- status of events
- status of resources
- thresholds
- user data

---

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Before you begin the post-SMP/E installation of SA OS/390, read *System Automation for OS/390 General Information*. That book briefly describes what SA OS/390 does and explains the concepts you need to know to operate the product. You also need to make sure that you or someone in your organization has done the SMP/E install.

---

### Component Description

The SA OS/390 product consists of the following components:

- system operations, sometimes also abbreviated as *SysOps*
- processor operations, sometimes also abbreviated as *ProcOps*
- I/O operations, sometimes also abbreviated as *I/O Ops*

### System Operations

System operations monitors and controls system operations applications and subsystems such as NetView, SDSF, JES, RMF™, TSO, RODM, ACF/VTAM®, CICS, DB2, IMS, and OPC.

Enterprise monitoring is used by SA OS/390 to update the NetView Management Console (NMC) resource status information which is stored in the Resource Object Data Manager (RODM).

### Processor Operations

Processor operations monitors and controls processor hardware operations. It provides a connection from a focal point processor to a target processor. With NetView on the focal point processor, processor operations automates operator and system consoles for monitoring and recovering target processors.

## Planning to Install SA OS/390 on Host Systems

Processor operations allows you to power multiple target processors on and off and reset them, perform IPLs, set the time of day clocks, respond to messages, monitor status, and detect and resolve wait states.

### I/O Operations

I/O operations provides a single point of control for managing connectivity in your active I/O configurations. It takes an active role in detecting unusual I/O conditions and lets you view and change paths between a processor and an input/output device, which can involve using dynamic switching (the ESCON switch).

I/O operations changes paths by letting you control channels, ports, switches, control units, and input/output devices. You can do this through graphic windows on a workstation, as well as on an operator console or API.

---

## SA OS/390 and Sysplex Hardware

Figure 1 on page 19 illustrates a basic hardware system and some of the types of hardware resources that can be attached.

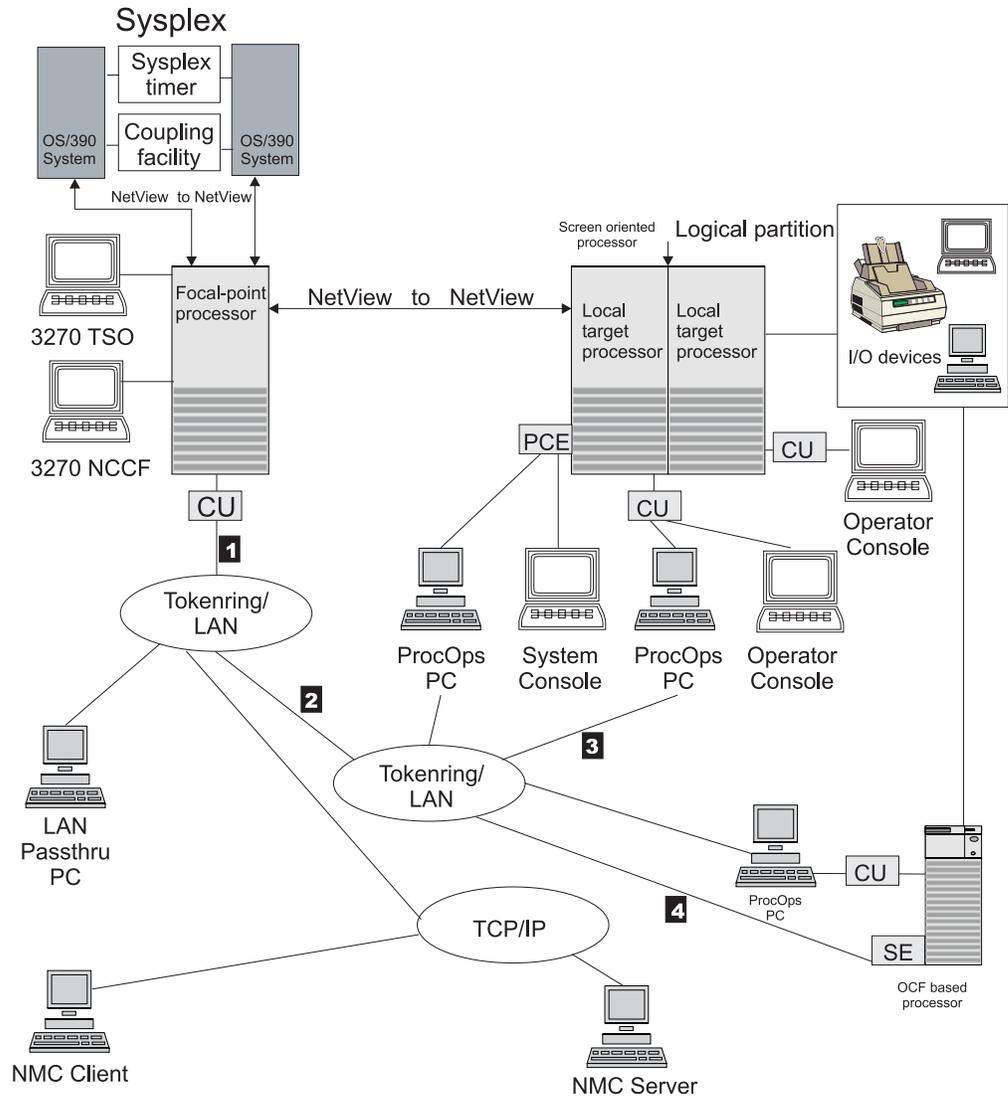


Figure 1. A Basic Hardware System

The following describes some relevant resources used by SA OS/390 and its components.

### OCF-Based Processor

A central processor complex that interacts with human operators via a graphical interface provided by the service element (SE). OCF-based processors originate from the 9672 processor family.

### Screen-oriented Processor

A central processor complex that interacts with human operators through line-mode display consoles. For System/390™ and System/370™ processors, the display consoles use either an IBM 3270 data stream or an ASCII data stream.

### Sysplex

A set of OS/390 systems communicating and cooperating with each other through certain multi-system hardware components (coupling devices and sysplex timers) and software services (couple data sets). In a sysplex, OS/390 provides the

## Planning to Install SA OS/390 on Host Systems

coupling services that handle the messages, data, and status for the parts of a multi-system application that has its workload spread across two or more of the connected processors. Sysplex timers, coupling facilities, and couple data sets containing policy and states for basic functions are all part of a sysplex. You can control a sysplex by NetView-based commands or through an NMC workstation.

A *parallel sysplex* is a sysplex that includes a coupling facility.

An OS/390 sysplex can be viewed and managed as a single system image on the SA OS/390 graphic interface.

### Coupling Facility

A hardware storage element with a high-speed cache, list processor, and locking functions that provides high performance random access to data for one system image or data that is shared among system images in a sysplex. With I/O operations you can see stand-alone coupling facilities. It handles them as control units with up to eight devices, all defined by the user. With SA OS/390 system operations, you can display the status of coupling facilities from a single system's point of view or you can display sysplex-wide status.

### Sysplex Timer

An IBM unit that synchronizes the time-of-day (TOD) clocks in a multiprocessor or in processor sides. External Time Reference (ETR) is the generic name for the IBM Sysplex Timer (9037).

### Logically Partitioned (L) mode

A processor with the PR/SM feature that can be divided into partitions with separate logical system consoles that allocates hardware resources among several logical partitions. (It is called *logical* because the processor is not physically divided, but divided only by definition.) The partitions are defined, monitored, and activated separately by processor operations.

A processor that does not use logical partitions is in "basic mode".

### Communications paths

Paths that connect the focal point processor to target processors so that commands, messages, and alerts can flow. For more information refer to "Defining System Operations Connectivity" on page 59.

#### NetView paths via logical unit (LU 6.2)

See **1**, **2**, **4** in Figure 1 on page 19: A type of network-accessible port — also called a VTAM® or *NetView connection* (NVC) — LU 6.2 permits communication between the processor operations focal point processor to the operator control facility (OCF), which runs on the service element (SE). It enables end users to gain access to SNA network resources and communicate with each other.

#### Personal Computer (PC) paths

See **1**, **2**, **3** in Figure 1 on page 19: Paths that connect the operator or system console to the processor operations focal point through a port on the processor operations PC. A target processor may also have a passthru console with a workstation path.

#### NetView to NetView

A connection through which status changes are routed from the system operations target system to the system operations focal point.

## Control Units (CU)

Control units are hardware units that control input/output operations for one or more devices. You can view information about control units through I/O operations, and can start or stop data going to them by blocking and unblocking ports. For example, if a control unit needs service, you can temporarily block all I/O paths going to it.

## I/O Devices

Input/output devices include hardware such as printers, tape drives, direct access storage devices (DASD), displays, or communications controllers. You can access them through multiple processors. You can see information about all devices and control paths to devices. You can vary devices or groups of devices online or offline.

## NetView Management Console (NMC)

A NetView function that consists of a graphic series of windows controlled by the NetView program and that allows you to monitor the SA OS/390 enterprise interactively. The NetView Management Console consists of an NMC server and an NMC client.

The NMC client is connected to the NMC server which communicates with NetView. The NetView Management Console (NMC) can be implemented with an optional client, either on the server or separately.

---

## Planning for the NMC Environment

The information in this section may help you to plan how to configure the components in your environment.

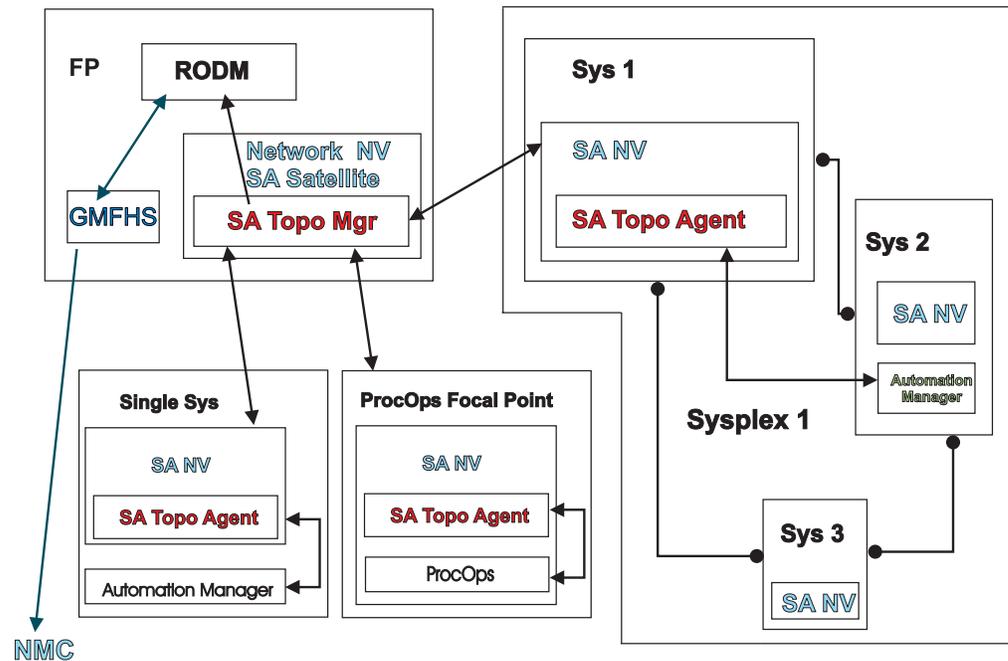


Figure 2. The SA OS/390 Environment for NMC Support

Figure 2 shows how in a SA OS/390 configuration the involved components communicate to produce graphical output information:

## Planning to Install SA OS/390 on Host Systems

1. At initialization time, the SA OS/390 topology manager knows the target systems for automation.
2. The SA OS/390 topology manager contacts the SA OS/390 topology agents on all sysplexes or stand-alone systems or, for processor operations, it contacts the processor operations focal point to retrieve from it the required information.
3. The SA OS/390 topology agents contact the related automation managers or the processor operations component respectively to find out the status from the systems and resources.
4. Then the SA OS/390 topology agents report their found information to the SA OS/390 topology manager on the focal point.
5. The SA OS/390 topology manager feeds the RODM data base with the achieved information.
6. The NMC workstation on the operator's request can retrieve the RODM data to produce the defined views.
7. Also, at initialization time, the automation managers get the order to inform the related SA OS/390 topology agents whenever status changes occur. Then the SA OS/390 topology agents will route the status change information to the SA OS/390 topology manager which will update the RODM data base.

---

## Using SA OS/390 Partitioned Data Sets

You must be aware of the restrictions involved in the use of partitioned data sets by SA OS/390 and NetView. This section provides information on:

- Allocating SA OS/390 partitioned data sets
- Using LNKLISTxx (Link Library List)
- Sharing data sets

### Allocating SA OS/390 Partitioned Data Sets

After you have completed the SMP/E installation of SA OS/390, you need to allocate data sets to hold your locally customized members. These data sets are concatenated in various data definition (DD) names in the NetView startup procedure. You may need data sets for the DSIPARM, DSIMSG, DSICLD, CNMPNL1, STEPLIB, and DSIPRF concatenations.

There are two types of customization that you may perform:

- Enterprise-specific
- Domain-specific

#### Domain-specific Customization

##### SA OS/390 DSIPARM

This data set holds SA OS/390 NetView definitions that are specific to this NetView. You may need it only for the DSIPARM concatenation. It should contain the DSIDMN statements that define this domain and a suitably customized AOFMSGSY member. For information about this customization, see *System Automation for OS/390 Customizing and Programming*.

#### Enterprise-specific Customization

##### SA OS/390 ACF

This data set holds the various automation control file fragments and control file fragments for the automation manager needed by the SA OS/390 instance on this NetView. It is not recommended that you

## Planning to Install SA OS/390 on Host Systems

build your SA OS/390 policy databases directly into this data set. Changing your active SA OS/390 policy is a process that should be under change control.

Consequently it is recommended that you allocate a separate partitioned data set for your policy database, your ACF fragments created from the ISPF dialogs BUILDF process and the enterprise wide ACF fragments data set specified to the automation manager.

### Notes:

1. If the automation agent and the automation manager use different data sets they must have the same name. If the name is not identical then dynamic allocation will take place.
2. INGAMS supports GDG data sets by resolving these to absolute data set names during dynamic allocation.
3. It is recommended that the ACF data set is not placed into the DSIPARM concatenation. The reasons for this are as follows:
  - a. The same data set must be specified to the automation manager.
  - b. The DSIPARM data set cannot be renamed without stopping and starting all agents within the sysplex.
  - c. If you use INGAMS to refresh your configuration and you specify another data set, dynamic allocation will take place, the data set allocated to DSIPARM is ignored. The control file you see with NetView browse will not match the control file used by the automation manager.
  - d. GDG versions are resolved at runtime by the automation manager, while the automation agent receives the complete data set name at NetView startup. If a different GDG version is allocated to DSIPARM, dynamic allocation takes place. Again, the control file you see with NetView browse will not match the control file used by the automation manager.

### SA OS/390 DSIPARM

This contains SA OS/390 NetView definitions that you have modified and that are applicable to all your systems. This is required on all NetView instances running SA OS/390. This data set contains SDF definitions, a DSICMD modified to include the AOF CMD sample, and possibly modified NetView message automation table fragments.

### SA OS/390 CREXX

Compilation of SA OS/390 REXX code is optional and supported. If you choose to compile the CLISTs in the SA OS/390 SMP/E target data set, this is where the compiled versions should be placed. It is needed only in the DSICLD concatenation for system operations and processor operations REXX CLISTs. If you have compiled I/O operations execs, then the data set with these compiled execs must be in the SYSEXEC concatenation.

**Note:** If you use this data set, you can omit the SA OS/390 SMP/E target data set in your DSICLD concatenation, because all the code is in it as well.

### SA OS/390

This contains data set members shipped with SA OS/390. It can either be the real SMP/E data set or a locally made copy. If you must change the contents of any SA OS/390 part, copy the member from the SMP/E target data set to an SA OS/390 enterprise-specific or domain-specific data set, and edit it there. By keeping the contents of this data set as shipped, you

## Planning to Install SA OS/390 on Host Systems

make it much safer to apply SMP/E maintenance to its members, because SA OS/390 fixes will not overwrite your enterprise-specific modifications.

### Using LNKLSTxx (Link Library List)

If you have put the NetView and SA OS/390 data sets into your LNKLST concatenation, rather than into STEPLIB, they must be in the following sequence: the SA OS/390 ones before the NetView ones.

### Sharing Data Sets

By using shared DASD, you are able to reduce the DASD required to store the data sets, but this exposes you to additional risk. With shared DASD you have only one copy of the data sets. As a result, if that DASD volume becomes unusable, you lose access to the data set on ALL the systems that were sharing it. In a large sysplex this may represent a significant operational exposure.

One solution is to have a set of standby procedures for SA OS/390. These are copies of your normal SA OS/390 procedures that point to a copy of your data set on another DASD volume and preferably on a different string of DASD volumes. Although an instance of SA OS/390 started from these procedures would not share status information with the SA OS/390 from your primary procedures, the standby procedures let you maintain operability of your systems in the event that your primary procedures are unavailable.

---

## SA OS/390 Password Protection Feature

The SA OS/390 password protection is an optional feature that allows SA OS/390 to use an SAF program, such as RACF® or a functionally equivalent product, to manage gateway operator IDs and passwords. This feature is intended for systems that establish gateway sessions with two or more other systems.

The SA OS/390 password protection feature involves the SA OS/390 password data set and the SAF program. The SA OS/390 password data set contains only gateway operator ID and password entries. The SAF program manages all user IDs and their passwords including gateway operator IDs and their passwords.

Consider the following if you plan to install the SA OS/390 password protection feature:

- For an automation network to use the SA OS/390 password protection feature, all systems in the network must install the feature.
- An SAF program must be installed on all systems that are to use the SA OS/390 password protection feature.
- The number of gateway sessions each system in your automation network establishes with other systems.
- You need to decide whether each system in your automation network is to have its own SAF product data set or whether several systems will share one password data set. See *System Automation for OS/390 Defining Automation Policy* for more information about shared SAF data sets.

To install the SA OS/390 password protection feature, install SA OS/390 as described in “Step 19 — Define Security” on page 144.

**Note:** To plan your RMTCMD-based INGSSEND security, see the discussion of RMTCMD security features in the NetView library.

---

## REXX Considerations

### Allocation Requirements for REXX Environments

Before running SA OS/390 you may need to change the maximum number of REXX environments allowable.

The recommended starting point is 400 concurrent REXX environments for the address space of your SA OS/390. Different SA OS/390 configurations may require more REXX environments.

The number of REXX environments allowable is defined in the REXX environment table. See *OS/390 TSO/E Customization* for more information. TSO/E provides a SYS1.SAMPLIB member called IRXTSMPE, which is an SMP/E user modification to change the maximum number of language processor environments in an address space. Define the number of allowable REXX environments on the IRXANCHR macro invocation:

```
IRXANCHR ENTRYNUM=401
```

Install the user modification by following the instructions in *OS/390 TSO/E Customization*.

### Changing NetView REXX Environment Usage Characteristics

It is recommended that you change some of the NetView REXX environmental usage defaults. This can be done using the NetView DEFAULTS or OVERRIDE commands with the REXXENV and REXXSMLT parameters.

#### REXXENV

This is the number of REXX environments that each task “hangs onto” when it has finished with them. The default is 10, but 3 usually gives quite satisfactory performance.

#### REXSMLT

This is the limit on the total amount of storage that NetView is allowed to allocate for REXX environments. The default is unlimited, but 500K usually gives satisfactory performance. If you use many locally written REXX, you may wish to use a larger value.

See *Tivoli NetView for OS/390 Automated Operations Network User's Guide* for details of the DEFAULTS and OVERRIDE commands.

---

## OS/390 Considerations

### SYS1.PARMLIB Member Suffix

The xx suffix on each SYS1.PARMLIB data set member can be any two characters chosen to match your IEASYS naming scheme. Before starting installation allocate a suffix for SA OS/390, checking that this suffix is not already in use. See *z/OS MVS Initialization and Tuning Reference* for information about IEASYS.

### Defining the XCF Group

In order to be able to communicate in certain situations, the automation manager instances and the automation agents belonging to one sysplex must be members of one and the same XCF group. The name of this group consists of a fixed main part and a variable suffix; the format is INXSGxx. The suffix must be specified

## Planning to Install SA OS/390 on Host Systems

separately for the manager and the agents. For the automation manager, it is specified in the HSAPRMxx member of SYS1.PARMLIB (see “Step 8A — Customizing HSAPRMxx” on page 122); for the automation agents, it is defined in the INGXINIT member of DSIPARM (see “INGXINIT” on page 117).

Note that SA OS/390 NetView instances belonging to the same XCF group must reside on different systems. Thus, when you run an SA OS/390 V2R1 agent and an instance of msys for Operations on the same system, they must not belong to the same XCF group.

## Planning XCF Transport Classes

By explicitly assigning the XCF group INGXSGxy to a transport class, you give the group priority access to the signalling resources (signalling paths and messages buffer space) of the transport class.

The person responsible for the sysplex setup needs to know that SA OS/390 has a maximum XCF message length of 3500 bytes. Either an existing transport class with the appropriate class length may be used, or a new transport class can be defined. In either case the group name INGXSGxy needs to be associated with this transport class (see *z/OS MVS Setting Up a Sysplex*).

---

## NetView Considerations

Installing SA OS/390 can increase the number of NetView logged-on operators you need. This requires that you re-specify that number in the POSPOOL statement. Make sure you include automated functions.

NetView ships two sample automation operators, AUTO1 and AUTO2. SA OS/390 assumes that these tasks are present and have not been renamed. If they have been renamed, and you are using NetView below level 1.4, you must change the names in the AOFMSGSY member. You then must also update the NetView initial CLIST *CNME1034* when invoking the *AOFRANTL* routine. If you are using NetView 1.4 or above, you will need to change these names in the DSIPARM AOFSTY0 member. See “Step 7D — Customize NetView Initial CLIST” on page 119.

It is recommended that you have system operations and processor operations installed together on the status focal point system.

---

## Automation Manager Considerations

This section presents automation manager considerations relevant to the installation process. For automation manager concepts that are interesting from an operator’s point of view, refer to *System Automation for OS/390 User’s Guide*.

The automation manager is introduced as a separate address space. An installation needs one primary automation manager and may have one or more backups. The automation manager is loaded with a model of the sysplex when it initializes. It then communicates with the automation agents on each system, receiving updates to the status of the resources in its model, and sending orders out to the agents as various conditions within the model become satisfied.

A series of substeps is required to get the automation manager up and running for your SA OS/390 installation. These installation steps are described in this documentation, but are not identified as being specific automation manager installation steps.

## Planning to Install SA OS/390 on Host Systems

For the automation manager, only the default installation of OpenEdition is a prerequisite. No hierarchical file system (HFS) or UNIX shell is required.

The automation manager must be defined by RACF (or an equivalent security product) as a *super user* for OpenEdition. The user that represents the started tasks in your installation must be authorized for the OMVS segment.

**Note:** The system on which the automation manager should be started must be defined as policy object *System* in the policy database which will be used to create the automation manager configuration file that this automation manager uses (see also “Step 15A — Build the Control Files” on page 139).

### Storage Requirements

When the automation manager is started, it needs a constant amount of storage of 56 MB plus a variable part which depends upon the number of resources that will be automated.

The constant part consists of 40 MB for the AM code and 15 MB for history information. The rule of thumb for the variable part is:  $n * 8$  KB where  $n$  is the number of resources.

So the sum of storage requirement according to the rule of thumb is:

$$40 \text{ MB} + 15 \text{ MB} + n * 8 \text{ KB}$$

This formula covers the maximum storage requirements. However, the storage requirements does not increase linearly with the number of automated resources. Real measurements may be smaller than values retrieved with the rule of thumb formula.

### Recovery Concept for the Automation Manager

In a sysplex-wide automation, the continuous availability of the automation manager is of paramount importance.

To ensure the automation manager’s functionality as automation decision server, the primary automation manager (PAM), must be backed up by additional automation manager address spaces called secondary automation managers (SAM). Secondary automation managers are able to take over the function whenever a primary automation manager fails.

To enable software or hardware maintenance in the sysplex, SA OS/390 supports a command to force a takeover of the primary automation manager.

A takeover is only possible when the following requirements are met:

- All the automation manager instances must have access to a shared external medium (DASD) where the following is stored:
  - the configuration data (result of the ACF and AMC build process)
  - the schedule overrides VSAM file
  - the configuration info data set which is a mini file in which the automation manager stores the parameters with which to initialize the next time when it is started WARM or HOT.
- Depending on whether MQSeries or XCF is used for communication between the automation manager and the automation agents (see “Manager-Agent Communication and Status Backup” on page 29), all the automation manager instances must have access to:

## Planning to Install SA OS/390 on Host Systems

- the coupling facility that contains the status backup queue (MQSeries communication), or
- the takeover file (XCF communication)
- When MQSeries is used for communication between the automation manager and the automation agents, the automation agents must have access to the coupling facility that contains the agent and the workitem queues

SA OS/390 follows the concept of a floating backup, because:

- the currently active automation manager has no awareness of the existence (and location) of possible backup instances.
- the location of the backup instances can change during normal processing without any interruption for the active automation manager.
- there is no communication between the primary automation manager and its backup instances during normal operation except when a SAM that is to become the new PAM informs the current PAM of that fact during a planned takeover.

This has the advantage that in normal operation, the processing is not impacted by a backup structure which can change.

Depending on the number of resources, the takeover time from a primary to a secondary automation manager is in the range of one to two minutes.

Figure 3 on page 29 shows the configuration of automation manager recovery. The data required for a restart are externalized on a shared I/O device.

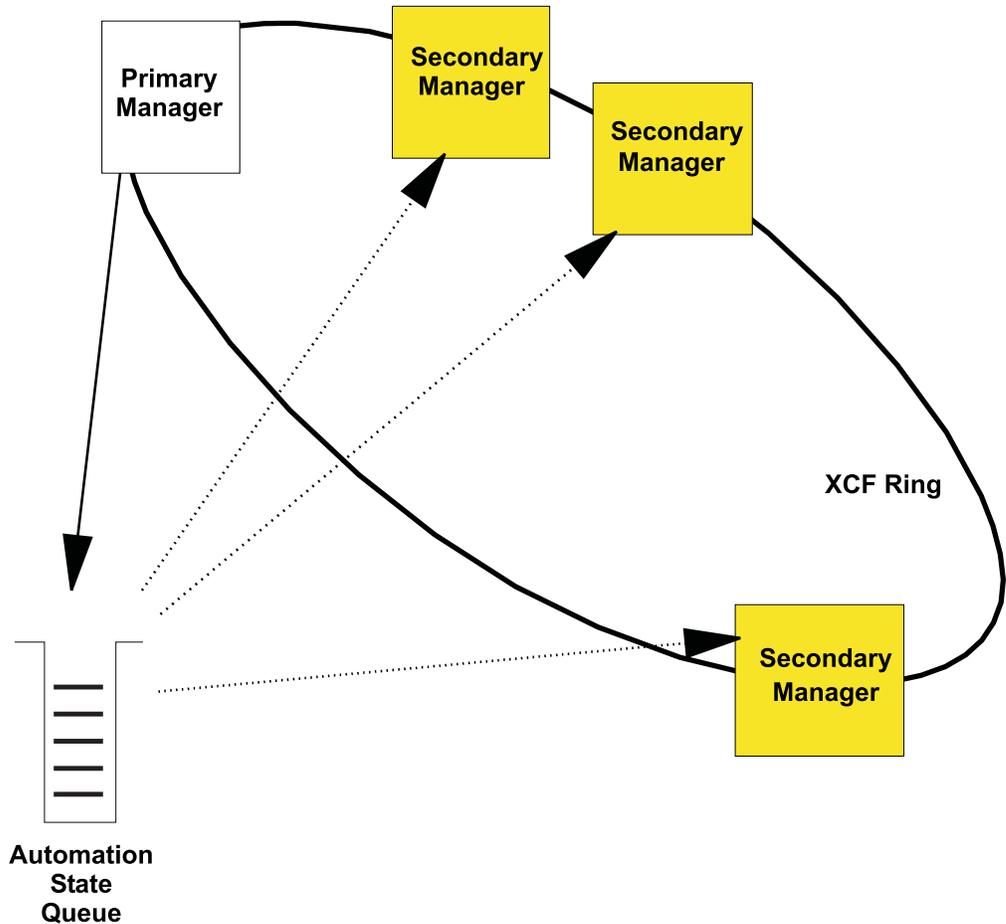


Figure 3. Recovery Concept of the Automation Manager when using MQSeries

## Manager-Agent Communication and Status Backup

SA OS/390 provides two options for establishing communication between the automation manager and the automation agents and keeping a backup copy of the status of the automated resources:

- Using MQSeries V5R2 queues for both communication and backup
- Using XCF for communication and a VSAM data set for backup

For the MQSeries solution, you need MQSeries V5R2 or higher, and also DB2 in data sharing mode. V5R2 is required because the PAM and the SAMs must share the queues; this data sharing capability, which is implemented by means of coupling facility list structures, is shipped with MQSeries V5R2. DB2 is required because it serves as the repository for the definitions of the shared queues.

**Note:** SA OS/390 also supports a local system environment with a MQSeries V2R1. In that case, DB2 is not required, but the scope of automation is limited to a single system.

IBM recommends that you choose the MQSeries V5R2 option. One decisive advantage of using MQSeries is that requests from automation agents that have not yet been processed by the automation manager, and orders for the automation agents that have not yet been executed, are also preserved after a recovery takeover, whereas they are lost with the XCF solution.

## Planning to Install SA OS/390 on Host Systems

### Exploiting MQSeries V5R2

When you have chosen the MQSeries option, the automation manager communicates with the automation agents through two MQSeries queues, and uses a third MQSeries queue for status backup:

- **Workitem Queue:** This queue is the inbound queue for the automation manager. The automation agents put their requests/queries in form of a workitem into this queue. Its name is WORKITEM.QUEUE.
- **Agent Queue:** This is the outbound queue of the automation manager. All orders for the automation agents that result from a request (a workitem) sent to the automation manager are placed in this queue by the automation manager. The automation agents are then picking up the orders from this queue for execution. Its name is AGENT.QUEUE.
- **Automation State Queue:** This queue is only used by the automation manager. It is used to save the current state as well as other information about the resources managed by the automation manager. It is the **automation state queue** that allows SA OS/390 to perform a hot takeover, since this queue contains at any point in time a consistent image of the resource data that the PAM maintains in storage. Any updates made to the resources are also reflected in the **automation state queue**. Its name is STATE.QUEUE.

The transactional behaviour of MQSeries ensures that these three queues are always consistent. A change in any queue is only committed after the corresponding changes have also been made in the other two queues. Thus, for example, the deletion of a workitem from the **Workitem Queue** is only committed when the resulting orders to the agents have been written to the **Agent Queue** and the resulting state changes of the affected resources have been written to the **Automation State Queue**.

Figure 4 shows how the queues interact with the automation manager and the automation agents

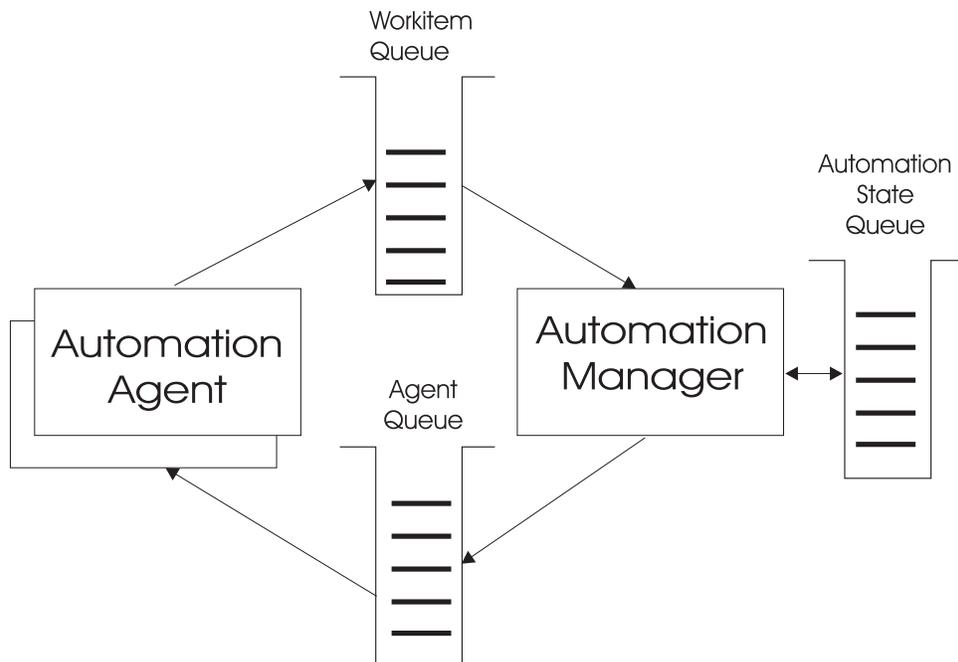


Figure 4. MQSeries Queues

## Planning to Install SA OS/390 on Host Systems

The three queues are shared between the PAM and the secondary automation managers (SAMs). When the PAM fails, an SAM becomes the new PAM and takes over the shared queues in a consistent state. Since not only the actual state of the automated resources, but also the unprocessed requests (workitems) — even those that were made during the takeover phase — and all unprocessed orders for the automation agents are known, no requests are lost, only the execution time can be delayed.

When you use MQSeries for manager-agent communication and status backup, it is recommended that you automate MQSeries and let it be started and stopped by SA OS/390. Collecting all the MQSeries and DB2 instances in a basic group allows you to monitor these prerequisites of SA OS/390 as you would do with normal application automation.

Automation of MQSeries by SA OS/390 implies that MQSeries is not yet available when the automation manager is started. In this situation, the automation manager will communicate with the automation agents through XCF services until it has started its local MQSeries. This phase is called the *startup phase*. As soon as MQSeries is up, the automation manager switches over to MQSeries for communication with the automation agents and for status backup. This means that both the SA OS/390 automation manager and automation agents are now MQSeries applications.

Similarly, when the PAM has shut down its local MQSeries, and there is no SAM left for a takeover, the PAM will switch back again to XCF communication. This phase is called the *shutdown phase*.

During these "MQSeries-less" phases, resources can change their status, and the information about these changes should be preserved for an eventual successor of the actual PAM. This applies not only to a shutdown and subsequent restart of SA OS/390, but also to a failure of the PAM and a subsequent takeover by a SAM during the startup phase. To this end, SA OS/390 maintains a *takeover file*.

Every status change during the startup and shutdown phase of SA OS/390 is recorded in the takeover file. The information in this file is kept consistent by maintaining two compartments for each resource record. These compartments are used alternately to store the changes. This ensures that a consistent and fairly actual version of the resource information exists even when the PAM fails in the middle of an update of the takeover file.

When the PAM fails during startup, a SAM becomes the PAM as before. But now, the new PAM reads the takeover file and starts with the information contained therein. When the shutdown phase is terminated normally or abnormally, the takeover file will be used for a restart of SA OS/390. In this way, a hot takeover or restart is possible even when MQSeries is not available. Of course, this requires that the takeover file be shared between the PAM and the SAMs.

The following figure shows the time line for the MQSeries solution when MQSeries is automated by SA OS/390:

## Planning to Install SA OS/390 on Host Systems

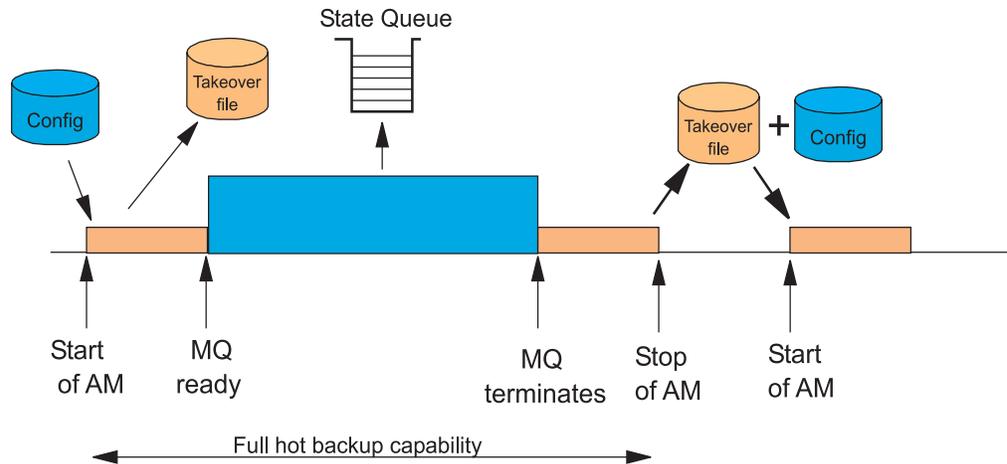


Figure 5. Automating MQSeries with SA OS/390

The sequence of events is as follows:

1. During the startup phase, when MQSeries is not yet running, the PAM uses XCF for communication and stores every status change in the takeover file.
2. (Not represented in Figure 5) If the PAM or its system fail during the startup phase, an SAM becomes the new PAM. The new PAM reads the actual state of the automatable resources from the takeover file.
3. As soon as MQSeries is up, the PAM switches to MQSeries and writes the status updates into the **Automation State Queue**.
4. (Not represented in Figure 5) If the PAM or its system fail while MQSeries is running, a SAM becomes the new PAM. The new PAM uses the information of the shared MQSeries queues.
5. When the PAM has shut down its own local MQSeries, the reaction of SA OS/390 depends on whether an SAM is available:
  - (Not represented in Figure 5) When SAMs exist one of these becomes the new PAM.
  - When no SAM exists, the current PAM enters the shutdown phase. It switches back to XCF and the takeover file.
6. During the shutdown phase, the PAM stores every status change in the takeover file. After the PAM has terminated normally or abnormally, the information of the takeover file will be used for a restart of SA OS/390.

**Note:** The takeover file substitutes for the **Automation State Queue** when MQSeries is not available. There are, however, no corresponding substitutes for the **Workitem Queue** or the **Agent Queue**. Therefore, all pending workitems and orders to the automation agents will be lost when the PAM fails during the startup or shutdown phase.

For this reason, you should keep the startup phase as short as possible, and define your automation policy so that the local MQSeries manager (local for the PAM) and its associated DB2 are started simultaneously immediately after JES is up.

The following subsection contains an overview of various recovery scenarios.

**Some Problem Scenarios and how SA OS/390 Reacts:** Some examples of how SA OS/390 reacts when there is a:

## Planning to Install SA OS/390 on Host Systems

### **system breakage with running automation manager and automation agent**

A waiting secondary automation manager will automatically take over the responsibility of the failed primary automation manager. Of course the broken automation agent is not moved, because all the broken resources are gone anyway. However the new automation manager will detect the system collapse and react accordingly.

### **an automation manager breakage**

A waiting secondary automation manager or the ARM restarted primary automation manager will automatically take over the responsibility.

### **an MQSeries manager breakage**

A connected automation agent will wait for the ARM initiated MQSeries manager restart. A connected automation manager will automatically trigger a takeover in case of active processes, otherwise this automation manager would also wait. Please note that even in the case of an MQSeries manager abend or problem, the automation agent is still able to do message automation.

### **a DB2 problem or breakage**

After DB2 first came up and SA OS/390 was able to access the MQSeries queues the first time, DB2 is actually not needed any longer. Therefore any of these cases can be completely automated even in the full MQSeries supported fashion.

### **a CF outage**

At this point in time, SA OS/390 will automatically restart its automation processing from the existing static configuration (WARM start).

### **a takeover resulting in the same problem**

When the new automation manager detects that a workitem has been rolled back twice, the process will be stopped and a WARM initialization will be triggered, thus preventing endless retries failing with the same persistent problem.

### **MQSeries Queue Problems**

Please see chapter "MQSeries Exception Processing" on page 34.

## **MQSeries Considerations**

This section assumes that you have selected MQSeries for manager-agent communication and status backup.

**Peer Recovery Considerations:** Please refer to the MQSeries V5.2 documentation for all aspects of MQSeries sysplex wide peer recovery. Since SA OS/390 is exploiting this technology you also gain this functionality. The following are just some important things you should know when planning for SA OS/390 to be an MQSeries shared queues exploiter.

The basic setup consideration is whether you choose to have a dedicated MQSeries<sup>®</sup> QSG (Queue Sharing Group) just for the purpose of SA OS/390.

Peer recovery requires that a failed MQSeries instance should be restarted in place either using OS/390 Automatic Restart Manager or SA OS/390 itself.

To roll back or complete the broken automation manager activities (*UOWs* in MQSeries terminology), MQSeries can use a different MQSeries manager instance of that QSG (Queue Sharing Group).

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SA OS/390 will ensure that all the pending work has been rolled back before the new primary automation manager starts accessing the queues.

There are no special considerations for DB2 in case of a takeover. DB2 is not involved in the MQSeries peer recovery functions.

Now since SA OS/390 provides the capability for automating its prerequisites, SA OS/390 could be used to initially start MQSeries and DB2. OS/390 Automatic Restart Manager or SA OS/390 could be used to restart the MQSeries instances and SA OS/390 can be used to observe the status of its prerequisites as well as to finally stop it.

Collecting all the MQSeries and DB2 instances in a basic group allows you to monitor all SA OS/390 prerequisites as you would do with normal application automation.

**MQSeries Exception Processing:** MQSeries services may fail. Assuming that the MQSeries setup and the queue definitions are correct, there is still a chance of running into a MQSeries exception. Basically these exceptions can be categorized into:

**recoverable errors**

can be recovered by running the failed MQSeries service again after a certain time.

**unrecoverable errors**

cannot be recovered automatically.

The automation agents will react to unrecoverable exceptions by disconnecting either from the MQSeries manager or MQSeries queue. However the sysplex communication task will not be stopped. This task will continuously try to re-establish the broken connection.

The automation manager will trigger a takeover in case there is a local MQSeries manager problem with active transactions.

Problems with the Automation State Queue will be handled differently. A takeover should be avoided when possible, because it probably cannot be successfully completed. For cases where that is possible the queue will be closed and GET/PUT disabled. Message INGY1107 is issued. Processing on the automation manager continues because the data is still in storage. Now you have the chance to repair the queue. For example:

- re-define the Queue on a different CF
- re-define the Queue on a different CF Structure
- increase the number of maximum possible messages.

The current automation manager will continuously monitor whether there is a new Automation State Queue with both GET and PUT enabled again. If this automation manager finds a queue with that attribute it will try to re-install the queue. Having done this, SA OS/390 is fully recoverable again.

**Queue Full Considerations:** MQSeries queues can become full. No further MQPUTs are possible unless some MQGETs remove messages.

## Planning to Install SA OS/390 on Host Systems

Recovery from a queue full condition will be automatically done by the current active SA OS/390 automation manager. It can be considered as a recoverable exception as described above.

Situations where a queue full condition can occur are:

1. For the Workitem Queue
  - an automation manager is not available to pick up the workitem requests (e.g. just stopped or restarting)
  - an automation agent based automation CLIST repetitively sends requests to the automation manager. Since these automation manager requests can be generated by an automation program, this program may loop.
2. For the Agent Queue
  - automation agent(s) are not available or able to process orders or responses in time.
  - Many concurrent big response blocks
3. Automation State Queue
  - Dynamic Configuration Reloads increase the amount of Automation State information drastically

Taking the SA OS/390 delivered samples together with a healthy system should not result in such a situation. It is more an indication that something is wrong but SA OS/390 tries its best to survive.

The recovery action for an Automation State Queue full condition is described in “MQSeries Exception Processing” on page 34.

For the Automation Workitem Queue as well as the Automation Agent Queue, SA OS/390 introduces three additional message counters to act as thresholds:

### **Low Threshold**

if the numbers of messages are below that line, operations on that queue are fine, no recovery actions are taken.

### **High Threshold**

if the number of current active messages reaches that count, recovery actions are taken. To stop this recovery mode again the number of messages must fall below the low threshold counter.

### **Max\_Queue\_Depth**

at this time, further MQPUTs are rejected, however SA OS/390 would retry.

Use the INGAMS command described in *System Automation for OS/390 Operator's Commands* to see these thresholds.

### **Using XCF only**

XCF communication and the takeover file are primarily intended to substitute for the MQSeries queues in certain situations. However, you can also use them permanently and thus dispense with MQSeries altogether. If you wish to do so, you must set the COMM parameter in the HSAPRMxx member accordingly; see “Appendix F. Syntax for HSAPRM00” on page 251.

As already pointed out, the workitems and orders to the automation agents that are pending at takeover time are not stored in this implementation, so all these pending items will be lost when the PAM fails and a SAM takes over. This will be explained in more detail in “Risks” on page 36.

## Planning to Install SA OS/390 on Host Systems

The following figure illustrates the time line from the start of the automation manager (AM) until its termination for both cases: a planned stop/start of the automation manager and an unexpected failure.

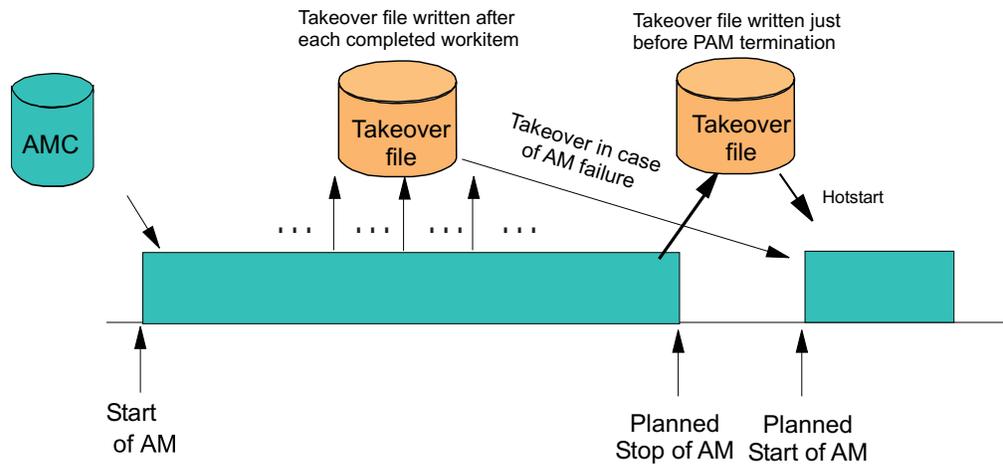


Figure 6. Using only the Takeover File for Status Backup

The following table outlines the various recovery scenarios:

Table 4. Recovery Scenarios

Event	SA OS/390 Recovery Action	Comments
PAM fails	SAM runs a takeover	The takeover file contains the state with the last successfully processed workitem
PAM detects a severe error condition	PAM terminates and SAM runs a takeover	The takeover file is used to rebuild the resource object structures in case of a takeover or next hotstart.
System with the PAM fails	SAM runs a takeover	The takeover file is used to rebuild the resource object structures in case of a takeover or next hotstart.

**Risks:** Running SA OS/390 with XCF communication and the takeover file only has the following risks:

- All workitems travelling to, queued in and processed by the primary automation manager are lost when the automation manager terminates abnormally.

If the workitem was generated by an automation manager command, such as INGREQ or INGLIST, the command issues message

```
ING008I INGPYAMC SERVICE FAILED, RC=2 - REASON=TIMEOUT
```

In most cases this can be taken as an indication that the automation manager failed. However, the message is also given when the automation manager is extremely busy, for example when refreshing a large configuration. In this case the command processor running on the automation agent gives up waiting for the response from the automation manager. Depending on the command, the timeout value is between 15 - 25 seconds.

## Planning to Install SA OS/390 on Host Systems

Special consideration must be taken when an automation manager command, for example INGEVENT or SETEVENT, is issued from the NetView message automation table or from within a customer written CLIST. When running the command in linemode, the command still issues message ING008I INGPYAMC SERVICE FAILED, RC=2 - REASON=TIMEOUT but the message is not automatically written into the NetView log. This is the responsibility of your CLIST. The NetView PIPE facility can be used to obtain all messages issued by the command and to write the message(s) into the NetView log.

Status updates that the automation agent sends to the automation manager are also lost, but will be recovered automatically when the secondary automation manager becomes ready and the automation agent re-registers to the automation manager. Part of the automation agent registration is informing the automation manager about the actual (observed) status of each resource the automation agent is responsible for.

- There is a short time period where the primary automation manager is no longer available, but the new automation manager is not yet ready. Requests sent to the primary automation manager can fail. This transition phase is divided into two subphases:

1. The first subphase lasts until the new automation manager has identified itself as the new primary automation manager. During this subphase, the command processor issues a message saying that no communication path exists to the primary automation manager:

```
ING008I INGPYAMC SERVICE FAILED, RC=20 - REASON=NO COMMUNICATION PATH AVAILABLE
```

Automation agents are not able to pass the current observed status of a resource to the automation manager during this subphase. However, the automation agent is able to correct this once the connection with the automation manager is reestablished. This is called *automation agent registration* where the automation agent updates the automation manager objects with actual data.

2. The second subphase starts when the automation manager has become the PAM and is reading the takeover file in order to get the exact status/settings of the resources at the point when the former automation manager failed. (Incomplete workitems are not reflected in the takeover file). During this subphase, the automation is accepting workitems coming from the automation agents, but the workitems are queued up until the takeover file is completely processed and the in-storage objects of the resources are constructed. A command issued during this subphase will timeout when the response from the automation manager does not return in time.
- Orders resulting from the work item being processed by the automation manager at the time when the automation manager terminates might be already have been sent to the appropriate automation agents.

**Example:** The operator has issued a *Stop* request for an application. The automation manager has fired off the stop order to the automation agent, but terminates abnormally while writing the appropriate resource updates to the takeover file. From the automation manager point of view, the workitem is incomplete, but the automation agent has already received the stop order and terminates the application. Now the new automation manager starts, performs a takeover, determines that the desired state of the application is "available", and sends a "start" order to the agent. The operator sees the application going down and coming up again.

## Planning to Install SA OS/390 on Host Systems

- Warmstart is required when an unrecoverable I/O error occurs while writing/reading to/from the takeover file. There is no concept of a backup takeover file. An unrecoverable I/O error means that the automation manager lost access to the takeover file. The takeover file is no longer usable. The net result is that the current status/settings of the resources are lost. The automation manager will continue to run, but updates only the in-storage objects of the resources. A warmstart involves:
  - the loss of all requests that have been sent to the automation manager
  - the loss of all resource settings such as start/stop type
  - the loss of all events set by means of the INGEVENT command

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## Chapter 4. Planning to Install SA OS/390 on Workstations

This chapter contains planning information on how to install the SA OS/390 components that run on several workstations. The following topics are described:

- “Planning to Install the NMC Workstation”
- “Planning to Install the LAN Passthru PC”
- “Planning to Install the Processor Operations PCs” on page 40
- “Planning to Install TEC Notification by SA OS/390” on page 51
- “Planning to Install Netfinity® Services” on page 55

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### Planning to Install the NMC Workstation

Ensure you have a working NMC environment as part of your NetView installation available. For information on how to install the NMC, refer to *NetView Management Console User's Guide*. The information of what to do to enable your NMC environment installation for use in SA OS/390 is described in “Installing the NMC Workstation” on page 160.

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### Planning to Install the LAN Passthru PC

The following tables show the information you need to install the LAN passthru PC. It is recommended that you make as many copies of the empty pages as required, one for each workstation on which SA OS/390 will be installed.

The values in these tables should be filled in before you begin the installation. They are required during the process of installation and customization.

In addition to the information collected in these worksheets, you will need to have information about NetView data set names and SA OS/390 data set names. SA OS/390 data set default names are mentioned in this book. System administrators who may have changed these names should note the changed names. Persons who install the SA OS/390 components may need to ask their system administrators for the correct names.

**Note:** The following worksheet is associated to the LAN Passthru Partner LU Definitions. The LAN Passthru partner LU name is the name of the workstation known to APPC.

Table 5. LAN Passthru Partner LU Definitions Worksheet

Description	Your Value	Other Information
Network name		No default. The name of the network to which the partner processor operations PC is defined. This is the same data as called <i>Network ID</i> by Communications Manager/2.
Node name		This is the control point (CP) name, or physical unit (PU) name used on the partner processor operations PC.  No default

## Planning to Install the LAN Passthru PC

Table 5. LAN Passthru Partner LU Definitions Worksheet (continued)

Description	Your Value	Other Information
LAN destination address		Enter the LAN destination address as defined for the partner processor operations PC, that is, the Locally Administered Address (LAA) or the Universally Administered Address (UAA).  Syntactically this must be a twelve-digit hexadecimal number.  No default
Adapter number		This is the LAN adapter of the partner processor operations PC.  No default
Partner LU name		Defines the processor operations PC's APPC logical unit (LU) name that your workstation communicates with.  No default
Partner LU alias		Defaults to LU name. The partner LU alias name. The alias is a nickname for the Partner LU Name and Network ID pair.

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## Planning to Install the Processor Operations PCs

Your communications path is processor dependent. For any of your processors that are OCF-based, the path from the SA OS/390 focal point host to the support element is through a NetView connection. However, an optional SA OS/390 workstation connection to the operator console is supported. For screen-oriented processors, your path is through a processor operations PC. Your communications path to a target processor's operator or system console is processor dependent.

### Processor Operations Worksheets

Make copies of these worksheets for each target system in your DP enterprise.

## Processor Operations Worksheets

### Target Definitions Worksheet for Screen-Oriented Hardware

Target Hardware name \_\_\_\_\_  
 Description \_\_\_\_\_  
 Enterprise \_\_\_\_\_

System Console  
 Active \_\_\_\_\_ Backup \_\_\_\_\_

PC \_\_\_\_\_  
 Type \_\_\_\_\_  
 Name \_\_\_\_\_

Target Operator Consoles

PC \_\_\_\_\_  
 Type \_\_\_\_\_  
 Num. \_\_\_\_\_

PC \_\_\_\_\_  
 Type \_\_\_\_\_  
 Num. \_\_\_\_\_

PC \_\_\_\_\_  
 Type \_\_\_\_\_  
 Num. \_\_\_\_\_

Processor type 9021 9121 3090 308x 4381 Model \_\_\_\_\_  
 Mode XA ESA LPAR 370  
 Partition SI A B

<b>CP Online</b>	<b>Vector Processor</b>	<b>Central Storage</b>
0 ON OFF	0 ON OFF	_____MB
1 ON OFF	1 ON OFF	
2 ON OFF	2 ON OFF	<b>Expanded Storage</b>
3 ON OFF	3 ON OFF	_____MB
4 ON OFF	4 ON OFF	
5 ON OFF	5 ON OFF	
6 ON OFF	6 ON OFF	
7 ON OFF	7 ON OFF	
8 ON OFF	8 ON OFF	
9 ON OFF	9 ON OFF	

### CHPID Assignments

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
B	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
D	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
E	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
F	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Figure 7. Target Definitions Worksheet (1) for Screen-Oriented Processor

**Note:** Processor operations checks the channel resources of 9021, 9121, and 3090 processors during the processing of the ISQXDLC, ISQXIPL, and ACTIVATE commands to see if the channel's online status matches what you have specified in the CHPID assignments during customization.

## Processor Operations Worksheets

### Target Hardware Definitions Worksheet for OCF-Based Processor

Target Hardware name \_\_\_\_\_ System Connection \_\_\_\_\_  
 Description \_\_\_\_\_  
 Enterprise \_\_\_\_\_ Path name \_\_\_\_\_

#### Target Operator Consoles (Optional for 9672)

PC	_____	_____	_____	_____	_____	_____	_____	_____	_____
Type	_____	_____	_____	_____	_____	_____	_____	_____	_____
Num.	_____	_____	_____	_____	_____	_____	_____	_____	_____
PC	_____	_____	_____	_____	_____	_____	_____	_____	_____
Type	_____	_____	_____	_____	_____	_____	_____	_____	_____
Num.	_____	_____	_____	_____	_____	_____	_____	_____	_____
PC	_____	_____	_____	_____	_____	_____	_____	_____	_____
Type	_____	_____	_____	_____	_____	_____	_____	_____	_____
Num.	_____	_____	_____	_____	_____	_____	_____	_____	_____
Processor type	_____	9672	9674	2003	3000	Model	_____	_____	_____
Mode	_____	ESA	LPAR	_____	_____	_____	_____	_____	_____
Partition	_____	SI	_____	_____	_____	_____	_____	_____	_____
CPC name	_____	_____	_____	_____	_____	_____	_____	_____	_____

Figure 8. Target Hardware Definitions Worksheet for OCF-Based Processor

**Processor Operations PC Definitions Worksheet**

PC name \_\_\_\_\_ PC LU 6.2 name \_\_\_\_\_  
 focal point port letter \_\_\_\_\_ Control port letter \_\_\_\_\_  
 External clock (WWV) YES NO  
 Initial status ACTIVE INACTIVE

**Communications Manager Information**

Connection type TOKEN-RING SDLC  
 Adapter number \_\_\_\_\_

**VTAM/NCP Definition Values:**

Network name \_\_\_\_\_  
 IDNUM= \_\_\_\_\_  
 PU name \_\_\_\_\_  
 PC LU 6.2 name \_\_\_\_\_  
 LU2 LOCADDR= \_\_\_\_\_  
 DLOGMODE= \_\_\_\_\_  
 Processor Operations Appl.  
 LU6.2 name: \_\_\_\_\_  
 MAXOUT= \_\_\_\_\_  
 MAXDATA= \_\_\_\_\_

**SDLC**

Modem connection \_\_\_\_\_  
 Link station role \_\_\_\_\_  
 PU ADDR= \_\_\_\_\_  
 DUPLEX= \_\_\_\_\_  
 NRZI= \_\_\_\_\_

**Token-Ring**

C&SM LAN ID= \_\_\_\_\_  
 LAN Destination Address \_\_\_\_\_  
 Locally Administered Address (LLA) \_\_\_\_\_

**Communications Task Information**

Comm Task LU name \_\_\_\_\_  
 PC poll response limit \_\_\_\_\_  
 LOGMODE \_\_\_\_\_  
 Poll interval \_\_\_\_\_  
 Passthru idle time limit \_\_\_\_\_  
 Event check time interval \_\_\_\_\_  
 PC command wait limit \_\_\_\_\_  
 Retry Count \_\_\_\_\_  
 Comm task no. \_\_\_\_\_  
 Session start time limit \_\_\_\_\_

**Port Configurations**

**3270 Port Information**

	First	Second	Third	Fourth
Console type	_____	_____	_____	_____
Command interval	_____	_____	_____	_____
Inbound retry count	_____	_____	_____	_____
Screen handler poll time	_____	_____	_____	_____
Response timer	_____	_____	_____	_____
Console interval	_____	_____	_____	_____
Control unit country code	_____	_____	_____	_____
Console model	_____	_____	_____	_____
Target hardware name	_____	_____	_____	_____
Passthru screen delays	_____	_____	_____	_____

**WWV Information**

COM address 1 2 3  
 Baud rate \_\_\_\_\_  
 Data length 7 8  
 Parity EVEN ODD NONE MARK SPACE  
 Number of stop bits 1 2

Slot	Card	Number	Port	Use
		1	_____	_____
		2	_____	_____
		3	_____	_____
		4	_____	_____
		5	_____	_____
		6	_____	_____
		7	_____	_____

System board serial port

**ASCII Port Information**

COM address	_____	_____
Baud rate	_____	_____
Data Length	_____	_____
Parity	_____	_____
No. of stop bits	_____	_____
XON code	_____	_____
XOFF code	_____	_____
ATTN code	_____	_____
Timeout code	_____	_____
Enter code	_____	_____
End-of-message code	_____	_____
Inbound retry count	_____	_____
Screen handler poll time	_____	_____
Response time	_____	_____
Target hardware name	_____	_____
Passthru screen delay	_____	_____

Figure 9. Processor Operations PC Definitions Worksheet

## Processor Operations Worksheets

### NetView Connection Definitions Worksheet

NVC Path name \_\_\_\_\_  
 Target hardware name \_\_\_\_\_  
 Path NETID \_\_\_\_\_  
 Path LU name \_\_\_\_\_  
 Path Authorization Token \_\_\_\_\_  
 Path Poll Frequency \_\_\_\_\_  
 Path Poll Retries \_\_\_\_\_

Figure 10. NetView Connection Definitions Worksheet

### OCF-Based Processor Target System Definitions Worksheet

NOTE: Not all fields are applicable to all operations.

Group \_\_\_\_\_ Subgroup \_\_\_\_\_  
 Target System \_\_\_\_\_ Hardware name \_\_\_\_\_  
 Description \_\_\_\_\_  
 Operating system type MVS VM TPF VSE CF  
 Initialized target when Processor Operations started YES NO  
 Time offset WWV Same as focal point + - \_\_\_\_\_

Interested operator IDs: System Console		Operator Console	
Operator 1 _____	Operator 6 _____	Operator 1 _____	Operator 6 _____
Operator 2 _____	Operator 7 _____	Operator 2 _____	Operator 7 _____
Operator 3 _____	Operator 8 _____	Operator 3 _____	Operator 8 _____
Operator 4 _____	Operator 9 _____	Operator 4 _____	Operator 9 _____
Operator 5 _____	Operator 10 _____	Operator 5 _____	Operator 10 _____

IPL responses IEA101A \_\_\_\_\_  
 OS/390 IEA212A or IEA213A \_\_\_\_\_  
 IEA347A \_\_\_\_\_  
 VM start msg \_\_\_\_\_

Operator Consoles (Optional for 9672)  
 Active PC name \_\_\_\_\_ Card No. \_\_\_\_\_ Type \_\_\_\_\_  
 Backup PC name \_\_\_\_\_ Card No. \_\_\_\_\_ Type \_\_\_\_\_

LPAR Information	Profile Information
Logical partition name _____	Reset profile name _____
Target mode ESA 370 CF	Load profile name _____
Secondary OCF name _____	
Image profile name _____	

Figure 11. OCF-Based Processor Target System Definitions Worksheet

## Processor Operations Worksheets

### Screen-Oriented Target System Definitions Worksheet

**Note:** Not all fields are applicable to all operations

Group \_\_\_\_\_ Subgroup \_\_\_\_\_      Initialized target when SA OS/390 started    YES    NO  
 Target System \_\_\_\_\_ Hardware name \_\_\_\_\_      Operating system type OS/390 VM TPF VSE CF  
 Description \_\_\_\_\_      IOCDS name \_\_\_\_\_  
 Time offset    WWV Same as focal point    + - \_\_\_\_\_

**Interested operator IDs:**

**System Console**

Operator 1 _____	Operator 6 _____	Operator 1 _____	Operator 6 _____
Operator 2 _____	Operator 7 _____	Operator 2 _____	Operator 7 _____
Operator 3 _____	Operator 8 _____	Operator 3 _____	Operator 8 _____
Operator 4 _____	Operator 9 _____	Operator 4 _____	Operator 9 _____
Operator 5 _____	Operator 10 _____	Operator 5 _____	Operator 10 _____

IPL CP    0    1    2    3    4    5    6    7

IPL address \_\_\_\_\_

IPL parameters \_\_\_\_\_

IPL responses    IEA101A \_\_\_\_\_

                  OS/390    IEA212A or IEA213A \_\_\_\_\_

                  IEA347A \_\_\_\_\_

                  VM start msg \_\_\_\_\_

**Operator Consoles**

Active    PC name \_\_\_\_\_    Card No. \_\_\_\_\_    Type \_\_\_\_\_

Backup    PC name \_\_\_\_\_    Card No. \_\_\_\_\_    Type \_\_\_\_\_

**LPAR Information**

Logical partition name \_\_\_\_\_ Favored    YES    NO    Initial State    ACTIVE    INACTIVE

Automatic IPL    YES    NO    Processing weight \_\_\_\_\_

Capping    YES    NO    Target mode    ESA    370    CF

Central storage    \_\_\_\_\_MB    Expanded storage    \_\_\_\_\_MB

**CP Online Vector Processor**

0	ON	OFF	0	ON	OFF
1	ON	OFF	1	ON	OFF
2	ON	OFF	2	ON	OFF
3	ON	OFF	3	ON	OFF
4	ON	OFF	4	ON	OFF
5	ON	OFF	5	ON	OFF
6	ON	OFF	6	ON	OFF
7	ON	OFF	7	ON	OFF
8	ON	OFF	8	ON	OFF
9	ON	OFF	9	ON	OFF

Figure 12. Screen-Oriented Target System Definitions Worksheet (1)

## Processor Operations Worksheets

### CHPID Assignments

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
B	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
D	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
E	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
F	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Figure 13. Screen-Oriented Target System Definitions Worksheet (2)

**Note:** Processor operations checks the channel resources of 9021, 9121, and 3090 processors during the processing of the ISQXDLC, ISQXIPL, and ACTIVATE commands to see if the channel's online status matches what you have specified in the CHPID assignments during customization.

## Processor Operations PC Hardware

For screen-oriented processors, the physical path connecting your focal point system to the target system is through a personal computer. SA OS/390 supports any hardware connection that provides an LU 6.2 independent LU session. This can be a token-ring network or an SDLC connection from the focal point system to the PC. The PC logically appears to the focal point system as an LU 6.2 node. You can add cryptography or use a secure network for the SA OS/390 connection.

A token-ring communications link is through a 37xx communications controller or a 3174 subsystem control unit that supports LU 6.2 independent LUs. An SDLC communication link is only through a 37xx.

For the display, use any computer display monitor supported by the OS/2 program.

SA OS/390 uses the following in the PC:

- A communication card to connect to the focal point system
- A console connection card for the system console connection to the target system
- A console connection card for the operator console connection to the target system <sup>1</sup>
- A combination of up to four ISA slots, PCI slots or MCA slots to put in the console connection cards

### Required Cards

Three types of cards are used in the processor operations PC:

- Communication card (token-ring or synchronous data link control (SDLC))
- Console connection card
- Additional memory card (optional)

1. For TPF using ASCII, the serial port on the system board can be used as the operator console connection.

**Communication Card:**

There are two ways to connect the focal point system to the PC:

- Through a SDLC connection
- Through a token-ring network

Use any SDLC connection or token-ring network that is supported by Communications Manager/2.

If a 3745 communications controller is installed between the focal point system and the token-ring card, both 4 megabyte (MB) and 16MB transmission speeds are supported. If any other 37xx communications controller is installed between the focal point system and the token-ring card, only the 4MB transmission speed is supported.

**Console Connection Cards:** In order to assist users in migrating to a different PC adapter, IBM has performed compatibility testing with some other manufacturers' adapters. The information concerning non-IBM products was obtained from the suppliers and is not intended to be an endorsement. Any questions regarding these products and their functionality should be directed to the supplier. Information in this document describes the configuration settings used and verified for each adapter in an IBM controlled testing environment.

Table 6 lists the hardware for the console connections.

*Table 6. Console Connection Adapters*

Card Name	Type	Bus	Manufacturer	Notes
IRMA 3270 Adapter	3270	PCI	Attachmate	Order number 124258
3270 Emulation Adapter	3270	PCI	IBM	IBM Part Number 05J4401
3278/79 Emulation	3270	ISA	IBM	Feature Code 5050, Part Number 53F6425
AC-24AT	RS-422	ISA	Opto 22	Single channel adapter only
DS-200S	RS-422	ISA	Qua Tech, Inc.	Dual channel adapter. The 'S' after the 200 signifies that the optional 16550 UARTs are to be used.
DS-2000	RS-422	MCA	Qua Tech, Inc.	Dual channel adapter
AC-32	RS-422	MCA	Opto 22	Dual channel adapter, no longer available from Opto 22
3270 Connection	3270	MCA	IBM	Feature Code 2000, Part Number 74F3465
PC Dual Async	RS-232	MCA	IBM	Dual channel adapter. Can be used for TPF ASCII operator consoles, or WWV receiver connections, Feature Code 1014, part number 6451013. Withdrawn from marketing as of June 22, 1994

## Processor Operations PC Hardware

Table 6. Console Connection Adapters (continued)

Card Name	Type	Bus	Manufacturer	Notes
Multiprotocol Adapter/A	RS-232	MCA	IBM	Single port adapter, Feature Code 3043, Part Number 92G7516
<p><b>Note:</b> For RS-232 connections (TPF ASCII operator consoles and WWV receiver), the system unit's built-in serial ports may be used instead of, or in conjunction with, an ASCII adapter card. Most IBM PCs built today have two serial ports incorporated into the system unit.</p>				

SA OS/390 requires two connections to a target system:

- A connection from the processor operations PC to the system console
- A connection from the processor operations PC to the operator console

System console connections require either 3270 connection cards or ASCII connection cards, depending on your system (see Table 7). Connections to the operator console of VM, OS/390, and VSE target systems must be through separate 3270 connection cards.

Table 7. Determining Which Connection Card to Use

	9021	9121	3090	4381	308x	908x
Operator Console						
VM, VSE, MVS	3270	3270	3270	3270	3270	3270
TPF	ASCII/ 3270	ASCII/ 3270	ASCII/ 3270	ASCII/ 3270	ASCII/ 3270	ASCII/ 3270
System Console	3270	ASCII	3270	3270	3270	3270

The system console communicates with the processor operations PC through a port of the target hardware processor controller. Non-ASCII connections to a PC use 3270 connection cards installed in the PC. ASCII connections use an RS-422 card in the PC.

How you connect a PC as a system console depends on the type of processor and processor controller in your system. If the processor is a 9121, the system console connection is through an RS-422 card. This is called an ASCII connection. For all other processors, use a 3270 card.

**3270 PCI Adapter Support Information:** The 3270 PCI Adapter is a PCI bus adapter designed to support 3270 terminal emulation in PCI V2.1 compatible PCs. It is designed as a 32-bit PCI V2.1 compliant target only device residing in a PCI (Peripheral Component Interface) bus expansion slot. The adapter is designed to be compatible with all PCs with PCI standard expansion slots. It conforms to PCI standard recommended dimensions for short cards.

You can use a mixture of four ISA bus cards and PCI bus cards to connect operator or system console coax cables to your processor operations PC.

### 9121 Information:

*Cable to Attach RS-422 Adapter:* The ES/9000 9121 processor system consoles use an ASCII RS-422 protocol and 3151 display stations. Processor operations emulates

## Processor Operations PC Hardware

the 3151 display with the use of an emulator, the base OS/2 COM communications device driver, and an RS-422 adapter card. The cable (or parts used to make the cable) used to attach the RS-422 adapter to a port on the 9121 input/output support processor (IOSP) can be purchased from a cable manufacturer by requesting the following specifications, which have been qualified by IBM:

- Bulk cable specification:
  - Two twisted pairs
  - Number 26 AWG stranded
  - Outer braided shield
  - Inner aluminum shield
  - Nominal impedance at 3 to 20 MHz is 150 ohms
  - Interpair cross-talk must be less than 34 db
- Processor controller standard 25-pin D-shell connector parts:

Description	AMP Part Number
Socket pins (female)	66505-9
Receptacle	207463-1
Screw kit (4-40 thread)	205980-4
Connector cover (metal)	745173-4

- The RS-422 adapter standard 9-pin D-shell connector parts:

Description	AMP Part Number
Pins (male)	66507-9
Plug	205204-3
Screw kit (4-40 thread)	205980-4
Connector cover (plastic)	205729-1

Figure 14 indicates the pin and signal assignments of both ends of the RS-422 cable for connection to an Opto 22 adapter (either the AC-32 or AC-24AT). Figure 15 on page 50 indicates the pin and signal assignments of both ends of the RS-422 cable for connection to a Qua Tech adapter (either the DS-2000 or DS-200S).

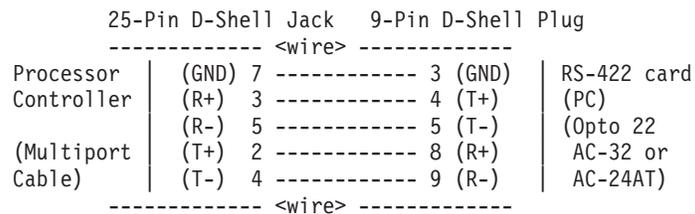


Figure 14. Processor Controller to Opto 22 Adapter Cable Wiring Diagram

## Processor Operations PC Hardware

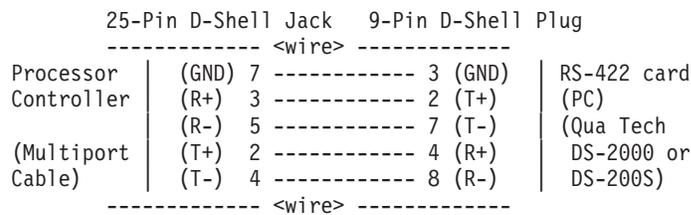


Figure 15. Processor Controller to Qua Tech Adapter Cable Wiring Diagram

*9121 Hardware System Console Message Automation:* Messages being displayed on a 9121 Hardware System Console may not be recognized if they are immediately overwritten by another message. Please make sure that messages are used for automation purposes which will be displayed long enough to be captured by the processor operations PC.

**4381 Information:** SA OS/390 does not support the integrated console feature of the 4381 processor. The operator console and the system console must be connected to two separate ports on the 4381 processor. However, both can be integrated console ports. The first port must be used for the system console; any other port can be used for the operator console. Two PC 3270 connection adapters are required with the two 4381 processor ports to make the 4381 processor compatible with SA OS/390.

**Additional Memory Card:** The actual hardware used depends on the system board in the particular personal computer model. Check the personal computer model instructions for the proper additional memory hardware to be installed.

### Expansion Slot Examples

The slot numbers in the following figures do not necessarily represent the actual physical slot positions in which the designated cards must be installed. Rather, they represent a possible configuration of cards for a given personal computer (PC). Follow the instructions for the PC and cards you use for slot designation.

**OS/390, VM, and VSE Target Systems:** Connections to target systems that use OS/390, VM, and VSE operating systems have similar memory and communication card requirements. Each console connection requires one expansion slot. SA OS/390 processor operation supports a maximum of four 3270 connections or two ASCII (RS-422) connections to a target system.

Table 8 on page 51 shows the possible configuration for connecting an 8-slot PC as an active console to two target systems. Connections for the second system could instead be backup connections for the first target system.

Table 8. Possible Configuration for 8-Slot PC as Active Console to Two Target Systems

Slot	Use
Slot 1	Memory
Slot 2	System console connection for the first target
Slot 3	Operator console connection for the first target
Slot 4	System console connection for the second target system
Slot 5	Operator console connection for the second target system
Slot 6	Communication card (token-ring or SDLC)
Slot 7	Available
Slot 8	Disk controller card
Serial port	WWV receiver

When planning your SA OS/390 configuration, determine the most effective way to connect your target systems.

**TPF Target Systems:** Using ASCII, TPF target system operating consoles can be connected through an RS-232 asynchronous interface. You can connect one operator console to the serial port on the PC system board. You must use the correct type of connection card for your system to provide the system console connection. When you plan your SA OS/390 processor operations configuration, determine the most effective means to connect your target systems. Table 9 shows possible connections to a TPF target system.

Table 9. Possible Configuration for TPF Target System

Slot	Use
Slot 1	Memory (may or may not be needed)
Slot 2	Communication card (token-ring or SDLC)
Slot 3	Active system console connection
Serial port	Active operator console connection

### Optional WWV Support

SA OS/390 permits the use of a radio time signal to set the target time of day (TOD) clock during the initialization process. This provides a more accurate time setting than can normally be accomplished by a human operator.

SA OS/390 supports the following WWV receivers:

- Heathkit Model GC1000
- Spectracom Model 8170 WWV-B.
- Spectracom Model Netclock/2 WWV-B

The WWV receiver connection requires a serial port. Two of the serial ports can be used by target system consoles. At most, there can be only two serial target system consoles and one WWV receiver connected to a single PC. Use the 2067 Communications Adapter Cable to connect the WWV receiver to the PC.

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## Planning to Install TEC Notification by SA OS/390

This section contains information required for the installation of TEC Notification by SA OS/390.

## Introduction of TEC Notification by SA OS/390

### Introduction of TEC Notification by SA OS/390

The SA OS/390 notification is extended to notify Tivoli Enterprise Console™ (TEC) about an automation problem on OS/390 by sending an event to the TEC event server.

For this purpose, on OS/390 systems, messages or alerts are transformed into Tivoli events and sent to the *TEC event server* which is running on a Tivoli managed node in your network.

These events in turn may cause a notification of a Tivoli administrator on the TEC, may be correlated with other events on the TEC event server, or may result in opening a trouble ticket for example, dependent on what you programmed at the TEC event server.

SA OS/390 introduces the TEC event server as a new notification target for SA OS/390. Note that not all messages, but only messages indicating critical situations and alerts are forwarded as TEC events to the TEC event server using the respective Tivoli GEM Event/Automation Service Adapter.

A Tivoli administrator who wants to deal with a problem indicated by an event forwarded to the TEC event server by SA OS/390 needs access to the affected OS/390 system. For this purpose, you may use the Tivoli NetView 3270 Management Console. With TEC Notification by SA OS/390, the TEC administrator may log on to the NetView operator console by starting the NetView 3270 Management Console from the TEC console by executing a task. See *System Automation for OS/390 User's Guide* for a description of the graphical interface on how to achieve this.

**Note:** Forwarding of SA OS/390 messages to TEC will not start until SA OS/390 and the GEM Event/Automation Service are up and running. SA OS/390 messages issued during SA OS/390 startup will not be forwarded to TEC.

### Environment Configurations

Several products are involved in TEC Notification by SA OS/390:

- *Tivoli NetView for OS/390*
- *Tivoli Global Enterprise Manager* (GEM)
- *Tivoli Enterprise Console* (TEC)

You can run TEC Notification by SA OS/390 in two configurations:

- **local configuration:** The message adapter or alert adapter is running on the same OS/390 system on which SA OS/390 is also running. The adapters are local to the SA OS/390 which is issuing and forwarding messages and alerts to the Tivoli Enterprise Console. Such a configuration for message forwarding is illustrated in Figure 16 on page 53.
- **distributed configuration:** The message adapter or alert adapter is running on an OS/390 system different from the one on which SA OS/390 is running and issuing messages and alerts. In this scenario, the OS/390 system running the adapters must be the SA OS/390 automation focal point system. Such a configuration for message forwarding is illustrated in Figure 17 on page 54.

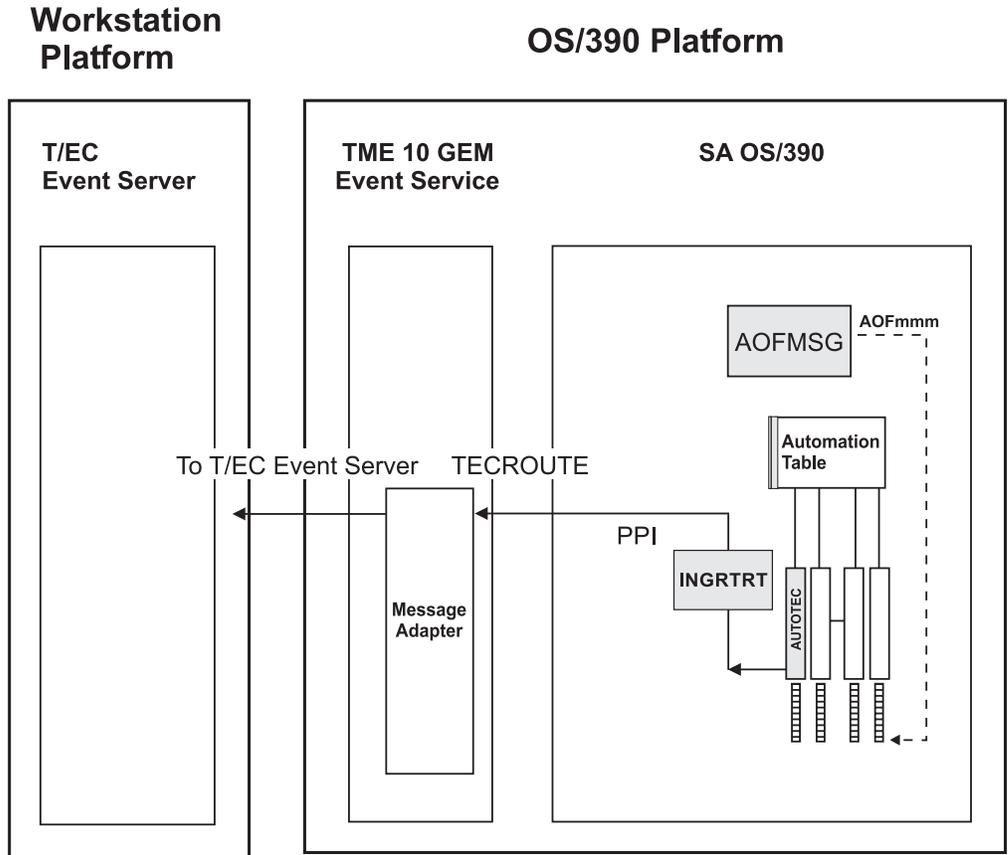


Figure 16. Local Configuration: Tivoli GEM Event/Automation Service local to the SA OS/390 Source of Messages

## Introduction of TEC Notification by SA OS/390

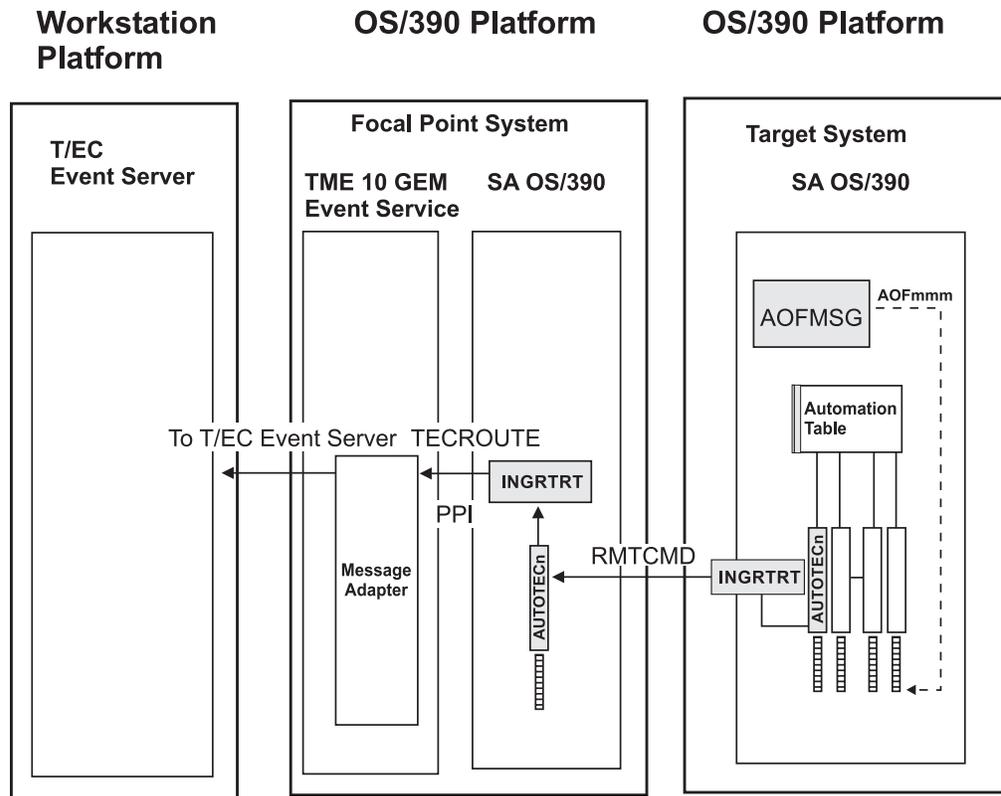


Figure 17. Distributed Configuration: Tivoli GEM Event/Automation Service remote to the SA OS/390 Source of Messages

Section "Environment Configurations" on page 52 describes the two configurations in which you can run TEC Notification by SA OS/390. How to install this feature is described in the following sections:

- "Installing and Customizing the TEC Event Server Workstation" on page 196
- "Activating the Installed Files" on page 198

The customization part comprises the following steps:

- "Step 13 — Customization of NetView for TEC Notification by SA OS/390" on page 135 describes how to customize your SA OS/390 and TEC Notification by SA OS/390 installations on the OS/390 system for both the local and distributed configuration as described in "Environment Configurations" on page 52.
- "Customization of the Tivoli Enterprise Console" on page 199 describes how to customize and define event sources, event groups and how to assign event groups to a Tivoli administrator's event console.

You can find more conceptual information about TEC Notification by SA OS/390 and information on how to use it in *System Automation for OS/390 User's Guide*.

---

## Planning to Install Netfinity® Services

### Netfinity is optional

Netfinity is not required to run SA OS/390 processor operations. However, the advantage of using it, is that it allows you to maintain your processor operations PC and Hardware Management Console (HMC) from remote (software updates and problem determination).

This section discusses the following topics:

- “General Considerations”
- “Netfinity Overview”
- “Communication Protocol Considerations” on page 57

## General Considerations

In environments, where SA OS/390 processor operations is used to monitor and control remote target systems, it may be helpful to use it together with Systems Management Products like Netfinity or remote control products such as Desktop On-Call. SA OS/390 utilizes and provides the following workstation functions:

- NMC Server
- NMC Client
- SA OS/390 workstation for LAN passthru PC and processor operations PC
- SA OS/390 processor operations PC

The unattended processor operations PCs are located remote from the operator working place, close to the processor hardware. If NMC client workstations are used as the SA OS/390 operator interface, an unattended NMC server workstation may also be located remote from its clients. Systems Management applications or remote workstation control software helps you to operate and control remote unattended workstations from a central point. Typical applications for Netfinity and Desktop On-Call are:

- Software maintenance and configuration
- ProcOps workstation operation
- Problem determination
- Recovery

## HMC Considerations

The use of Hardware Management Consoles (HMC) is common in SA OS/390 environments for manual operation of selected processor hardware. If Netfinity is pre-installed on your HMC, a subdirectory NETFIN is available on the C: drive, containing the product data. With the Netfinity client code installed and customized on the HMC, you can use your Netfinity manager workstation to monitor and control the availability of a remote Hardware Management Console.

The Desktop On-Call software is not available on HMCs running Version 1.5.1 or prior releases and must be installed separately.

## Netfinity Overview

The following chapter gives you an introduction to the Netfinity product and its components.

## Planning to Install Netfinity Services

### Netfinity Information

The following information is related to the Netfinity Version 5.20.2 of the Manager Services and to the Netfinity Version 5.20.3 of the Base Services.

- Program name: Netfinity Manager and Services
- Supported platforms: OS/2, Windows® 95, Windows NT®

Netfinity is a Client-Manager type of application, where the Netfinity Manager™ part allows you to monitor and control multiple clients where the Netfinity services program is running. Communication between the manager and the client workstations can be established using the following protocols:

- NETBIOS
- TCP/IP
- Serial interface/modem
- SNA/APPC

With processor operations, the Netfinity client services for OS/2 can be installed and customized on a processor operations PC, supported by Netfinity. The Netfinity manager can be installed and customized on any workstation that is supported by this program.

**Note:** For a detailed description of the network driver configuration please refer to "Client Services of Netfinity Manager User's Guide", which is available as online documentation in the product.

### Netfinity Services

This section gives an overview of services provided by Netfinity. Note, that not all services that can be configured are listed here. For a complete list, please refer to the Netfinity User's Guides available as online documentation with the product.

#### Netfinity services to be used from the manager workstation

- Remote System Manager:

You can use Remote System Manager to access and manage any Netfinity service on any Netfinity system in your network. The Netfinity systems on your network are organized into easy-to-manage logical groups that can be updated automatically using the auto-discovery feature.

- Screen View:

The Screen View service takes a snapshot of any remote Netfinity systems graphic display and displays it on your screen. These snapshots can then be saved as bitmaps and viewed later.

- Remote Session:

You can use Remote Session to establish a fully-active command session with any remote Netfinity system.

- Remote Workstation Control:

Remote Workstation Control enables you to monitor or control the screen display of a remote Netfinity system. Once you initiate a Remote Workstation Control session with another Netfinity system, you can passively monitor events that are occurring on the display of the remote system or actively control the remote systems desktop. When you initiate an active Remote Workstation Control session, all mouse clicks and keystroke entered on your system are automatically passed through to the remote system. With Remote Workstation Control, you can remotely start programs, open and close windows, enter commands, and much more.

- **File Transfer:**  
You can use the File Transfer service to easily send, receive, or delete files or entire directories to and from remote Netfinity systems on your network.
- **Process Manager:**  
You can use Process Manager to view detailed information about all processes that are currently active on any system. You can also stop or start processes and generate Netfinity alerts if a process starts, stops, or fails to start within a specified amount of time after system startup.

### Netfinity services to be used on the client workstation

- **Serial Connection Control:**  
The Serial Connection Control service enables remote Netfinity Managers to access your system through a phone line and modem. With the Serial Connection Control service, you can monitor and control your remote system using a different "path". This can be helpful in case of networking problems affecting other networking protocols.
- **Security Manager:**  
The Security Manager can prevent unauthorized access to some or all of your Netfinity services. It uses incoming user ID and password combinations, and is available for network use only.

## Communication Protocol Considerations

After the installation, Netfinity has to be customized on what protocols to use for communication between a Netfinity client workstation and the Netfinity manager workstation. You may choose an alternate to the protocol used by the processor operations distributed feature code. If for example processor operations uses TR and SNA/APPC, a serial connection with a modem will provide a backup for the network adapter, the TR card, and the SNA network.

However it may be sufficient to use the same network adapter for ProcOps and Netfinity communications and to select NETBIOS or TCP/IP as the protocol for Netfinity. By this, a backup is available in case of SNA network problems.

The NFCONFIG utility of Netfinity allows you to select one or more protocols when configuring the network driver for Netfinity manager or Netfinity clients.

---

## Planning to Install Desktop On-Call

### Desktop On-Call is optional

Desktop On-Call is not required to run SA OS/390 processor operations. However, the advantage of using it, is that it allows you to maintain your processor operations PC and Hardware Management Console (HMC) from remote (software updates and problem determination).

In the following you find an introduction to the Desktop On-Call product and its components. This information is related to Version 3.0 of Desktop On-Call.

Desktop On-Call allows you to remotely control a PC from a Web browser. With Desktop On-Call, the remote PC to be controlled is called Host-PC. Supported platforms on the Host-PC are OS/2, Windows 95, Windows NT and MacOS.

## Planning to Install Desktop On-Call

On the Guest PC, you can use a Web browser to establish a connection to the Host-PC. The Guest-PC's Web browser must support Java applets and may have any operating system supporting this environment. The supported network protocol is TCP/IP.

With processor operations, Desktop On-Call for OS/2 can be installed and customized on a processor operations PC. You can use the Web browser of an SA OS/390 workstation as a Guest PC and establish a session with the remote processor operations PC. If the SA OS/390 workstation provides a Web browser, you can use any workstation to control a processor operations PC as long as the TCP/IP network allows the connection and the guest PC's Web browser supports Java applets (Java 1.0 or Java 1.1).

For a detailed description of the environments supported by Desktop On-Call, please refer to the Online User's Guide supplied with the product.

## Desktop On-Call Features

The following section gives an overview of some features available with Desktop On-Call.

### Remote control

Access a remote PC for desktop control as if accessing an internet homepage. A login window displayed in the Guest-PC's browser window requesting user ID and password to logon to the Host-PC.

### Session control

Control window displayed in the Guest-PC's browser window once the Host-PC is connected. Allows you to start a file transfer session or to logoff.

### File transfer

Invokes a file transfer session between Guest and Host PC. In enhanced connection mode, a signed applet authentication panel is displayed first.

### Security

On the Host-PC security settings are available on a user ID basis to adjust the level of security on an individual basis.

## Communication Protocol Considerations

Desktop On-Call utilizes the TCP/IP protocol on the Guest and on the Host-PC. You may either use a network card or a modem to physically connect the PCs to the TCP/IP network. See the Desktop On-Call User's Guide for a list of network environments supported.

Since the protocol is TCP/IP, you can use the PING command to check the connection between a Guest and a host-PC before you invoke Desktop On-Call.

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This chapter provides background on SA OS/390. It includes what a focal point system is and what targets are, and how to define a network of interconnected systems, known as an *automation network*, to SA OS/390 for purposes of monitoring and controlling the systems. The procedures and examples in this chapter assume that VTAM definitions for systems in the automation network are in place and available as input.

---

### The Focal Point System and Its Target Systems

SA OS/390 allows you to centralize the customization, monitoring, and control functions of the multiple systems or images that make up your enterprise using a single, centrally located OS/390 system. This controlling OS/390 system is called the focal point system. The systems it controls are called target systems. These systems communicate using LU6.2 sessions, XCF, MQSeries and NetView facilities.

---

### Defining System Operations Connectivity

This section discusses the following aspects of defining system operations connectivity:

- “Multiple NetViews”
- “Overview of Paths and Sessions” on page 61

#### Multiple NetViews

The number of NetViews that run in your SA OS/390 complex affects how you plan for it. Have a look at Figure 18 on page 60: Networking and automation function cannot run in the same NetView, that means, *Networking NetView* and *Automation NetView* must be separated. If you want to monitor resources using the

## Defining System Operations Connectivity

NMC workstation, you have to care that RODM can operate with just one NetView on the focal point. If you use the *Networking NetView* only on the focal point, then you cannot have your resources automated by SA OS/390 on this focal point. If you use the *Automation NetView* only on the focal point, then you cannot have network resources in RODM, but only SA OS/390 resources that you automate. It is common therefore, to use two NetViews to separate networking (the *Networking NetView*) and automation functions (the *Automation NetView*). You can operate network and SA OS/390 resources via RODM and have SA OS/390 on the focal point if you setup the *Networking NetView* with a subset of SA OS/390, the so-called *SA OS/390 Satellite* and the *Automation NetView* as shown in the picture. See "Step 24 — Install an SA OS/390 Satellite" on page 149 for instructions on how to do this installation. Performance may be improved using this division. The NMC workstation then must be linked to **NetView Graphic Monitor Facility Host Subsystem (GMFHS)** on the *Networking NetView* which has connection to RODM.

In environments where there is only one NetView, all functions are handled by that NetView.

When an operator initiates a command or routine from a workstation, the action flows back to the *Networking NetView* for processing in the reverse direction from that shown in Figure 18.

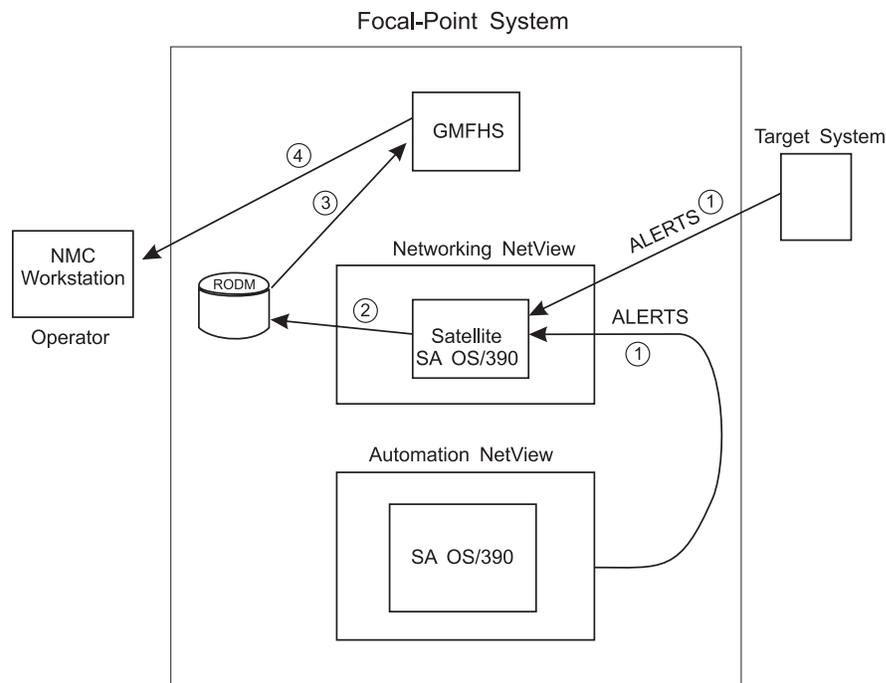


Figure 18. SA OS/390 Enterprise Using a *Networking NetView* and an *Automation NetView*

### Action Initiated by Alerts

1. The alerts from the target system are sent to the *Networking NetView* at the focal point. (Alerts from processor operations are sent directly to the *Automation NetView*).
2. The satellite OS/390 automation traps the alerts and updates objects in RODM appropriately.
3. NetView Graphic Monitor Facility Host Subsystem (GMFHS) becomes aware of status updates.

4. GMFHS broadcasts updates to the operator workstation.

### Overview of Paths and Sessions

To learn about message forwarding paths, see “Message Forwarding Path” and to learn about gateway sessions, see “Gateway Sessions”.

#### Message Forwarding Path

SA OS/390 generates and uses messages about significant actions that it detects or takes such as a resource status change. In addition to sending these messages to operators on the same system, SA OS/390 can forward them from target systems to a focal point system and can route commands and responses between systems, using a message forwarding path. This path is defined in your policy. Key components in a message forwarding path include:

- A primary focal point system
- A backup focal point system
- A target system or systems
- Gateway sessions connecting systems. Gateway sessions use inbound and outbound gateway autotasks or INGSSEND to route commands and responses between systems, instead of requiring individual NetView-to-NetView task (NNT) sessions for each operator. Operators can use gateway sessions for command and response routing in an automation network. An optional feature manages the passwords used for logging the gateway autotasks on to other systems.
- One or more adjacent NetView systems that act as a path for forwarding messages, commands, and responses between systems that do not have a direct gateway connection.

Using a message forwarding path, a focal point system can monitor several target systems.

“Appendix G. Example Automation Network Configuration” on page 257 describes an example message forwarding path.

SA OS/390 uses notification messages to update the status of resources displayed on the status display facility (SDF). Routing notification messages over the message forwarding path helps consolidate monitoring operations for multiple systems on the SDF at a focal point system. See *System Automation for OS/390 User's Guide* for details on configuring SDF for a focal point system-target system configuration.

#### Gateway Sessions

To forward messages and route commands and responses between systems, you can use either dedicated NNT sessions for each logged-on operator, or autotasks called gateway autotasks, or INGSSEND. Using gateway autotasks is the method described in this chapter.

**Outbound and Inbound Gateway Autotasks:** Each gateway session consists of:

- Two one-way NNT sessions between two systems
- Two gateway autotasks on each system that use the NNT sessions.
  - One autotask for handling information outbound from a system, called the outbound gateway autotask. The outbound gateway autotask establishes and maintains all connections to other systems. It sends messages, commands, and responses to one or more systems.

## Defining System Operations Connectivity

- One autotask for handling information incoming from another system, called the inbound gateway autotask. A system can have one or more inbound gateway autotasks, depending on the number of systems to which it is connected.

In the automation policy for each system in an automation network, you need to define only the outbound gateway autotask (see *System Automation for OS/390 Defining Automation Policy*). However, in the NetView DSIPARM data set member DSIOPE, you must define all gateway autotasks, both inbound to and outbound from a system, as operators.

You define the outbound gateway autotask by defining the GATOPER policy item for the Auto Operators policy object in the customization dialog. You must specify an operator ID associated with the GATOPER function in the Primary field on the Automation Operator NetView panel. See *System Automation for OS/390 Defining Automation Policy* for more information.

For this example, the operator ID for the system CHI01 outbound gateway autotask is GATCHI01. Similarly, any operator ID for an inbound gateway autotask is the prefix GAT combined with the inbound gateway system name.

Figure 19 on page 63 shows three systems: CHI01, ATL01, and ATL02. System CHI01 is the focal point for forwarding messages from target systems ATL01 and ATL02. In Figure 19 on page 63, gateways are designated as follows:

- O Outbound gateway autotask
- I Inbound gateway autotask.

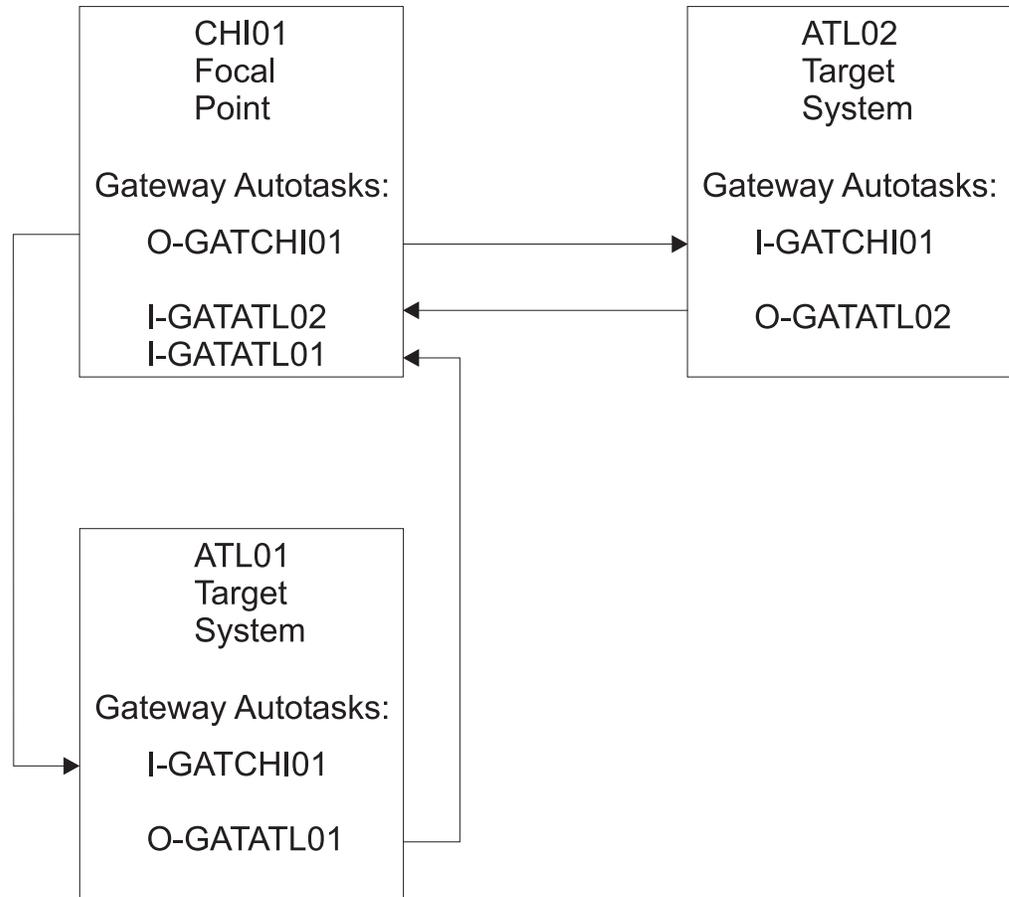


Figure 19. Example Gateways

**How Gateway Autotasks Are Started:** Gateway autotasks establish a connection between systems when any system receives the following NetView message:

DSI112I NCCF READY FOR LOGON AND SYSTEM OPERATOR COMMANDS

When this message is received, the following steps occur:

1. The outbound gateway autotask tries logging on to all systems specified in gateway definitions in the automation policy for the system, using the operator ID defined for the outbound gateway autotask.
2. Once the outbound gateway autotask is logged on to the other systems, this autotask sends a message to the outbound gateway autotask on each system to which it is connected, requesting that their outbound gateway autotasks log on.
3. A gateway session between two systems is established when the outbound gateway autotasks for each system log on to the other system.

This process automatically establishes outbound and inbound connections for systems without human operator intervention.

For example, in the gateway examples shown in Figure 19, if message DSI112I is received on system CHI01, the outbound gateway autotask for CHI01 attempts to log on to systems ATL01 and ATL02, because they are defined as gateway entries on system CHI01. The outbound gateway autotask logs on using operator ID GATCHI01. Once the CHI01 outbound gateway autotask logs on to systems ATL01 and ATL02, as the inbound gateway autotask, it sends messages to the outbound gateway autotasks on ATL01 and ATL02, asking them to log on to CHI01. ATL01

## Defining System Operations Connectivity

then uses operator ID GATATL01 to log on to CHI01, and ATL02 uses operator ID GATATL02. System CHI01 then has three gateway autotasks active:

- One outbound, using operator ID GATCHI01
- One inbound from ATL01, using operator ID GATATL01
- One inbound from ATL02, using operator ID GATATL02

On each system, the Gateway Display panel of the SA OS/390 NetView interface displays the status of gateways. Refer to *System Automation for OS/390 User's Guide* for details.

**How Gateway Sessions Are Monitored:** Optionally, gateway sessions can be monitored by a command executed periodically. The time interval is set in the field Gateway Monitor Time. in the Automation Setup policy item for the System policy object.

See *System Automation for OS/390 Defining Automation Policy* for details. The ID of the timer created to monitor gateway sessions is AOFGATE. This timer will not be set if NONE is entered for Gateway Monitor Time.

If SA OS/390 detects that any gateway session is inactive during the monitoring cycle, it tries to restart the session by issuing a start domain command.

**Issuing Commands Using Gateway Services:** Once gateway sessions between automation agents running on different systems are established, operators can route commands to other systems using the outbound gateway autotask. Command responses can be routed from the other systems back to the originating system using inbound gateway autotasks.

Using the outbound and inbound gateway autotasks for routing commands and responses eliminates requiring all operators to have personal NetView-NetView (NNT) sessions for all systems to which they need access.

Commands can be issued using the INGSEND command. (Refer to *System Automation for OS/390 User's Guide* and *System Automation for OS/390 Operator's Commands* for descriptions of the INGSEND command.)

### Adjacent NetView Paths

Your automation network may require routing messages, commands, or responses between systems that are not directly connected by a gateway session. In such cases, you need to define to SA OS/390 which existing gateway session between systems is used to send the information on to the destination system. This definition is called an adjacent NetView path description.

### Automatically Initiated Terminal Access Facility (TAF) Full-Screen Sessions

Using the FULL SESSIONS policy item of the Network policy object, you can set up automatically initiated terminal access facility (TAF) full-screen sessions from within SA OS/390. *System Automation for OS/390 Defining Automation Policy* describes how to define applications with which SA OS/390 operators can establish TAF sessions automatically using the SA OS/390 NetView interface.

### Automatically Initiated User NetView-to-NetView (NNT) Sessions

Using the NNT Sessions policy object on the customization dialog panels, you can set up automatically initiated user NNT sessions from within SA OS/390.

### Using Focal Point Services

Once an automation network is configured, you can use the message forwarding path to route messages, commands, and responses between systems. SA OS/390 operators can display the status of gateway autotasks, NNT sessions, and TAF full-screen sessions using the SA OS/390 operator commands. Details on these operator activities are in *System Automation for OS/390 User's Guide*.

---

## Defining Processor Operations Communications Links

After determining that you plan to use the processor operations functions, you must decide the type of communication link from your focal point system to your support element or processor operations PC. Processor operations supports two types of communication connections:

- Token-ring local area network (LAN)
- Synchronous data link control (SDLC)

There are a variety of token-ring LAN connections that can be made, including back-up connections. See “Step 1 — Configuring the Processor Operations PC” on page 173 for more information.

### Meeting Availability Requirements

When you plan your processor operations configuration, examine the physical and logical paths for single points of possible interruption. An efficiently operating enterprise can recover from any minor service interruption. An effective strategy for combating service interruptions is to include standby hardware in your enterprise. Consider using the following:

- Backup processor operations PC connections
- Backup communication link
- Alternate focal point system

#### Backup Processor Operations PC Connections

To provide flexibility in connecting to target systems, you can plan to use additional processor operations PC connections. The console connection cards in a second processor operations PC can connect as the backup system console (SCB) and operator console (OCB).

Another approach might be to install two connection cards in a single processor operations PC, designating one as the active system console and the other as the backup operator console. In a second processor operations PC, install two connection cards; designate one as the backup system console and the other as the active operator console. By spreading primary responsibility to different hardware, the effects of a system outage can be reduced.

#### Backup Communication Links

Alternate communication links provide continuous message flow. Instead of depending on a single token-ring LAN or leased-line connection, plan alternate data routes. You can use bridges through alternate token-ring networks or an additional SDLC leased line if trouble develops in the primary link. Connecting the backup processor operations PC to the alternate communications link provides a means of recovery if the primary processor operations PC or communication link fails.

#### Alternate Focal Point System

An alternate focal point system can be used, in addition to the primary focal point system, to minimize the effect of a focal point system outage. If a focal point

## Defining Processor Operations Communications Links

system must remain operational at all times, an alternate focal point system with a separate communications network can act as a stand-by focal point system.

If you plan to install an alternate focal point system, you must include one or more 37xx communications controllers. Each controller must be equipped with a channel adapter. The Network Control Program (NCP) must be installed in the communications controllers. You can use a 3174 subsystem control unit in place of the 37xx.

However, the alternate focal point system operator is not automatically notified of the loss of the session between a focal point system and a processor operations PC or NetView connection. This notification is instead received by the operator of the failed focal point system, which is the primary focal point system. See “Step 1 — Configuring the Processor Operations PC” on page 173 for alternate focal point system configurations and for VTAM considerations when installing an alternate focal point system.

## Task Structure for Processor Operations

For processor operations there is a task structure that is modular; distinct types of SA OS/390 tasks handle different work assignments. The types of SA OS/390 tasks are:

- Target control tasks
- Communications tasks (When you are using the NetView connection, these tasks are not required.)
- Message monitor tasks (When you are using the NetView connection, these tasks are not required.)
- Recovery task
- Start task
- Polling task
- OCF-CI task

SA OS/390 allows up to 999 tasks of each of the first three types, but only one recovery task and one processor operations start task. Because SA OS/390 tasks are OS/390 tasks that require system services and also add to the load running in the NetView address space, you should only define as many tasks as are needed.

The following guidelines help you match the number of SA OS/390 tasks to your SA OS/390 configuration.

- Define enough communications tasks so that there are 4 to 6 personal computers per communication task.
- The number of message monitor tasks should be less than or equal to the number of communications tasks.
- The number of target control tasks should be less than or equal to the number of target hardware defined. If you plan to use the processor operations group and subgroup support for the common commands, the total number of target control tasks should be equal to the number of concurrently active target hardware systems.
- In consideration of focal point performance, limit the total number of tasks to a number your system can handle.

## Defining Processor Operations Communications Links

### Target Control Tasks

The number of message monitor tasks and the number of target control tasks are specified when you customize Enterprise policy. The number of communications tasks depends on how many individual communications tasks you define using the customization dialogs.

Target control tasks process commands. A target system is assigned to a target control task when the target system is initialized. More than one target system can be assigned to the same target control task. A target control task is a NetView autotask.

### Communications Tasks

**Note:** When you are using a NetView connection, these tasks are not required.

Communications tasks control communications between the processor operations PCs and other processor operations tasks. Each communications task is a NetView user task.

A communications task establishes sessions with its assigned processor operations PCs and provides the actual communication with VTAM. It sends commands to the processor operations PCs, handles messages and responses from target systems, and handles traffic from the SA OS/390 passthru facility.

A communications task can send data to up to 64 different processor operations PC connections. While planning your SA OS/390 configuration, determine which target systems are most critical. Develop a strategy for assigning processor operations PCs to communications tasks to provide access to high priority system. For example, consider assigning the processor operations PCs connected to your most critical target systems to a communications task of their own. This allows the communications task to be always available. Commands to your critical target systems are not queued behind commands for less critical ones.

### Message Monitor Tasks

**Note:** When you are using a NetView connection, these tasks are not required. Message monitor tasks receive inbound messages at the focal point system from communications tasks and broadcast the messages to appropriate tasks and operators. Message monitor tasks start and end communications tasks. Each message monitor task is a NetView autotask.

### Recovery, Start, and Polling Tasks

Automation for resource control messages runs under the recovery task, which is a NetView autotask. Processor operations also uses the recovery task for processing of recovery automation commands. Normally, this task is idle. It is generated automatically when you generate NetView autotask definitions from the configuration dialogs.

The startup task, a NetView task, is used to establish the processor operations environment with the NetView program and to start the other NetView tasks needed for processor operations to function. The startup task is only active during processor operations start (ISQSTART).

The polling task, another NetView task, is used to poll the processors using NetView connections. You determine both the polling frequency and polling retries to be attempted. (These polling functions are specified using the NetView connection path definition panels in the configuration dialogs.) This task is

## Defining Processor Operations Communications Links

generated automatically when you generate the NetView Autotask definitions from the customization dialogs. This NetView task enables SA OS/390 to verify and update operations command facility-based processor status.

### Processor Operations OCF-CI Task

The OCF-CI task receives messages sent to the support element on the console integration interface. These messages come from a target OCF-based or parallel enterprise server operating system. The task broadcasts these messages to the appropriate processor operations task and operators interested in processor operations. For information about interested operators, see *System Automation for OS/390 User's Guide*. The OCF-CI task, a NetView autotask, is singular. Only one is required, and it is required only for OCF-based processors.

---

## Planning to Connect the Hardware

This section describes making the hardware connections. It is divided into subsections for each set of hardware connections:

- “Preparing the Focal Point System Connections” and “Alternate Focal Point System Considerations” on page 72 for focal point system connections
- “Preparing the Target System Connections” on page 74 for target system connections. This section also discusses complex connection configurations.

### Preparing the Focal Point System Connections

The physical path for the focal point system consists of connections from the PC to the focal point system. SA OS/390 processor operations supports two types of communication connections:

- Token-ring LAN
- SDLC

The following examples explain connecting the PC to the focal point system.

#### Token-Ring LAN Connections

You can connect the PC to the focal point system through a local or remote token-ring LAN. Following are some examples of how this connection could be made.

- The token-ring LAN can use an SNA connection to a 37xx communications controller attached to the focal point system.
- The token-ring LAN can use an SNA connection to a local (requires VTAM 3.4.1 or higher) or remote 3174 subsystem control unit that supports PU 2.1 independent LU sessions. Contact your IBM service representative for model and licensed internal code levels.

**Possible Token-Ring Configurations:** Figure 20 on page 69 shows two focal point system connections through a 3174 subsystem control unit:

- One connection to a processor operations PC (denoted as *Personal Computer* in the subsequent figures)
- One connection to a System/390 microprocessor cluster

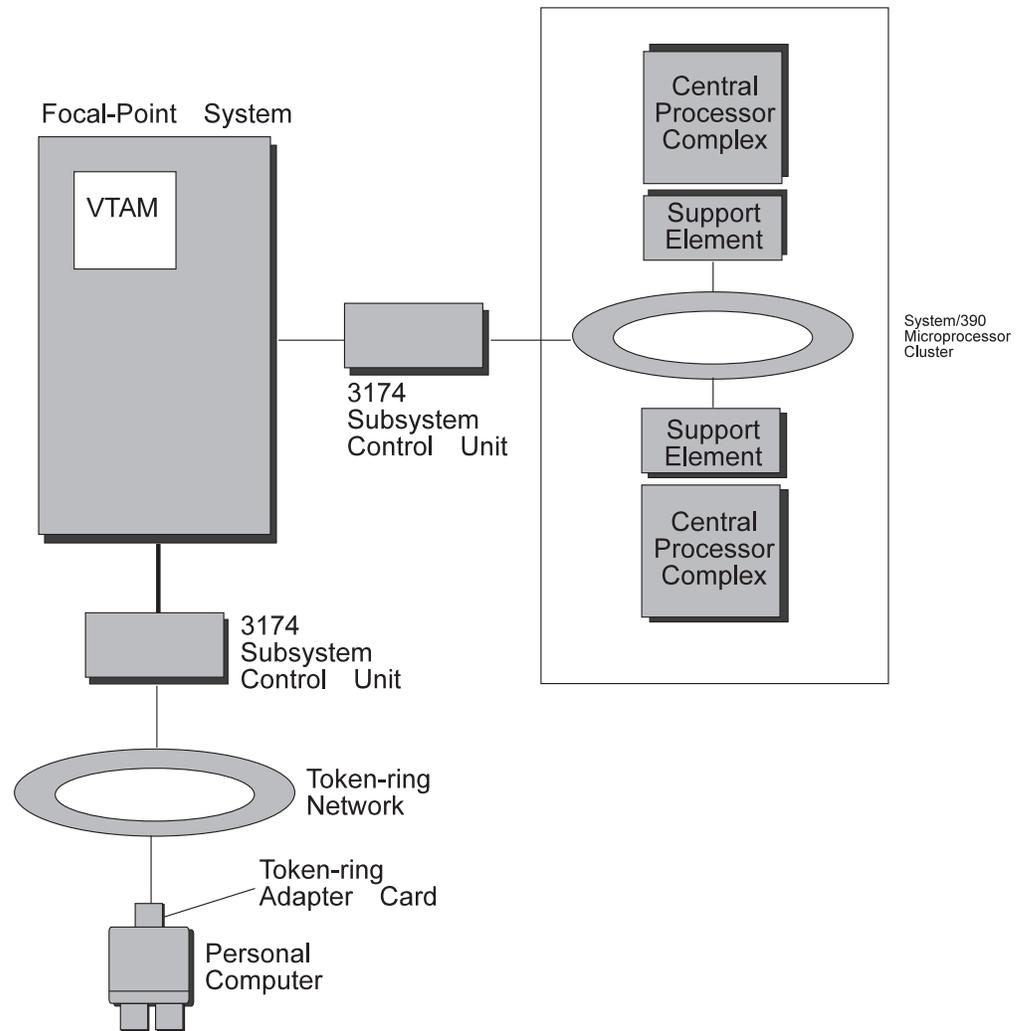


Figure 20. Focal Point System Connections to a Token-Ring Network through a 3174

The token-ring LAN can use an SNA connection to a local (requires VTAM 3.4 or higher) or remote 3174 subsystem control unit that supports PU 2.1 independent LU sessions. Contact your IBM service representative for model and licensed internal code levels.

You can use any of the token-ring network configurations with multiple token rings connected by means of a bridge. Figure 21 on page 70 shows a PC and a System/390 microprocessor cluster connected to the focal point system, each through a token-ring bridge.

## Planning to Connect the Hardware

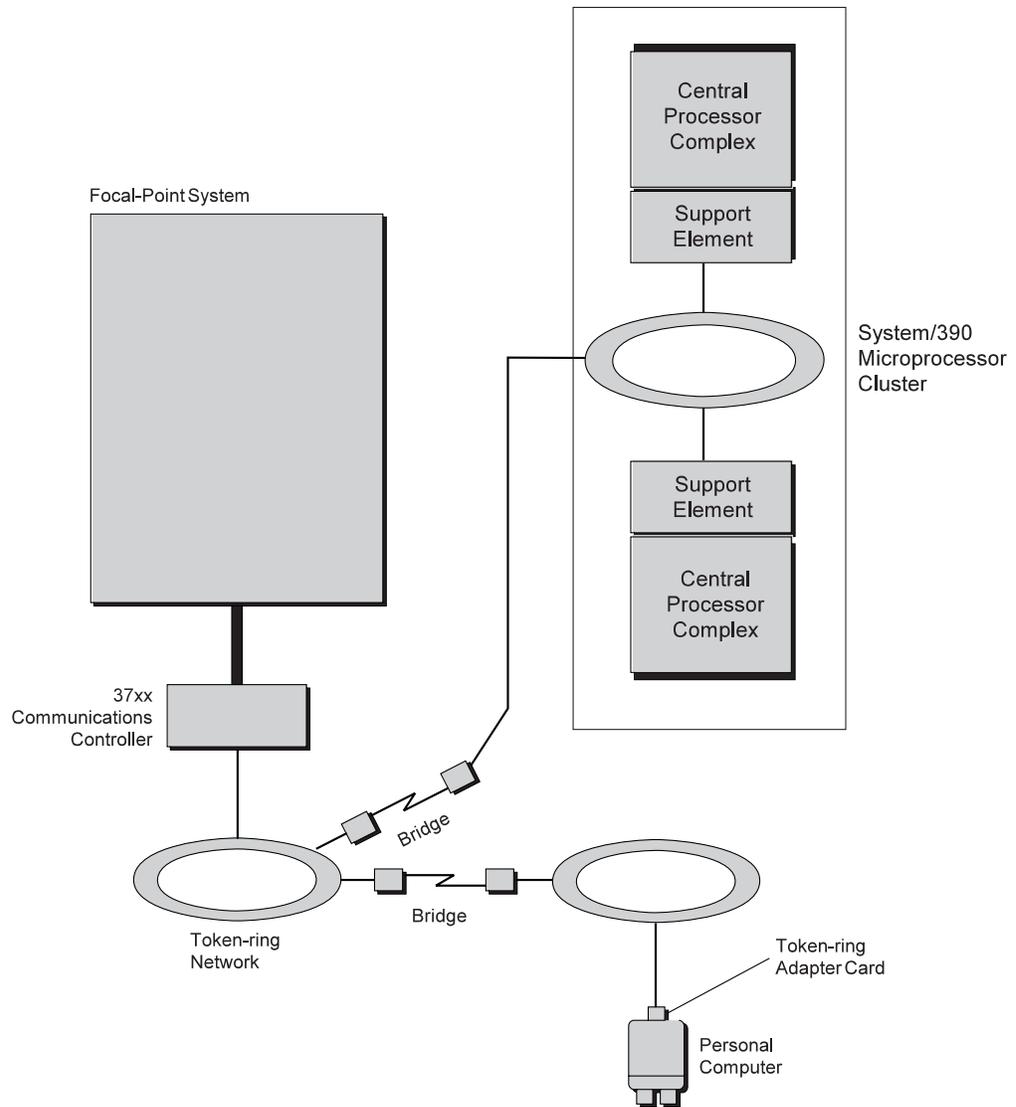


Figure 21. Processor Operations PC and System/390 Microprocessor Cluster to Focal Point System through Token-Rings with Bridge

### SDLC Connection

Connecting the processor operations PC to the focal point system using an SDLC link requires the following:

- A multi-protocol adapter card installed in the personal computer
- A 37xx communications controller connected to the focal point system
- An SDLC communication link between the personal computer and the 37xx communications controller, including modems and a leased line

Figure 22 on page 71 shows a focal point system connected through a 37xx communications controller to the SDLC card in the personal computer and to a System/390 microprocessor cluster through System/390 support elements.

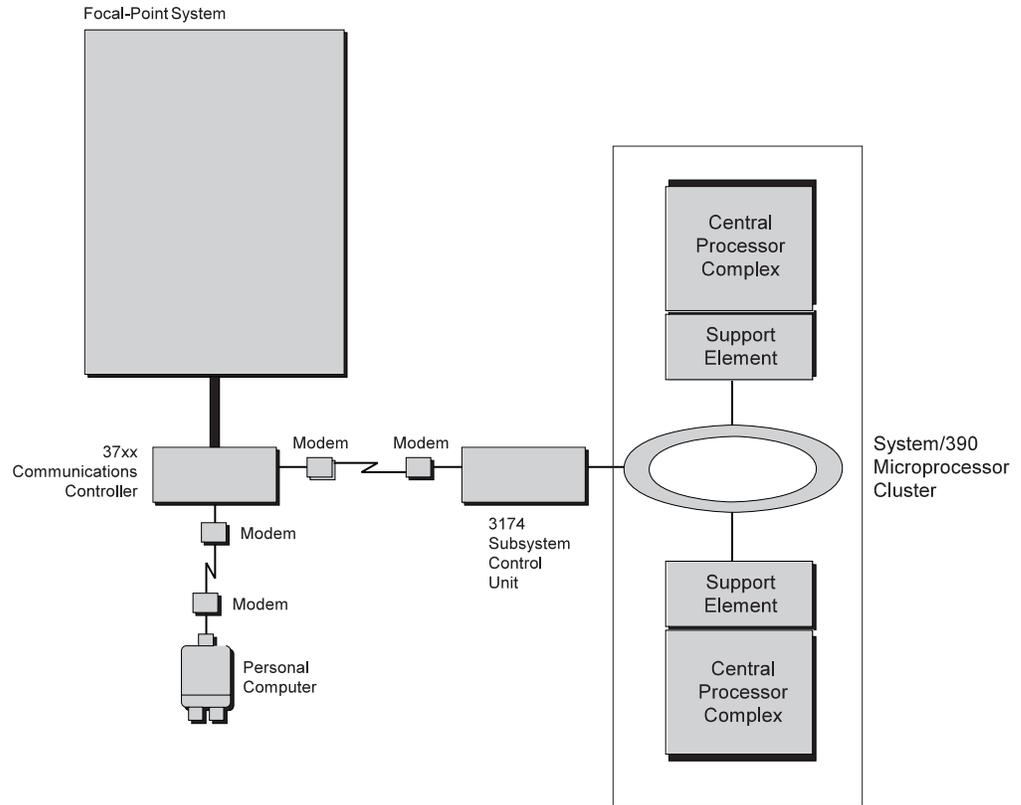


Figure 22. Focal Point System Connection to Target Hardware through an SDLC

### SDLC Connection to Multiple PCs and a System/390 Microprocessor Cluster

You can configure the SDLC modem at the target hardware site to fan out to additional personal computers and a System/390 microprocessor cluster. Up to four personal computers can be attached to a single SDLC modem. To the target hardware site modem, add a data terminal equipment (DTE) attachment for each personal computer. Figure 23 on page 72 shows two connections, each using a single SDLC modem:

- To four personal computers
- To a System/390 microprocessor cluster through a 3174 subsystem control unit

## Planning to Connect the Hardware

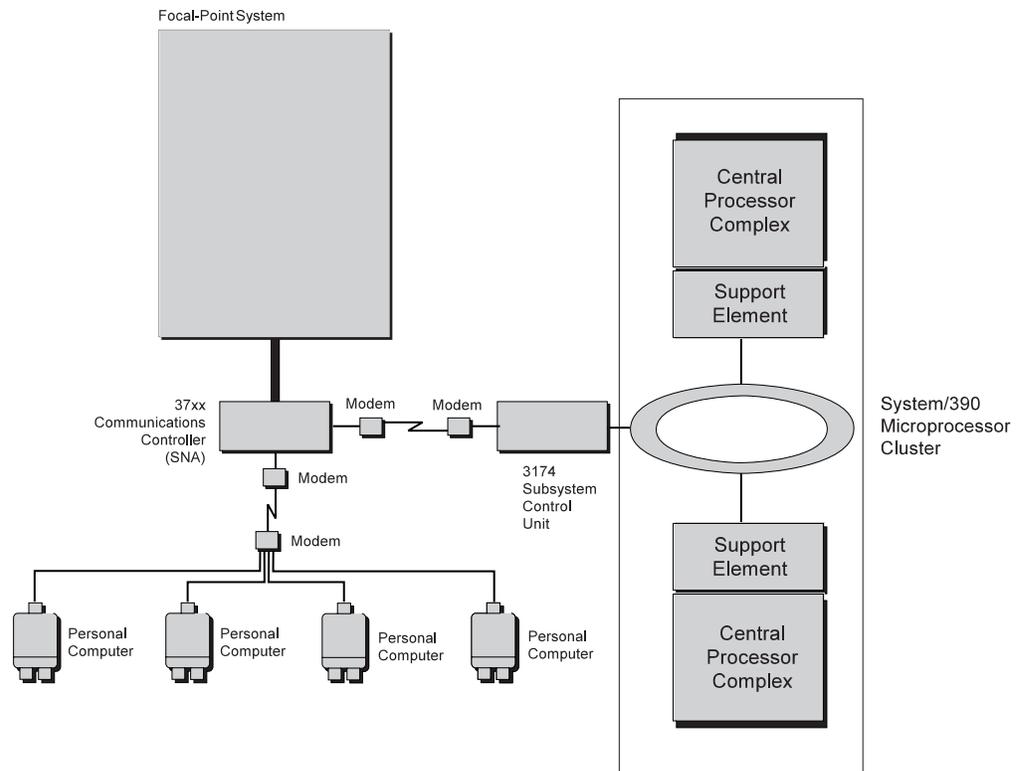


Figure 23. SDLC Fan-Out Modem Connections

## Alternate Focal Point System Considerations

An alternate focal point system can be connected to your DP enterprise in addition to the primary focal point system.

### Applications

An alternate focal point system allows you to:

- Monitor and control your DP enterprise from another physical location. By installing an alternate focal point system at this location, you can switch from the primary focal point system to the alternate focal point system and back again.
- Provide a method for minimizing the effects of a primary focal point system outage. If a focal point system must remain operational at all times, an alternate focal point system with a separate communications network acts as a stand-by focal point system. Backup personal computers at the target systems can provide further backup protection.

### Preparing the Alternate Focal Point System Connections

The physical connection path for the alternate focal point system is identical to that for the primary focal point system. As with the primary focal point system, SA OS/390 processor operations supports two types of communication connections:

- Token-ring LAN (See "Token-Ring LAN Connections" on page 68)
- SDLC, using a leased line (See "SDLC Connection" on page 70)

The following examples explain the two methods of connecting the alternate focal point system to the personal computer.

## Planning to Connect the Hardware

**Token-Ring LAN Connection:** The alternate focal point system connects to the token-ring LAN in the same way as the primary focal point system. Figure 24 shows an alternate focal point system as well as a primary focal point system connected through a single 37xx communications controller with NCP and NTRI installed. The figure does not imply that the alternate focal point system must be in the same physical location as the primary focal point system.

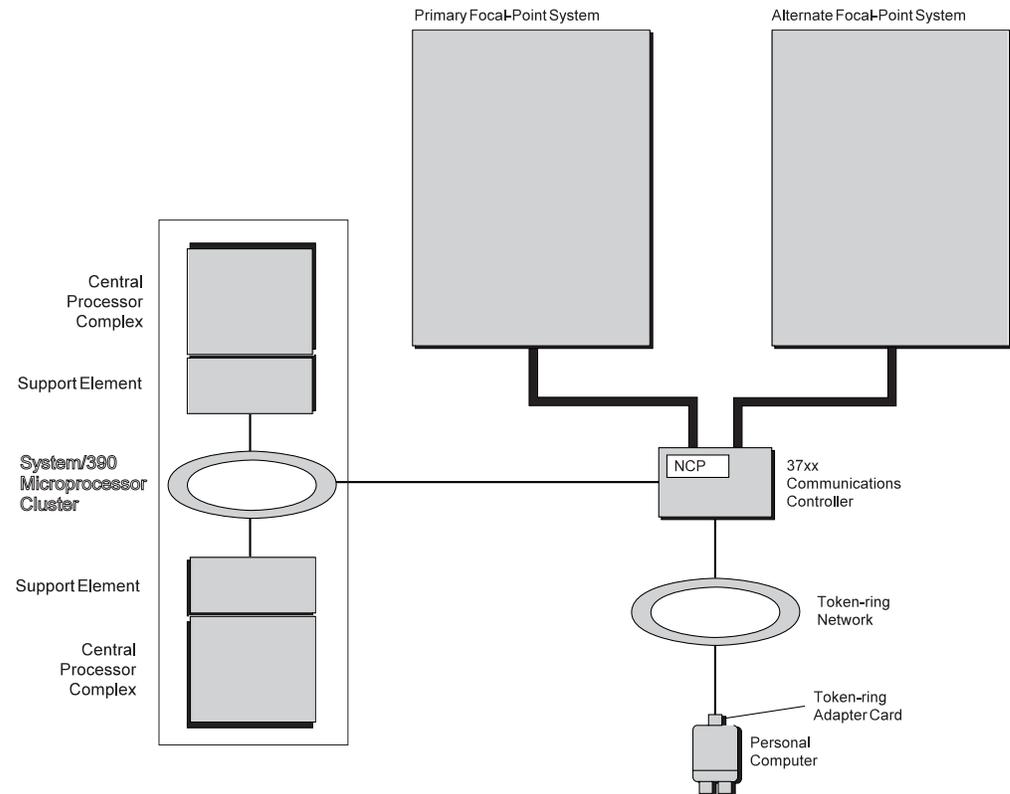


Figure 24. Alternate and Primary Focal Point System Connections to a Token-Ring Network through a 37xx Controller

**SDLC Connection:** The personal computer or a System/390 support element connects to the alternate focal point system through an SDLC connection over a leased line in the same way as to the primary focal point system. Figure 25 shows a PC with an SDLC card connected through a 37xx communications controller to both the primary and alternate focal point systems. The alternate focal point system does not have to be in the same physical location as the primary focal point system. Figure 25 also shows a connection to a System/390 microprocessor cluster.

## Planning to Connect the Hardware

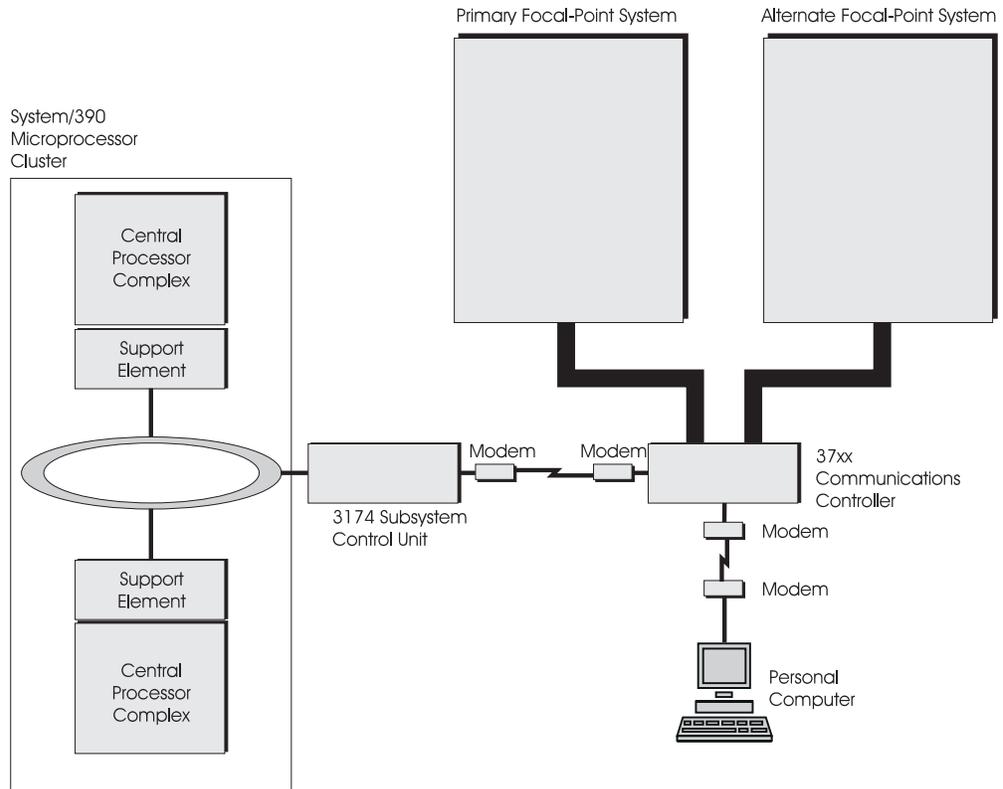


Figure 25. Alternate and Primary Focal Point Systems Connections to a Personal Computer through an SDLC Link

## Preparing the Target System Connections

The target system connects to the PC using cables that connect to the 3270 or RS-422 connection cards installed in the personal computer. Each target system site can have a different hardware configuration, depending on the target processor type. Possible connections include the following:

- Operator console communications from 9021, 3090, 4381, and 308x processor systems could use the existing non-SNA controller, such as a 3174 subsystem control unit. See “Configuring a 3x74 for Use in an Operator Console Connection” on page 81 for 3174 configuration requirements.
- System console communications from 9021, 3090, 4381, and 308x processor systems use a non-SNA integrated adapter and do not require a separate controller. For a 9121, use an RS-422 port on the IOSF.
- processor operations requires two separate consoles at each target system: a system console and an operator console.
- processor operations does not support the 4381 integrated console feature. You must use a separate system console and operator console connected to two distinct ports on the 4381. One path provides the system console connection and the other path provides the operator console connection.
- In Transaction Processing Facility (TPF) systems, processor operations can support line-mode asynchronous ASCII communications between the target system and the personal computer. For this type of communications, an ASCII protocol converter is required.

## Planning to Connect the Hardware

You can configure your target system to have a supplementary operator console and a supplementary system console. A coaxial switch box is one way of allowing the operator to select the PC or the supplementary display station as the system console.

The following installation instructions for each type of processor include information about both the system console (SC) and the operator console (OC) connections.

### System Console Connections

The PC replaces the system console at the target site. A number of factors affect the correct configuration for the target hardware. The installation differs, depending on processor type, partitioning, and use of a backup personal computer. The following information is about installing these processors:

- 9021 processors
- 9121 processors
- 3090 processors
- 4381 processors
- 308x processors

The following examples show various partition and backup system console connections.

#### **9021, 9121, 3090, 4381, and 308X System Console Connection with Backup:**

Figure 26 on page 76 shows both a primary and backup system console connection to 9021, 9121, 3090, 4381, and 308X system console connection with backup as well as a physically partitioned 3084 system console connection.

## Planning to Connect the Hardware

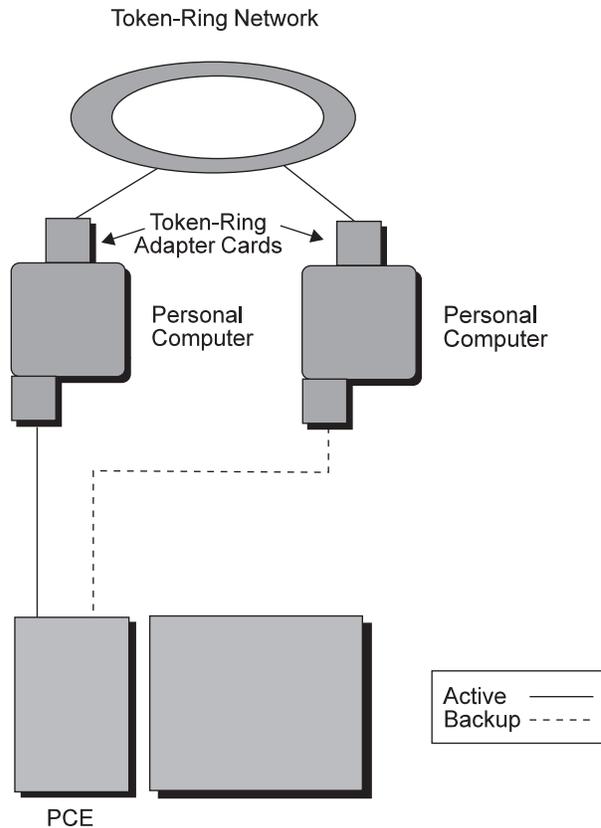


Figure 26. Single-Image System Console Connection with Backup

- **9021 System Console Connection with Backup:**
  - To install the primary personal computer, connect the connection card to location 07A-P position E of the target processor.
  - To install the backup personal computer, connect the connection card to location 07B-Q position F of the target processor.
- **9121 System Console Connection with Backup:**
  - To install the primary personal computer, connect the connection card to left port of the target processor.
  - To install the backup personal computer, connect the connection card to right port of the target processor.
- **3090 System Console Connection with Backup:**
  - To install the primary personal computer, connect the connection card to location 07A-P position E of the target processor.
  - To install the backup personal computer, connect the connection card to location 07B-Q position F of the target processor.
- **4381 System Console Connection with Backup**
  - To install the primary system console personal computer, connect the 3270 connection card to Port 1 of the target processor. Do not connect it to Port 0.
  - To install the backup system console personal computer, connect the 3270 connection card to Port 2 or 3 of the target processor. Do not connect it to Port 0 or to a port being used for a operator console connection.

See “Replacing the 4381 Integrated Console with a Processor Operations-Compatible System Console and Operator Console” on page 88 for an example of system console and operator console personal computer connections to a 4381 processor, providing the function of the integrated console

## Planning to Connect the Hardware

feature. “Step 3 — Redefining Target System Consoles” on page 190 provides information about defining consoles to provide this function.

- **308x System Console Connection with Backup:**

- To install the primary personal computer, connect the 3270 connection card to jack 7 of the target processor.
- To install the backup personal computer, connect the 3270 connection card to jack 8 of the target processor.

- **Physically Partitioned 3084 System Console Connection:**

Connect the PC to position jack 8 (location EB-A08BNC) on side A and jack 8 on side B. Keep in mind that each side is defined using a distinct target hardware name.

*Physically Partitioned 9021 and 3090 System Console Connection:* Figure 27 shows the primary system console connections to both sides of physically partitioned 9021 and 3090 processors.

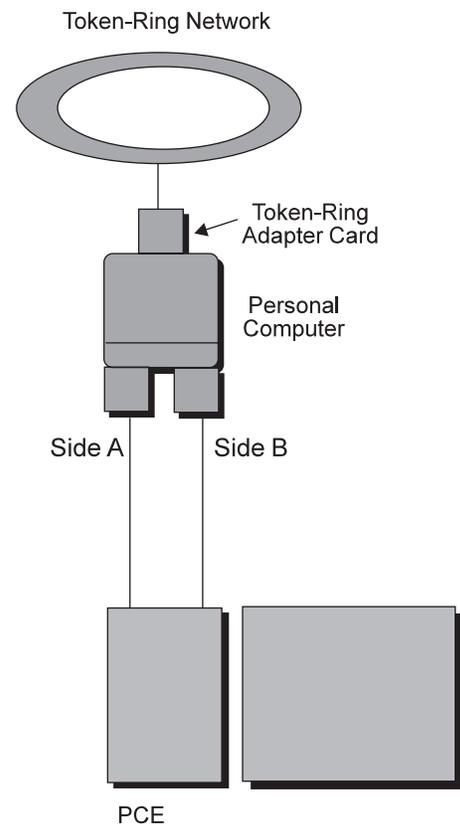


Figure 27. Partitioned Primary System Console Connections

- **Physically Partitioned 9021 System Console Connection:**

Install the primary PC for side A, connect the 3270 connection card to port E of the target processor. To install the primary PC for side B, connect the 3270 connection card to port F of the target processor. Keep in mind that each side is considered a distinct target hardware.

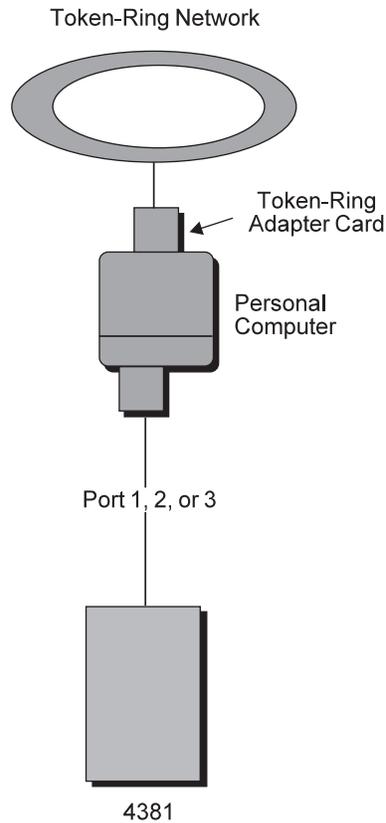
- **Physically Partitioned 3090 System Console Connection**

- To install the primary PC for side A, connect the 3270 connection card to port E of the target processor.
- To install the primary PC for side B, connect the 3270 connection card to port F of the target processor.

## Planning to Connect the Hardware

Keep in mind that each side is considered a distinct target hardware.

*4381 System Console Connection:* Figure 28 shows a primary system console connection to a 4381 processor.



*Figure 28. 4381 System Console Connection*

To install the primary personal computer, connect the 3270 connection card to Port 1, 2, or 3 of the target processor. Do not connect it to Port 0 or to a port being used for an operator console connection. See “Replacing the 4381 Integrated Console with a Processor Operations-Compatible System Console and Operator Console” on page 88 for an example of system console and operator console PC connections to a 4381 processor to provide the function of the integrated console feature. “Step 3 — Redefining Target System Consoles” on page 190 provides information about defining consoles to provide this function.

*Physically Partitioned 9021, 3090, and 3084 System Console Connection with Backup:* Figure 29 on page 79 shows both primary and backup system console connections to both sides of a physically partitioned 9021 processor.

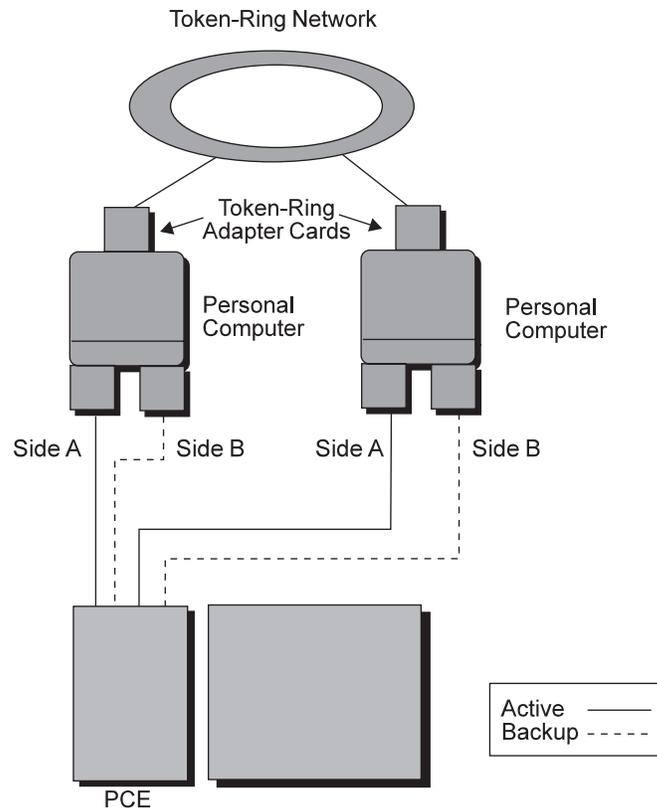


Figure 29. Partitioned 9021 System Console Connections with Backup

- **Physically Partitioned 9021 System Console Connection with Backup:**
  - To install the primary PC for side A, connect the 3270 connection card to port E of the target processor.
  - To install the backup PC for side A, connect the 3270 connection card to port C of the target processor.
  - To install the primary PC for side B, connect the 3270 connection card to port F of the target processor.
  - To install the backup PC for side B, connect the 3270 connection card to port D of the target processor.

Keep in mind that each side is defined using a distinct target hardware name.

- **Physically Partitioned 3090 System Console Connection with Backup:**
  - To install the primary PC for side A, connect the 3270 connection card to port E of the target processor.
  - To install the backup PC for side A, connect the 3270 connection card to port C of the target processor.
  - To install the primary PC for side B, connect the 3270 connection card to port F of the target processor.
  - To install the backup PC for side B, connect the 3270 connection card to port D of the target processor.

Keep in mind that each side is defined using a distinct target hardware name.

- **Physically Partitioned 3084 System Console Connection with Backup:**

Follow these instructions for both side A and side B:

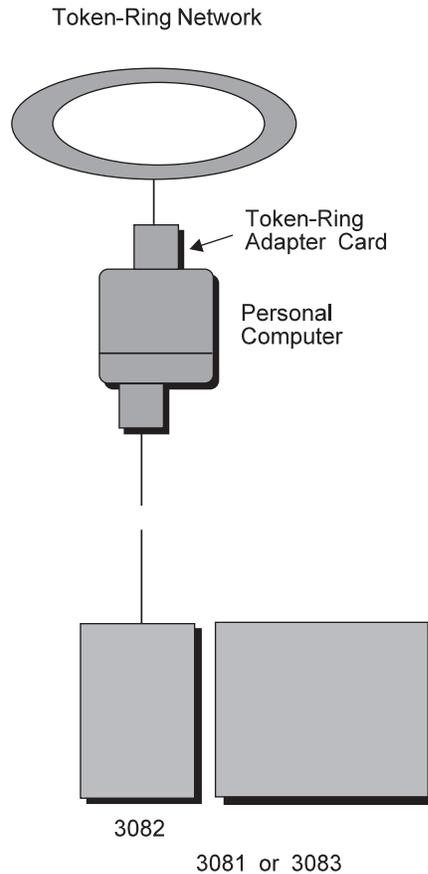
  - To install the primary personal computer, connect the 3270 connection card to jack 7 of the target processor.

## Planning to Connect the Hardware

- To install the backup personal computer, connect the 3270 connection card to jack 8 of the target processor.

Keep in mind that each side is defined using a distinct target hardware name.

*308x System Console Connection:* Figure 30 shows a primary system console connection to a 308x processor.



*Figure 30. 308x System Console Connection*

Connect the coaxial cable from the 3270 connection card in the PC to position jack 8 (location EB-A08BNC) of the target processor. For a single-image 3084 processor controller, connect the 3270 connection card to jack 8 on the side where the direct communication adapter (DCA) is active.

### Operator Console Connections

The processor operations PC replaces the operator console for each processor or logical partition. If an ASCII connection card (RS-232/RS-422 Interface Board) is installed in the processor operations PC, connect it directly to the processor terminal port, just as you would connect an operator console. If a 3270 connection card is installed in the processor operations PC, connect it to a 3x74 non-SNA subsystem control unit. Then connect the 3x74 non-SNA subsystem control unit to the processor terminal port. Further detail follows regarding:

- 3x74 Configuration Recommendations
- Single-image processors
- Physically partitioned processors
- 4381 processor

## Planning to Connect the Hardware

**Configuring a 3x74 for Use in an Operator Console Connection:** The following controller configuration settings are recommended and may be required when the Operator Console connection is via a coaxial connection to a 3x74.

- The host attachment should be configured as non-SNA Channel.

3174 Question 101 - 4

- *Multiple Logical Terminal* support should be disabled.

3174 Question 110 - 0 0000

3174 Question 116 - 0

- *File Transfer Aid* should be enabled.

3174 Question 125 - 00000100

- *Type Ahead* must be disabled on those controllers which offer it.

3174 Question 126 - 00100000

- Coaxial port 0 on the 3x74 controller should not be used with a 3270 emulation device such as the TSCF PS/2 3270 connection card.

For further information on configuring 3174 Controller refer to the 3174 Planning Guide.

**Single-Image Processor Operator Console Connection with Backup:** Figure 31 on page 82 shows the operator console connections to a single-image processor.

## Planning to Connect the Hardware

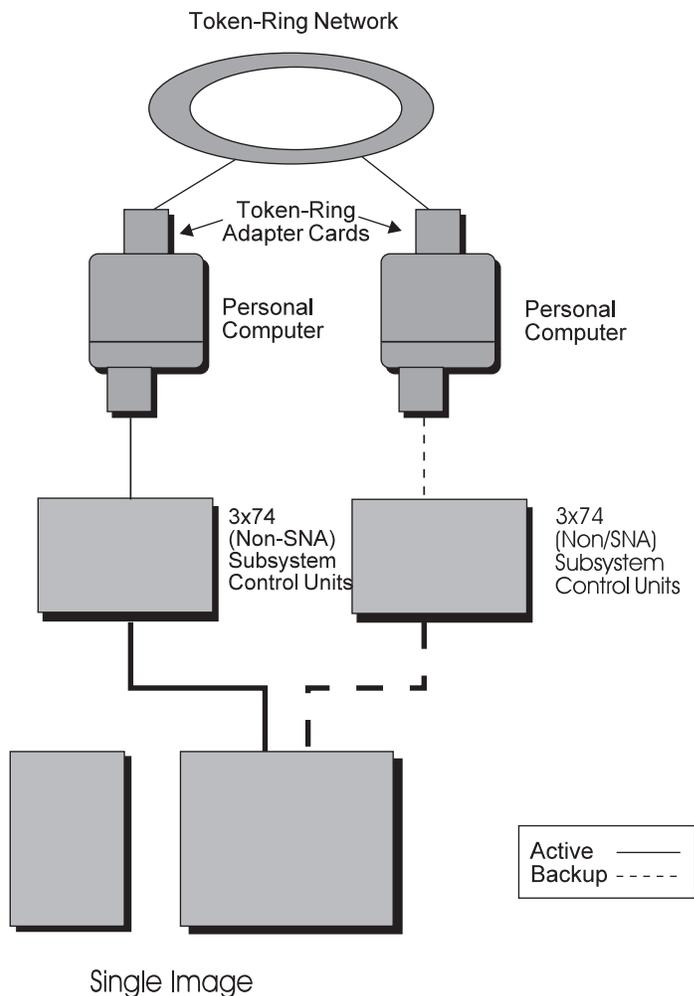


Figure 31. Single-Image Operator Console Connections with Backup

For both the primary and backup operator consoles, connect a terminal port on the target hardware to the PC through a non-SNA 3x74 subsystem control unit, using port 1 or above. (Port 0 is not for use with the personal computer.) If you use a 3174 subsystem control unit, configure it with the "file transfer aid" option on. See the *3172 Interconnect Controller Planning Guide* for instructions.

**Physically Partitioned Processor Operator Console Connection with Backup:** Figure 32 on page 83 shows the operator console connections to a physically partitioned processor.

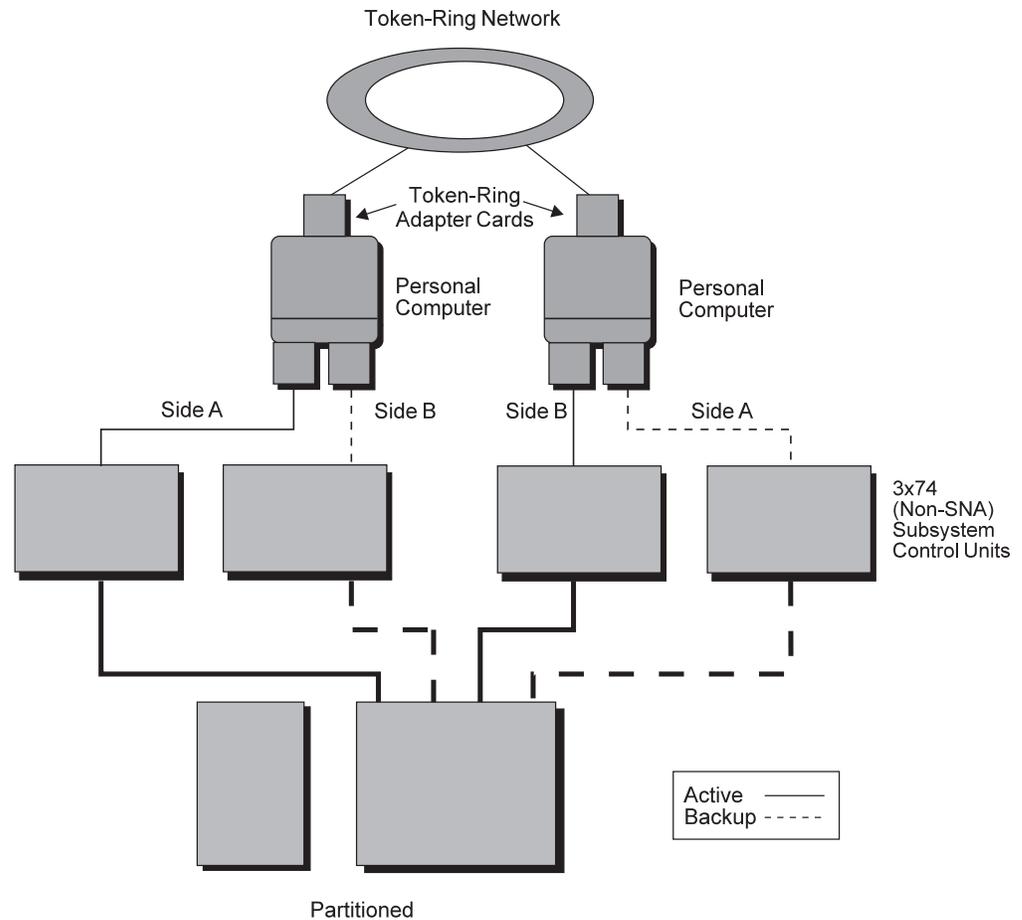


Figure 32. Partitioned Operator Console Connections with Backup

- **Physically Partitioned Processor:**  
Use the following instructions to attach the primary and backup PC to both side A and side B.
- **Both Primary and Backup Operator Consoles:**  
Connect a terminal port on the target hardware to the PC through a non-SNA 3x74 subsystem control unit, using port 1 or above. (Port 0 is not for use with the personal computer.) If you use a 3174 subsystem control unit, configure it with the “file transfer aid” option. See the *3172 Interconnect Controller Planning Guide* for instructions on setting the transfer aid bit on.
- **Logically Partitioned 9021, 9121, or 3090 Processor:**  
Connect the PC through a non-SNA 3x74 subsystem control unit to a target terminal port for each logical partition defined in the processor.

**4381 Operator Console Connection:** Figure 33 on page 84 shows a primary operator console connection to a 4381 processor.

## Planning to Connect the Hardware

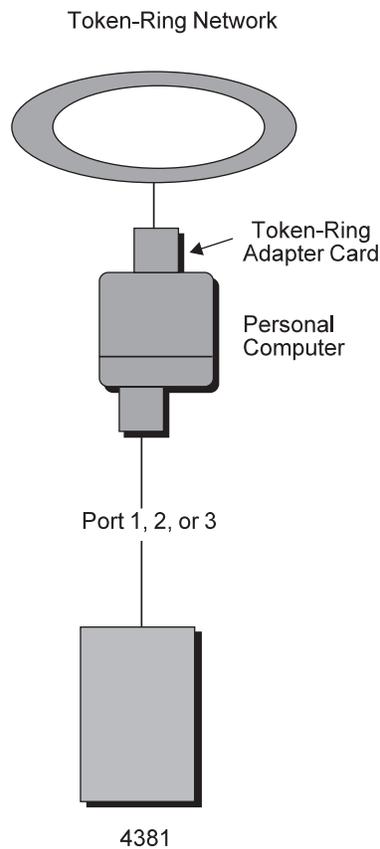


Figure 33. 4381 Operator Console Connection

To install the primary personal computer, connect the 3270 connection card to Port 1, 2, or 3 of the target processor. Do not connect it to Port 0 or to a port being used for a system console connection. See “Replacing the 4381 Integrated Console with a Processor Operations-Compatible System Console and Operator Console” on page 88 for an example of system console and operator console personal computer connections to a 4381 processor to provide the function of the integrated console feature. *System Automation for OS/390 Defining Automation Policy* provides information about defining consoles to provide this function.

### Complex Configuration Examples

Your processor operations configuration may have special requirements for installation. SA OS/390 processor operations is designed to be as flexible as possible. The following are examples of some complex configurations using processor operations. Use these examples to determine the best way to take advantage of processor operations flexibility.

### Connections to Two Target Hardware Processors

If you have two processors located close to one another, one personal computer can provide the console connection to both target hardware processors. Figure 34 on page 85 shows an example of this.

## Planning to Connect the Hardware

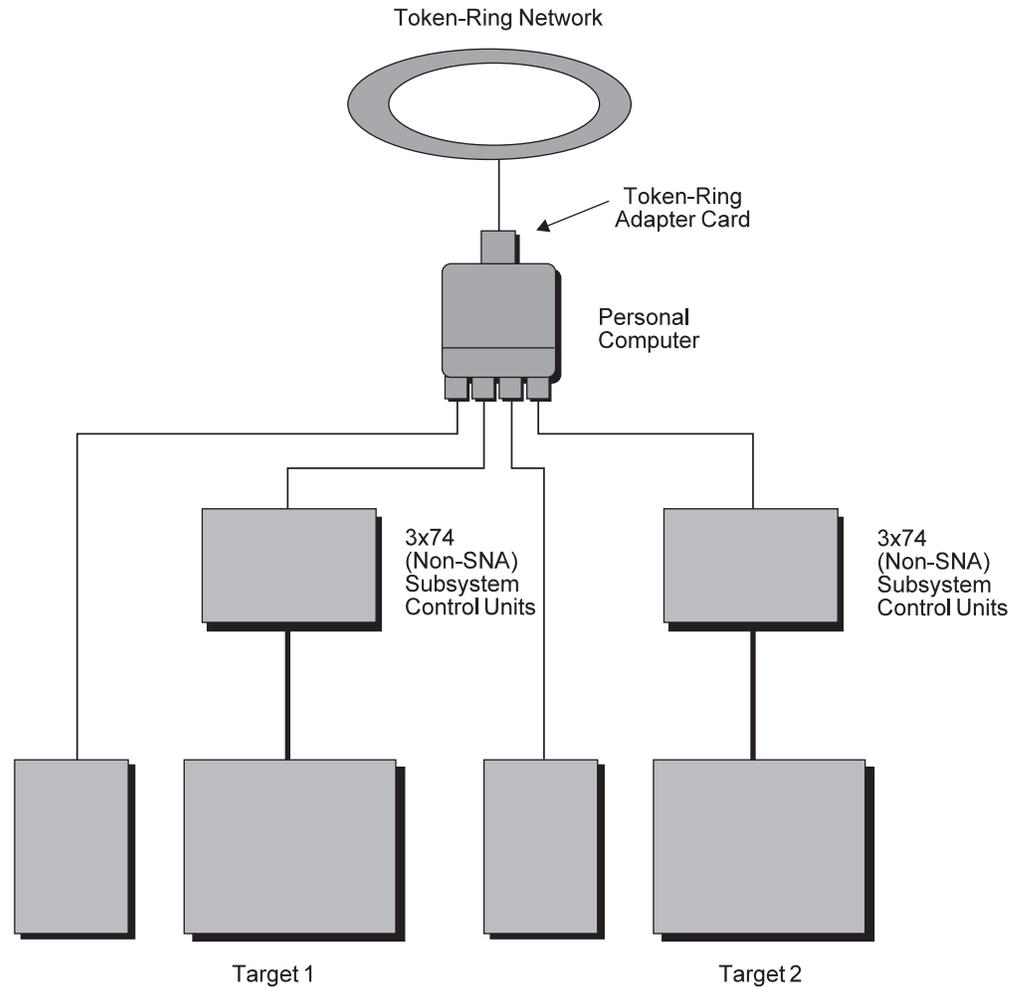


Figure 34. Connections to Two Target Hardware Processors

For the two separate processors, use the following instructions to attach the PC to both target hardware processors.

For the operator console, connect a terminal port on each target hardware processor to the PC through non-SNA 3x74 subsystem control units, using ports 1 or above. (Port 0 is not for use with the personal computer.) If you use 3x74 subsystem control units, configure them with the "file transfer aid" option. See the *3174 Establishment Controller Planning Guide* for instructions on setting the transfer aid bit on.

For logically partitioned processors, connect the personal computer through non-SNA 3x74 subsystem control units to a target terminal port for each logical partition (()) defined in the processors.

### Alternate Focal Point System with Backup Communication Paths

Figure 35 on page 86 shows a primary focal point system and an alternate focal point system, each with independent connections from separate personal computers through separate 37xx communications controller. In this configuration, communications controller #1 is the owner of the primary focal point system and the backup for the alternate. Communications controller #2 is the owner of the alternate focal point system and the backup for the primary. Therefore, PC #1 is the

## Planning to Connect the Hardware

primary computer for the primary focal point system and the backup computer for the alternate. PC #2 is the primary computer for the alternate focal point and the backup for the primary.

This redundancy provides a method for minimizing the effects of a primary focal point outage while keeping the number of communication components and personal computers at a minimum.

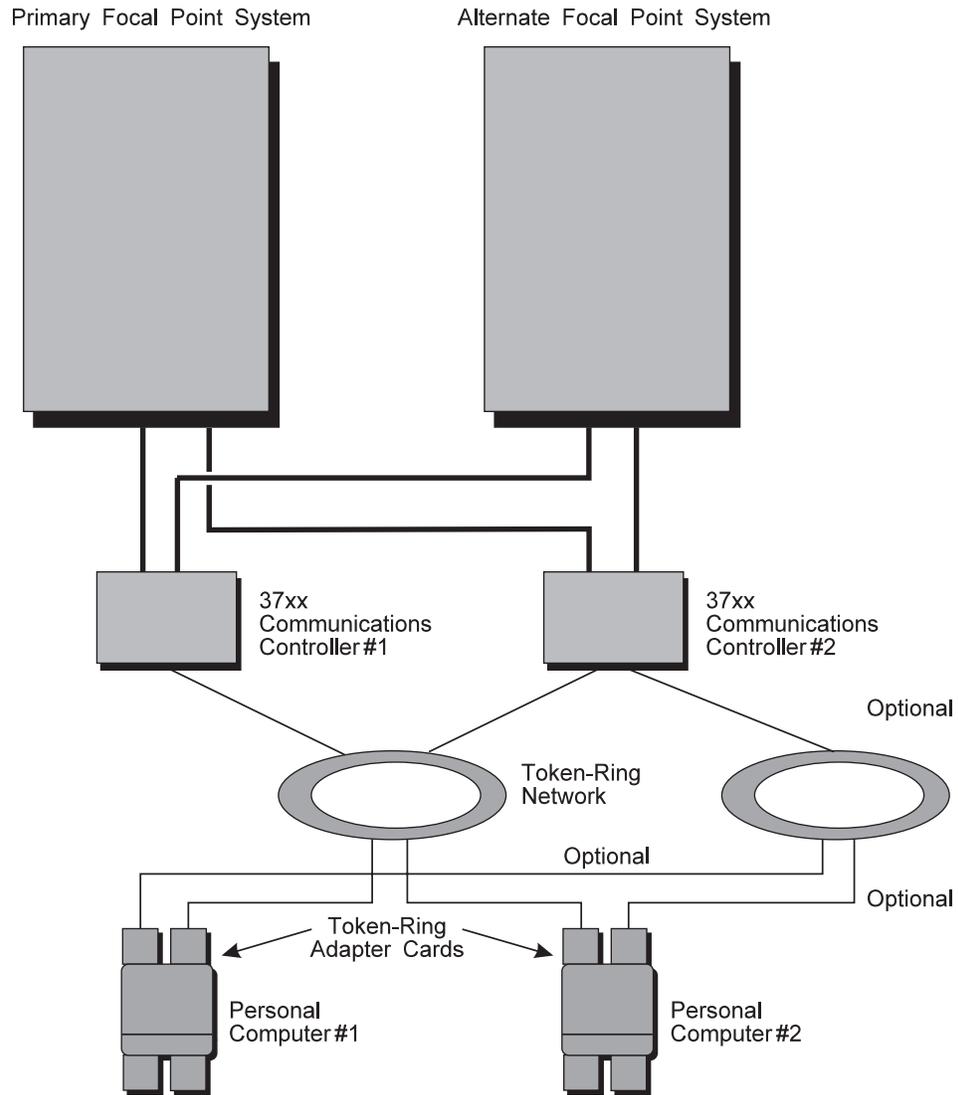


Figure 35. Alternate and Primary Focal Point Systems with Backup Communication Paths

## Logically Partitioned Processor Console Connections with Backup

Figure 36 on page 87 shows the operator console connections to a logically partitioned target hardware processor.

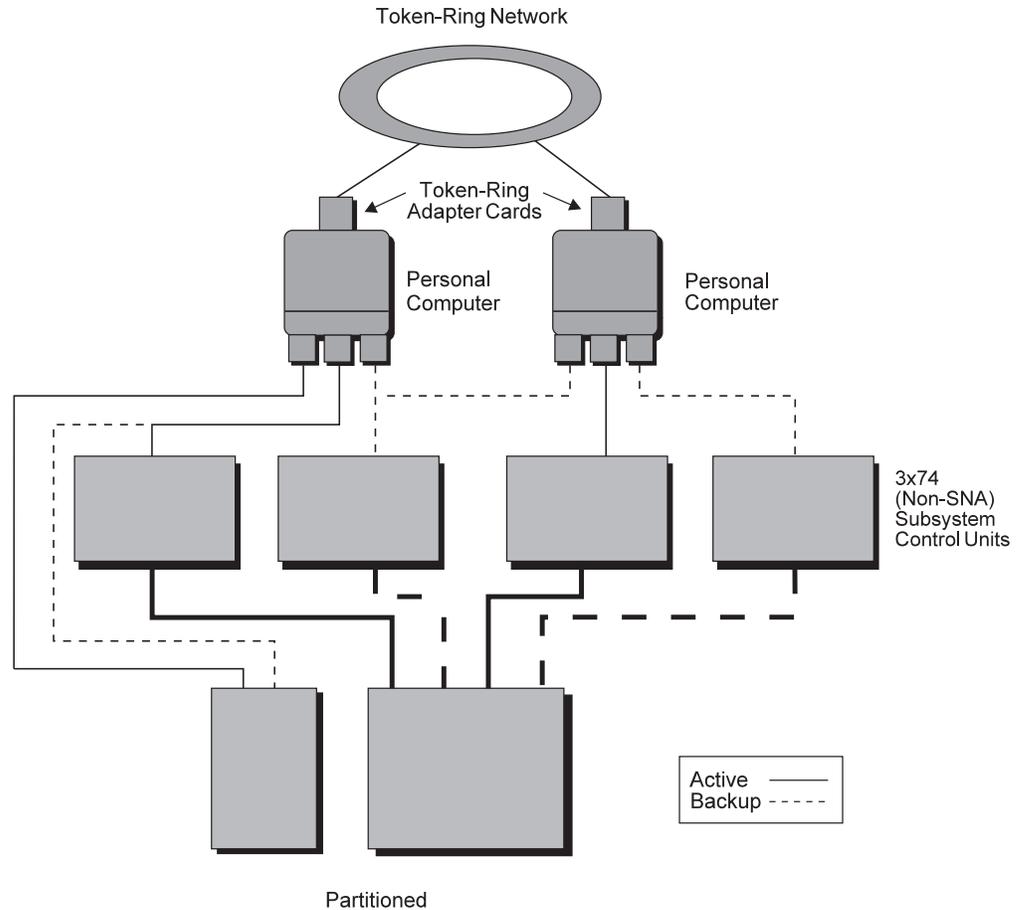


Figure 36. Partitioned Operator Console Connections with Backup

For the processor in ( mode, use the following instructions to attach the primary and backup personal computers to the target hardware processor.

For both the primary and backup operator consoles, connect terminal ports on the target hardware processor to the two personal computers through non-SNA 3x74 subsystem control units, using ports 1 or above. (Port 0 is not for use with the personal computer.) There is one terminal port for each logical partition ( ) as defined in the processor. If you use 3x74 subsystem control units, configure them with the "file transfer aid" option. See the *3174 Establishment Controller Planning Guide* for instructions on setting the transfer aid bit on.

### Connections to Multiple Logical Partitions

In some instances, you may want to connect to several logical partitions in a processor with PR/SM enabled. The most efficient method of connecting to multiple partitions is through two or more personal computers. Figure 37 on page 88 shows how to connect the personal computers to the processor complex. The example has one system console connection and ten operator console connections.

## Planning to Connect the Hardware

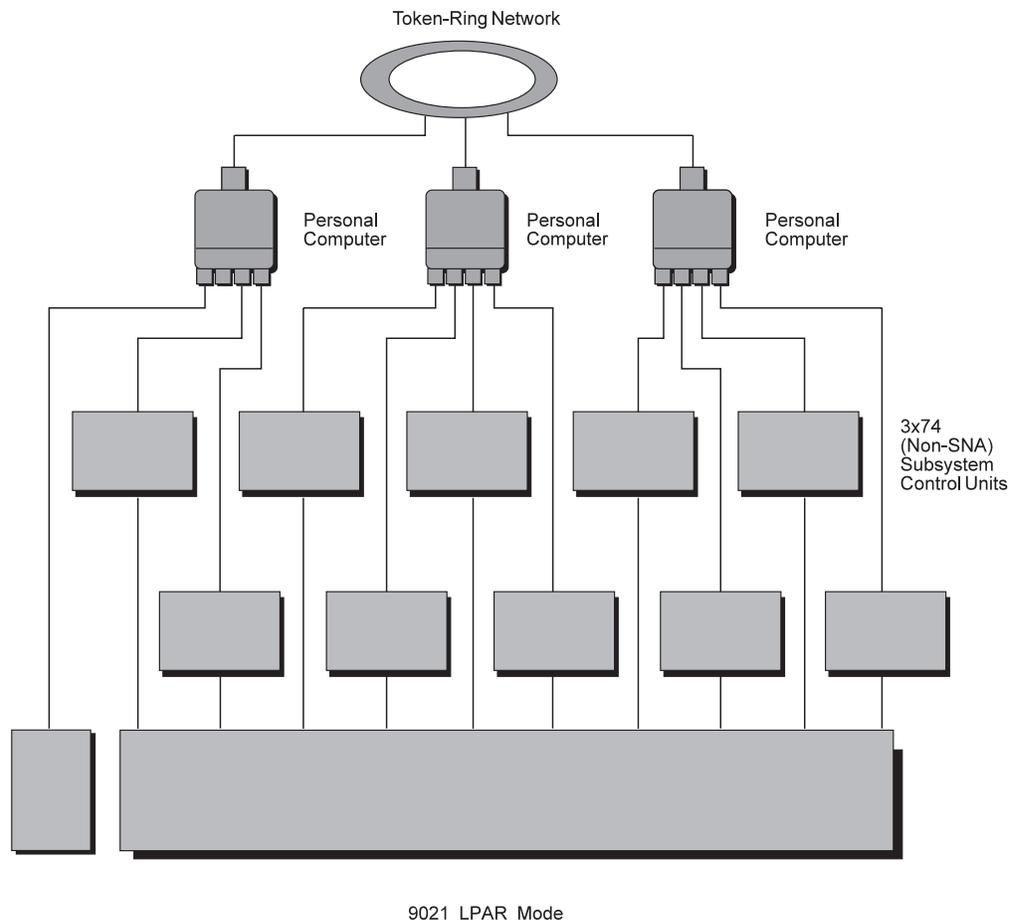


Figure 37. Connections to Ten Logical Partitions

For the processor in ( mode, use the following instructions to attach the personal computers to the target hardware processor.

For the operator's console, connect the 10 terminal ports on the target hardware to the personal computers through non-SNA 3x74 subsystem control units using ports 1 or above. (Port 0 is not for use with the personal computer.) There is one operator's console connection for each logical partition (), as defined in the processor. If you use 3x74 subsystem control units, configure them with the file transfer aid option. See the 3174 *Establishment Controller Planning Guide* for instructions on setting the transfer aid bit on.

For the system console, the logical partitions share the same connection.

### Replacing the 4381 Integrated Console with a Processor Operations-Compatible System Console and Operator Console

Figure 38 on page 89 shows primary system console and operator console connections to a 4381 processor.

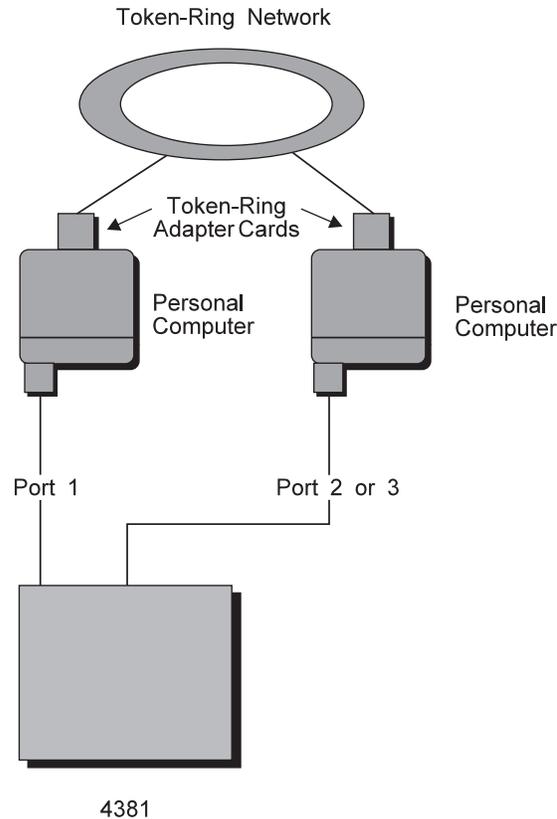


Figure 38. 4381 System Console and Operator Console Connections

To install the primary system console personal computer, connect its 3270 connection card to Port 1 of the target processor. Do not connect it to Port 0 or to a port being used by the operator console.

To install the primary operator console personal computer, connect its 3270 connection card to Port 2 or 3 of the target processor. Do not connect it to Port 0 or to a port being used by the system console. Step 3 — Redefining Target System Consoles, provides information about defining consoles to provide the function of the integrated console feature.

## Defining I/O Operations Communications Links

When you use SA OS/390 on one system to make an operational change to an I/O resource, like a shared ESCON Director, it coordinates the change with other copies of SA OS/390 on other systems. This is especially important when the result of the action you are taking removes connectivity - disables I/O paths - so that the systems do not lose access to critical resources. Each copy of SA OS/390 interacts with its local system image (for example, via VARY) so the operating system has the chance to "vote" on the changes. When one system fails VARYs, SA OS/390 takes that as a vote of "no" and fails the operation. The copy of SA OS/390 from which you initiated the operation then interacts with the other copies on the affected system images to back out VARYs that were successful.

The copies of SA OS/390 across your systems also use the network to share information with each other on changes to the I/O configuration and to provide displays that collect I/O information from multiple systems.

## Defining I/O Operations Communications Links

To do this, the SA OS/390 I/O operations functions on each system image need to intercommunicate. They do this by establishing VTAM sessions between each other. All systems that share access to a given ESCON Director should run SA OS/390 to provide the protection described above. Those copies of SA OS/390 that do share access to a Director automatically discover each other and establish sessions each time they start.

You can also use the Reset Host function of I/O operations to force two copies of SA OS/390 that do not share any ESCON Directors to establish communications. This is useful if you want to benefit from the I/O operations multisystem I/O graphic displays or use its multisystem version of Remove CHP, Restore CHP, Remove Device, or Restore Device, even across system images that don't use ESCON Directors or have no reason to share them.

I/O operations is able to interact with systems that are running ESCON Manager. I/O operations can interact with VM systems that run ESCON Manager 1.2 to support switching operations (for example, blocking ports or writing an entire saved switch configuration) and for Remove CHP and Restore CHP. I/O operations can interact with OS/390 systems that run ESCON Manager 1.3 to support the same operations as for VM, and also the same level of multisystem Query and graphic display requests that ESCON Manager 1.3 itself supports.

To plan for this function, you must review the I/O configuration across the systems that you will define as an enterprise in SA OS/390. You should plan to include in one enterprise all system images that share a given ESCON Director, in order to benefit from the I/O operations configuration change protection and displays.

To enable the VTAM sessions, you must create VTAM definitions as described in "Step 16B — Perform VTAM Definitions" on page 141 to support communications between I/O operations defined as a VTAM application in each of them.

Where images do not automatically use those definitions to start sessions, because they do not share ESCON Directors, you should plan local procedures to use the SA OS/390 Reset Host function to force I/O operations to start the sessions.

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## Chapter 6. Naming Conventions

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### SA OS/390 System Names

The information in this section describes name requirements for OS/390 systems and for processor operations functions.

All system names defined with the customization dialog within one policy database must be unique.

If your system names currently contradict this restriction, you must change the names before using SA OS/390.

System names defined in the customization dialog for OS/390, VM, TPF, CF, or SNMP systems can have up to 20 characters and must be unique within the SA OS/390 enterprise.

When you name elements of your SA OS/390 processor operations, use a logical format that creates names that have meaning for the people using them. The following names can consist of 1 to 8 alphanumeric characters (A-Z,a-z,0-9,#,\$,@), cannot contain blanks, and must begin with an alphabetic character:

- Processor or target hardware system names
- Target system names
- Path (Processor operations PC and NetView connection) names
- Focal point name

Processor or target hardware system names, target system names, group names for target systems, and subgroup names for target systems must all be different from one another. Target system names must also be different from processor operations names. For any given system, however, its system name can equal its own processor operations name.

Group and subgroup names for target systems can consist of up to 20 alphanumeric characters.

---

### Cloning on OS/390 Systems

The SA OS/390 cloning capability allows you to specify up to ten clone IDs to identify a system and to identify an application. These clone IDs are then used to qualify the application job name to ensure a unique job name for each system. The names given to each of these clones needs to be unique. The OS/390 system symbolics and the NetView &domain. variable can also be used.

### Further Processor Operations Names

IOCDs names must be unique on each target hardware processor and must not contain blanks.

Secondary OCF names and Image, Load, and Reset profile names are defined at the support element of an OCF-based target processor. They must consist of the characters A-Z and 0-9. Secondary OCF and Image profile names can be up to eight characters; Reset and Load profile names can be up to sixteen characters.

A port on a processor operations PC is uniquely identified by a port identifier and by the path name of the PC it is associated with. The port identifier consists of one alphabetic character, which must be different from all other port identifiers on the same PC.

---

### ESCON Director Ports

This section offers some suggestions for naming ESCON Director ports (dynamic switch ports) and fully utilizing these names in I/O operations display and connectivity commands.

#### Reasons for Naming Switch Ports

Assigning names to switch ports:

- Provides an indication of what is on that port. For example, CP01.SYSA.CHP38 indicates that this port is physically connected to processor CP01, on system SYSA, on CHPID 38.
- Allows you, when issuing I/O operations connectivity commands, to refer to ports by name. For example, BLOCK 3490.46233.CU1.E \* blocks the port connected to interface E of control unit side 01, on the 3490 control unit with serial number 46233. See “Using Port Logical Names” on page 94.
- Allows you, when issuing I/O operations connectivity commands, to change connectivity of an entire system to a control unit. For example, PROHIBIT CP01.SYSA\* 3990.35182\* \* removes connectivity from all ports on system SYSA of processor CP01, from all ports on the 3990 control unit with serial number 35182. See “Using Generic Logical Names” on page 94.

#### Suggestions for Naming ESCON Director Ports

When naming ports, you should choose names that help identify what the port is connected to. This simplifies the task of entering commands when connectivity changes are required. Following are some suggestions for naming CHPID ports and control unit ports, followed by a figure displaying those ports in an actual configuration.

##### Naming CHPID Ports

Name the CHPID ports with three parts: the processor name, followed by the system image name, followed by the CHPID number. For example:

```
CP02.SYSC.CHP40
```

is the port name associated with CHPID 40, on system SYSC of processor CP02.

##### Naming Control Unit Ports

Name the control unit ports with four parts: the device type, followed by the serial number, followed by the storage cluster (or control unit side), followed by the interface letter. For example:

3990.35182.SC1.E

is the port name associated with the 3990 with serial number 35182, on storage cluster 1, interface E.

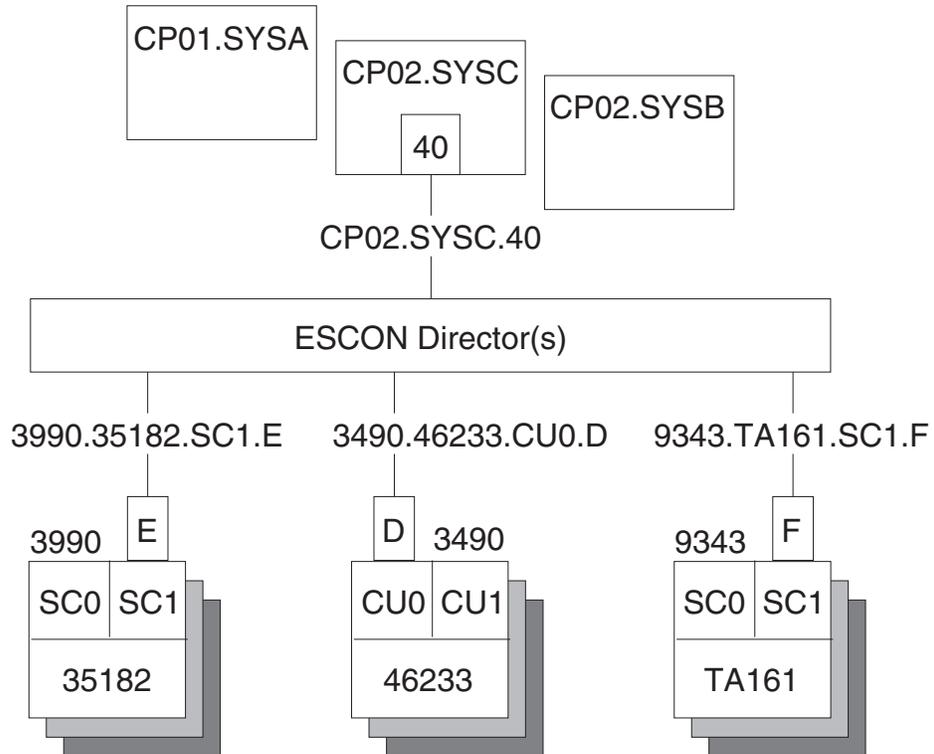


Figure 39. Examples of Port Names in a Configuration

## Methods of Naming Ports

You can assign names to ports using the following:

- The WRITE command

You can use the command:

```
WRITE CP01.SYSB.CHP38 (D3) 100
```

to write the name CP01.SYSB.CHP38 to port D3 on switch 100. This command is available on the operator command line, the ISPF command line, the workstation feature command builder, and the port settings notebook.

- The matrix editor

You can use the matrix editor to enter a name next to the port number; then send the matrix to the switch. This interface is available on ISPF and the workstation.

- EXECs

You can create an EXEC with commands like:

```
WRITE CP01.SYSB.CHP38 (D3) 100
WRITE 3990.35182.SC1.E (F1) 100
```

to send a series of name assignments to a dynamic switch.

- The WRITE switch (WRITESWCH)

## Naming Conventions

You can create an EXEC to issue the WRITESWCH command, placing the new name in the WRITESWCH data block.

### Using Port Logical Names

Once names are assigned to ports, you can issue a single command to change the connectivity of one or more switches. The command:

```
BLOCK 3490.46233.CU1.F 100
```

blocks the port named 3490.46233.CU1.F on switch 100. The command:

```
BLOCK 3490.46233.CU1.F *
```

blocks the port named 3490.46233.CU1.F on any switch that contains that name. The command:

```
PROHIBIT CP02.SYSC.CHP42 3490.46233.CU1.F *
```

looks for any switch that has both names, CP02.SYSC.CHP42 and 3490.46233.CU1.F. If both names exist on any switch, those two ports are prohibited from each other.

The use of these commands is limited to one change per switch.

### Using Generic Logical Names

SA OS/390 I/O operations provides the ability to use an asterisk as a wild card character in commands that use port names. This allows you to make more than one change on each switch.

You can use an asterisk as a name in the DISPLAY NAME, BLOCK, UNBLOCK, ALLOW, and PROHIBIT connectivity commands. For example, if you issue:

```
PROHIBIT CP02* 3490.46233* *
```

all switches are searched for ports with names beginning with CP02 (for example, CP02.SYSA.CHP34 and CP02.SYSB.CHP70) and ports with names beginning with 3490.46233 (for example, 3490.46233.CU1.B and 3490.46233.CU0.D). If found, those ports are prohibited from each other.

By using a single command, you can remove connectivity from a entire system to a control unit. However, for this to work properly:

- The names must be consistent across all switches.
- You must issue the connectivity commands from an I/O operations system that has access to all switches.

Any names that are not an exact match cause no errors. Any switches that are not affected because they were not accessed cause no errors. You only receive notification if:

- No name match is found on any one switch (warning return code).
- No name match is found on any switch (failure return code).

### Command Usage Examples with Generic Logical Names

The following are some examples of how you can issue I/O operations commands using generic logical names:

- Use DISPLAY NAME \* to show information about the ports specified:

## Naming Conventions

```
DISPLAY NAME CP02.SYSC* *
SWCH                STATUS I/O
PORT NAME           DEVN  LSN  PORT  H B C P DEF
CP02.SYSC.CHP22     0400  02   C6   0 B   CH
CP02.SYSC.CHP39     0100  00   EC           P CHCU
CP02.SYSC.CHP35     0100  00   C5           CH
CP02.SYSC.CHPE0     0200  01   E0           CH
```

- Use DISPLAY NAME to show information about the ports for the 3490 with serial number 46233:

```
DISPLAY NAME 3490.46233* *
SWCH                STATUS I/O
PORT NAME           DEVN  LSN  PORT  H B C P DEF
3490.46233.CU0.D     0100  02   C0           CU
3490.46233.CU0.F     0200  01   F6           CU
3490.46233.CU1.A     0300  00   E7           P CU
3490.46233.CU0.C     0400  03   C1           CU
```

- Use BLOCK to remove access to a 3490 with serial number 46233 (four variations):

```
BLOCK 3490.46233.CU0.D *           (for one port on some switch)
BLOCK 3490.46233.CU0* *           (for one CU side)
BLOCK 3490.46233* *              (for one CU)
BLOCK 3490.46233* 100            (for one CU through SW 100)
```

Notice that the first BLOCK command affects only one switch because there should be only one port with the name 3490.46233.CU0.D.

- Use PROHIBIT and then ALLOW to remove access from one host to one 3490 and give access to another host:

```
PROHIBIT CP02.SYSC* 3490.46233* * (affects multiple paths)
ALLOW    CP01.SYSA* 3490.46233* * (affects multiple paths)
```

- Use PROHIBIT to remove access from one host to all 9343s to show results:

```
PROHIBIT CP02.SYSA* 9343* *
DISPLAY  NAME      9343* *
SWCH                STATUS I/O
PORT NAME           DEVN  LSN  PORT  H B C P DEF
9343.TA161.SC0.A    0100  02   E0           P CU
9343.TA161.SC0.B    0200  01   E1           P CU
9343.TA161.SC1.A    0300  00   E2           P CU
9343.TA161.SC0.C    0400  03   E1           P CU
```

In summary, you can use generic logical names to control system connectivity without being concerned about individual ports and switches.



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## Part 2. Installation



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## Installing SA OS/390 on Host Systems

This chapter describes the tasks required to install SA OS/390 components on the SA OS/390 host systems. This chapter includes information on installing SA OS/390 on both focal point and target systems. The target system installation does not require some of the steps used for the focal point installation. Any installation step that does not apply to the target systems is indicated. Many of the installation steps have corresponding planning activities and explanations in chapters 2 through 6 of this book. Chapter 8 describes installation on workstations.

In this chapter, the single installation steps are marked as either being required for all or certain SA OS/390 components or as being *optional*. *Optional* denotes steps that may or may not need to be performed based on your environment, your system management procedures, and your use of the SA OS/390 product. For each of these steps you need to decide whether it is required for your installation.

Each optional step explains why it is optional and describes the circumstances when you will need to perform it.

### Notes:

1. The meaning of the term *target system* as used by SMP/E needs to be distinguished from the way the term is used in SA OS/390. As used in SMP/E and when describing the installation of OS/390 products and services, a target system is the system on which a product such as SA OS/390 is installed. It is the collection of program libraries that are updated during SMP/E APPLY and RESTORE processing. In this publication this meaning of target system is referred to as an "SMP/E target system". The usual SA OS/390 meaning of a "target system" is a computer system attached to a focal point system for purposes of monitoring and control.
2. In this book, data set names are shown with the high level qualifier ING. If you choose, your data sets can have a different high level qualifier.
3. If ESCON Manager is already installed, consider that SA OS/390 *cannot* run together with ESCON Manager on the same system. Running a mixed environment will end up with unpredictable results for example, storage overlay ABEND0C4 or ABEND0C1. See also "Step 4D — Update LPALSTxx" on page 107 and "Step 4E — Update LNKLSTxx" on page 108.

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## Overview of Installation Tasks

The major tasks required for installing SA OS/390 on a focal point are listed in Table 10.

Table 10. Installation Tasks for SA OS/390 Host Systems

Description	Page	Required for	Optional for
Step 1 — SMP/E Installation	101	SysOps, ProcOps, I/O Ops	
Step 2 — Allocate Data Sets Common to Systems	103	SysOps, ProcOps, I/O Ops	
Step 3 — Allocate Data Sets for the Customization Dialog	104	SysOps, ProcOps, I/O Ops	
Step 4 — Customize SYS1.PARMLIB Members	105	SysOps, ProcOps, I/O Ops	
Step 5 — Setting up MQSeries	110	SysOps	
Step 6 — Customize SYS1.PROCLIB Members	112	SysOps, ProcOps, I/O Ops	

## Installing SA OS/390 on Host Systems

Table 10. Installation Tasks for SA OS/390 Host Systems (continued)

Description	Page	Required for	Optional for
Step 7 — Customize NetView	113	SysOps, ProcOps	
Step 8 — Customizing the Automation Manager	122	SysOps	
Step 9 — Customizing the Component Trace	124	SysOps, ProcOps	
Step 10 — Customizing the System Logger	124		SysOps
Step 11 — Install ISPF Dialog Panels	126	SysOps, ProcOps, I/O Ops	
Step 12 — Verify the Number of available REXX Environments	134	SysOps, ProcOps	
Step 13 — Customization of NetView for TEC Notification by SA OS/390	135	SysOps, ProcOps	
Step 14 — Compile SA OS/390 REXX Procedures	138		SysOps, ProcOps
Step 15 — Defining Automation Policy	138	SysOps, ProcOps	
Step 16 — Define Host-to-Host Communications	140	SysOps, ProcOps, I/O Ops	
Step 18 — Enabling SA OS/390 to Restart Automatic Restart Manager Enabled Subsystems	144		SysOps
Step 17 — Add Additional VTAM APPL Statements	143	SysOps, ProcOps	
Step 19 — Define Security	144		SysOps
Step 20 — Customize the Status Display Facility (SDF)	145		SysOps
Step 21 — Check for Required IPL	145	SysOps, ProcOps I/O Ops	
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Step 23 — Verify Automatic System Operations Startup	148		SysOps
Step 24 — Install an SA OS/390 Satellite	149	SysOps	
Step 25 — Installing and Customizing the SA OS/390 Topology Manager	151	SysOps	
Step 26 — Copy and Update Sample Exits	157		SysOps, ProcOps I/O Ops

### Step 1 — SMP/E Installation

Required for:

SysOps, ProcOps, I/O Ops

## Step 1 — SMP/E Installation

Perform the SMP/E installation as described in the *Program Directory* document shipped with this product. This documentation contains the required information on how to build the SMP/E environment.

**Note:** In the steps that follow, sample jobs are all members of the SINGSAMP data set, the SA OS/390 sample library.

Table 11 shows a list of target data sets as provided by the SMP/E installation process to be used for production on your system.

Table 11. Target Data Sets

Data Set Name	Description
ING.SINGIMOD	SA OS/390 modules for ISPF <b>1</b>
ING.SINGIMSG	ISPF messages <b>1</b>
ING.SINGINST	SMP/E jobs to install the product alternatively to using SMP/E dialogs <b>2</b>
ING.SINGIPDB	policy database samples <b>1</b>
ING.SINGIPNL	ISPF panels <b>1</b>
ING.SINGIREX	ISPF REXX execs <b>1</b>
ING.SINGISKL	ISPF skeletons <b>1</b>
ING.SINGITBL	ISPF tables <b>1</b>
ING.SINGMOD1	different SA OS/390 modules <b>3</b>
ING.SINGMOD2	different SA OS/390 modules in LINKLST <b>3</b>
ING.SINGMOD3	different SA OS/390 modules in LPALIB <b>3</b>
ING.SINGNMSG	NetView messages <b>3</b>
ING.SINGNPNL	NetView panels <b>3</b>
ING.SINGNPRF	NetView profiles <b>3</b>
ING.SINGNPRM	NetView DSIPARM samples <b>3</b>
ING.SINGNREX	NetView REXX execs <b>3</b>
ING.SINGSRC	SA OS/390 source <b>3</b>
ING.SINGPWS1	workstation code <b>4</b>
ING.SINGSAMP	General samples <b>3</b>
ING.SINGMODC	for CICS <b>5</b>
ING.SEVIMOD5	for IMS version 5 <b>6</b>
ING.SEVIMOD6	for IMS version 6 <b>6</b>
ING.SEVIMOD7	for IMS version 7 <b>6</b>

The following list helps you to grant RACF access to the appropriate users of the data sets:

- 1** Data sets of this category are related to ISPF and need to be accessed by all persons using the customization dialog.
- 2** Data sets of this category need to be accessed by the system programmer running SMP/E.
- 3** Data sets of this category need to be used by the NetView and automation team responsible for setting up and customizing system automation and I/O operations.

## Step 1 — SMP/E Installation

- 4 Data sets of this category need to be accessed by anyone who will be installing the workstation components.
- 5 Data sets of this category need to be accessed by system programmers responsible for CICS automation.
- 6 Data sets of this category need to be accessed by system programmers responsible for IMS automation.

---

## Step 2 — Allocate Data Sets Common to Systems

Required for:

SysOps, ProcOps, I/O Ops

The sample jobs in INGALLC1, INGALLC2 and INGALLC3 in SINGSAMP can be used to allocate data sets required for both focal point and target systems. In the comments included in the sample job are instructions for customizing the values for the data set allocations. These data sets are:

- *for I/O operations*

Table 12. Data Sets for I/O Operations

Data Set	DD Name	Sample
HCD trace file	HCDTRACE	INGALLC1

- *for all automation agents*

These data sets are required once per automation agent and cannot be shared.

Table 13. Data Sets for Automation Agents

Data Set	DD Name	Sample
automation status file	AOFSTAT (in the NetView start procedure)	INGALLC2
dump file	INGDUMP	INGALLC2
gateway password file	AOFPSWD (in the NetView start procedure)	INGALLC2

- *for all automation managers*

The following data sets are required once per sysplex or stand-alone system.

Table 14. Data Sets for the Sysplex or Stand-Alone System

Data Set	DD Name	Sample
schedule override file	HSAOVR	INGALLC3
configuration information data set	HSACFGIN	INGALLC3
component trace data set	n/a	INGALLC3
PARMLIB	HSAPLIB	INGALLC3
takeover file (1)	HSATKOV	INGALLC3

## Step 2 — Allocate Data Sets Common to Systems

Table 14. Data Sets for the Sysplex or Stand-Alone System (continued)

Data Set	DD Name	Sample
<b>Notes:</b> 1. Calculate the required size of the takeover file, which is a VSAM data set, by the following formula: 4000 records + $n$ records of 4K where $n$ is the maximum numbers of resources.		

The following data sets must be allocated once for each automation manager. For more details, see the comments in the INGALLC3 sample.

Table 15. Data Sets for the Automation Manager

Data Set	DD Name	Sample
internal trace files (optional)	TRACET0, TRACET1	INGALLC3
SYSOUT data set	SYSOUT	INGALLC3

## Step 3 — Allocate Data Sets for the Customization Dialog

Required for:

SysOps, ProcOps, I/O Ops

When this step is performed, the sample job INGEDLGA in SINGSAMP can be used to allocate data sets required for the I/O operations and the customization dialog. These data sets are normally allocated only on the focal point system, where you use the customization dialog. These data sets include:

- *for system operations*
  - The ISPF table library data set that contains the values you enter in the customization dialog
  - The system operations control file: this is the output data set for the customization dialog when building the system operations control files (automation control file and automation manager configuration file)

The following data sets are created:

Data Set Name	Purpose
ING.CUSTOM.AOFTABL	ISPF customization table for customization dialog
ING.CUSTOM.SOCNTL	System operations control file

- *for processor operations*
  - The ISPF table library data set that contains the values you enter in the customization dialog
  - The processor operations control file, generated using the customization dialog, which provides information about your processor operations configuration
  - The processor operations control file log, which receives messages that result from generating the processor operations control file

### Step 3 — Allocate Data Sets for the Customization Dialog

- The processor operations PC profiles data set is optional and should be created at this point if needed

The following data sets are created:

Data Set Name	Purpose
ING.CUSTOM.AOFTABL	ISPF customization table for customization dialog
ING.CUSTOM.POCNTL	Processor operations control file
ING.CUSTOM.POLOG	Processor operations control file log
ING.CUSTOM.POPS2	Processor operations PC profiles data set. <b>Note:</b> This data set name must be specified in the BUILD process described in <i>System Automation for OS/390 Defining Automation Policy</i> .

- *for I/O operations*

- The I/O operations configuration file. Since you use the customization dialog to collect information and build control files, you normally need them only at the focal point. The I/O operations dialogs, however, are used to input commands and get responses from the I/O operations part of SA OS/390. Since they do not support multisystem commands for I/O operations functions, you must install them on each system, focal point or target, where you wish to use them. Alternatively, you can use the workstation window set, which does support multisystem commands, to access I/O operations functions. Then you do not need the I/O operations dialogs to access I/O operations function.

The following data sets are created:

Data Set Name	Purpose
ING.CUSTOM.IHVCONF	I/O operations configuration file

**Notes:**

1. Keep these data set names in mind. They are used in “Step 11 — Install ISPF Dialog Panels” on page 126. If you rename the data sets, you need to adapt the corresponding names in that step.
2. You might also allocate a dedicated data set for the output for building the system operations control files (automation control file and automation manager configuration file). The default for this data set is the policy database itself. It is however recommended to use a separate data set.

---

### Step 4 — Customize SYS1.PARMLIB Members

Required for:

SysOps, ProcOps, I/O Ops

The *xx* suffix on each SYS1.PARMLIB data set member can be any two characters chosen to match your IEASYS naming scheme. The SA OS/390 samples delivered in SINGSAMP use a suffix of *SO*. See *z/OS MVS Initialization and Tuning Reference* for information about IEASYS.

## Step 4 — Customize SYS1.PARMLIB Members

The subsequent sections will enumerate the SYS1.PARMLIB data set members that need to be changed and provide information on how to achieve this.

### Step 4A — Update PROGxx

Required for:

SysOps, ProcOps, I/O Ops

With DFSMS/MVS®, you can define authorized libraries in a PROGxx member for dynamic authorized program facility (APF). You can activate a PROGxx list using the SET PROG=xx command without IPLing the system. Alternatively, you can define authorized libraries to the APF in an IEAAPFxx member. For a complete description of dynamic APF and PROGxx, see *z/OS MVS Initialization and Tuning Reference*.

Update PROGxx to include:

- ING.SINGMOD1, ING.SINGMOD2, ING.SINGMOD3
- SYS1.SCBDHENU (for I/O operations)

**Note:** Do not include SYS1.NUCLEUS.

- If you chose to set AOF\_SET\_AVM\_RESTART\_EXIT to 0 in module AOFEXDEF then you will need to add this entry into your PROGxx member:

```
EXIT ADD
EXITNAME(IXC_ELEM_RESTART)
MODNAME(AOFPERRE)
```

### Step 4B — Update SCHEDxx

Required for:

SysOps and ProcOps

Compare the contents of the SCHEDxx member with the INGESCH member which resides in the SINGSAMP sample library. Edit the SCHEDxx member so that it includes all the statements in the INGESCH member.

This enables the NetView subsystem interface job, the NetView application job (for the automation agent) and the automation manager to run without being swapped out of memory.

### Step 4C — Update MPFLSTxx

Required for:

SysOps and ProcOps

## Step 4 — Customize SYS1.PARMLIB Members

Compare the contents of the MPFLSTxx member with the INGEMPF member which resides in the SINGSAMP sample library. Edit the MPFLSTxx member so that it includes all the statements in the INGEMPF member. Review the MPFLSTxx member to ensure that it is appropriate for your system, and resolve any conflicts.

This adds the SA OS/390 message automation and console display suppression specifications to the MPFLSTxx member.

The *AUTO(YES)* in the NO\_ENTRY statement is required to gather all unknown WTORs. If you ensure that the unknown WTORs are routed to automation via the general MPF exit IEAVMXIT and you have all messages that are specified in the NetView message automation table also specified in the MPF with *AUTO(YES)*, you can specify *AUTO(NO)* for the NO\_ENTRY statement.

If you want to use CICS Automation, add the following entries in MPFLSTxx in SYS1.PARMLIB to trap all DFH , EVE, and EYU prefix messages:

```
DFH*,SUP(NO),AUTO(YES)
EVE*,SUP(NO),AUTO(YES)
EYU*,SUP(NO),AUTO(YES)
```

This CICS Automation requirement forwards these messages to NetView.

See *z/OS MVS Initialization and Tuning Reference* for more information about MPF.

## Step 4D — Update LPALSTxx

Required for:

SysOps, ProcOps, I/O Ops

Edit the LPALSTxx member to add ING.SINGMOD3 to the SA OS/390 load library. There is no other choice for this library, it must be in the LPALST concatenation.

You can avoid an IPL:

As ING.SINGMOD3 contains only a few modules, you can also code a PROGxx member that enables a dynamic addition of those modules to the LPALST. Hereafter, no IPL is required.

### Notes:

1. Make sure that the SA OS/390 load library is cataloged in the master catalog or copy the members in ING.SINGMOD3 into a data set which is in the master catalog.
2. Be sure you do not have any data sets containing load modules with prefixes of **IHV, AOF, ISQ, ING, HSA** in these members.

## Step 4 — Customize SYS1.PARMLIB Members

### Step 4E — Update LNKLSTxx

Required for:

SysOps, ProcOps, I/O Ops

To run SA OS/390, you must ensure that program libraries can be found at start up time.

Add *SINGMOD2* to the LNKLST concatenation. There is no other choice for this library: it **must** be in the LNKLST concatenation.

For the other libraries, either add them to the LNKLST concatenation or add them on STEPLIB DDs in the JCL in SYS1.PROCLIB used to start the products.

Adding libraries on STEPLIB DDs will involve performance degradation compared to adding them to the LNKLST concatenation and should therefore be avoided.

OS/390 link list data sets no longer have to be cataloged in the master catalog. It is possible to specify a volume in the link list entry for data sets which are cataloged in user catalogs.

**Note:** Be sure you do not have any data sets containing load modules with prefixes of **IHV, AOF, ISQ, ING, HSA** in these members.

Add the following data sets:

- ING.SINGMOD1, ING.SINGMOD2
- SYS1.SCBDHENU (for I/O operations)

### Step 4F — Update IEFSSNxx

Required for:

SysOps and ProcOps

Ensure that IEFSSNxx contains all the statements in the INGESSN sample member. If this has already been accomplished during the NetView installation there are no further updates required to this member.

Compare the contents of the IEFSSNxx member with the INGESSN member, which resides in the SA OS/390 sample library. Edit the IEFSSNxx member so that it includes the subsystem records from the INGESSN member.

This defines:

- Four-character prefix used in the NetView startup procedure member names. The four-character prefix that you specify must match the four-character prefix of the NetView startup procedure member names. For example, if you specify INGE, then the names of the NetView startup procedure members must be INGExxxx, where xxxx are any four characters you choose. If you change this

## Step 4 — Customize SYS1.PARMLIB Members

four-character prefix, you can dynamically add this entry using the OS/390 command SETSSI. Otherwise you must perform an IPL of OS/390 to effect the change.

- JES startup specifying JES2 or JES3 with the NOSTART option. This prevents JES from starting before SA OS/390 during the IPL process. If you plan to start JES before NetView, remove the NOSTART option from the following statement:

```
JESx,,,PRIMARY,NOSTART
```

You can also use the IEFSSN-syntax:

```
JESx,PRIMARY(YES),START(NO)
```

The positional syntax (PRIMARY,NOSTART) is still supported. For the correct syntax of your environment please check the *z/OS MVS Initialization and Tuning Reference*.

The first active NetView SSI is used for program-to-program interface communication. When a NetView SSI is active and in use by the program-to-program interface (PPI), and another NetView SSI becomes active that is coded higher in the SSN table, then the PPI will switch and use that NetView SSI. If product automation has already signed on to the PPI before the switch occurs, product automation program-to-program communications will be disrupted.

To ensure that disruptions do not occur, do one of the following:

- Make sure that the SA OS/390 SSI entry is the first SSI in the SSN table and the SSI starts during the IPL.
- Use an option available with NetView to specify “NOPPI” on all NetView SSIs except the SSI that product automation uses. This “NOPPI” option is specified as a startup parameter on the SSI JCL.
- If you do not code the SSI that product automation uses in the highest position in the SSN table and you do not use the “NOPPI” option, then the SSI that is first in the SSN table must be up before product automation initialization and must remain uninterrupted until final termination of product automation.

Check the subsystem name table in MVS SYS1.PARMLIB, member IEFSSNxx to verify the NetView SSI used by product automation is first in the list (ahead of all other NetView subsystem names).

## Step 4G — Update JES3INxx

Required for:

SysOps

If you are using JES3, compare the contents of the JES3INxx member with the INGEJES3 member which resides in the SINGSAMP sample library. You may want to review these members first to see whether there are entries in the INGEJES3 member that are already in the JES3INxx member. After merging the INGEJES3 member, be sure there are no duplicate entries in the JES3INxx member.

This includes the DUMP options and adds the JES3 parameters.

### Step 5 — Setting up MQSeries

Required for:

SysOps

When you want to use MQSeries for communication between the automation manager and the automation agents and provide a continuous high-reliable environment for the automation manager, you must set up an MQSeries manager. The basic steps on how to do this are described in *MQSeries for OS/390 System Management Guide*. The outline for setting up MQSeries for exploitation by SA OS/390 is described in the subsequent substeps.

**Note:** This step is not necessary when you have decided to use XCF for communication between the automation manager and the automation agents.

#### Step 5A — Customizing an MQSeries Manager for SA OS/390

This needs to be done on every system where either the automation manager and/or an automation agent is installed.

Please refer to *MQSeries for OS/390 System Management Guide* for the correct MQSeries installation and setup processing. It is recommended that there is a single MQSeries manager instance for SA OS/390. The way SA OS/390 exploits the MQSeries infra-structure does not immediately require a dedicated DB2 for MQSeries's shared data repository.

The following list describes which parameters and MQSeries options need special consideration for SA OS/390.

- SA OS/390 is using the TSO/Batch adapter
- SA OS/390 does not require any distributed queuing capabilities
- Archiving can be switched off. See Macro CSQ6LOGP.
- The maximum number of connections SA OS/390 is using is in the range of 20 which is the current default. However if the number of SA OS/390 query threads is increased drastically you may also require additional connections. See Option IDBACK in Macro CSQ6SYSP.
- The maximum number of messages processed per MQSeries transaction is normally set to 10000 via CSQINP1. See MQSeries DISPLAY MAXSMSGS. This should be sufficient in all cases. However when it turns out that the number of messages in the State Queue (see INGAMS commands) reaches the area of 4000, this value should be set to approximately,  $2.5 * \text{the number of expected state queue messages}$ . See MQSeries DEFINE MAXSMSGS.
- For the calculation of the number of log records see the *MQSeries for OS/390 System Management Guide*. You may consider that the largest processing load which is to be logged is the takeover case, where about 5000 MQPUTs and 5000 MQGETs with an average of 4 K messages are produced in a timeframe of one minute. As a rule of thumb, you can take the MAXSMSGS value, divide it by two to get the number of maximal MQGETs. The same number can be taken for the maximum number of MQPUTs. The largest transaction producing so many GETs and PUTs should be in a range of a minute and processes 4 K messages.

### ARM Considerations for MQSeries Manager

If you choose OS/390 Automatic Restart Manager for doing the restart, the MQSeries manager instance must be set up to allow element restarts only. A cross system restart is not required.

### Step 5B — Definition of CF Structures for a Sysplex Environment

In a full sysplex environment, you need to build CF list structures needed for MQSeries shared queues. One CF list structure can have more than one MQSeries queue, however a queue cannot span CF structure boundaries. It is recommended that you use two CF structures for the SA OS/390 queues. The Workitem Queue and the Agent Queue can easily share a CF structure. The CF storage size consumption for the Automation State Queue could be very dynamic, because the automation manager can generate a huge amount of uncommitted MQSeries messages also using CF storage.

Please refer to the *MQSeries for OS/390 System Management Guide* for information on how to calculate the size of the CF List Structures. The number of messages per queue and the message size can be taken from the provided samples (INGALLMS, INGALLML). Keep in mind that you have to double the number of messages for the state queue because of uncommitted updates which also occupy CF storage.

### Step 5C — Definition of MQSeries Queues

Two sample jobs are delivered defining the queues either as

- local Queues for a single system environment with Sample INGALLML
- shared Queues for a full Sysplex Environment with Sample INGALLMS

Important operands to consider:

#### name of the queue

the names of the queues are fixed and follow the pattern:

- 'HSA' the SA OS/390 automation manager component prefix
- the XCF groupid (8 Characters) to allow more than one Automation domain per Sysplex

This is the only modifyable part. Please see the samples.

- a predefined character string as suffix:
  - WORKITEM.QUEUE for the Workitem Queue
  - STATE.QUEUE for the Automation State Queue
  - AGENT.QUEUE for the Automation Agent Queue

#### CFSTRUCT

Name of the CF List structure used by this queue. This is only valid for shared queues.

#### MAXMSGL

maximum length in bytes per message (excluding messages descriptor). This length plus the message descriptor should not be larger than 4K. This value is already provided in the samples and should not be changed

#### MAXDEPTH

maximum possible number of messages. The samples provides values which should fit your environment. INGAMS can be used to monitor whether there is a danger that a queue becomes full. In this situation the size should be changed accordingly.

## Step 5 — Setting up MQSeries

### Display MQSeries Statistics

Operators may be interested in some MQSeries queue statistics. The INGAMS command with the automation manager detail option provides the data.

It is also possible to use the ISPF based MQSeries standard operations and control panel to operate with the SA OS/390 queues.

## Step 5D — RACF Considerations for MQSeries

If you are using RACF to protect MQSeries resources on your system the following RACF profiles must be defined:

```
CLASS(MQCONN) profile mqsubsysid.BATCH
CLASS(MQCONN) profile qsgname.BATCH
CLASS(MQQUEUE) profile mqsubsysid.HSA.**
```

#### Notes:

1. mqsubsysid is the 4 character subsystem name of the local MQSeries queue manager.
2. qsgname is the name of the queue-sharing group to which the queue manager belongs (refer to the QSGDATA statement in the MQSeries documentation for details on qsgname).
3. The SA OS/390 automation manager and automation agents must be granted READ access to the resource profiles of MQCONN.
4. The SA OS/390 automation manager and automation agents must be granted ALTER access to the resource profiles of MQQUEUE.

---

## Step 6 — Customize SYS1.PROCLIB Members

Required for:

SysOps, ProcOps, I/O Ops

Some changes need to be made to startup procedure members in the SYS1.PROCLIB data set. It is recommended that you either backup the startup procedure members that you are going to change or that you create new members. Then perform the following:

- *for system operations only*
  - Include the procedure that runs the automation manager into SYS1.PROCLIB  
A separate NON-APF authorized task library is required in addition to the authorized steplib.
    - The NON-APF authorized task library is used by the LE task. It must concatenate the NON-APF authorized SA OS/390 product library with the LE runtime library and the C/C++ library.
    - The steplib specifies the APF authorized SA OS/390 product library.

You can find an example in member HSAMPROC in the SINGSAMP sample library.

If you do not want to place the automation manager PARMLIB member into the SYS1.PARMLIB concatenation, include a HSAPLIB DD statement into the automation manager startup procedure (see also “Step 8 — Customizing the Automation Manager” on page 122):

## Step 6 — Customize SYS1.PROCLIB Member

HSAPLIB DD DSN=IBMING.PARMLIB, DISP=SHR

- Optional: Startup procedure for the External Writer of the Component Trace Copy member HSACTWR from SINGSAMP. At least the SYSNAME parameter must be specified before the procedure is stored into a library of the PROCLIB concatenation.
- *for system operations and processor operations*
  - NetView subsystem interface startup:

NetView provides a sample subsystem interface startup procedure in member CNMSJ010. Copy this member from your NetView library and adapt it to your needs. Rename it to agree with the four-character prefix defined in the IEFSSNxx member which is described in “Step 4F — Update IEFSSNxx” on page 108.
  - NetView application startup:

NetView provides a sample application startup procedure in member CNMSJ009. Copy this member from your NetView library and do the following:

    1. Check the INGENETV member residing in the SINGSAMP sample library. This is not an executable procedure, but it contains statements required for the NetView application startup procedure. Include all of these statements into your copy of the NetView application startup procedure.
    2. Ensure that the edited copy of the NetView application startup procedure contains the appropriate data set concatenation order.
    3. Ensure that your new NetView application startup procedure member uses the correct data set names for your system.
    4. Rename the NetView application startup procedure member to agree with the four-character prefix defined in the IEFSSNxx member, which is described in “Step 4F — Update IEFSSNxx” on page 108. For example, if the name of the NetView application startup procedure is INGExx, then INGE must be specified in the IEFSSNxx member as the character prefix.

If you do not make ING01 your domain name, note carefully what your NetView domain name is. This information is needed in the next step and for system operations. See also *System Automation for OS/390 Defining Automation Policy* for more information on enterprise definitions.

See *Tivoli NetView for OS/390 Installation and Administration Guide* for more details on how to modify the NetView startup procedure.
- *for I/O operations*
  - Copy INGEIO into SYS1.PROCLIB and edit it to specify the domain name that you noted in step 4. The DD statement in the procedure should match the allocation you did in “Step 2 — Allocate Data Sets Common to Systems” on page 103 for HCDTRACE.

---

## Step 7 — Customize NetView

Required for:

SysOps and ProcOps

This section discusses how to customize several aspects of NetView:

- “Step 7A — Customize NetView Alert Information” on page 114

## Step 7 — Customize NetView

- “Step 7B — Customize NetView DSIPARM Data Set”
- “Step 7C — Modifying NetView DSIPARM Definitions for an Automation Network” on page 118
- “Step 7D — Customize NetView Initial CLIST” on page 119
- “Step 7E — Customize NetView CNM1NETV - Main Menu Panel” on page 120
- “Step 7F — Customize NetView for Processor Operations” on page 120
- “Step 7G — Customize NetView DSIEX17 for Tape Mount Monitoring” on page 122

## Step 7A — Customize NetView Alert Information

Required for:

SysOps

SA OS/390 enterprise monitoring depends upon alert information being passed from remote systems to the focal point.

The NetView command **SRFILTER** (or **SRF**) establishes the conditions governing the recording of data in the hardware monitor database, the generation of messages to the authorized operator, the forwarding of alert data to a NetView focal point, and the coloring of alerts.

In order to ensure that the alerts required by SA OS/390 for enterprise monitoring are not filtered out, the following is recommended:

- On any focal point system:
  - issue the command **SRF AREC PASS N \***
- From the remote systems:
  - Issue the command **SRF AREC PASS N \***
  - Issue the command **SRF ROUTE CLEAR.**

These **SRF** commands should be included into a startup CLIST/exit because they need to be issued after every NetView startup.

If you do not want to allow all alerts to pass by using the **SRF AREC PASS N \***

command, you should allow the following event types (*etypes*) to pass, as a minimum:

- NTFY

The NetView **SRFILTER** command is documented in *Tivoli NetView for OS/390 Command Reference*.

## Step 7B — Customize NetView DSIPARM Data Set

Required for:

SysOps and ProcOps

## Step 7 — Customize NetView

Copy any DSIPARM and SINGNPRM member into an enterprise-specific data set and edit it there, rather than modifying the original maintained by SMP/E in the NetView DSIPARM and SA OS/390 SINGNPRM target libraries.

Then change the following members in the copied NetView DSIPARM data set:

### DSIDMN

This only applies to supported NetView below 1.4.

Use the NetView %INCLUDE statement to add the AOFDMN member to DSIDMN. This adds the SA OS/390 task entries to the NetView task table.

Make sure that your NetView type is specified like NETVTYPE ENTERPRISE (in DSIDMN fragment DSIDMNE).

### DSIDMNK

If you are in a multi-system environment, planning to use communications to other NetViews, there must be a resource routing definition statement (RRD statement) in the DSIDMNK member for each NetView system to which your system is connected.

If you are using NetView below level 1.4, do not specify the NetView message automation table name AOFMSG00 as a parameter when invoking the NetView initial CLIST CNME1034.

### DSICMD

Use the NetView %INCLUDE statement to add the AOFCMD member to DSICMD.

### DSICMDB

To allow SA OS/390 and NetView to jointly manage the initiation of NNT sessions, ensure that the DSI809A entries in the DSICMDB member are specified as follows:

```
DSI809A CMDMDL MOD=DSIPRPT  CROSS DOMAIN LOGON
*DSI809A CMDMDL MOD=DSICCP  CROSS DOMAIN LOGON CLIST
*DSI809A CMDMDL MOD=DSIGOP  CROSS DOMAIN LOGON GO
```

### DSIOPF

Use the NetView %INCLUDE statement to add the AOFOPF member to DSIOPF. This adds NetView operator ID definitions and passwords for automation operators. Do not change the AOFOPF member.

#### Notes:

1. The operator IDs that SA OS/390 uses reference the profile in the SINGNPRF data set.
2. If you are not using the SA OS/390 password protection feature to manage gateway operator IDs and passwords, you must code the gateway operator IDs and passwords into the AOFOPFGW member. See "SA OS/390 Password Protection Feature" on page 24 for information about using the SA OS/390 password protection feature.
3. In order to determine whether an operator station task (OST) is an AUTOMATED OST (AOST), SA OS/390 compares the operator ID (OPID), with the Logical Unit Name (LUNAME). When they match, the OST is considered to be an AOST. For this reason, SA OS/390 does not support OST operator IDs when specified the same as the LUNAME of terminals, for certain functions.

Do not specify operator IDs that are the same as terminal LUNAMES. If operator IDs and terminal LUNAMES are the same, unpredictable results may occur.

## Step 7 — Customize NetView

4. If you are defining default RMTCMD autotasks in the command dialogs, ensure that their operator IDs are included in DSIOPF.
5. If you use RACF for your AUTOMATED OST, you need to define your automation operators to RACF (see also *System Automation for OS/390 Defining Automation Policy*).

### AOFMSGSY

Copy and edit the AOFMSGSY member which resides in ING.SINGNPRM and do the following:

1. Review your use of all other synonyms. Note that your JES name synonym (%AOFJES3JOB%) is used for that JES subsystem that you are using. The only reference to %AOFJES3JOB% is in the AOFMJES3 member of the SINGNPRM library. This member contains automation entries for the JES3 subsystems only.
2. If you have renamed any automation tasks in A0F0PF, you will need to make the corresponding changes here.
3. If you do not wish to use the ASSIGN BY JOBNAME exploitation (that is, Advanced Automation CGLOBAL AOF\_ASSIGN\_JOBNAME has been set to 0), do NOT specify (\*) in the %AOFOPGSSOPER% synonym, because this may cause serialization problems.
4. If you use TEC Notification by SA OS/390, review the synonyms for TEC Notification by SA OS/390 and set all listed synonyms to their appropriate value.

- %AOFTECTASK% and %AOFTECTASKQ%

This is the name of the autotask for sending SA OS/390 events to the Tivoli Enterprise Console. It is the operator ID specified in “Step 13 — Customization of NetView for TEC Notification by SA OS/390” on page 135. The default is AUTOTEC.

**Note:** In a *distributed configuration* as described in “Environment Configurations” on page 52, the operator ID must be unique on all target systems sending events to the focal point. Also, if the focal point is simultaneously configured as a target system, you also need a different operator ID in this system.

- %AOFTECPPI%

This is the NetView PPI Receiver ID of the GEM message adapter (with quotes). The default is IHSATEC.

- %AOFTECMODE%

This is the event generation mode (with quotes). Possible values are:

- LOCAL: the GEM message adapter is running on **this** system. LOCAL is valid for the *local configuration* (“Environment Configurations” on page 52) and for the focal point in the *distributed configuration*.
- REMOTE: the GEM message adapter is running on a remote automation focal point. SA OS/390 messages will be generated on **this** target system and forwarded to a **remote** automation focal point system. There is no local GEM message adapter which can process SA OS/390 messages. REMOTE is valid for the target system in a *distributed configuration* (“Environment Configurations” on page 52).

The default is LOCAL.

### AOFMSG01

Copy and edit the AOFMSG01 member which resides in ING.SINGNPRM and do the following:

1. Comment out INCLUDE statements for members you do not need. If you are running in a single NetView configuration and therefore do not plan to perform “Step 24 — Install an SA OS/390 Satellite” on page 149, remove the comment signs from the statement %INCLUDE AOFMSGST.
2. The AOFMSG01 member (or whatever name you chose for this member) may reside in the NetView DSIPARM data set. The chosen name must be specified in the automation control file or as a response to the initialization AOF603D message.
3. If you are not using the SA OS/390 provided product automation for CICS, DB2, IMS or OPC, then comment out the following statements:

```
%INCLUDE EVMSG01      <-- CICS
%INCLUDE EVMSG01      <-- IMS
%INCLUDE EVJTBL01     <-- OPC
%INCLUDE INGMDDB2     <-- DB2
```

### AOFMSGGN

Copy and edit the AOFMSGGN member, which resides in ING.SINGNPRM, and do the following:

1. SA OS/390 supports generic processing of state transitions (ACTIVMSG, TERMMSG, HALTMSG) from the NetView automation table using AOFMSGGN. You can choose:
  - to retain existing specific (job/token based) traps,
  - to use the generic processing,
  - or to use a combination of the two methods.

See *System Automation for OS/390 Customizing and Programming* for a discussion of generic automation.
2. Review the optional table entries based on IEF403I, IEF404I, and IEF450I and comment them out as appropriate.

### INGXINIT

The communication DST initialization processing will read data that is specified in the DISPARM member INGXINIT. Copy and edit the INGXINIT member, which resides in ING.SINGNPRM. Uncomment the following parameters and specify your values:

#### GRPID

2-byte XCF group id. Default is blank.

**MQM** 4-byte MQ manager name.

All parameter values must match with the respective parameters in the PARMLIB member HSAPRMxx of the automation manager.

A **GRPID** may be specified to indicate that a subset of the members of an actual OS/390 sysplex is defined in a sysplex group. If specified, the ID may contain 1 or 2 characters. Valid characters are A-Z, 0-9, and the national characters (\$, # and @).

It will be prefixed with the string INGXSG to construct the XCF group name used for cross system synchronization, for example, INGXSGxy.

If no **GRPID** is specified, the default group name INGXSG will be used.

## Step 7 — Customize NetView

This group needs to be associated with an appropriate XCF transport class by the person responsible for the sysplex setup (see *z/OS MVS Setting Up a Sysplex*).

**Note:**

Syntax errors are reported by a message with error code ERRCODE=564. Any syntax errors will stop the initialization process and therefore no automation will be possible.

The following parsing syntax applies:

- Data can only be specified via key-value-pairs.
- One or more parameters may be specified on one line.
- Each record will be parsed for the keyword.
- Parsing will be stopped and any further input data will be ignored after all keywords listed above are found.
- If the same parameter is specified multiple times, the last one is used.
- For any keyword that was not specified, the default value is blank.
- No blanks between parameters and values are allowed.
- The syntax of a keyword is equal to the syntax of the parmlib member HSAPRMxx.

Example of a valid syntax:

```
GRPID=XY,MQM=SSSS
```

Example of an invalid syntax:

```
GRPID = 34 , MQM = SSSS
```

### HELPMAPU

Insert the %INCLUDE INGMAP statement into the HELPMAPU member to enable help processing.

## Step 7C — Modifying NetView DSIPARM Definitions for an Automation Network

**Note:** The following information refers to setting up a single NetView automation network.

To support an automation network, you need to add or modify NetView definitions in the following NetView DSIPARM data set members:

- AOFOPFGW
- DSIDMNK

### AOFOPFGW Modifications

In the AOFOPFGW member for each system, define the operator IDs used for both outbound and inbound gateway autotasks. If you use hardcoded passwords for your gateway autotask operator IDs, coordinate the passwords for incoming gateway autotask operator IDs, that is, operator IDs specifying other system names, with passwords specified in the *Password* field on the *GATEWAY Definitions* panel for the other systems. See *System Automation for OS/390 Defining Automation Policy* for an example.

## Step 7 — Customize NetView

For example, in Figure 19 on page 63, the gateway autotask definitions in AOFOPFGW on system CHI01 are:

```
GATCHI01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL02 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
```

### DSIDMNK Modifications

In the NetView DSIPARM member DSIDMNK, make the following modifications:

- If necessary, increase the number of cross-domain sessions by changing the CDMNSESS parameter value when defining a focal point or target system. You can do one of the following:
  - Increase the value for each definition by the number of systems that can communicate with the focal point.
  - Increase the definition values by the number of inbound operators that are defined, plus one for the outbound operator.

The following is an example CDMNSESS statement:

```
CDMNSESS 04
```

- Add an RRD statement (if one does not already exist) for each system with which the system being defined directly communicates. Following are example RRD statements:

```
ATL01 RRD
CHI02 RRD
```

For more examples of these NetView definitions, see “Appendix G. Example Automation Network Configuration” on page 257. For more information on NetView definitions, refer to the *Tivoli NetView for OS/390 Installation and Administration Guide*.

## Step 7D — Customize NetView Initial CLIST

Required for:

SysOps

If you are using NetView below level 1.4,, modify the NetView initial CLIST *CNME1034*. Add the line:

```
EXCMD AUTO1,AOFRANTL AUTO1,AUTO2
```

right before the end of the file.

If you have changed the names of the automation operators AUTO1 and AUTO2 during installation, update the above statement accordingly.

If you are using NetView 1.4 or above, then adjust the following statements in DSIPARM member AOFSTY0 accordingly:

```
AUTOTASK.AUTO1.Console=*NONE*
AUTOTASK.AUTO1.InitCmd=AOFRANTL AUTO1,AUTO2
function.autotask.primary=AUTO1
```

## Step 7 — Customize NetView

```
AUTOTASK.AUTO2.Console=*NONE*
AUTOTASK.AUTO2.InitCmd=AOFRAAIC
function.autotask.secondary=AUTO2
```

## Step 7E — Customize NetView CNM1NETV - Main Menu Panel

Optional for:

SysOps

The NetView main menu (CNM1NETV) can be modified to include an option for invoking the system operations main selection menu. Add an entry like the one shown at **1** in the following panel CNM1NETV:

```
$      Index of help topics          %INDEX+command
$      Hardware Monitor              %NPDA+command
$      4700 Support Facility         %TARA+command
$      Session Monitor               %NLDM+command
$      Status Monitor                %STATMON+command
$      Automated Operations Network  %AON+command
$      System Automation for OS/390 %AOC+command 1
$      News                           %NEWS+command
$      PF Key Settings               %DISPFK+command
$
$      To Exit the NetView Program   %LOGOFF+command
```

## Step 7F — Customize NetView for Processor Operations

Required for:

ProcOps

If you want to use processor operations, make sure that the processor operations definition members generated at processor operations build time are included into the appropriate system operations definition members:

Table 16.

System Operations Definition Member	processor operations Includes
AOFDMN (for supported NetView below 1.4)	AOFDMNPO
AOFSTY1 (for NetView 1.4 or above)	
AOFCMD	AOFCMDPO
AOFOPF	AOFOPFPO

Processor operations uses automation table entries for its operation. Make sure, the following automation table fragments are included in its master members:

Table 17.

Master	Includes
AOFMSG01	AOFMSGPM, AOFMSGPA
AOFMSGPM	AOFMSGXC

### AOFDMNPO

This member is to contain the NetView task definition statements for the processor operations communication tasks used in your environment. The input for this include member is generated during the build process. Please refer to *System Automation for OS/390 Defining Automation Policy*, to get more information on the build process. Make sure the generated information is copied into the AOFDMNPO member before using it. The supplied sample data set AOFDMNPO does not contain any task definition statements.

### AOFMDPO

This member contains the NetView command definition statements for the commands supplied by processor operations. In order to use processor operations, these definitions must be included. You may tailor the command definition entries to establish command scope security if needed in your environment.

### AOFOPFPO

This member is to contain the NetView definition statements for the processor operations autotasks used in your environment. The input for this include member is generated during the build process. Refer to *System Automation for OS/390 Defining Automation Policy* to get more information on the build process. Make sure the generated information is copied into the AOFOPFPO member before using it. The supplied sample data set member AOFOPFPO does not contain any autotask definition statements. Please refer to “Step 16A — Customize the SYS1.VTAMLST Data Set” on page 140 for more information on how to customize the SYS.VTAMLST library of VTAM for processor operations.

### AOFMSGPM

This member contains automation table definitions for processor operations. Without this automation table fragment included, processor operations cannot be started. AOFMSGPM contains a number of message automation entries that are marked as comments. These entries are not needed for standard processor operations functionality. Please inspect AOFMSGPM to see if some of the inactive automation entries may provide additional value in your environment.

### AOFMSGPA

This member contains automation table definitions for processor operations. The automation table fragment is needed to support the MSUs of the S/390 Microprocessor cluster family of processors.

### AOFMSGXC

This member contains automation table definitions for Sysplex message automation using processor operations to perform processor hardware operations such as SYSTEM RESET or ACTIVATE.

Other NetView definitions supplied by processor operations:

### ISQPROF

This member contains the processor operations autotask operator profile

## Step 7 — Customize NetView

definitions. It is available in the operator profile data set INGNPRF supplied by SA OS/390. You may customize the profile definitions in order to use OPCLASS levels different from the supplied ones.

### Step 7G — Customize NetView DSIEX17 for Tape Mount Monitoring

Required for:

SysOps

You must customize NetView exit DSIEX17 if you want NetView to gather information about response times for tape mount requests on OS/390 systems.

SA OS/390 provides two samples, INGEX17 and INGEX17J, which can act as a guide to customizing DSIEX17. INGEX17 is a sample DSIEX17 that has been customized to call the SA OS/390 module AOFEX17, which gathers information on tape mounts. INGEX17J is JCL to assemble the customized DSIEX17 and link it to AOFEX17. Follow the instructions in INGEX17 and INGEX17J.

---

## Step 8 — Customizing the Automation Manager

Required for:

SysOps

This step consists of the following substeps:

- “Step 8A — Customizing HSAPRMxx”
- “Step 8B — ARM Instrumentation of the Automation Manager” on page 123

### Step 8A — Customizing HSAPRMxx

The HSAPRMxx PARMLIB member contains information required for the initialization of the automation manager and default values for other operational parameters. The member is designed to be used in common by all automation manager instances within the automation subplex.

Alternatively you can put the automation manager PARMLIB member in any partitioned data set. Then, you need to insert a statement HSAPLIB DD into the automation manager startup procedure member which refers to this partitioned data set.

A sample member called HSAPRM00 is provided in the SINGSAMP sample library. This sample is automatically copied into the PARMLIB of the automation manager (DD name HSAPLIB) when you allocate this data set as described in “Step 2 — Allocate Data Sets Common to Systems” on page 103. Refer to “Appendix F. Syntax for HSAPRM00” on page 251 for the contents of this sample and the description of the parameters.

### Step 8B — ARM Instrumentation of the Automation Manager

The automation manager can be enabled for Automatic Restart Manager (ARM).

A job skeleton is provided in the SINGSAMP sample library as member HSADEFA to define the SA OS/390 specific Automatic Restart Manager policy.

You can define a policy allowing you to keep the number of automation manager instances on a certain level.

#### In a single system environment

with more than one automation manager active, ARM can automatically restart a failing primary instance. One of the survived automation managers will take the primary role and the restarted instance will become a backup instance.

If there is only one automation manager active on a single system, ARM will automatically restart this instance again. It becomes the primary instance again and runs the takeover. The takeover time is extended by the time needed for the address space restart.

#### In a sysplex (subplex) environment

ARM will always restart the failing instance on the **same** system. Either there is already a backup waiting around or the restarted instance will take over.

SA OS/390 will provide a policy sample with the following major options:

- Restart only for an address space ABEND ( Option ELEMTERM). The restart in case of a system breakage is not supported.

The concept of the automation manager availability follows a 'floating' master model. It is a peer model with one or more backup instances on different systems already active and waiting to take over. Whenever a complete system goes away the failed automation managers (backup or primary) are not restarted somewhere else.

- The ARM element name is a 16 byte string concatenation HSAAM\_sysnamexy with:

**HSAAM\_**

is a string constant as prefix

**sysname**

is the XCF member name of the automation manager which is the 8 byte MVS system name padded with '\$', for example: MVS1\$\$\$\$

**x** is a one byte digit (one of 1, 2, ... 9) automatically determined at initialization time

**y** is a blank

- The restart command is the unchanged original start command, however the start mode is always HOT.
- There are no restart dependencies (no Waitpred processing)

### Step 8C — Security Considerations

The job invoking the automation manager (see HSAMPROC in the sample library) must have the following access rights:

1. Access to the OMVS segment
2. It must be defined by RACF as a superuser for OpenEdition if the manager will be started before OMVS initialization has completed.

## Step 8 — Customizing the Automation Manager

3. Read access for the SYS1.PARMLIB dataset
4. Write access to the log streams
5. Write access to the following datasets:
  - Trace datasets
  - Schedule override file
  - Configuration information file (DDname HSACFGIN)

---

## Step 9 — Customizing the Component Trace

Required for:

SysOps and ProcOps

The system operations component as well as the automation manager are using the OS/390 component trace for debugging purposes. The following setup must be done:

- Edit and - if necessary - customize the CTIHSAZZ member residing in the SINGSAMP sample library. Copy the member into SYS1.PARMLIB.
- Copy the HSACTWR member residing in the SINGSAMP sample library into SYS1.PROCLIB.
- Allocate the trace data set used by the component trace. You can use the sample job HSAJCTWR in SINGSAMP to allocate the data set. Modify the sample job where appropriate.

**Note:** Make sure that the job invoking the ITTTRCWR module (see HSACTWR member in the sample library) has write access to the trace output dataset.

---

## Step 10 — Customizing the System Logger

Optional for:

SysOps

**Note:**

Though this step is optional, it is, however, recommended. The automation manager writes history information into the OS/390 system logger and the automation agents read from it.

If you do not perform this step, users will not get any output from the INGHIST command.

To exploit the system logger, the following must be fulfilled:

- systems in a sysplex must run in XCF mode and  
PLEXCFG=MULTISYSTEM

must be defined in SYS1.PARMLIB(IEASYSxx).

## Step 10 — Customizing the System Logger

- for stand-alone systems  
PLEXCFG=MONOPLEX

must be defined in SYS1.PARMLIB(IEASYSxx).

As a next step, the LOGR couple data sets must be formatted - if not already done. For this task you can use the sample JCL provided in the HSAJFCDS member of the sample library.

To define LOGR policy in:

- a single system environment, use the sample JCL provided in member HSAJDLGM.
- a sysplex, use the sample JCL provided in member HSAJDLGS.

In both cases you may want to adapt the HLQ parameter in the LOGR policy according to your environment. The default is IXGLOGR.

For a sysplex environment, you must additionally add the log structure to the CFRM policy:

```
STRUCTURE  NAME(HSA_LOG)
            SIZE(8M)
            PREFLIST(cfname,cfname)
```

In this CFRM policy, you have to adapt the PREFLIST for structure HSA\_LOG. Also adapt the SIZE parameter to a recommended minimum of 8 megabyte (8M).

The system logger must be authorized. If it is not yet assigned privileged and/or trusted RACF status, refer to chapter *Planning for System Logger Applications in OS/390 MVS Setting Up a Sysplex* for more information on how to define authorization to system logger resources. The names of the system logger resource used by SA OS/390 are *HSA.MESSAGE.LOG* and *HSA.WORKITEM.HISTORY*.

The NetView agents as well as the automation manager address spaces need to be authorized for accessing the log streams. They need update access for

```
RESOURCE(logstream_name)
CLASS(LOGSTRM)
```

where *logstream\_name* stands for *HSA.MESSAGE.LOG* as well as for *HSA.WORKITEM.HISTORY*.

For further information see section *Authorization for System Logger Application Programs in OS/390 MVS Setting Up a Sysplex*.

Now activate the couple data sets via the console commands:

```
SETXCF COUPLE,TYPE=LOGR,PCOUPLE=(primary_couple_data_set)
SETXCF COUPLE,TYPE=LOGR,ACOUPLE=(alternate_couple_data_set)
```

For a sysplex, after defining the new structure in the CFRM policy, activate the CFRM policy via

```
SETXCF START,POLICY,TYPE=CFRM,POLNAME=policy_name
```

## Step 11 — Install ISPF Dialog Panels

Required for:

SysOps, ProcOps, I/O Ops

This step is required at least on the customization focal point and on any system where you want to use the customization dialog. It is recommended that you do not move any SA OS/390 policy databases between systems because of synchronization problems.

SA OS/390 ships two types of ISPF dialogs: one for I/O operations and one for defining automation policy. The I/O operations panels are used for I/O functions. The customization dialog is used to create configuration and automation definitions.

The I/O operations and customization dialog are both invoked using the INGDLG exec. This exec provides parameters for selection of the appropriate dialogs. In addition, this exec can optionally be used to allocate the required dialog libraries. INGDLG should be invoked from an ISPF menu or from a user-defined TSO REXX exec.

Since you use the customization dialog to collect information and build control files, you normally need them only at the focal point. However, as the customization dialog allows editing of specific entry types by multiple users, you also need to observe the instructions given in the appendix *Problem Determination in System Automation for OS/390 User's Guide*.

The I/O operations dialogs, however, are used to input commands and get responses from the I/O operations part of SA OS/390. Since they do not support multisystem commands for I/O operations functions, you must install them on each system, focal point or target, where you wish to use them. Alternatively, you can use the workstation window set to access I/O operations function.

The INGDLG command allocates required DD names and invokes the customization dialog. Its syntax is:

## Step 11 — Install ISPF Dialog Panels

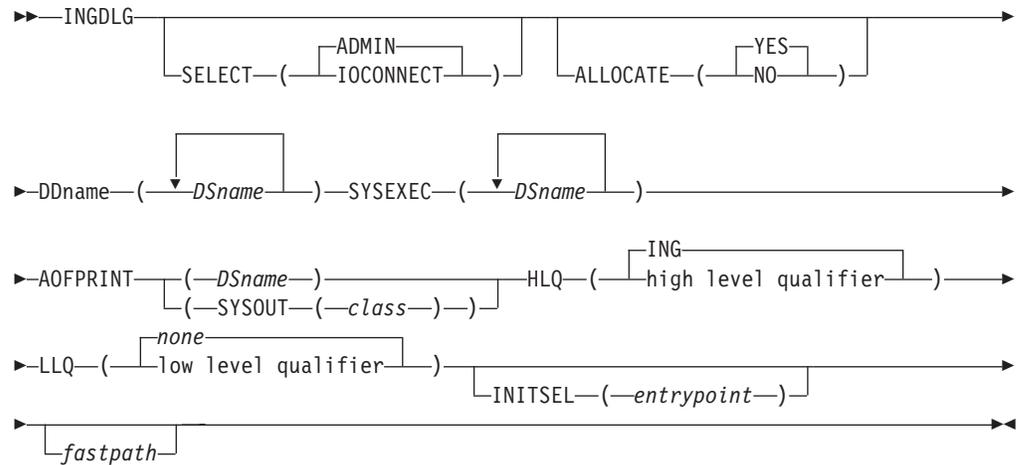


Figure 40. INGDLG Command Syntax

Its parameters are:

### **SELECT**

Enables you to select either ADMIN or IOCONNECT. If the SELECT keyword is not specified, SELECT (ADMIN) is the default.

#### **ADMIN**

Enables the selection of automation policy dialogs. This is the default.

#### **IOCONNECT**

Enables the selection of I/O connectivity dialogs

### **ALLOCATE**

Controls defining DD names. If ALLOCATE is not specified, ALLOCATE (YES) is the default.

#### **YES**

Uses any defined DD names. This is the default.

#### **NO**

Ignores any DD names that have been specified.

### **DDname (DSname)**

Fully qualified data set name to associate. Prefixes and suffixes defined using this panel are not appended to this name. For the DD name AOFPRINT, the following syntax is also valid:

```
AOFPRINT(SYSOUT(class))
```

, where *class* is a valid output class, creating a DD statement with SYSOUT=*class*. In this case, the output is placed into the JES output class *class*.

### **SYSEXEC(DSname DSname DSname ...)**

For DD name SYSEXEC, multiple data set names are supported: SYSEXEC(DSname DSname DSname ...). This will result in the following command:

```
TSO ALLOC ALTLIB ACTIVATE APPLICATION(EXEC)
      DATASET(DSname DSname DSname ...) UNCOND
```

### **AOFPRINT**

For DD name AOFPRINT, *DSname* is a fully qualified data set name or a request to allocate a SYSOUT data set: AOFPRINT(SYSOUT(class))

**HLQ** Enables you to change the high level qualifier (HLQ) of the SMP/E data

## Step 11 — Install ISPF Dialog Panels

sets, which currently is ING, to a HLQ of your choice. If you do not specify this parameter, ING is retained as the default.

**LLQ** Enables you to establish a suffix for default data set names (The default is none).

### INITSEL

may be used to provide a user-selected entry point to the customization dialog. If this keyword is specified, you will not see the *Customization Dialog Primary Menu* as the first panel when invoking the customization dialog, but it provides a fast path to some other panel, for example, the *Entry Name Selection* panel for a frequently used entry type. Valid values are those that you can specify as fast path within the customization dialog, for example, to reach the APPC application:

```
=APL; S APPC
```

or to reach application group *CICS\_APG*:

```
=APG; S CICS_APG
```

or to just reach the *Entry Name Selection* panel for *Applications*:

```
=APL;
```

### fastpath

Any words that are not the reserved keywords. The fastpath words are passed as parameters to I/O operations dialogs, if selected.

Return codes for this routine are:

- 0 No errors encountered
- 4 ISPF is not active
- 8 Error in data set allocation
- 12 Error in data set de-allocation or a failed allocation

## Step 11A — Allocate Libraries for the Dialogs

Required for:

**SysOps, ProcOps, I/O Ops**

To set up the dialogs, you must allocate the REXX load libraries and customization dialog load libraries. This section describes the two alternative options available:

- **Alternative 1:** Dynamic allocation of the libraries using the INGDLG exec
- **Alternative 2:** Allocation of the libraries as part of the TSO logon procedure

**Remember:**

Throughout “Step 11 — Install ISPF Dialog Panels” on page 126 use the names of the data sets as created in “Step 3 — Allocate Data Sets for the Customization Dialog” on page 104.

**Alternative 1: Dynamic Allocation using INGDLG**

This exec performs allocations prior to starting the dialogs. In order to invoke the exec, you need to be in ISPF. The INGDLG command parameters describe where the data sets are found. See Figure 40 on page 127 for the use of INGDLG to allocate libraries.

Note that if you use INGDLG to allocate libraries, you must still perform allocation of the ISPF product libraries as described in “Alternative 2: Add to the TSO Logon Procedure”.

**Alternative 2: Add to the TSO Logon Procedure**

Create a new TSO logon procedure that has the SA OS/390 data sets in the appropriate concatenations.

To create a TSO logon procedure, take an existing one and modify its DD statements to include the following:

```
//ISPPLIB DD ...
          DD DSN=ING.SINGIPNL,DISP=SHR
          DD ...

//ISPMLIB DD ...
          DD DSN=ING.SINGIMSG,DISP=SHR
          DD ...

//ISPSLIB DD ...
          DD DSN=ING.SINGISKL,DISP=SHR
          DD ...

//ISPTLIB DD ...
          DD DSN=ING.CUSTOM.AOFTABL,DISP=SHR 1
          DD DSN=ING.SINGITBL,DISP=SHR
          DD ...

//ISPLLIB DD ...
          DD DSN=ING.SINGIMOD,DISP=SHR
          DD ...

//SYSPROC DD ...
          DD DSN=ING.SINGIREX,DISP=SHR
          DD ...

//AOFTABL DD DSN=ING.CUSTOM.AOFTABL,DISP=SHR 1

//AOFPRINT DD SYSOUT=... 2

//AOFIPDB DD DSN=ING.SINGIPDB,DISP=SHR 3

//IHVCONF DD DSN=ING.CUSTOM.IHVCONF,DISP=SHR 4
```

**Notes:**

1. Ensure that your ISPF temporary data sets have been allocated with enough space.
  - When a build of the automation control file is performed, each file is written to the temporary data sets before it is copied into the target data set. This can lead to a temporary data set many thousands of lines long. For an enterprise with many processors, there may be several hundred thousand lines written to the temporary data set. These are in the ISPWRK data sets. See *z/OS ISPF Planning and Customizing* for more information, where it is recommended that you pre-allocate to VIO however, because it reduces overhead and eliminates potential problems from insufficient space.

## Step 11 — Install ISPF Dialog Panels

- The ISPCTL1 temporary data set is used by SA OS/390 to hold output created by a data model report and to hold the JCL for batch submission of an ACF Build job. See *z/OS ISPF Planning and Customizing* for more information on the ISPCTL1 data set.
- 2. Ensure that the ISPF table output library ISPTABL is allocated. SA OS/390 uses this table output library for temporary tables created by the customization dialogs. The table output library must be a partitioned data set. The ISPTABL DD name that defines the table output library may be the same data set as the table input library, DD name ISPTLIB, but this is not required by SA OS/390. For more information, see *ISPF User's Guide*.
- 3. The ellipses (...) in the DD-statements indicate the presence of more information in the JCL: for example, other data sets in a concatenation.
- 4. User-specific data sets should be placed before the SA OS/390 data sets. Generally speaking you need to take care that the concatenation of the SA OS/390 data sets does not interfere with the concatenation with data sets from other products.
- 5. You should **not** include data sets for any predecessor products, AOC/MVS, TSCF, or ESCON Manager, anywhere in the concatenation.
- 6. The AOFTABL DD statement ( **1** ) is required as soon as you intend to customize your environment: this data set stores ISPF tables containing unique information created when you use the customization dialog. It is used with the customization dialog. ING.CUSTOM.AOFTABL, allocated in “Step 3 — Allocate Data Sets for the Customization Dialog” on page 104, is used to hold new and modified ISPF tables created when the administrator modifies or changes the SA OS/390 Data Model or the SA OS/390 policy definitions from the SA OS/390 customization dialog. While modifications of the SA OS/390 Data Model in many customer environments need not to be changed, changes in the SA OS/390 policy definitions and ISPF tables might often occur. This makes it a required DD statement. This data set is also used to hold the data set definitions for batch processing. This data set was allocated by you in the sample INGEDLGA (see “Step 3 — Allocate Data Sets for the Customization Dialog” on page 104).
- 7. The AOFPRINT DD statement ( **2** ) is used in place of SYSPRINT for IEBUPDTE, which is invoked when a user of the customization dialog creates a policy database using an SA OS/390-supplied sample as a model. If this DD statement is not allocated, SA OS/390 allocates the DD as SYSOUT=H.  
If the IEBUPDTE invocation is successful and SA OS/390 dynamically allocated the AOFPRINT file as SYSOUT=H, the output is purged. If the invocation fails, the output is saved for use in diagnosis of the problem.  
When specifying AOFPRINT(SYSOUT(C1s)), the output of the dynamically called IEBUPDATE utility is placed in the JES output class C1s. This output is not purged.
- 8. The AOFIPDB DD statement ( **3** ) points to the SA OS/390 sample library.  
The AOFIPDB DD statement is required for building system operations control files (automation control file and automation manager configuration file). It must point to a single data set, not a concatenation. In SA OS/390, this data set is required, even if you do not use any sample policy databases. AOFIPDB contains the automation manager logic deck INGLOGIC.
- 9. IHVCONF ( **4** ), is required for I/O operations. If you are not using I/O operations this DD statement is optional.
- 10. You should not use any DD names starting with AOF in your logon procedure except those specified in the example above. This is because the SA OS/390

## Step 11 — Install ISPF Dialog Panels

customization dialog may dynamically generate AOFxxxx DD names. Specifically, SA OS/390 generates AOFIN and AOFUT2 DD names.

11. I/O operations ISPF dialogs use REXX execs that invoke I/O operations commands and ISPF services. These execs must be made available to the users who want to use the ISPF dialogs. Note that the default record format of the I/O operations REXX target library (whose name is SINGIREX) is FB. The data sets in your SYSPROC concatenation might not be FB. If this is the case, the ALLOCATE command can be used, but you are not able to execute the differently formatted or sized execs. You can do one of the following to correct this:
  - a. Copy the contents of the SINGIREX exec library to another data set that is already in your SYSPROC concatenation.
  - b. Copy the contents of the SINGIREX exec library to a new data set that has the same characteristics as the other data sets in your SYSPROC concatenation.

If you already use a CLIST to allocate your data sets for ISPF, modify it to include the SA OS/390 data sets in the appropriate concatenations for users of the customization dialog. If you wish to create a CLIST to allocate your data sets you should find out your current allocations for the DD names that need SA OS/390 data sets allocated to them. This can be done with the LISTALC STATUS command.

### Step 11B — Invoking the ISPF Dialogs

Required for:

SysOps, ProcOps, I/O Ops

The ISPF Application Selection Menu can be modified to include options for the system operations and processor operations customization dialog and for the I/O operations dialogs. These options allow a user to begin the customization dialog without having to issue commands at the TSO prompt.

Two changes are required to add the dialogs to the ISPF Application Selection Menu panel (see also Figure 41 on page 132):

- adding selections to the menu
- adding logic to the panel processing to invoke the appropriate dialogs.

Both sets of dialogs are invoked by the INGDLG command. Parameters of this command determine which set of dialogs is invoked.

Add the command dialogs selections to an ISPF menu panel, such as the ISPF Master Application Menu panel (ISP@MSTR) or the ISPF Primary Menu panel (ISP@PRIM).

**Note:** If you use a customized, non-standard ISPF primary menu panel, modify the definition for that panel instead of ISP@MSTR or ISP@PRIM.

See *z/OS ISPF Planning and Customizing* for information about customizing ISPF panels. The modified panel should be placed in a data set so that it is used by all users who have the dialog data sets in their concatenation, but it is not used by anyone who does not. You may want to copy it into an enterprise-specific

## Step 11 — Install ISPF Dialog Panels

panel data set that you allocate in front of your normal ISPF panel data sets. Figure 41 is an example of how a modified panel may look.

```
%-----ISPF APPLICATION SELECTION MENU-----%
%OPTION ==>_ZCMD
%
% 0 +ISPF PARS - Specify terminal and user parameters +VERSION -&ZENVIR
% 1 +BROWSE - Display source data or output listings +USERID -&ZUSER
% 2 +EDIT - Create or change source data +TIME -&ZTIME
& 3 +UTILITIES - Perform utility functions +TERMINAL -&ZTERM
:
:
& C +CUSTOMIZE - SA OS/390 customization dialog
& I +I/O-Ops - SA OS/390 I/O Operations
& T +TUTORIAL - Display information about ISPF/PDF
& X +EXIT - Terminate ISPF using log and list defaults
%
+Enter%END+command to terminate ISPF.
```

Figure 41. ISPF Application Selection Menu

The options for the customization dialog and the I/O operations dialogs must also be added to the panel processing section of the ISPF Application Selection Menu panel as follows. The lines you add are written in italics in the example. You can select the character used to specify the dialogs on your menu.

### Using TSO Logon or Your CLIST

This is the example to be followed if you allocated the data sets using the TSO logon procedure or using a CLIST of your own.

```
)PROC
&ZQ = &Z
IF (&ZCMD ^= ' ')
&ZQ = TRUNC(&ZCMD, '.')
IF (&ZQ = ' ')
·MSG = ISRU000
&ZSEL = TRANS( &ZQ
0, 'PANEL(ISOPTA)'
:
:
C, 'CMD(INGDLG SELECT(ADMIN) ALLOCATE(NO))'
I, 'CMD(INGDLG SELECT(IOCONNECT) ALLOCATE(NO))'
T, 'PGM(ISPTUTOR) PARM(ISR00000)'
:
:
X, 'EXIT'
*, '?' )
&ZTRAIL = ·TRAIL
)END
```

### Using INGDLG

If you let INGDLG, described in Figure 40 on page 127, allocate the data sets dynamically prior to starting the dialogs, the following is a sample definition to be added to the ISPF processing section:

```
C, 'CMD(EXEC ' 'ING.SINGIREX(INGDLG)' ' +
'HLQ(MYHLQ) +
AOFTABL(ING.CUSTOM.AOFTABL) +
SELECT(ADMIN)' )'
I, 'CMD(EXEC ' 'ING.SINGIREX(INGDLG)' ' +
'HLQ(MYHLQ) +
IHVCONF(ING.CUSTOM.IHVCONF) +
SELECT(IOCONNECT)' )'
```

## Step 11 — Install ISPF Dialog Panels

Alternatively, you can invoke the dialogs using TSO REXX execs:

```
/* REXX ADMIN */
ADDRESS ISPEXEC "SELECT CMD(EXEC 'ING.SINGIREX(INGDLG)'           ",
"'HLQ(ING)'           ",
/* HLQ is the hlq of the SMP/E output data sets */
" AOFTABL(ING.CUSTOM.AOFTABL)   ",
" SELECT(ADMIN)                 ')"

/* REXX IOCONNECT */
ADDRESS ISPEXEC "SELECT CMD(EXEC 'ING SINGIREX(INGDLG)'         ",
"'HLQ(ING)'           ",
/* HLQ is the hlq of the SMP/E output data sets */
" IHVCONF(ING.CUSTOM.IHVCONF)   ",
" SELECT(IOCONNECT)             ')"
```

## Step 11C — Reconvert I/O Operations Panels

Optional for:

I/O Ops

The I/O operations dialog panels are defined using Dialog Tag Language (DTL) for ISPF. Both the source panels and converted panels are provided in the product libraries. If you choose to update the panels, the source panels must then be reconverted.

## Step 11D — Verify the ISPF Dialog Installation

Required for:

SysOps, ProcOps, I/O Ops

Logon to TSO using your modified logon procedure or running your data set allocation CLIST.

Access the customization dialog from the ISPF main menu that you defined. From the *Customization Dialog Primary Menu* that will appear, select option *4 Policies* to see a screen that looks similar to Figure 42 on page 134.

## Step 11 — Install ISPF Dialog Panels

```
MENU  COMMANDS  ACTIONS  VIEW  HELP
-----
AOFGPDB                      Policy Data Base Selection
Command ==>>>                                SCROLL==>> PAGE

Action  PolicyDB Name      Enterprise Name/Data Set Name
        DATABASE_NAME      YOUR_ENTERPRISE
        RESOURCE_PDB       'HART.DOCU.PDB'
        SH_POLICYDB        MY_ENTERPRISE
                               'HART.RESOURCE.PDB'
                               SH_ENTERPRISE
                               'HART.SH.POLICYDB'

F1=HELP  F2=SPLIT  F3=END  F4=RETURN  F5=RFIND  F6=RCHANGE
F7=UP    F8=DOWN  F9=SWAP F10=LEFT  F11=RIGHT F12=RETRIEVE
```

Figure 42. Policy Data Base Selection Screen

A screen similar to the one shown in Figure 43 will be displayed if you run the REXX exec *IOCONNECT* shown on page 133. You can use the information shown to verify your SA OS/390 installation.

```
Modify View Locking Options Help
-----
IHVMMU                      SA OS/390 - I/O Operations
Command ==>>> _____

System Automation for OS/390
Version 2 Release 1
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5655-137
(C) Copyright IBM Corp. 1990, 2000 All Rights Reserved

I/O-Ops
Command . . _____
```

Figure 43. I/O Operations Initialization Panel

---

## Step 12 — Verify the Number of available REXX Environments

Required for: \_\_\_\_\_

**SysOps and ProcOps**

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. See also “Allocation Requirements for REXX Environments” on page 25.

## Step 13 — Customization of NetView for TEC Notification by SA OS/390

Optional for:

SysOps

This section describes the customization steps specific for TEC Notification by SA OS/390 of all involved products:

- NetView
- SA OS/390
- GEM

Depending on whether SA OS/390 messages are forwarded to a local GEM Message Adapter or a message has to be forwarded to the SA OS/390 focal point system running the GEM Message Adapter, the NetView customization is different:

- In a *local configuration*, there is only one operator; so you can use the default (operator ID is AUTOTEC).
- In a *distributed configuration*, you need to define a different operator ID on each target system. If the focal point is also configured as a target system that triggers messages and alerts, you need to define another different operator ID on the focal point itself. In case of a distributed configuration, you need to adapt the synonym table.

All operator IDs of all target systems must be defined on the focal point.

### Modifying Existing Files

Table 18 shows all product files which need to be modified.

Table 18. Product Files to be Modified

File Name	DD Name	Description
AOFMSGSY	DSIPARM	synonyms used within the automation table
AOFMSG01	DSIPARM	master automation table
AOFOPF	DSIPARM	operator definitions

#### AOFMSGSY

Locate the automation fragment AOFMSGSY to update the required synonyms.

#### AOFMSG01

Activate the TEC Notification by SA OS/390 specific automation table fragment:

Use the modified version of AOFMSG01, which is part of the installation package and already has the include statement inserted at the correct position. Uncomment the include statement

```
*%INCLUDE INGMTEC
```

by removing the \*. This include statement will activate the filter criteria (message traps) specified in the automation table fragment in file *INGMTEC*.

## Step 13 — Customization of NetView for TEC Notification by SA OS/390

### AOFOPF

1. Append the statements similar to the ones shown in the following example to your operator definitions file *AOFOPF*. If you work in a distributed environment, be careful to use different operator IDs on each system. Uncomment the statements to activate them.

```
* AUTOTEC      OPERATOR      PASSWORD=AUTOTEC
*              PROFILEN      AOFPRFAO
```

2. Set the operator ID and password to a value suitable for your environment. If you work in a *local configuration* where there is only one operator, you can leave the default value *AUTOTEC*.

#### Note:

In a *distributed configuration* as described in “Environment Configurations” on page 52, the operator ID must be unique on all target systems sending events to the focal point. Also, if the focal point is simultaneously configured as a target system, you also need a different operator ID in this system.

In a distributed environment, you must define all operators on the focal point which are defined on target systems.

Definition of operator IDs is done in file *AOFOPF*.

3. Save the operator ID you typed in. It is required for the customization of the synonyms described in the list in “Customizing the Auto Operators Policy Object”.

## Customizing the Auto Operators Policy Object

Besides the modifications of SA OS/390 files, you need to perform the following steps using the SA OS/390 customization dialog. For a complete description of the required dialogs, refer to *System Automation for OS/390 Defining Automation Policy*.

1. Invoking the SA OS/390 customization dialog will display the **Customization Dialog Primary Menu** panel. The **Policy Data Base Selection** panel is displayed if you select **4 Policies** from this panel. You will see a list of one or more already available policy databases.
2. Applying action **(O) Open** on the desired policy database will display the **Entry Type Selection** panel.
3. Select action code **37 Auto Operators (AOP)**. SA OS/390 will display the **Entry Name Selection** panel.
4. Edit the entry with Entry Name *BASE\_AUTOOPS*, which contains the default automation operators. You can edit entries by typing **E** in front of the entry name. SA OS/390 will display the **Policy Selection** panel.
5. Enter **S** for **SELECT** in front of the policy name *OPERATORS* to define automation operators. SA OS/390 will display the **Automation Operator Definition** panel.
6. Select an empty line from the column **Automated Function** and enter *TECOPER*. SA OS/390 displays panel **Automation Operator NetView Userids**.
7. In this panel enter *AUTOTEC* or a name of your choice as the **Primary Automation Operator**.

**Note:** The operator ID that you specify here must be the same that you defined in the synonym definition section of the automation table.

8. End the dialog until you again reach the **Entry Name Selection** panel. From this panel, perform action **Build Automation Control File**.

## Removing Messages

You may want to remove a message from the set of mapped messages. To do this, you only need to remove the *IF ... THEN* statement corresponding to the affected message from file *INGMTEC*.

## Customization of GEM

This section describes how to customize GEM, namely the message adapter and the alert adapter for messages and alerts from SA OS/390.

### Modifying GEM Files

Table 19 shows all product files which need to be modified.

Table 19. Product Files to be modified

Member Name	DD Name	Description
IHSAINIT	IHSSMP3	initialization file for the GEM Event Service
IHSAMCFG	IHSSMP3	message adapter configuration file
IHSAACFG	IHSSMP3	alert adapter configuration file
IHSAMFMT	IHSSMP3	message adapter format file
IHSAACDS	IHSSMP3	alert adapter CDS file
IHSAECFG	IHSSMP3	Event Receiver Configuration file

The following is a brief list of steps needed to customize the GEM Event/Automation Service for SA OS/390 specific message/alert routing. For detailed guidance see *Tivoli GEM User's Guide chapter Event/Automation Service*.

- Adapt the initialization file for the GEM Event/Automation Service IHSAINIT. At least the following values have to be defined:
  - ALRTCFCG*: specifies the alert adapter configuration, for example: `ALRTCFCG=IHSAACFG`
  - MSGCFCG*: specifies the message adapter configuration file, for example: `MSGCFCG=IHSAMCFG`
  - PPI*: specifies the PPI receiver ID used by the GEM Event/Automation Service, for example: `PPI=IHSATEC`

The values given here are examples only. They will be further used within this chapter.

**Note:** The *PPI* receiver ID for the GEM Message Adapter (*PPI*) specified here, must be the same as the one defined in the synonym section of the NetView message automation table.

- Adapt the message adapter configuration file IHSAMCFG. You must at least define: `ServerLocation=IP address of your Tivoli Enterprise Console`
- Adapt the alert adapter configuration file IHSAACFG. You must at least define: `ServerLocation=IP address of your Tivoli Enterprise Console`
- Insert the include statement shown in Figure 44 on page 138 at the end of the GEM Event/Automation Service format file IHSAMFMT. This will activate the message/event mapping defined in the message adapter format file *INGMFMT* for SA OS/390 messages.

## Step 13 — Customization of NetView for TEC Notification by SA OS/390

```
/* ----- */
/* System Automation for OS/390 (AOF) message to T/EC event mapping */
/* ----- */
%INCLUDE INGMFMT
```

Figure 44. Format File Include Statement

5. Insert the include statement shown in Figure 45 into the GEM Event/Automation Service CDS file IHSAACDS to activate the alert / event mapping. Make sure the SA OS/390 specific statements precede the more general statements of the same class. This can be achieved by inserting the include statement at the top of file *INGACDS*.

```
/* ----- */
/* System Automation for OS/390 (AOF) alert to T/EC event mapping */
/* ----- */
%INCLUDE INGACDS
```

Figure 45. CDS File Include Statement

6. Adapt the Event Receiver Configuration file IHSAEFCFG. You must at least define: *NetViewAlertReceiver=NETVALRT*

---

## Step 14 — Compile SA OS/390 REXX Procedures

Optional for:

SysOps and ProcOps

You should perform this step to gain considerable performance improvement for system operations startup.

You can optionally compile the SA OS/390 automation procedures, which are written in REXX. The decision to compile the SA OS/390 automation procedures implies an added responsibility for recompilation whenever *ING.SINGNREX* members are affected by *SMP/E* maintenance. To compile and execute these automation procedures, the IBM Compiler and Library for REXX/370 must be installed on your system along with their prerequisite products.

The JCL job *INGEREXR* and related routine *INGEREXC* are provided in the SA OS/390 sample library to help you compile the *ING.SINGNREX* members. Modify the data set names and jobcard in *INGRXRUN* as necessary and submit the job. Specify the name of the resulting compiled-REXX data set in place of *ING.SINGNREX* in your NetView application startup procedure.

---

## Step 15 — Defining Automation Policy

Required for:

SysOps and ProcOps

## Step 15 — Defining Automation Policy

Before you can start using automation, you need to define automation policy using the customization dialog. This involves the following actions:

- If applicable, migrate/merge existing policy information; you can use the sample job INGEBMIG in the SINGSAMP sample library.
- Add further policy definitions
- Build a new policy database
- Distribute the policy definitions (the policy database) where required.

If you start from scratch, you will use the IBM samples delivered with the product and create your new policy database. In such a case, read the information in the section *Creating a New Policy Database* in *System Automation for OS/390 Defining Automation Policy*.

Then invoke the customization dialog to define automation policy. Of the different policy objects you can define, start with defining the following:

- Applications
- Application groups
- Processor
- Communications paths
- Communications tasks
- Systems
- System defaults
- A group for each sysplex

You will find detailed information on how to perform these steps in *System Automation for OS/390 Defining Automation Policy* which provides information on using the customization dialog for the required definitions.

### Step 15A — Build the Control Files

When the policies for the SA OS/390 components have been defined, use the BUILD command to create the system operations control files (automation control file and automation manager configuration file, needed for automation), processor control file (needed for processor operations functions), NetView and VTAM information (needed for processor operations functions), and PC profile information for processor operations. The BUILD command is available from various panels of the customization dialog. For more information on how to perform this step, refer to the manual *System Automation for OS/390 Defining Automation Policy*. You can use the sample job INGEBBLD in the SINGSAMP sample library.

**Note:**

It is mandatory to use the SA OS/390 customization dialog to create policy objects for the resources you want to automate. Do not edit the automation control files (ACF) manually.

A manually edited automation control file cannot be used to start SA OS/390.

## Step 15 — Defining Automation Policy

### Step 15B — Distribute System Operations Control Files

The system operations control files consist of the automation control file and the automation manager configuration file. You need to make the control files available to the automation agents and automation managers on the target systems. All automation managers and automation agents within the same sysplex must have access to the same system operations control files or a copy of them. You must send the files to the target sysplexes and make the data available to the automation agents and the automation managers. For the automation agents, it can either be in the DSIPARM concatenation or in a separate data set which has the same name as that known to the automation manager. For the automation managers it can either be placed within the automation managers' current configuration data set or the automation managers can be told to use a new configuration data set.

---

## Step 16 — Define Host-to-Host Communications

Required for:

SysOps, ProcOps, I/O Ops

VTAM definitions are required for both host-to-host communications and host-to-workstation communications. This section of the installation addresses the host-to-host communications.

Verify that your NetView APPL member is consistent with the steps that follow.

The host-to-host communications require:

- Defining each host as a CDRM
- Defining the host ACB

### Step 16A — Customize the SYS1.VTAMLST Data Set

Required for:

SysOps and ProcOps

Edit the member that defines NetView to VTAM and do the following:

1. Include as many NetView operator subtask APPL statements as you defined operators in the DSIOPF member of the NetView DSIPARM data set.
2. Include as many terminal access facility (TAF) APPL statements as there are NetView operator subtask APPL statements. There are two types of TAF APPL statements: operator and full-screen. The number of TAF APPL statements for each type must match the number of NetView operator subtask APPL statements. See *Tivoli NetView for OS/390 Installation and Administration Guide* for more details.
3. Define the NetView primary program operator interface task (PPT) as AUTH=(NVPACE,SPO). This causes unsolicited VTAM messages to be broadcast on the SSI and therefore be available to NetView. If, however, you have another NetView defined as a primary program operator application program (PPO), then it receives unsolicited messages first and messages do not

## Step 16 — Define Host-to-Host Communications

reach the secondary program operator application program (SPO) defined NetView. See *NetView for MVS Automation Implementation* for information on PPO and SPO definitions.

Processor operations application definitions for VTAM are required to enable communication between the processor operations communication task and VTAM. Communication tasks are required by processor operations to communicate with the processor operations PCs. Make sure that the VTAM application definition file generated at build time is included into your SYS1.VTAMLST data set. Refer to *System Automation for OS/390 Defining Automation Policy* for more information about this processor operations build step. Usually, application definitions are included into a VTAM Majornode definition member of your SYS1.VTAMLST. Contact your VTAM system programmer for more information on how to do this. “Comtask LU VTAM Definitions Example” on page 241 shows how a generated VTAM comtask definition looks.

Switched Majornode definitions are required to define either a processor operations PC or a S/390 Support Element in VTAM to make it accessible for processor operations. “Appendix D. Processor Operations Samples” on page 239 provides the definitions illustrating this for different networking environments.

### Step 16B — Perform VTAM Definitions

Required for:

I/O Ops

**Note:** This applies to I/O operations host-to-host communications only. If you have configured a prior level of ESCON Manager, these definitions remain the same.

In order to use VTAM for I/O operations, there are some definitions that VTAM requires. These definitions are in addition to those needed for the installation and running of VTAM. If you already have VTAM installed, some of these definitions may already exist.

The I/O operations program in each host that carries on this communication must be defined as a VTAM application in each host. The I/O operations program that it communicates with in another host must be defined as a cross domain resource. I/O operations uses the LU 0 protocol for the communication between hosts and the LU 6.2 protocol for host-to-workstation communications.

Since the means of the I/O operations program may be a channel-to-channel adapter, this connection has to be defined to VTAM via VTAM definition statements.

If the alternate path used is via a network communications program (NCP), then the NCP must be defined to VTAM.

In order for VTAM, to choose what routes to use for this communication and what priorities to assign, PATH statements and CLASS OF SERVICE must be defined.

## Step 16 — Define Host-to-Host Communications

An example of some of these VTAM definition statements will be shown in the following picture as an example.

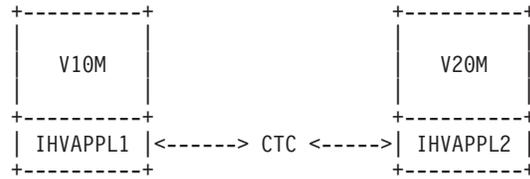


Figure 46. VTAM Definition Statements

In this example, there are two hosts running I/O operations. One application is named IHVAPPL1 and is in subarea 10. The second application is named IHVAPPL2 and is in subarea 20. Each host has its own set of VTAM definition statements.

V10M	V20M	
VBUILD TYPE=CDRM		
V10M CDRM SUBAREA=10		----> Same statements in this
V20M CDRM SUBAREA=		
host.		

The appropriate definitions are needed for each host that will be communicating via I/O operations. Each host will be defined as a CDRM.

If a communication path between the hosts is a channel to channel adapter, this has to be defined to VTAM.

**Note:** Change each “x” to the appropriate value.

```

CTCV20  VBUILD  TYPE=CA
label1  GROUP   LNCTL=CTCA,
          DELAY=x,
          MIH=x,      (cause link to inop if
                       sio timeout occurs)
          REPLYTO=x  (tells vtam how long to
                       wait for completion after
                       channel program started)
label12 LINE   ADDRESS=x,  (channel unit address of
                       channel to channel adapter)
          MAXBFRU=x  (# of buffers vtam will use to
                       receive data)
label13 PU     PUTYPE=4,TG=1
  
```

Each I/O operations program must be defined via an application statement in each host. The customer specified names must be unique in the network. These are the names by which each I/O operations will be known by the other I/O operations hosts.

The ACBNAME parameter is required for I/O operations this name must be IHVISC, and this name must be reserved for this use only.

The parameters SONSCIP=YES and AUTH=ACQ must also be specified.

## Step 16 — Define Host-to-Host Communications

For I/O operations it is strongly recommended that the DLOGMODE parameter and the MODETAB parameter given in the example, or equivalent definitions should be used. For your information: A RUSIZE of 'zero' is used with this LU TYPE 0 protocol.

VBUILD TYPE=APPL	VBUILD TYPE=APPL
IHVAPPL1 APPL ACBNAME=IHVISC,	IHVAPPL2 APPL ACBNAME=IHVISC,
AUTH=ACQ,	AUTH=ACQ,
SONSCIP=YES,	SONSCIP=YES,
DLOGMOD=INTERACT,	DLOGMOD=INTERACT,
.	.
.	.
MODETAB=ISTINCLM	MODETAB=ISTINCLM

Using the above VTAM definitions the LOGMODE table entry would be,

```
IBM3767 MODEENT LOGMODE=INTERACT,FMPROF=X'03',TSPROF=X'03',
PRIPROT=X'B1',SECPROT=X'A0',COMPROT=X'3040'
```

Each host must have a cross-domain definition for the other I/O operations host applications. They are defined as cross domain resources.

VBUILD TYPE=CDRSC	VBUILD TYPE=CDRSC
IHVAPPL2 CDRSC CDRM=V20M	IHVAPPL1 CDRSC CDRM
M	

The communication paths between the I/O operations hosts must be defined.

PATH DESTSA=20	PATH DESTSA=10
ER0=(20,1)	ER0=(10,1)
ER1=(20,1)	ER1=(10,1)
VR0=1	VR0=1
VR1=0	VR1=0

The CLASS OF SERVICE definition:

ISTSDCOS COSTAB	ISTSDCOS COSTAB
.	.
.	.
IHVAPPL1 COS VR=((0,2),(1,2))	IHVAPPL2 COS VR=((0,2),(1,2))
.	.
COSEND	COSEND

In addition to the VTAM definitions, you need to define the APPC/MVS environment to allow I/O operations functions on the focal point to communicate with I/O operations functions at the SA OS/390 workstation. Refer to *Multiplatform APPC Configuration Guide* for help in doing this.

---

## Step 17 — Add Additional VTAM APPL Statements

Required for:

SysOps and ProcOps

In your VTAM definitions, verify that there are enough VTAM APPL statements to allow all of the operators to be logged on. You should have one statement for each person who is logged on as a NetView operator. Do not include automation operators. If you add VTAM APPL statements, be sure to increase the POSPOOL value in DSIDMN appropriately.

## Step 18 — Enabling SA OS/390 to Restart Automatic Restart Manager Enabled Subsystems

Optional for:

SysOps

If you intend to use the OS/390 Automatic Restart Manager (available with MVS 5.2 and above) and you wish to coordinate its actions with those of SA OS/390, you must ensure the following:

- The SA OS/390-supplied element restart exit (ERE) must be available to OS/390. The exit, AOFPERRE, is in the ING.SINGMOD2 data set. No customization is required.
- The AOFARCAT autotask must be created. The autotask name is included in the AOFOPF member and is created automatically by NetView if you install SA OS/390 without changing AOFOPF.
- The NetView Subsystem Support Interface (SSI) must be active for the coordination of SA OS/390 and OS/390 automatic restart management to occur.
- As part of its Automatic Restart Manager support, SA OS/390 claims all PPI receiver IDs starting with AOF. If you have any other PPI receivers named AOFxxxx, results are unpredictable.

For further information on the relationship between key; and Automatic Restart Manager, see *System Automation for OS/390 Defining Automation Policy*.

---

## Step 19 — Define Security

Optional for:

SysOps

You should perform this step if you want to ensure that only authorized staff can manage the resources in your environment.

When you define your SA OS/390 environment, you need to ensure that both your operations staff and your automation facilities are authorized to manage the resources in that environment. You can control human and automation operator authority using the NetView operator definition file (DSIOPF) or a security product, such as RACF. Both of these facilities provide password security to control access by operators.

The following is recommended:

- Use NetView facilities to limit the use of commands and keywords to authorized operators or to limit (to specific systems) an operator's span of control
- Control access to the NMC workstation by a user ID, password, and RODM access information
- Include logic in the NetView automation table or in your automation routines to verify the source of a message before taking an action

## Step 19 — Define Security

- Use RACF to limit the use of OS/390 system commands to authorized operators

See “Appendix A. Authorizing Users” on page 213 for details about defining security. See “Installing the SA OS/390 Password Protection Feature (Optional)” on page 221 for more information about installing the SA OS/390 Password Protection Feature, which is optional. I/O operations command security definitions are found in “Step 6 — Define a RACF Profile for I/O Operations” on page 224.

---

## Step 20 — Customize the Status Display Facility (SDF)

Optional for:

SysOps

If you decide to use SDF as the SA OS/390 full-screen operator interface for monitoring automated resource statuses at the NetView 3270 console, then customizing SDF involves defining the following:

- SDF initialization parameters. These are defined in the AOFINIT member of a NetView DSIPARM data set.
- Resource hierarchy or tree structure. The AOFTREE member of a NetView DSIPARM data set includes the appropriate tree members, which contain the resource hierarchy information.
- Color and priority assignments for resource status types. These have default values set up by SA OS/390 (see *System Automation for OS/390 User's Guide* for details), but overrides to color and priority assignments can be defined by the user using the SA OS/390 customization dialog.
- SDFROOT. A root name for the SDF tree can be specified on the Environment Setup Panel of the customization dialog. If you do not specify a new root name, it defaults to the value specified for SYSNAME.

See *System Automation for OS/390 Customizing and Programming* for detailed information about customizing SDF.

---

## Step 21 — Check for Required IPL

Required for:

SysOps, ProcOps, I/O Ops

An IPL is only required if:

- in “Step 4D — Update LPALSTxx” on page 107 you did *not* decide to use the solution to dynamically add the modules to the LPALST
- in “Step 4E — Update LNKLSTxx” on page 108 you updated LNKLST and you did *not* decide to use the solution to dynamically add the modules to the LNKLST
- “Step 4F — Update IEFSSNxx” on page 108 has been required because the IEFSSNxx member has not been updated during NetView installation and you cannot use the OS/390 command SETSSI for a dynamic update of the subsystem name table.

# Step 22 — Automate System Operations Startup

Required for:

SysOps

Add commands to the COMMNDxx member of SYS1.PARMLIB to start the automation NetView when OS/390 starts. You may also need to modify an IEASYSxx member of SYS1.PARMLIB to specify which COMMNDxx or other PARMLIB members to use during IPL. SA OS/390 initialization begins with starting system operations. If an SA OS/390 automation policy is used, system operations subsequently starts processor operations and I/O operations.

Make the described changes to the following SYS1.PARMLIB data set members:

### COMMNDxx

Make sure that the procedure names you choose match those specified in the SYS1.PROCLIB data set.

Compare the contents of the COMMNDxx member with the INGECOM member which resides in the SINGSAMP sample library. Edit the COMMNDxx member and do the following:

1. Ensure that the COMMNDxx member includes the following statement:

```
COM='MN JOB NAMES,T'
```

This statement causes the system console to display a status message when a job starts or ends.

2. Ensure that an appropriate MPFLST member is specified. The AOFCOM member contains a SET MPF statement that specifies the suffix SO. This identifies MPFLSTSO as the MPF list member OS/390 is to use. (You can use any two characters xx as a pointer to your MPFLSTxx member. It is helpful if you use the same suffix you used to name other PARMLIB members. For example, see the statement SET PROG=xx described in “Step 4A — Update PROGxx” on page 106).
3. If you are running more than one NetView on your system, ensure that you have included start commands for the Automation NetView. They should look like this example:

```
COM='S NETVSSI,SUB=MSTR'  
COM='S NETVSTRT,SUB=MSTR'
```

### Note:

NETVSSI here is a placeholder for the name of the member to which you copied the NetView subsystem interface startup procedure in “Step 6 — Customize SYS1.PROCLIB Members” on page 112.

NETVSTRT here is a placeholder for the name of the member to which you copied the NetView application startup procedure in “Step 6 — Customize SYS1.PROCLIB Members” on page 112.

## Step 22 — Automate System Operations Startup

If you are starting JES before NetView, edit the COMMNDxx member and remove the SUB=MSTR parameter from the NetView startup command statements.

This adds commands that select the correct MPF entries and that start NetView.

### IEASYSxx

Edit the IEASYSxx member to specify which SYS1.PARMLIB data set members to use during the IPL process. This is done by specifying the 2-character suffix of the SYS1.PARMLIB member names. If you choose SO, then the statements in the IEASYSxx member would be as follows:

```
APF=SO
CMD=SO
CON=SO
SSN=SO
SCH=SO
LNK=SO
LPA=SO
```

For example, because APF=SO, the system uses the IEAAPFSO member during the IPL process.

## How to Automate the Automation Manager Startup

**Note:** The system on which the automation manager should be started must be defined as policy object *System* in the policy database which will be used to create the automation manager configuration file that this automation manager uses (see also “Step 15A — Build the Control Files” on page 139).

To enable automatic startup of the automation manager whenever SA OS/390 is started, add the start command for the automation manager

```
S procname,SUB=MSTR
```

to the COMMNDxx PARMLIB member, where *procname* is your selected name of the automation manager start procedure.

You can find a sample startup procedure called HSAMPROC in the SINGSAMP sample library, so that your entry in the COMMNDxx member could look as follows:

### Sample COMMNDxx entry

```
'S HSAMPROC,JOBNAME=HSAM&SYSCLONE.,SUB=MSTR'
```

## How to Automate MQSeries Startup

When you use MQSeries for manager-agent communication and status backup, you can automate MQSeries and let it be started and stopped by SA OS/390 (for details on how this is made possible, see “Exploiting MQSeries V5R2” on page 30), and this is the recommended way.

In a full sysplex environment it is recommended that you start the local MQSeries manager with its associated DB2 simultaneously immediately after JES is up and running. In a single system case with MQSeries version 2.1, DB2 is not needed. See

## Step 22 — Automate System Operations Startup

the related product installation manuals for information on how to start MQSeries and DB2 and define these resources to SA OS/390 in the customization dialog. For more information, also refer to “Peer Recovery Considerations” on page 33.

Consider that the subsystem RRS is also necessary for shared DB2 database functions.

**Note:** This substep is not necessary when you have decided to use XCF for communication between the automation manager and the automation agents.

---

## Step 23 — Verify Automatic System Operations Startup

Optional for:

SysOps

After you have installed the host components of SA OS/390, it is recommended that you perform the following steps for verification purposes:

1. Perform an IPL, if you have not done this according to “Step 21 — Check for Required IPL” on page 145. Then start SA OS/390 and perform a coldstart. A coldstart is performed by default unless you specify the warmstart option. Do not select the warmstart option, because you might have policy data from earlier releases in your warmstart cache.

The following messages should appear on the system console:

```
AOF532I hh:mm:ss AUTOMATION ENVIRONMENT HAS BEEN INITIALIZED
AOF540I hh:mm:ss INITIALIZATION RELATED PROCESSING HAS BEEN COMPLETED
```

2. Use the NetView LIST command to confirm that the following SA OS/390 tasks are active:

Task Name	Description
AOFTSTS	automation status file task
AOFTDDF	Status Display Facility (SDF) task
INGPXDST	XCF communication task

To confirm that these tasks are active, log on to NetView, and enter the NetView LIST command to display the status for each task:

```
LIST taskname
```

3. Use the commands INGAMS and INGLIST to verify that they work.
4. Use the SA OS/390 DISPSTAT command in NetView to confirm that subsystem status and automation flag settings are what you expect. Enter the DISPSTAT ALL command to display the status of automated subsystems and automation flag settings: See *System Automation for OS/390 Operator’s Commands* for information about the DISPSTAT command.
5. Use the SA OS/390 DISPAUTO command in NetView to display a menu that allows you to initiate further command dialogs. These display information about your automation. Enter DISPAUTO and then choose one of the menu options. See *System Automation for OS/390 Operator’s Commands* for information about the DISPAUTO command.

## Step 23 — Verify Automatic System Operations Startup

6. Confirm that the automation shuts down and restarts the subsystems as you expect. You can shutdown and restart each automated resource individually using the following SA OS/390 command:

```
INGREQ resource REQ=STOP SCOPE=ONLY RESTART=YES
```

If any of the resources (subsystems) do not restart as you expect, make corrections to your automation policy.

---

## Step 24 — Install an SA OS/390 Satellite

Optional for:

SysOps

This step is not required if you run in a single NetView environment. In this case, do not forget to follow the instructions in step 1 on page 117 for member A0FMSG01 described in “Step 7 — Customize NetView” on page 113.

So this step is only required if your enterprise runs one Automation NetView and one Networking NetView with GMFHS on the focal point system or on another focal point NetView. Then you must install SA OS/390 on the automation NetView used for system automation.

## Step 24A — Customize the Networking NetView or Focal Point NetView Startup Procedure

In SYS1.PROCLIB or another procedure library, find members used to start the Networking NetView application. Insert the data set names from the following table into the indicated DD concatenations.

### Notes:

1. The data sets listed in Table 20 should appear last in your concatenation. If they appear before other data sets (for example, data sets containing members customized for automated network operations [AON/MVS]), results are unpredictable.
2. The *ING.SINGMOD1* library needs to be authorized for *APF*.

Table 20. Members to start the Networking NetView

DDNAME	System Operations Data Set
STEPLIB	ING.SINGMOD1
DSICLD	ING.SINGNREX
DSIPARM	ING.SINGNPRM
DSIMSG	ING.SINGNMSG
DSIPRF	ING.SINGNPRF
CNMPNL1	ING.SINGNPNL

## Step 24 — Install an SA OS/390 Satellite

### Step 24B — Customize the Networking NetView or Focal Point NetView DSIPARM Data Set

Several members in the DSIPARM concatenation must be customized for the SA OS/390 satellite. Before editing an SA OS/390 member, remember to copy it out of ING.SINGNPRM into a new, user-defined data set that is placed before ING.SINGNPRM in the concatenation.

#### AOFMSGSY

If you do not choose to use the NetView operator IDs defined by SA OS/390, copy and edit AOFMSGSY to contain the appropriate definitions of the synonyms %AOFOPMSU%, %AOFOPHB% for your Networking NetView. %AOFOPMSU% is a synonym for the operators that can be routed commands as a result of alerts trapped in the NetView automation table. %AOFOPHB% is a synonym for the operator that can be routed heartbeat alerts trapped in the NetView automation table. (Note that there can be only one operator defined for %AOFOPHB% and it must be unique and not used for any other functions). Other synonyms in the member are not specific to the Networking NetView environment.

**Note:** If you do change any of the automation operator names supplied in AOFMSGSY (such as AUTHB), you must also change the corresponding names in member CNME1034 (for supported NetView below 1.4) or AOFSTYLE (for NetView 1.4 or above). These entries are described later.

#### AOFOPFST and AOFMCDST

Copy members AOFOPFST and AOFMCDST into a data set that is in the DSIPARM concatenation. AOFOPFST defines the automation operators for heartbeat processing on the Networking NetView or focal point NetView. AOFMCDST defines the commands used by SA OS/390 on the Networking NetView or focal point NetView.

#### AOFOPFFP

Copy member AOFOPFFP into a data set that is in the DSIPARM concatenation. AOFOPFFP defines the automation operators for the SA OS/390 topology manager on the Networking NetView or focal point NetView.

#### AOFRODM

Copy and edit AOFRODM to contain the correct name for your RODM and a user ID authorized to update it.

#### AOFSTYLE

For NetView 1.4 or above edit AOFSTYLE and include the statement  
AUTOTASK.AUTHB.Console=\*NONE\*

to start this operator when NetView starts. AUTHB is the name of the heartbeat operator. Remember that changes to the names used in AOFMSGSY must be reflected here.

#### CNME1034

For supported NetView below 1.4 edit CNME1034 or the NetView initial CLIST and include the statement

```
AUTOTASK OPID=AUTHB
```

to start this operator when NetView starts. AUTHB is the name of the heartbeat operator. Remember that changes to the names used in AOFMSGSY must be reflected here.

## Step 24 — Install an SA OS/390 Satellite

### DSICMD

Edit DSICMD to %INCLUDE AOFKMDST.

### DSIOPF

Check DSIOPF to ensure that it contains %INCLUDE AOFOPFST and %INCLUDE AOFOPFFP.

### DSITBL01

Edit DSITBL01, or whichever other automation table is loaded by the Networking NetView, to %INCLUDE AOFMSG03. AOFMSG03 contains %INCLUDEs for other automation table fragments that trap alerts for the satellite SA OS/390 and for systems where OPC/ESA is running.

---

## Step 25 — Installing and Customizing the SA OS/390 Topology Manager

Required for:

SysOps

The SA OS/390 topology manager extracts resource topology information from one or more automation managers and maintains corresponding objects within RODM. This information is available if you have completed the previous installation steps. The following sections describe how to customize the SA OS/390 topology manager for the operators.

### Step 25A — Preparing for NMC

Optional for:

SysOps

Make sure you have RODM and GMFHS and MSM (MultiSystem Manager) installed and working. For information on how to do this, refer to *Tivoli NetView for OS/390 Resource Object Data Manager and GMFHS Programmer's Guide*, *Tivoli NetView for OS/390 Graphic Monitor Facility User's Guide* and *Tivoli NetView for OS/390 MultiSystem Manager User's Guide*.

## Step 25 — Installing and Customizing the SA OS/390 Topology Manager

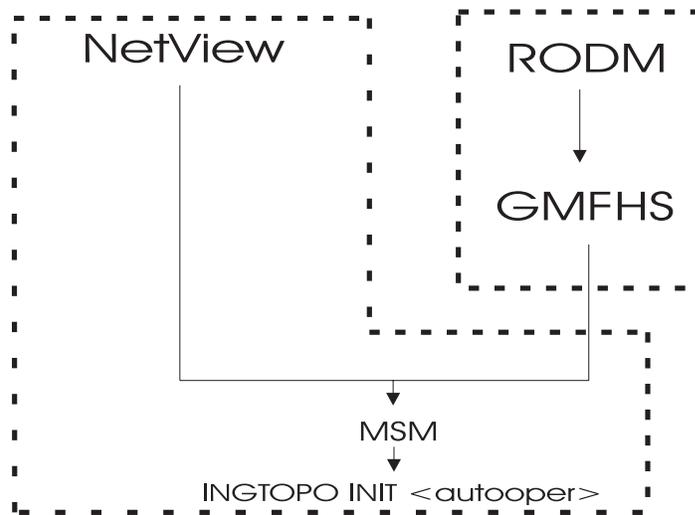


Figure 47. Environment for the SA OS/390 Topology Manager

Figure 47 shows the dependencies needed to run the SA OS/390 topology manager: NetView and MSM on one hand run in a common address space, RODM and GMFHS on the other hand run in a separate address space. MSM depends on NetView and on GMFHS. The SA OS/390 topology manager depends on MSM.

SA OS/390 delivers a NetView message automation table fragment AOFMSGST that automates this setup. This fragment is included in the main NetView message automation table AOFMSG01. If you want to use it, you must uncomment it to activate it. It awaits the completion message from MSM and then starts the SA OS/390 topology manager.

### Step 25B — Modify the NetView DSIPARM Data Set for the SA OS/390 Topology Manager

There are a few things you have to do to prepare for the SA OS/390 topology manager to run. Table 21 lists the data sets to be modified for this purpose.

Table 21. DSIPARM Members to be modified for the SA OS/390 Topology Manager

DSIPARM Member	Description
DSIDMNK	NetView system level parameters for NetView initialization
DSI6INIT	Initialization member for the NetView DSI6DST task.
DSIOPF	system operations automation operator definitions
AOFMSG01	NetView message automation table

**Note:**

Ensure that the **DSIQTSK** task has a connection to the **Resource Object Data Manager (RODM)** on the and focal point systems. This task provides facilities for communicating with RODM. Please refer to the *Tivoli NetView for OS/390 Resource Object Data Manager and GMFHS Programmer's Guide* for further details.

## Step 25 — Installing and Customizing the SA OS/390 Topology Manager

### DSIPARM.DSIDMNK

This needs to specify that SNA-MDS alert forwarding should be used.

```
*      ALERTFWD NV-UNIQ
      ALERTFWD SNA-MDS=LOGONLY
*      ALERTFWD SNA-MDS=AUTHRCV
*      ALERTFWD SNA-MDS=SUPPRESS
```

Any one of the SNA-MDS settings is acceptable.

While SNA-MDS is not absolutely required, it is recommended as it allows the construction of networks with intermediate focal points and hot backups.

### DSIPARM.DSI6INIT

This is the initialization member for the NetView DSI6DST task and needs to have the appropriate focal point defined.

```
DEFFOCPT TYPE=ALERT,PRIMARY=NETA.CNM02,BACKUP=NETA.CNM03
```

Note that on the focal point and the backup you will need different members, as NetView complains if a definition references its own system.

Usage of the LU 6.2 alert forwarding mechanism allows for the construction of focal point networks that include intermediate focal points.

### Autotask Operator IDs

Each focal point that will be running the SA OS/390 topology manager must have an autotask defined for it. Your environment may have one or more of the following types of focal point:

- the primary focal point
- the secondary focal point
- the intermediate focal point (IFP)

This requires a definition in DSIPARM.DSIOPF:

```
&domain.TPO OPERATOR PASSWORD=&domain.TPO
            PROFILEN AOFPRFAO
```

This definition needs to be present on the focal point(s) and on each target system. It should only be started as an autotask on the focal point.

An include member, DSIPARM.AOFOPFFP, has been provided to help you centralize and manage these operator IDs. You need to customize it to contain the operator IDs for your focal points. It is included into the DSIPARM.AOFOPF member and will need including into your DSIPARM.DSIOPF on your focal point if it is a non-SA OS/390 NetView.

The &domain. variable contains the focal point's domain ID. This is just a suggestion for the naming scheme. Any scheme will work as long as the names are the same on the focal point and the target systems.

Additionally, on the focal point, the operator ID must be defined in the DSIPARM.AOFMSGSY member, as the value for the %AOFOPTOPOMGR% synonym.

```
SYN %AOFOPTOPOMGR% = '&domain.TPO';
```

You should not include any backup operators in this synonym.

## Step 25 — Installing and Customizing the SA OS/390 Topology Manager

You will need one set of autotasks for your primary focal point and a second set for your backup focal point. If you are using intermediate focal points, you will also need a set of operators for each of those (but only on the target systems that are defined to the IFP). Note that even in an IFP situation, the focal point will contact all target systems directly to obtain status and configuration data. The IFP is only used for alert forwarding.

### Operator Profiles

This concerns statements in DSIOPF, which associate operator ids with logon profiles and the profiles themselves, which are defined in the DSIPRF concatenation.

Each operator who will be an NMC Administrator must be assigned a NetView logon profile which includes the NGMFADMN=YES key/value pair on its AUTH tag.

Each NMC user who needs to issue commands against resources through the NMC interface needs to be linked to a profile with the NGMFCMDS=YES key/value pair on its AUTH tag.

### Message Tables

The focal point (and any intermediate focal points with RODM and GMFHS) should have AOFMSGST loaded and active. It contains statements to trap the INGPOST alerts and make the corresponding updates within RODM.

If you want an intermediate focal point that does not have RODM and GMFHS installed, then it should not have the AOFMSGST message table fragment loaded.

## Step 25C — Customize RODM

You need to configure RODM so that it will dynamically refresh the workstation when a number of fields other than DisplayResourceStatus is changed. To do this you need to ensure that the following RODM Loader statements are processed whenever the GMFHS Data Model is reloaded.

```
-- Ensure views are refreshed when OtherData changes.
OP DUIFVINS INVOKED_WITH (SELFDEFINING)
(
  (SMALLINT) 1
  (INTEGER) 7
  (OBJECTID) EKG_Method.DUIFVNOT
  (CLASSID) GMFHS_Managed_Real_Objects_Class
  (FIELDID) GMFHS_Managed_Real_Objects_Class.DisplayResourceOtherData
);

-- Ensure views are refreshed when ResourceName changes.
OP DUIFVINS INVOKED_WITH (SELFDEFINING)
(
  (SMALLINT) 1
  (INTEGER) 7
  (OBJECTID) EKG_Method.DUIFVNOT
  (CLASSID) GMFHS_Managed_Real_Objects_Class
  (FIELDID) GMFHS_Managed_Real_Objects_Class.DisplayResourceName
);

-- Ensure views are refreshed when UserData changes.
OP DUIFVINS INVOKED_WITH (SELFDEFINING)
(
  (SMALLINT) 1
  (INTEGER) 7
```

## Step 25 — Installing and Customizing the SA OS/390 Topology Manager

```
(OBJECTID) EKG_Method.DUIFVNOT  
(CLASSID) GMFHS_Managed_Real_Objects_Class  
(FIELDID) GMFHS_Managed_Real_Objects_Class.DisplayResourceUserData  
);
```

These statements are provided in member SINGSAMP(INGDYNRF).

## Step 25D — Customize the INGTOPOF File

The following overview of the operation mode of the SA OS/390 topology manager supplies some background for discussing the INGTOPOF file. Some familiarity with the class structure of RODM and with the BLDVIEWS tool is assumed.

During initialization, the SA OS/390 topology manager gathers information about generated SA OS/390 resources from the sysplexes and stores the resources within RODM, prefixing their names with the current sysplex name. Usually not only the resources, but also the dependencies and major/minor relationships between resources will be represented in RODM (this depends on the OPTION statement in the INGTOPOF file, see “Appendix B. Syntax for INGTOPOF File” on page 227).

The INGTOPOF file supplies the SA OS/390 topology manager with the following information:

- which sysplexes there are and which of their member systems contain a SA OS/390 topology agent.
- the names of the data sets (members) that contain the definitions of the views.
- when views must be rebuilt during runtime, it is desirable that only those views be rebuilt to which new members have been added.

You will need to prepare the INGTOPOF input file. This contains information about the target domains and how they are grouped into sysplexes along with some additional information that affects the resources that are dynamically created.

The INGTOPOF file contains configuration information for the SA OS/390 topology manager. It must reside in DSIPARM. The records of the file consist of a keyword with one or more parameters. Comment lines must have an asterisk (\*) in the first column. A '+' at the end of a line indicates that the record is continued in the next line.

The information is passed from the INGTOPOF file to the SA OS/390 topology manager with the help of the following keywords:

- SYSPLEX
- PROCOPS
- BLDVIEWS
- [LOCATION]
- [ANCHOR]
- [OPTION]

The syntax of the statements in the INGTOPF file is described in “Appendix B. Syntax for INGTOPOF File” on page 227.

## Step 25E — Prepare BLDVIEWS Cards

You need to provide files with BLDVIEWS cards. These are required for the SA OS/390 resources to appear on the NMC workstation. These files will become

## Step 25 — Installing and Customizing the SA OS/390 Topology Manager

part of the BLDVIEWS statement in the INGTOPOF file. The BLDVIEWS statement in the INGTOPOF file is used by the SA OS/390 topology manager to pass information to the BLDVIEWS tool which it invokes to produce the views of the objects. The BLDVIEWS tool writes information about views into RODM. The SA OS/390 topology manager is automatically invoked whenever you start SA OS/390 or you can invoke it with the INGTOPO command whenever you changed information in the INGTOPOF file or in the files with the BLDVIEWS cards.

So to run the BLDVIEWS tool, use one of the following methods:

- via the SA OS/390 topology manager which invokes the tool
- via an external invocation of this tool (as a NetView command in a NetView session)

For information about the BLDVIEWS cards syntax refer to the appropriate NetView documentation.

## Step 25F — Customize the SA OS/390 Topology Manager for Responsive Commands

You must have the *NetView 3270 Management Console* installed. Refer to the *NetView Management Console User's Guide* for information on how to do this. The set up for the *NetView 3270 Management Console* must be done from a 3270 console that has been invoked from the NMC. It must run in an environment where it can access the INGNMCEX.JAR file which is delivered with the SA OS/390 installation package.

You have to set up a *Session Service* for SA OS/390. To do this, perform the following steps:

1. In the *Session Services* menu item of the *NetView 3270 Management Console*, select *Add/Delete/Modify Session*.
2. In the *Add/Delete/Modify Session* dialog, as the *Full Screen Session Name*, enter SA in upper case.
3. As the *Start command String* enter *window*.
4. Select radio button *Immediate*.
5. Select *Session options Start Automatically*.
6. Press the *Add* push button and then the *Save* push button.

If you start the NetView 3270 Management Console in future, you will see an SA tab. This tab is required to execute responsive commands.

To test this functionality, go to the NetView Management Console and select the *SA Operation Command INGSCHED - Schedule Overrides* on an APL resource (see also *System Automation for OS/390 User's Guide*). This will bring up the NetView 3270 Management Console with the SA session. If this session is not visible, click on the SA tab. It will show you the INGSCHED command dialog as described in *System Automation for OS/390 User's Guide*.

---

## Step 26 — Copy and Update Sample Exits

Optional for:

**SysOps, ProcOps, I/O Ops**

Several sample exits are provided in the SINGSAMP library (for example, AOFEXSTA). You can use these samples to create your own exits. When used, they must be copied into a data set (either the enterprise-specific or domain-specific one) in the DSICLD concatenation. These exits are called at fixed points during SA OS/390 processing. If they are not available, you will receive a warning message and processing continues. So you should look into each of the sample exits to determine whether you need to use and update it.

Updating and copying the sample exits allows you to add your specific processing. For more information on user exits, provided samples and advanced automation options, refer to *System Automation for OS/390 Customizing and Programming*.



---

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This chapter contains information on how to install those parts of SA OS/390 that are required on workstations. You can use the Software Installer to install the code for the LAN passthru PC and the processor operations PC on the related workstations. For this reason, “Installing the Software Installer” on page 163 is part of this chapter. Furthermore, it contains the following subchapters:

- “Installing the NMC Workstation” on page 160
- “Installing the LAN Passthru PC” on page 168
- “Installing the Processor Operations PC” on page 173
- “Installing and Customizing Netfinity in an SA OS/390 Environment” on page 203
- “Installing and Customizing Desktop On-Call in an SA OS/390 Environment” on page 207

The workstation components can be installed on any workstation that meets the requirements listed in “Chapter 1. SA OS/390 Prerequisites and Supported

## Installing SA OS/390 on Workstations

Equipment” on page 3. One or more workstations can be installed for users to monitor and control the systems being managed with SA OS/390.

The code for the LAN passthru PC and the processor operations PC is supplied with the host code that is installed using SMP/E. For each workstation, the code is downloaded from the focal point system using Software Installer.

The code for the SA OS/390 NMC exploitation is supplied with the host code that is installed using SMP/E. Installing the SA OS/390 NMC exploitation will enable you to issue the most important SA OS/390 processor operations and system operations commands from all NMC workstations.

**Note:** The NMC installation as described in “Installing the NMC Workstation” is performed on the NMC Server and the NMC clients. After this installation, you need to restart the individual NMC clients.

---

## Installing the NMC Workstation

If you already have an NMC environment installed, you can continue with the actions described in the remainder of this section. Having completed these, you can use the SA OS/390 NMC exploitation as described in *System Automation for OS/390 User's Guide*. This will enable you to issue a selection of SA OS/390 processor operations and system operations commands from all NMC workstations.

The following packed files for the SA OS/390 NMC exploitation are available after your SMP/E installation:

- ING.SINGPWS1(INGNMCZP): packed file for Windows or OS/2 Workstations; download this file with extension ZIP and unpack with an appropriate tool (WINZIP or PKZIP).
- ING.SINGPWS1(INGNMCTZ): packed file for UNIX<sup>®</sup> Workstations; download this file with extension TAR.Z and unpack and uncompress with an appropriate tool (*uncompress* and *tar*).

The content of each packed file is divided into a support for system operations commands and a support for processor operations commands. Both packages include two NMC response files. One response file contains the system operations commands, the other one contains the processor operations commands. The response files include the definitions and profiles for

### ING\_SO\_OPER

SystemOperation Operator

### ING\_PO\_OPER

ProcessorOperation Operator

### ING\_SA\_OPER

SystemAutomation Operator (definition for both the system operations and processor operations commands)

Furthermore there are two subdirectories for the related data definition files and two subdirectories with the online help in HTML format.

With this separation of system operations and processor operations commands you may install either the system operations commands or the processor operations commands or both depending on your needs. The installation has to be done

manually, as there is no common installation tool for the several supported platforms. This requires that you are familiar with the common commands of your workstation operating system.

**Note:** *BINDIR* is an environment variable set by your NMC installation and indicates that this is a subdirectory of your installed NMC product.

### INGNMCEX

—	<b>ING_NMCC_HELP</b>	<b>Subdirectory including the online help files for the System Operations commands</b>
—	<b>ING_NMCC_DDF</b>	<b>Subdirectory including Data Definition files for the provided System Operations commands</b>
—	<b>ISQ_NMCC_HELP</b>	<b>Subdirectory including the online help files for the Processor Operations commands</b>
—	<b>ISQ_NMCC_DDF</b>	<b>Subdirectory including Data Definition files for the provided System Operations commands</b>
—	<b>ING_NMCS_CMD.RSP</b>	<b>Response file for System Operations commands</b>
—	<b>ISQ_NMCS_CMD.RSP</b>	<b>Response file for Processor Operations commands</b>
—	<b>INGNMCJDialog.jar</b>	<b>SA OS/390 NMC Exploitation Java Archive File</b>

Figure 48. Directory Structure of Unpacked Files

## Installation Steps on the NMC Server

Now perform the following steps to install SA OS/390 NMC exploitation on the NMC Server:

1. Download the appropriate packed file in binary format to the NMC Server.
2. Unpack the file into a temporary directory of the NMC Server, using an appropriate tool for the NMC Server operating system. You will obtain the directory structure for the unpacked files as shown in Figure 48.
3. Copy the required help files:
  - a. for WIN or OS/2 environment: from *tmp*\INGNMCEX\ING\_NMCC\_HELP and/or *tmp*\INGNMCEX\ISQ\_NMCC\_HELP to your [BINDIR]\TDS\server\db\current\help directory
  - b. for UNIX environment: from *tmp*/INGNMCEX/ING\_NMCC\_HELP and/or *tmp*/INGNMCEX/ISQ\_NMCC\_HELP to your \$BINDIR/TDS/server/db/current/help directory

where *tmp* stands for the directory where you downloaded the files.

4. Copy the required data definition files
  - a. for WIN or OS/2 environment: from *tmp*\INGNMCEX\ING\_NMCC\_DDF and/or *tmp*\INGNMCEX\ISQ\_NMCC\_DDF to your [BINDIR]\TDS\server\config\ddf directory
  - b. for UNIX environment: from *tmp*/INGNMCEX/ING\_NMCC\_DDF and/or *tmp*/INGNMCEX/ISQ\_NMCC\_DDF to your \$BINDIR/TDS/server/config/ddf directory.
5. Copy the required response files from INGNMCEX
  - a. for WIN or OS/2 environment: to your [BINDIR]\TDS\server\sample directory
  - b. for UNIX environment: \$BINDIR/TDS/server/sample directory.
6. Copy the Java archive file INGNMCJDialog.jar from INGNMCEX to:

## Installing the NMC Workstation

- a. for WIN or OS/2 environment: from *tmp\INGNMCEX* to your [BINDIR]\TDS\server\db\current\lib directory
  - b. for UNIX environment: from *tmp/INGNMCEX* to your \$BINDIR/TDS/server/db/current/lib directory
7. Verify the following:
- a. To operate the NMC Server you must be logged on to NetView via a 3270 host session.
  - b. Your NetView user ID must have NGMF administrator rights.
  - c. The NMC Server must be started and active.
  - d. The connection from the NMC Server to NetView must be established.
8. Start the *Command Profile Editor batch utility* (CPEBATCH) with either:
- a. for WIN or OS/2 environment
    - [BINDIR]\TDS\server\sample\ING\_NMCS\_CMD.RSP and/or
    - [BINDIR]\TDS\server\sample\ISQ\_NMCS\_CMD.RSPand the -i and -g parameters
  - b. for UNIX environment
    - \$BINDIR/TDS/server/sample/ING\_NMCS\_CMD.RSP and/or
    - \$BINDIR/TDS/server/sample/ISQ\_NMCS\_CMD.RSPand the -i and -g parameters

With this step, you load the delivered commands into the NetView internal database. For information on how to use this batch utility, refer to *NetView Management Console User's Guide*.

9. Start the CPE online utility to apply the new profiles to the individual operators. You can also use this online utility to add or remove single commands to or from your individual profile. For details of the CPE see *NetView Management Console User's Guide*.

**Note:** The CPE online utility is available for INTEL platforms only. For other platforms you need to edit the files with a text editor. For more information refer to *NetView Management Console User's Guide*.

## Installation Steps on the NMC Client

1. Set the environment variable TCONSOLE\_CLASSPATH:
  - a. for WIN or OS/2 environments pointing to:  
[NMC\_Client\_Installation\_path]\TDS\client\lib
  - b. for UNIX environments pointing to :  
[NMC\_Client\_Installation\_path]/TDS/client/lib
2. On the individual NMC Clients: Restart your NetView Management Console to incorporate your changes.
3. Set up the NetView 3270 Management Console:
  - a. On the NMC, select an SA OS/390 resource from an existing view. Then, for this resource, select an SA OS/390 command that needs to be transferred to the NetView 3270 Management Console, such as the INGHIST command. You will see the NetView 3270 Management Console, however without any output from the INGHIST command.
  - b. Now select *Session Services* from the NMC menu bar. Then select *Add/Delete/Modify Session* from the upcoming pull-down choice. This will lead you to the *Add/Delete/Modify Session* dialog.
  - c. Into the *Full Screen Session Name* field of this dialog enter: SA.

- d. Into the *Start command String* field enter: *window envir.*
- e. From the *Session Options* select: *Start Automatically.*
- f. Press the *Add* push button and the *Save* push button.
- g. Press the *Done* push button to leave this dialog.
- h. In the NMC, select the added SA pull-down choice from the *Session Services* menu bar item.
- i. As a verification, once again, issue the INGHIST command to see the desired output now.

For further information about the delivered commands refer to the online help or to *System Automation for OS/390 Operator's Commands*.

---

## Installing the Software Installer

Software Installer is used to install LAN passthru PC and processor operations PC. Software Installer can also be used to update (apply maintenance) or delete SA OS/390 processor operations PC code or LAN passthru PC code. See "Maintaining the Workstation Code" on page 166 for information on using Software Installer for maintenance of the workstation code.

Software Installer is needed to:

- Create subdirectories and place the workstation files in them
- Replace any files requiring replacement based on a comparison of date and time when you apply a new level (As a default option, Software Installer maintains the previous level of LAN passthru PC and processor operations PC)
- Register LAN passthru PC and processor operations PC on the OS/2 workplace (desktop)
- Update the CONFIG.SYS on your workstation

Software Installer must be installed on any workstation that will have the LAN passthru PC and processor operations PC installed by download from an OS/390 system. Software Installer must also be installed on any workstation that will be a server for access of the LAN passthru PC and processor operations PC by requester workstations. Software Installer does not need to be installed on any workstations that are requesters to the server workstation that has the LAN passthru PC and processor operations PC code.

## Using a non SA OS/390 Copy of Software Installer

If Software Installer is already available on the workstation or LAN server you will be using to install the workstation code (LAN passthru PC and processor operations PC), you may be able to use this copy to install the code.

To see if Software Installer is available, look on the workstation for the file name "*xxxINSTS.EXE*", where "*xxx*" is the prefix of the product used to install Software Installer.

**Note:** If the available file has been supplied by another product, the file may have been tailored to meet the requirements of that product. It may also be at a lower level than what is required by SA OS/390. One way to check the level is to see if there is an Software Installer file named "*xxxIUPCK.EXE*". If there is, then the wrong level of Software Installer is installed and you must

## Installing the Software Installer

use the copy provided by SA OS/390. If you use a copy of Software Installer that is NOT provided by SA OS/390 and run into any difficulty, use the copy provided by SA OS/390.

## Installing an SA OS/390 Copy of the Software Installer

1. Ensure that you have access to the host system from which you will download the code for LAN passthru PC and processor operations PC
2. Log on to a user ID that can access the ING.SINGPWS1 data set or the appropriate data set, if the data set name has been changed.
3. To prepare the host for downloading, position the OS/390 session at the READY prompt in a TSO session.
4. Download the Software Installer Command file.

This step is divided for the LAN passthru PC and the processor operations PC:

- a. *For the LAN passthru PC:* In an OS/2 window, switch to an appropriate directory and enter the following command:

```
RECEIVE INGINENU.CMD a: 'ING.SINGPWS1(INGINENU)'
```

- Replace INGINENU with INGINJPN if installing the Japanese version of LAN passthru PC and processor operations PC.
- Replace a with the host session that you established in step 2 of Software Installer installation.
- If you are not using the ING.SINGPWS1 data set, replace ING.SINGPWS1 with the data set name used in your system.

- b. *For the processor operations PC:* Switch to the root directory. Because you can erase the bootstrap install file after you have installed Software Installer, it is recommended that you use the root directory. Enter:

```
RECEIVE INGINISQ.CMD a: 'ING.SINGPWS1(INGINISQ)'
```

- Replace a with the host session that you established in step 2 of "Installing the Software Installer" on page 163.
- If you are not using the ING.SINGPWS1 data set, replace ING.SINGPWS1 with the data set name used in your system.

5. Run the Software Installer Command file.

This step is divided for the LAN passthru PC and the processor operations PC:

- a. *For the LAN passthru PC:* On the OS/2 command line, enter the following command to **install** the workstation feature:

```
INGINENU d: ING.SINGPWS1 a:
```

If the workstation feature is already installed and you only want to make an **update**, issue the following:

```
INGINENU d: ING.SINGPWS1 a: /update
```

Depending on your keyboard it might be necessary to specify the file transfer code pages to avoid any damage to the CONFIG.SYS.

- Replace INGINENU with INGINJPN if installing the Japanese version of LAN passthru PC and processor operations PC.
- Replace d with the workstation target drive.
- Replace a with the host session established in step 2 of Software Installer installation.
- If you are not using the ING.SINGPWS1 data set, replace ING.SINGPWS1 with the data set name used in your system.

- b. *For the processor operations PC:* On the OS/2 command line, enter the following command:

```
INGINISQ d: ING.SINGPWS1 a:
```

## Installing the Software Installer

- Replace **d** with the workstation target drive.
- Replace **a** with the host session established in step 2 on page 164 of “Installing the Software Installer” on page 163.
- If you have renamed the ING.SINGPWS1 data set during installation, specify your changed data set name.

If the processor operations distributed feature is already installed and you only want to make an **update**, issue the following:

**INGINISQ d: ING.SINGPWS1 a: /update**

### Note:

If the processor operations distributed feature from SA/MVS 1.2 is already installed and you want to install the processor operations distributed feature from SA OS/390 2.1, then do not specify the **/update** option.

6. When you see the question “Would you like to continue with the installation?”, take one of the following steps.
  - If you do not want to install the workstation code at this time:
    - a. Select No.
    - b. Because Software Installer is now installed, you can:
      - for the LAN passthru PC installation, erase the INGINENU.CMD or INGINJPN.CMD file;
      - for the processor operations PC installation, erase the INGINISQ.CMD file;
    - c. When you later want to proceed with installing LAN passthru PC, you must start with step 1 on page 168 of “Installing LAN Passthru PC on a Stand-Alone Workstation” on page 168.

When you later want to proceed with installing the processor operations PC, you must continue with “Step 4B — Installing the Processor Operations Distributed Feature Code from an OS/390 Host” on page 194.
  - If you do want to install the workstation code at this time:
    - a. Enter Yes.
    - b. For the processor operations PC, continue with step 13 on page 195 from the list in “Step 4B — Installing the Processor Operations Distributed Feature Code from an OS/390 Host” on page 194.

For the LAN passthru PC, continue with step 12 on page 169 from the list in “Installing LAN Passthru PC on a Stand-Alone Workstation” on page 168.

## Correcting CONFIG.SYS Errors

If the *CONFIG.SYS* becomes corrupted maybe due to incorrect code pages, take the following actions to resolve the problem.

1. If the workstation does not boot, do the following:
  - When the workstation is booting up there will be a small white box followed by OS/2 in the upper left-hand corner of the display. At this point press the ALT and F1 keys at the same time.
  - This will then display a menu. Select Option C which will display an OS/2 full screen session.

## Installing the Software Installer

- Enter **REN CONFIG.SYS CONFIG.BAD** to rename the bad *CONFIG.SYS* file.
- Enter **DIR CONFIG.\*** which will display a series of *CONFIG* files.
- Notice which *CONFIG* file has the highest extension number and latest date associated to it. This is the *CONFIG.SYS* file prior to the SA OS/390 update.
- Enter **REN CONFIG.xxx CONFIG.SYS** where *xxx* is the extension noticed in the prior step. This will restore the *CONFIG.SYS* file and allow the workstation to successfully start up.

The *CONFIG.SYS* updates for the LAN passthru PC that should have been made are as follows:

DPATH should have `d:\IBMING\GEUI`; added to the end of the line.

A `SET TMP=d:\xxx` entry should be present,

where *xxx* is a valid directory

and *d:* is drive where the directory can be found.

**Note:** In all of the above examples, *d:* is the workstation target drive specified under step 5a on page 164 or step 5b on page 164 where the SA OS/390 workstation code is installed. Additional subdirectories may have been added prior to **IBMING** during installation. If so, the complete additional path must be inserted prior to **IBMING**.

2. If the workstation boots, but *CONFIG.SYS* errors are found then use the above information to either replace the *CONFIG.SYS* file or edit the existing *CONFIG.SYS* and make the appropriate corrections.

---

## Maintaining the Workstations with the Software Installer

This section handles the following topics:

- “Maintaining the Workstation Code”
- “Determining the Current Level”
- “Applying a New Service Level” on page 167
- “Restoring the Preceding Level” on page 167
- “Deleting the LAN Passthru PC or the Processor Operations PC” on page 168

### Maintaining the Workstation Code

The workstation components should be serviced using Software Installer. This service includes installing updates, and deleting existing code. Note that this method of deleting installed component software should be used for any error that occurs in the installation process. Before retrying the installation, the installed software should be removed with Software Installer.

For maintenance, first stop the processor operations PC or LAN passthru PC with the SHUTDOWN command. In addition, if updating, it is necessary to deselect the ‘Save a backup version of the installed product’ checkbox in the update dialog.

### Determining the Current Level

1. Change directories to the directory in which Software Installer resides. The default is **C:\IBMING**.
2. To start Software Installer, enter **INGINSTS**.
3. For the LAN passthru PC, select *System Automation for OS/390* on the **Installation and Maintenance** window.

For the processor operations PC, select *SA OS/390 ProcOps* on the **Installation and Maintenance** window.

## Maintaining the Workstations with the Software Installer

4. Select the *Details* menu bar choice.
5. Select *Product Status...* to display the data on the **Product Status** window.
6. Select the *Service Level...* push button to display the data on the **Service Level** window.
7. Select the *Cancel* push button to display the data on the **Product Status** window.
8. Select the *Cancel* push button to display the data on the **Installation and Maintenance** window.
9. Close Software Installer.

## Applying a New Service Level

1. Log on to an OS/390 user ID with access to the ING.SINGPWS1 data set or to its equivalent data set, the name of which you changed.
2. Switch to the directory in which Software Installer resides. The default is **C:\IBMING**.
3. To start Software Installer, enter for example:

```
INGINSTS /S:ING.SINGPWS1
```

Replace **ING.SINGPWS1** with the name of the OS/390 data set that contains the code.

4. For the LAN passthru PC, select *System Automation for OS/390* on the **Installation and Maintenance** window.  
For the processor operations PC, select *SA OS/390 ProcOps* on the **Installation and Maintenance** window.
5. Select the *Action* menu bar choice.
6. Select *Update...* to display the **Update** window.
7.
  - a. If you wish to update the CONFIG.SYS file, the *Update CONFIG.SYS* option must be selected. If you are updating on a LAN server or if you want to update the CONFIG.SYS file manually on your machine: De-select the *Update CONFIG.SYS* option.
  - b. Select the *OK* push button.
  - c. If you did not select the *Update CONFIG.SYS* option, a warning message tells you that the Software Installer will not update your CONFIG.SYS file. Select the *YES* push button.
  - d. A warning message tells you that the Software Installer will not be able to restore the previous level. Select the *YES* push button.
8. Select the *OK* push button after you see a message that indicates downloading has completed successfully.
9. Close Software Installer.
10. If you de-selected the *Update CONFIG.SYS* option in step 7 and if the new level requires your CONFIG.SYS file to be updated, refer to "Installing LAN Passthru PC on a Stand-Alone Workstation" on page 168.

## Restoring the Preceding Level

1. Switch to the directory in which Software Installer resides. The default is **C:\IBMING**.
2. To start Software Installer, enter **INGINSTS**.

## Maintaining the Workstations with the Software Installer

3. For the LAN passthru PC, select *SA OS/390* on the **Installation and Maintenance** window.  
For the processor operations PC, select *SA OS/390 ProcOps* on the **Installation and Maintenance** window.
4. Select the *Action* menu bar choice.
5. Select *Restore...* to display the **Restore** window and start processing.
6. Select the *OK* push button when you see the message indicating that the restore process has completed successfully.
7. Close Software Installer.

## Deleting the LAN Passthru PC or the Processor Operations PC

1. Switch to the directory in which Software Installer resides. The default is **C:\IBMING**.
2. To start Software Installer, enter **INGINSTS**.
3. For the LAN passthru PC, select *SA OS/390* on the **Installation and Maintenance** window.  
For the processor operations PC, select *SA OS/390 ProcOps* on the **Installation and Maintenance** window.
4. Select the *Action* menu bar choice.
5. Select *Delete...* to display the **Delete** window.
6. Select the *Delete* push button to start the delete process.
7. Select the *OK* push button when you see the message indicating that the delete process has completed successfully.
8. Close the Software Installer.

---

## Installing the LAN Passthru PC

This chapter contains information on how to install the code for the LAN passthru PC. Before you start, you should have read the considerations presented in "Planning to Install the LAN Passthru PC" on page 39.

### Installing LAN Passthru PC on a Stand-Alone Workstation

1. Log on to an OS/390 user ID with access to the OS/390 data set containing the workstation feature. This data set is named **ING.SINGPWS1** when it is shipped from IBM, but the name may have been changed by host personnel.
2. Change to the drive and directory where *SA OS/390* is installed, for example **d:\...\IBMING**. Start the installation by entering  
**INGINSTS /S:ING.SINGPWS1**

Replace **ING.SINGPWS1** with the name of the OS/390 data set that contains the code for the workstation feature (see **4** in "Step 1 — SMP/E Installation" on page 101).

3. Select *File* as the choice on the menu bar of the **Installation and Maintenance** window.
4. Select *Open catalog*.
5. Select *Host...* to display the **Open host catalog** window.
6. Select the **Host session** you want to use.
7. Select the **MVS** radio button under **Host operating system**.

## Installing the LAN Passthru PC

Enter ING.SINGPWS1(INGCATE) in the Filename field under the catalog section.

- a. If you are not using the ING.SINGPWS1 data set, replace **ING.SINGPWS1** with the changed data set name.
- b. Replace INGCATE with INGCATJ if you are installing the Japanese workstation code.

**Note:** If you have installed the Japanese version of the host code, you must install the Japanese version of LAN passthru PC and processor operations PC.

8. Select the *Open* push button to get the selected catalog file from OS/390.
9. Select *System Automation for OS/390* on the **Installation and Maintenance** window.
10. Select the *Action* menu bar choice.
11. Select *Install* to display the **Install** window. The SA OS/390 product subdirectories are created (if they do not exist) under the directory specified.
12. If you wish to update the CONFIG.SYS file, select the **OK** push button.  
If you install on a LAN server, do not update the CONFIG.SYS file.  
If you are installing on a LAN server or if you do not want to update your CONFIG.SYS file on your machine:
  - a. De-select the **Update CONFIG.SYS** option.
  - b. Select the **OK** push button.
  - c. A warning message will inform you that Software Installer will not update your CONFIG.SYS file. Confirm this by selecting the **Yes** push button.
13. When the **Install - Directories** window is displayed, either accept the defaults or enter your own. If you are installing on a LAN server, you can change the drive but do not change the directory.
14. Select *Install...* to start the download processing.
15. Select the **OK** push button when you see the message that indicates successful completion.
16. Close Software Installer.
17. If you did not install the workstation feature on a LAN server *and* if you de-selected the *Update CONFIG.SYS* option, you must now update your CONFIG.SYS file.  
Or after you applied a service level to the workstation feature that affects the values in the CONFIG.SYS file, you should:
  - a. Compare CONFIG.ADD to CONFIG.SYS.
  - b. If SA OS/390 values are the only differences between the two files, rename the CONFIG.ADD file to become the CONFIG.SYS file.
  - c. Reboot your workstation.
18. If you used Software Installer to update your CONFIG.SYS file, shut down your workstation and reboot, and you are done.

## Configuring APPC Connections for the LAN Passthru PC

After a successful LAN passthru PC installation, you need to edit your OS/2 Access Feature configuration file (NDF) as described in the following sample NDF. This sample NDF is a sample LAN passthru PC configuration for two processor operations PCs. The number of processor operations PCs defined in the NDF must be the same as defined in the processor control file that you build using the customization dialog (see *System Automation for OS/390 Defining Automation Policy*).

## Installing the LAN Passthru PC

```
DEFINE_LOCAL_CP FQ_CP_NAME(DEIBMD1.X7FEB6 )
                DESCRIPTION(Test)
                CP_ALIAS(X7FEB6 )
                NAU_ADDRESS(INDEPENDENT_LU)
                NODE_TYPE(EN)
                NODE_ID(X'05DFE6BC')
                NW_FP_SUPPORT(NONE)
                HOST_FP_SUPPORT(NO)
                DLUR_MULTISUBNET_SUPPORT(YES)
                FREE_UNUSED_SESSIONS(NO)
                FREE_UNUSED_SESSIONS_TIME(10)
                MAX_COMP_LEVEL(NONE)
                MAX_COMP_TOKENS(0);

DEFINE_LOGICAL_LINK LINK_NAME(HOST0001)
                   ADJACENT_NODE_TYPE(LEN)
                   DLC_NAME(IBMTRNET)
                   ADAPTER_NUMBER(0)
                   DESTINATION_ADDRESS(X'40001000000104')
                   ETHERNET_FORMAT(NO)
                   CP_CP_SESSION_SUPPORT(NO)
                   PU_NAME(X7FEB6 )
                   SOLICIT_SSCP_SESSION(YES)
                   NODE_ID(X'05DFE6BC')
                   USE_PUNAME_AS_CPNAME(NO)
                   MAX_ACTIVATION_ATTEMPTS(USE_ADAPTER_DEFINITION)
                   AUTO_REACTIVATE(NO_RETRY)
                   ACTIVATE_AT_STARTUP(YES)
                   LIMITED_RESOURCE(USE_ADAPTER_DEFINITION)
                   LINK_STATION_ROLE(USE_ADAPTER_DEFINITION)
                   EFFECTIVE_CAPACITY(USE_ADAPTER_DEFINITION)
                   COST_PER_CONNECT_TIME(USE_ADAPTER_DEFINITION)
                   COST_PER_BYTE(USE_ADAPTER_DEFINITION)
                   SECURITY(USE_ADAPTER_DEFINITION)
                   PROPAGATION_DELAY(USE_ADAPTER_DEFINITION)
                   HPR_SUPPORT(NO)
                   LIMITED_RESOURCE_TIMEOUT(USE_ADAPTER_DEFINITION)
                   INACTIVITY_TIMEOUT(USE_ADAPTER_DEFINITION)
                   USER_DEFINED_1(USE_ADAPTER_DEFINITION)
                   USER_DEFINED_2(USE_ADAPTER_DEFINITION)
                   USER_DEFINED_3(USE_ADAPTER_DEFINITION);

DEFINE_LOGICAL_LINK LINK_NAME(PROC1) 1
                   FQ_ADJACENT_CP_NAME(DEIBMD1.X7F1F1)
                   ADJACENT_NODE_TYPE(LEARN)
                   DLC_NAME(IBMTRNET)
                   ADAPTER_NUMBER(0)
                   DESTINATION_ADDRESS(X'002035311F73')
                   ETHERNET_FORMAT(NO)
                   CP_CP_SESSION_SUPPORT(NO)
                   SOLICIT_SSCP_SESSION(NO)
                   ACTIVATE_AT_STARTUP(NO)
                   USE_PUNAME_AS_CPNAME(NO)
                   LIMITED_RESOURCE(NO)
                   LINK_STATION_ROLE(USE_ADAPTER_DEFINITION)
                   MAX_ACTIVATION_ATTEMPTS(USE_ADAPTER_DEFINITION)
                   EFFECTIVE_CAPACITY(USE_ADAPTER_DEFINITION)
                   COST_PER_CONNECT_TIME(USE_ADAPTER_DEFINITION)
                   COST_PER_BYTE(USE_ADAPTER_DEFINITION)
                   SECURITY(USE_ADAPTER_DEFINITION)
                   PROPAGATION_DELAY(USE_ADAPTER_DEFINITION)
                   USER_DEFINED_1(USE_ADAPTER_DEFINITION)
                   USER_DEFINED_2(USE_ADAPTER_DEFINITION)
                   USER_DEFINED_3(USE_ADAPTER_DEFINITION);

DEFINE_LOCAL_LU LU_NAME(X7FEB0A) 2
```

## Installing the LAN Passthru PC

```

        LU_ALIAS(EGVPC )
        NAU_ADDRESS(INDEPENDENT_LU);

DEFINE_LUA LU_NAME(@LUA0001)
           HOST_LINK_NAME(HOST0001)
           NAU_ADDRESS(2);

DEFINE_LUA LU_NAME(@LUA0002)
           HOST_LINK_NAME(HOST0001)
           NAU_ADDRESS(3);

DEFINE_LUA LU_NAME(@LUA0003)
           HOST_LINK_NAME(HOST0001)
           NAU_ADDRESS(4);

DEFINE_LUA LU_NAME(@LUA0004)
           HOST_LINK_NAME(HOST0001)
           NAU_ADDRESS(5);

DEFINE_LUA LU_NAME(@LUA0005)
           HOST_LINK_NAME(HOST0001)
           NAU_ADDRESS(6);

DEFINE_LUA LU_NAME(@LUA0006)
           HOST_LINK_NAME(HOST0001)
           NAU_ADDRESS(7);

DEFINE_LUA LU_NAME(@LUA0007)
           HOST_LINK_NAME(HOST0001)
           NAU_ADDRESS(8);

DEFINE_LUA LU_NAME(@LUA0008)
           HOST_LINK_NAME(HOST0001)
           NAU_ADDRESS(9);

DEFINE_PARTNER_LU FQ_PARTNER_LU_NAME(DEIBMD1.X7F1F10A) 3
                 DESCRIPTION(LanPT partner definition for ProcOps PC BBTSCF1)
                 PARTNER_LU_ALIAS(BBTSCF1)
                 PARTNER_LU_UNINTERPRETED_NAME(X7F1F10A)
                 MAX_MC_LL_SEND_SIZE(32767)
                 CONV_SECURITY_VERIFICATION(NO)
                 PARALLEL_SESSION_SUPPORT(YES);

DEFINE_PARTNER_LU_LOCATION FQ_PARTNER_LU_NAME(DEIBMD1.X7F1F10A) 4
                          WILDCARD_ENTRY(NO)
                          FQ_OWNING_CP_NAME(DEIBMD1.X7F1F1)
                          LOCAL_NODE_NN_SERVER(NO)
                          DESCRIPTION(LanPT partner definition for ProcOps PC BBTSCF1);

DEFINE_MODE MODE_NAME(DSIL6MOD) 5
            COS_NAME(#CONNECT)
            DEFAULT_RU_SIZE(YES)
            RECEIVE_PACING_WINDOW(4)
            MAX_NEGOTIABLE_SESSION_LIMIT(32767)
            PLU_MODE_SESSION_LIMIT(8)
            MIN_CONWINNERS_SOURCE(0)
            PACING_TYPE(ADAPTIVE)
            COMPRESSION_NEED(PROHIBITED)
            PLU_SLU_COMPRESSION(NONE)
            SLU_PLU_COMPRESSION(NONE)
            SESSION_LEVEL_ENCRYPTION(NO)
            APPN_ENCRYPTION_SUPPORT(NO);

DEFINE_DEFAULTS IMPLICIT_INBOUND_PLU_SUPPORT(YES)
                DEFAULT_MODE_NAME(BLANK)
```

## Installing the LAN Passthru PC

```
MAX_MC_LL_SEND_SIZE(32767)
DIRECTORY_FOR_INBOUND_ATTACHES(*)
DEFAULT_TP_OPERATION(NONQUEUED_AM_STARTED)
DEFAULT_TP_PROGRAM_TYPE(BACKGROUND)
DEFAULT_TP_CONV_SECURITY_RQD(NO)
MAX_HELD_ALERTS(10)
DEFAULT_ROUTING_PREFERENCE(NATIVE_FIRST)
IMPLICIT_LINK_HPR_SUPPORT(YES)
RETRY_COUNT(6)
ALIVE_TIMER(60)
PATH_SWITCH_TIMER_LOW(480)
PATH_SWITCH_TIMER_MEDIUM(240)
PATH_SWITCH_TIMER_HIGH(120)
TN3270E_PORT(23)
TN3270E_KEEPALIVE_TYPE(NONE)
TN3270E_AUTOMATIC_LOGOFF(0)
DISABLE_DLUR_REGISTRATION(NO)
DEFAULT_LOCAL_LU_ALIAS(EGVPC ); 6
```

```
START_ATTACH_MANAGER;
```

```
DEFINE_PARTNER_LU FQ_PARTNER_LU_NAME(DEIBMD1.X7F2F20A) 7
DESCRIPTION(LanPT connection to ProcOps PC BBTSCF2)
PARTNER_LU_ALIAS(BBTSCF2)
PARTNER_LU_UNINTERPRETED_NAME(X7F2F20A)
MAX_MC_LL_SEND_SIZE(32767)
CONV_SECURITY_VERIFICATION(NO)
PARALLEL_SESSION_SUPPORT(YES);
```

```
DEFINE_PARTNER_LU_LOCATION FQ_PARTNER_LU_NAME(DEIBMD1.X7F2F20A) 8
WILDCARD_ENTRY(NO)
FQ_OWNING_CP_NAME(DEIBMD1.X7F2F)
LOCAL_NODE_NN_SERVER(NO)
DESCRIPTION(LanPT connection to ProcOps PC BBTSCF2);
```

```
DEFINE_LOGICAL_LINK LINK_NAME(PROC2) 9
FQ_ADJACENT_CP_NAME(DEIBMD1.X7F2F)
ADJACENT_NODE_TYPE(LEARN)
DLC_NAME(IBMTRNET)
ADAPTER_NUMBER(0)
DESTINATION_ADDRESS(X'004123456781')
ETHERNET_FORMAT(NO)
CP_CP_SESSION_SUPPORT(NO)
SOLICIT_SSCP_SESSION(NO)
ACTIVATE_AT_STARTUP(NO)
USE_PUNAME_AS_CPNAME(NO)
LIMITED_RESOURCE(NO)
LINK_STATION_ROLE(USE_ADAPTER_DEFINITION)
MAX_ACTIVATION_ATTEMPTS(USE_ADAPTER_DEFINITION)
EFFECTIVE_CAPACITY(USE_ADAPTER_DEFINITION)
COST_PER_CONNECT_TIME(USE_ADAPTER_DEFINITION)
COST_PER_BYTE(USE_ADAPTER_DEFINITION)
SECURITY(USE_ADAPTER_DEFINITION)
PROPAGATION_DELAY(USE_ADAPTER_DEFINITION)
USER_DEFINED_1(USE_ADAPTER_DEFINITION)
USER_DEFINED_2(USE_ADAPTER_DEFINITION)
USER_DEFINED_3(USE_ADAPTER_DEFINITION);
```

**1**

- For every processor operations PC that you define, you must select one link definition (LINK\_NAME). The name must start with PROC and you can append 1 - 9 or A - Z.
- The FQ\_ADJACENT\_CP\_NAME consists of two parts:

## Installing the LAN Passthru PC

1. the SNA network name of the processor operations PC
  2. the CP name (PU name, physical unit name)
- The DESTINATION\_ADDRESS field contains the address (MAC address) of the token-ring card of the processor operations PC in hexadecimal notation.

### 2

- The LU\_NAME is the name of the logical unit for APPC communication (independent LU).
- The LU\_ALIAS must be EGVPC (as shown) for LAN Passthru.

### 3

- FQ\_PARTNER\_LU\_NAME must contain the fully qualified name (two parts):
  1. the network ID
  2. the LU name defined in the processor operations PC
- PARTNER\_LU\_ALIAS can be of your choice (eight alphanumeric characters).
- PARTNER\_LU\_UNINTERPRETED\_NAME must be identical to second part of FQ\_PARTNER\_LU\_NAME.

### 4

FQ\_OWNING\_CP\_NAME must be identical with FQ\_ADJACENT\_CP\_NAME specified under **1**.

### 5

MODE\_NAME must be DSIL6MOD (as shown in the example).

### 6

The DEFAULT\_LOCAL\_LU\_ALIAS must be EGVPC (as shown) for LAN Passthru.

### 7

corresponds to **3** for the second processor operations PC

### 8

corresponds to **4** for the second processor operations PC

### 9

corresponds to **1** for the second processor operations PC

---

## Installing the Processor Operations PC

This chapter contains information on how to install the code for the processor operations PC. Before you start, you should have read the considerations presented in “Planning to Install the Processor Operations PCs” on page 40.

### Note:

Note that the *processor operations PC* (ProcOps PC) often is referred to as *processor operations PS/2* in both SA OS/390 panels and SA OS/390 documentation.

## Step 1 — Configuring the Processor Operations PC

This section discusses installing the necessary hardware and software for your processor operations PC. Follow these steps:

1. Install the hardware.
2. Configure either an MCA bus, a PCI bus, or an ISA bus personal computer.
3. Install the prerequisite software.
4. Configure APPC connections.

## Step 1 — Configuring the Processor Operations PC

**Note:** For a NetView connection, see *S/390 Managing Your Processors* for information about hardware and software configuration requirements.

See “Processor Operations PC Hardware” on page 46, for descriptions and feature codes of the required hardware.

### Step 1A — Installing the Hardware

The PC needs the following hardware:

- Additional memory (if necessary)
- Communication card
- Connection cards

**Installing Additional Memory:** The PC must run both the OS/2 program and the processor operations distributed feature code. The minimum amount of memory needed to operate the required software on OS/2 Warp is 8MB. However, 16MB or more is recommended.

You can use any memory configuration supported by the OS/2 program. Follow the installation instructions provided with the memory expansion items.

**Installing the Communication Card:** SA OS/390 uses the OS/2 Access Feature, which supports two types of communication connections: token-ring and SDLC.

Install either the token-ring card or the SDLC card, whichever is appropriate for your site.

You should use any SDLC or token-ring adapter that is supported by OS/2 Access Feature.

**Installing Connection Cards:** Install an RS-422 adapter card or a 3278/79 emulation adapter card for an MCA or ISA bus or install a card for a PCI bus.

### Step 1B — Configuring the Connection Cards

Select from the following alternatives:

- “Configuring an MCA Bus PC”
- “Configuring an ISA Bus PC” on page 175
- “Configuring a PCI Bus PC” on page 180

**Configuring an MCA Bus PC:** Configuration information for MCA bus PCs is maintained by utilizing a reference disk. Because of this, the PC needs to be booted with its reference disk to update the configuration of the new adapter. When an adapter is installed in an MCA PC, the configuration change is detected during boot, and an error code is displayed (usually 162 or 165). This section will describe how to configure the two supported RS-422 adapters in an MCA bus PC.

*RS-422 Adapter Configuration:* Two RS-422 adapters, Opto 22’s AC-32 and Qua Tech’s DS-2000, are supported by processor operations. Both cards have an options disk that needs to be copied to your backup copy of the reference disk for the PC. Once this has been accomplished, you can proceed to the *Set Configuration* menu and configure the adapter. Both adapters support the configuration of the two I/O channels in a variety of different addresses and interrupt levels. However, the processor operations distributed feature only supports the usage of COM1, COM2, or COM3. The values set during the configuration of the adapter should be written in the worksheet in Figure 9 on page 43 for later use when the SA OS/390 customization dialog is prepared.

## Step 1 — Configuring the Processor Operations PC

**Note:** It is recommended that unused serial ports, including the system unit's built-in serial ports, be disabled.

### *Opto 22 AC-32 Configuration*

The Opto 22 AC-32 Dual Channel RS-422 adapter card for Micro Channel Computers has two I/O channels and can be configured as COM1 through COM8. When the *Set Configuration* panel is displayed, there is one field to configure for each channel. Select either COM1, COM2, COM3, or OFF for each channel. You must ensure that you select an available COM resource. If, for example, as you are configuring a PS/2 Model 80, you do not disable the built-in system unit serial port and you attempt to set channel A of the AC-32 adapter to COM1, an asterisk appears to the right of the selection, indicating that the value would conflict with an existing configured value.

The AC-32 adapter is no longer manufactured by Opto 22, but it continues to be supported by processor operations for connection to 9121 processors.

### *Qua Tech DS-2000 Configuration*

The Qua Tech DS-2000 2 channel RS-422 Communications adapter has two I/O channels and utilizes two values for configuring each channel, *address* and *interrupt*. The *address* and *interrupt* together define what the processor operations distributed feature considers the COM address (such as COM1, COM2, COM3). The *address* values for each channel range from Serial1 through Serial8, eight different I/O address ranges, and disabled. The *interrupt* values for each channel includes IRQ 3, IRQ 4, IRQ 7, and IRQ 9. The following table shows the supported configuration settings of the DS-2000 for use with the processor operations distributed feature.

Table 22. Supported Qua Tech DS-2000 Configuration Settings

COM Address	Address setting	Interrupt setting
COM1	Serial1	IRQ 4
COM2	Serial2	IRQ 3
COM3	Serial3	IRQ 3

**Note:** If either of the channels is not to be used, the address should be set to "Disabled". The interrupt selected on a "Disabled" channel is not used.

You must ensure that you select an available *address* resource. If, for example, as you are configuring a PS/2 Model 80, you do not disable the built-in system unit serial port and you attempt to set channel 1 of the DS-2000 adapter to Serial 1 and IRQ 4, an asterisk appears to the right of the selection indicating the value would conflict with an existing configured value.

**Configuring an ISA Bus PC:** As stated earlier, the processor operations distributed feature can now be run on an ISA bus, IBM-compatible PC capable of running OS/2. In contrast to MCA bus PCs, there are many manufacturers that produce ISA bus, IBM-compatible PCs. The following configuration information was modeled after the settings and procedures necessary to configure processor operations support on an IBM PC 350. The manner in which other manufacturers present configuration information varies widely. Therefore, specific procedures for the test system are generalized in an attempt to relay the relevant information.

## Step 1 — Configuring the Processor Operations PC

The following configuration information for the console connection cards describes the various switch and jumper settings for the 3270 and RS-422 type consoles. The use of built in serial ports for the use of RS-232 TPF consoles and WWV receivers is assumed, and therefore configuration information needs to be provided by the manufacturer of the system unit.

*3278/79 Emulation Adapter:* The supported ISA bus adapter for 3270 type consoles is the IBM 3278/79 Emulation card. This adapter has one switch assembly containing four switches. Switch 1 and Switch 2 are used to set the base I/O address for the adapter and allow for up to four adapters to be used simultaneously. Switch 3 is used to enable the adapter to be used in slot 8 of certain PCs and should be left in the factory default setting of OFF. Switch 4 is not used and should be left in the factory default setting of ON. The following table depicts the supported switch assemble settings for the 3278/79 Emulator adapter.

*Table 23. IBM 3278/79 Emulation Adapter Switch Assemble Settings*

Sw1	Sw2	Sw3	Sw4	I/O Address Range	Card Assignment
On	On	Off	On	02D0h-02DFh	First*
Off	On	Off	On	06D0h-06DFh	Second
On	Off	Off	On	0AD0h-0ADFh	Third
Off	Off	Off	On	0ED0h-0EDFh	Fourth

**Note:** \* These are the default settings the 3278/79 Emulator adapter card are shipped with.

In addition to the adapter switch setting configuration, the processor operations distributed feature CUT mode emulator device driver also needs to be configured to use a different RAM address for each 3278/79 adapter installed in the PC. This configuration is accomplished by modifying the DEVICE statement for the CUT mode emulator device driver in the CONFIG.SYS file. This DEVICE statement is automatically added by the processor operations distributed feature download process but does not contain the required RAM address parameters for the installed 3278/79 adapters. The RAM address parameter is specified by indicating the card number (1–4) and the two hexadecimal characters that represent bits 12 through 19 of the RAM address. See Table 24 for the mapping of the RAM address to the bit 12–19 representation. For the syntax of the DEVICE statement, see step 19 on page 195 of the list in “Step 4B — Installing the Processor Operations Distributed Feature Code from an OS/390 Host” on page 194.

*Table 24. RAM Address Bit 12–19 Mapping*

RAM Addresses Used	Address Bits 12–19
0CE000h-0CFFFFh	CE
0CA000h-0CBFFFh	CA
0CC000h-0CDFFFh	CC
0D0000h-0D1FFFh	D0
0D2000h-0D3FFFh	D2
0D4000h-0D5FFFh	D4
0D6000h-0D7FFFh	D6
0D8000h-0D9FFFh	D8
0DA000h-0DBFFFh	DA
0DC000h-0DDFFFh	DC
0DE000h-0DFFFFh	DE

## Step 1 — Configuring the Processor Operations PC

Table 24. RAM Address Bit 12–19 Mapping (continued)

RAM Addresses Used	Address Bits 12–19
<b>Note:</b> The RAM address in the DEVICE statement may be specified in either upper, lower, or mixed case (such as CE, ce, Ce, or cE).	

After the switch settings have been made and the adapters have been installed into the PC, the PC's setup utility needs to run. The following items should be checked for conflicts. If conflicts exist, they need to be resolved.

- The processor operations distributed feature CUT mode emulator device driver uses interrupt level 9 to communicate with the 3270 adapters, so the IRQ 9 resource must be made available.
- The RAM addresses to be used for the 3270 adapters must be available.
- If your PC has a ROM shadowing feature, ROM shadowing must be disabled for the RAM addresses selected for use of the 3270 adapters.

*RS-422 Adapter:* Two ISA bus RS-422 adapters, Opto 22's AC-24AT adapter and Qua Tech's DS-200S adapter, are supported by processor operations. Both adapters support the configuration of the I/O channels by setting a series of switches and jumpers to control which COM resource is used and the I/O characteristics of the channels. Although both of these adapters support a wide range of operating characteristics, the processor operations distributed feature only supports the usage of COM1, COM2, or COM3. The values set during the configuration of the adapter should be written in the worksheet in the Figure 9 on page 43 for later use when the customization dialog is prepared.

**Note:** It is recommended that unused serial ports, including the system unit's built-in serial ports, be disabled.

In addition to the adapter jumper and switch setting configuration, the OS/2 COM device driver also needs to be modified to match the adapters jumper and switch settings. This modification is accomplished by adding parameters to the DEVICE statement for the OS/2 COM.SYS device driver in the CONFIG.SYS file. This DEVICE statement is automatically added by the OS/2 Warp installation programs, but its parameters are not added. For a complete description of the COM.SYS device driver and its syntax, view the OS/2 online Command Reference. The COM.SYS documentation is listed under the DEVICE command description. The following are examples (from the CONFIG.SYS file of an OS/2 Warp system) of how the DEVICE statement may be updated.

In the next example, the COM device driver statement shows the default statement installed by the OS/2 Warp install program.

```
DEVICE=C:\OS2\BOOT\COM.SYS
```

The next example has been modified to configure COM1 (using a base I/O address of 3F8, and IRQ 4) and COM2 (using a base I/O address of 2F8 and IRQ 3).

```
DEVICE=C:\OS2\BOOT\COM.SYS (1,3F8,4) (2,2F8,3)
```

The next example builds on the preceding one by adding a parameter for COM3 (using a base I/O 3E8 and IRQ 5).

```
DEVICE=C:\OS2\BOOT\COM.SYS (1,3F8,4) (2,2F8,3) (3,3E8,5)
```

## Step 1 — Configuring the Processor Operations PC

### *Opto 22 AC-24AT Adapter Configuration*

The Opto 22 AC-24AT is a single-channel RS-422 adapter card for IBM-compatible, ISA bus computers and can be configured as either COM1, COM2, or COM3. The factory presets for the AC-24AT are configured to operate as COM2, using a base I/O address of 3F8 in full-duplex mode.

The Group A jumpers select the base I/O address the adapter will use. It contains seven jumpers that correspond to the base I/O address bits 9 through 3. Group A jumper 9 maps to base I/O address bit 9, jumper 3 maps to base I/O address bit 3, and so on. Installing a jumper causes the corresponding address bit to be turned off, so the factory preset base I/O address (jumper installed on 8) is 2F8 in hexadecimal (address bit 9 and 7 through 3 are all on).

Hexadecimal Address	2	F	8
Binary Address	0010	1111	1000
Group A Jumpers	--98	7654	3---

The Group B jumpers are for configuring the RS-422 transmitter. Jumpers should be installed on B2, B4, B5, and B6 (which are factory presets).

The Group C jumpers are for configuring the RS-422 receivers. Jumpers should be installed on C2, C4, C5, and C6 (which are factory presets).

In addition to the jumper groups, there is a collection of individual jumpers that are used to configure the interrupt level, duplex mode, and how many wires are used for transmitting and receiving data on the adapters channel.

Table 25 shows the combination of jumper settings required to configure the AC-24AT.

*Table 25. Opto 22 AC-24AT Adapter Jumper Settings*

COM Resource	Individual Jumpers	Group A Jumpers	Group B Jumpers	Group C Jumpers	COM.SYS Parameter
COM1	COM1, CTS	None (Addr = 3F8)	B2, B4, B5, B6	C2, C4, C5, C6	(1,3F8,4)
COM2	COM2, CTS	A8 (Addr = 2F8)	B2, B4, B5, B6	C2, C4, C5, C6	(2,2F8,3)
COM3	IRQ5, CTS	A4 (Addr = 3E8)	B2, B4, B5, B6	C2, C4, C5, C6	(3,3E8,5)

### *Qua Tech DS-200S Adapter Configuration*

The Qua Tech DS-200S adapter is a two-channel RS-422 communications adapter for IBM-compatible, ISA bus computers. Each channel can be configured as COM1, COM2, COM3, or disabled. There are eight sets of jumper blocks and four switch assemblies that are utilized to configure the adapters two channels. Table 26 on page 179 shows the supported configuration settings of the DS-200S for processor operations. See Table 27 on page 179 for a description of what each jumper setting configures.

**Note:** Qua Tech sells the DS-200 adapter with either 16450 or 16550 UARTs. Specifying the DS-200S results in a proper order with 16550 UARTs. The DS-200 adapter with the 16450 UARTs is not supported because of problems that have been encountered with screen integrity.

## Step 1 — Configuring the Processor Operations PC

Table 26. Qua Tech DS-200S Switch and Jumper Settings

COM Port	Switch and Jumper settings						
	SW1/SW3	SW2/SW4	J1	J2	J3/J4	J5/J7	J6/J8
COM1	11111100	000001	1-2	1-2	IRQ4	1-4	5-6
	(I/O address= 3F8)		3-6	4-5		2-5	
COM2	11111101	000001	1-2	1-2	IRQ3	1-4	5-6
	(I/O address= 2F8)		3-6	4-5		2-5	
COM3	11111100	000101	1-2	1-2	IRQ5	1-4	5-6
	(I/O address= 3E8)		3-6	4-5		2-5	
Disabled	xxxxxxx	xxxxx0	n/a	n/a	n/a	n/a	n/a
	(channel disabled)						

**Note:** The values for switch 1 through 4 are represented as 1s and 0s and are listed in ascending order (1–8 or 1–6, 1 being the left most bit). 1 indicates the switch is to be placed in the ON position, and 0 indicates the switch should be placed in the OFF position. The use of x and n/a for the disabled COM address columns is intended to indicate that these settings are not relevant and can be left as is.

Table 27. Qua Tech DS-200S Switch and Jumper Descriptions

Jumper Block	Pins Jumped	Setting Description
J1	1-2 3-6 4-5	Divides the adapters internal 18.432MHz clock by 10 to produce a standard 1.8432MHz input clock to the cards drivers.
J2	1-2	Dedicates the interrupt level (IRQ) for channel 1
	4-5	Dedicates the interrupt level (IRQ) for channel 2
J3	IRQ4	Sets channel 1 to use interrupt request level 4. This IRQ level is used when channel 1 is to operate as COM1.
	IRQ3	Sets channel 1 to use interrupt request level 3. This IRQ level is used when channel 1 is to operate as COM2.
	IRQ5	Sets channel 1 to use interrupt request level 5. This IRQ level is used when channel 1 is to operate as COM3.
J4	IRQ4	Sets channel 2 to use interrupt request level 4. This IRQ level is used when channel 2 is to operate as COM1.
	IRQ3	Sets channel 2 to use interrupt request level 3. This IRQ level is used when channel 2 is to operate as COM2.
	IRQ5	Sets channel 2 to use interrupt request level 5. This IRQ level is used when channel 2 is to operate as COM3.
J5	1-4	Defeats the RTS/CTS handshake on channel 1 by looping the RTS output to the CTS input. This is referred to as an RTS/CTS loopback.
	2-5	Connects the auxiliary output (AUXOUT) to the auxiliary input (AUXIN) on channel 1, which is referred to as AUXOUT/AUXIN loopback.
	3-6	Connects the transmitter output clock to the receivers input clock for channel 1. This is referred to as a RCLK/XCLK loopback.
J6	5-6	Sets channel 1 to operate in full duplex mode.

## Step 1 — Configuring the Processor Operations PC

Table 27. Qua Tech DS-200S Switch and Jumper Descriptions (continued)

Jumper Block	Pins Jumpered	Setting Description
J7	1-4	Defeats the RTS/CTS handshake on channel 2 by looping the RTS output to the CTS input. This is referred to as an RTS/CTS loopback.
	2-5	Connects the auxiliary output(AUXOUT) to the auxiliary input(AUXIN) on channel 2, which is referred to as AUXOUT/AUXIN loopback.
	3-6	Connects the transmitter output clock to the receivers input clock for channel 2. This is referred to as a RCLK/XCLK loopback.
J8	5-6	Sets channel 2 to operate in full duplex mode.

**Configuring a PCI Bus PC:** Unlike ISA bus cards, PCI bus cards are plug-and-play devices: there are no switches on the card for defining an I/O base address. Also, the processor operations distributed feature CUT mode emulator device driver does not need parameters to learn the address of the 3270 card's memory buffer.

However, the device driver still has to be informed (via parameters on the DEVICE statement in CONFIG.SYS) that it should use an installed 3270 PCI adapter card.

This configuration is accomplished by modifying the DEVICE statement for the CUT mode emulator device driver in the CONFIG.SYS file. This DEVICE statement is automatically added by the processor operations distributed feature download process, but will not contain the required parameters for the installed 3270 adapters.

*BIOS Setup Considerations:* If the customer uses a mixture of PCI and ISA bus cards in his processor operations PC, the PC's BIOS has to be configured to avoid possible conflicts.

The processor operations PC CUT mode device driver communicates with the 3270 emulator cards via interrupts. ISA bus 3270 cards always use interrupt request level (IRQ) 9, so IRQ 9 should not be available for PCI cards if ISA bus cards are being used.

The same is true for the RAM addresses to be used for 3270 ISA bus adapter cards. If the DEVICE statement in the CONFIG.SYS is modified for an ISA bus 3270 card to use a RAM address range, this address range must also be made available.

PCI bus 3270 cards are more flexible: the computer's PCI BIOS chooses an IRQ to be used by the card and the device driver learns about the chosen IRQ during OS/2 boot time. However, the computer's BIOS does not always know about the IRQs and RAM address ranges used by other ISA bus cards installed in the system.

An example for an interrupt conflict is: an ISA bus Token Ring adapter uses IRQ 11 (without being prepared to share the interrupt) and the PCI BIOS might erroneously assign IRQ 11 to a PCI bus 3270 card as well. This would result in an interrupt conflict causing the system to stop working properly.

An example for a RAM address range conflict is: a PCI bus Token Ring card uses RAM addresses that resides in the RAM address range 0CA000h-0CBFFFh and the

## Step 1 — Configuring the Processor Operations PC

DEVICE statement in the CONFIG.SYS configures an ISA 3270 adapter card to use the same address range (for example, DEVICE=.\ISQXSCUT.SYS 1=CA). This would result in an address conflict preventing the adapter card from working properly.

Such conflicts can be avoided by explicitly telling the computer's BIOS about IRQs and RAM address ranges occupied exclusively by ISA bus adapters and their device drivers.

The details of this configuration step vary among different computers. It is usually done within the computer's BIOS setup program under a submenu called PCI bus configuration or similar. The menu should provide options to assign chosen IRQs and RAM address ranges to ISA legacy adapters, thus marking them as not available for PCI adapters.

*Possible Conflicts with IBMINT13.I13:* IBMINT13.I13 is an OS/2 device driver to access the computer's hard disks via BIOS software interrupt 13. It is a low performance driver meant only as temporary last resort to allow access to the hard disk until a more suitable device driver for the hard disk controller is installed.

The significance of IBMINT13.I13 with respect to processor operations is that it uses an interrupt request level (IRQ) exclusively which may also be handed out by the computer's PCI BIOS. This can lead to a conflict if one of the installed Attachmate IRMA 3270 PCI Adapter cards is assigned the IRQ which is exclusively used by IBMINT13.I13. This conflict will not show any symptoms during device driver loading, but it will prevent correct operation of the processor operations PC via Attachmate IRMA 3270 PCI Adapter cards later on.

A computer used as a processor operations PC should not have IBMINT13.I13 installed in its CONFIG.SYS file. Instead, the proper device driver for the computer's hard disk controller should be installed to access hard disks (for example, the correct Adaptec device driver if hard disks are attached to an Adaptec SCSI controller).

### Step 1C — Installing Prerequisite Software

The code that will be running on the processor operations PCs is called *processor operations distributed feature code*. The processor operations distributed feature code on the SA OS/390 processor operations PC runs under OS/2 (see also "Software Requirements" on page 4).

Make sure that after a successful installation of OS/2 you have also installed a product that allows you to configure your APPC connections. This product can be one of:

- Personal Communications and OS/2 Access Feature
- Communications Manager/2

You can also use alternative tools to configure your APPC connections and follow the instructions in the related documentation.

If you have installed an ASCII connection card or the serial port, modify the OS/2 CONFIG.SYS file to include serial device driver.

### Step 1D — Configuring APPC Connections

You can exploit two techniques to configure APPC Connections for your processor operations PCs:

- IBM token-ring LAN; "Configuring IBM Token-Ring LAN" on page 182

## Step 1 — Configuring the Processor Operations PC

- SDLC (synchronous data link control)

**Note:**

Though the description in the following sections in several cases hints to Personal Communications, it is independent from any product used to establish the APPC connection between the SA OS/390 host and the processor operations PCs.

**Note:**

All entries in the Personal Communications sample panels shown in this section are sample values and need to be adapted to your environment.

- If you use Communications Manager/2, refer to the Communications Manager/2 documentation listed in “Related Publications” on page xvi.
- If you use Personal Communications and OS/2 Access Feature, refer to the Personal Communications documentation listed in “Related Publications” on page xvi or to the documentation accessible through the *Access Home Page* icon in the *OS/2 Access Feature* folder (<http://www.raleigh.ibm.com/cm2/cm2prod.html>).
- If you use any other tool, refer to the appropriate documentation.

Each PC requires a Communications Manager/2 or a Personal Communications configuration file, which defines the PC as an LU2 terminal and as an LU 6.2 node for advanced program-to-program communications (APPC).

The processor operations PC uses the LU2 node configuration to download the processor operations distributed feature code from a host system. It uses the LU 6.2 node configuration for communicating with the SA OS/390 focal point system.

Follow the instructions in this section to configure both LU2 and LU 6.2 nodes. The LU2 configuration is standard for any SDLC or token-ring connection.

Coordinate the names of the physical units (PU) and logical units (LU) with your VTAM coordinator. For the LU 6.2 configuration, you must set specific values for several parameters to enable SA OS/390. This section guides you in setting those values. Use Figure 9 on page 43 to obtain VTAM values and to record values you enter.

After you have made all of the configuration changes, verify the configuration before you exit the configuration program. To activate changes, follow the instructions of the used configuration program.

**Configuring IBM Token-Ring LAN:** The following sections contain recommendations for how to complete the IBM token-ring connection between the host and the processor operations PCs.

*Configuring the Processor Operations PC as LU2 Terminal:* To install the processor operations PC code from an OS/390 host, you must have a connection to that host. You configure your processor operations PC as an LU2 Terminal with 3270 emulation support. To accomplish this task, you need to specify the following information. You can retrieve these values from the worksheets in “Processor Operations Worksheets” on page 40:

## Step 1 — Configuring the Processor Operations PC

- Network ID (*Network name* in Figure 9 on page 43)
- Local Node Name (*PU name* in Figure 9 on page 43)
- Local Node ID (*IDNUM* in Figure 9 on page 43)
- LAN Destination Address (in Figure 9 on page 43)

If you are using Personal Communications, you enter this information in the panel shown in Figure 49.

**LUA APIs over Token-ring (3270 emulation support)**

Network ID

Local node name

Local node ID (hex)   (optional)

Connection information

LAN destination address (hex)

Number of LUA definitions  (1-253)

Figure 49. Personal Communications: LUA APIs over Token-ring

*Configuring the Processor Operations PC for an IBM Token-Ring:* To accomplish this task, you need to specify the following information. You can retrieve these values from the worksheets in "Processor Operations Worksheets" on page 40:

- Adapter number (in Figure 9 on page 43)
- C&SM LAN ID (in Figure 9 on page 43)

If you are using Personal Communications, you enter this information in the panel shown in Figure 50 on page 184.

## Step 1 — Configuring the Processor Operations PC

**Token Ring or Other LAN Types DLC Adapter Parameters**

Adapter  (0 - 15)

Free unused links

Send alert for beaoning

Maximum activation attempts  (1 - 99)

Maximum link stations  (1 - 255)

Maximum I-field size  (265 - 16393)

Percent of incoming calls (%)  (0 - 100)

Link establishment retransmission count  (1 - 127)

Retransmission threshold  (1 - 127)

Local SAP (hex)  (04 - 9C)

C&SM LAN ID

Connection network name (optional)  .

Figure 50. Personal Communications: Configuring for IBM Token-Ring

*Configuring the Processor Operations PC as an End Node:* To accomplish this task, you need to specify the appropriate information using the tool of your choice. You define your end node to be **no network node server**.

If you are using Personal Communications, you enter this information in the panel shown in Figure 51 on page 185.

## Step 1 — Configuring the Processor Operations PC

APPC APIs over Token-ring

Network ID: NETWRKID

Local node name: WRKSTNID

Local node type:

- End node - no network node server
- End node - to a network node server

Network node server address (hex):

OK Advanced... Cancel Help

Figure 51. Personal Communications: Configuring the Processor Operations PC as an End Node

*Configuring the SNA Connection to a Host for an IBM Token-Ring:* This connection or link to a host is required for

- 3270 emulation sessions of the host which will be used as the processor operations focal point system, on which processor operations will be running
- the host from which you will later download the required code for the processor operations PCs, referred to as the *processor operations distributed feature code*.

You may consider to use one host link for both purposes.

This section describes how to set up the SNA connection between a processor operations PC and the host, using an IBM Token-ring. To accomplish this task, you need to specify the following information (see the worksheets in “Processor Operations Worksheets” on page 40):

- Link name (for example: HOST0001);

Please verify the following for your link:

1. Do **not** configure this host connection to support APPN<sup>®</sup> (for Personal Communications: see Figure 53 on page 186).
2. Check that *Activate at startup* is enabled (for Personal Communications: see Figure 52 on page 186).
3. Use this host link as the focal point system connection (for Personal Communications, check that *Use this host connection as your focal point system support* is enabled, see Figure 53 on page 186).

If you are using Personal Communications, you enter this information in the panels shown in Figure 52 on page 186 and Figure 53 on page 186.

## Step 1 — Configuring the Processor Operations PC

The 'Connection to a Host' dialog box contains the following fields and controls:

- Link name:** HOST0001
- Activate at startup:**
- Adjacent node ID (hex):** [Empty field]
- Partner LU definitions:**
  - Partner network ID:** [Empty field]
  - Partner node name:** [Empty field]
  - Define Partner LUs...:** [Button]
- Destination information for host:**
  - LAN destination address (hex):** 400010000001
  - Address format:** Token-Ring
  - Remote SAP (hex):** 04
- Buttons:** OK, Additional parameters..., Cancel, Help

Figure 52. Personal Communications: Connection to a Host

The 'Additional Connection Parameters' dialog box contains the following fields and controls:

- Link name:** HOST0001
- HPR support:**
- Multiple PU parameters:**
  - Local PU name:** WRKSTNID
  - Local node ID (hex):** 05D 00000
- Host connection parameters:**
  - APPN support:**
  - Use this host connection as your focal point support:**
- Optional comment:** [Empty text area]
- Buttons:** OK, Cancel, Help

Figure 53. Personal Communications: Additional Connection Parameters

*Configuring the Processor Operations PC as an Independent LU6.2 Node:* This section describes how the LU6.2 node is configured using APPC APIs through IBM Token-ring.

## Step 1 — Configuring the Processor Operations PC

To accomplish this task, you need to specify the following information. You can retrieve these values from the worksheets in “Processor Operations Worksheets” on page 40:

- LU name and Alias (*PC LU 6.2 name* in Figure 9 on page 43)
- Enable the local LU as your default local LU alias

If you are using Personal Communications, you enter this information in the panel shown in Figure 54.

The screenshot shows a dialog box titled "Local LU". It has a collapse icon in the top left corner. The dialog contains the following fields and controls:

- LU name:** Text box containing "X7H1440A".
- Alias:** Text box containing "LOCALLU".
- NAU address:** A section with two radio buttons:
  - Independent LU
  - Dependent LU NAU (with a text box containing "1 - 254")
- Host link:** Text box containing "HOST0001".
- Optional LU model name:** Empty text box.
- Use this local LU as your default local LU alias
- Optional comment:** Empty text area.
- Buttons: **OK**, **Cancel**, and **Help**.

Figure 54. Personal Communications: Configuring the Processor Operations PC as independent LU6.2 Node (1)

*Configuring the Mode for the LU6.2 Connection:* This section describes how you define a mode for the LU6.2 connection.

To accomplish this task, you need to specify the following information. You can retrieve these values from the worksheets in “Processor Operations Worksheets” on page 40:

- Mode name (*DLOGMODE* in Figure 9 on page 43)

### Note:

It is recommended that you use the default logon mode of DSIL6MOD as defined by NetView. If you have not yet defined logon mode DSIL6MOD on

## Step 1 — Configuring the Processor Operations PC

your host, you can use the NetView job called *CNMSJ006* to define this logmode. This job is described in the *Tivoli NetView for OS/390 Installation and Administration Guide*.

- RU size (*MAXDATA* - 9 in Figure 9 on page 43)

If you are using Personal Communications, you enter this information in the panel shown in Figure 55.

**Mode Definition**

Mode name: DSIL6MOD

Class of service: #CONNECT

Mode session limit: 3 (0 - 32767)

Minimum contention winners: 1 (0 - 32767)

Receive pacing window: 1 (0 - 63)

Pacing type: Adaptive

Compression and session-level encryption support: Setup...

RU size:

- Default RU size
- Maximum RU size: 2224 (256 - 16384)

Optional comment:

OK Cancel Help

Figure 55. Personal Communications: Configuring the Mode for the LU6.2 Connection

*Configuring the Transaction Programs on the Processor Operations PC:* This section informs you how to configure the following transaction programs on the processor operations PC:

- ISQBOOT
- ISQREIPL
- IBMING.LANPT.ISQBOOT

### ISQBOOT

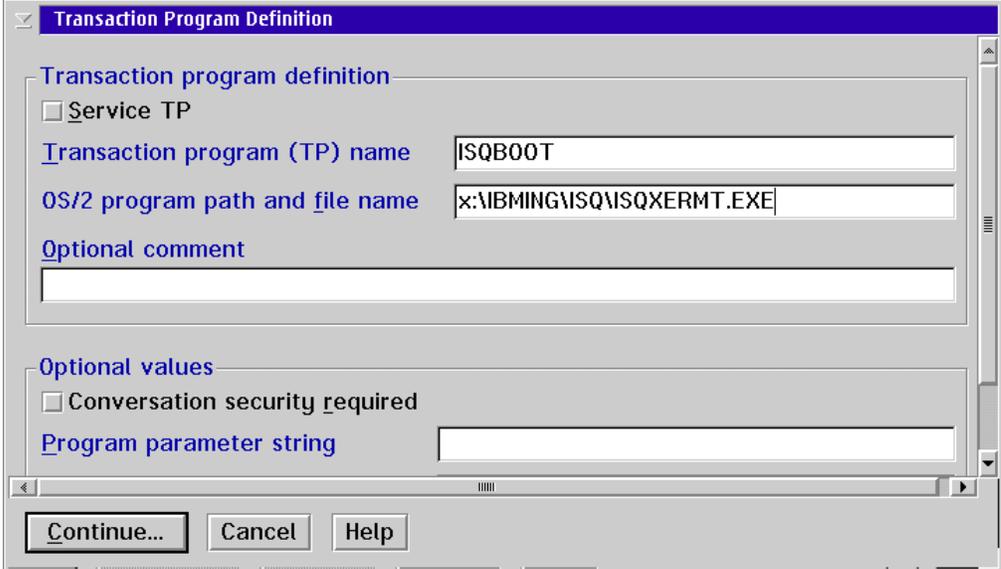
To configure the transaction program (TP) ISQBOOT, you need to specify the following information.

- Do not specify ISQBOOT to be a Service TP.
- Specify the transaction program name: *ISQBOOT*

## Step 1 — Configuring the Processor Operations PC

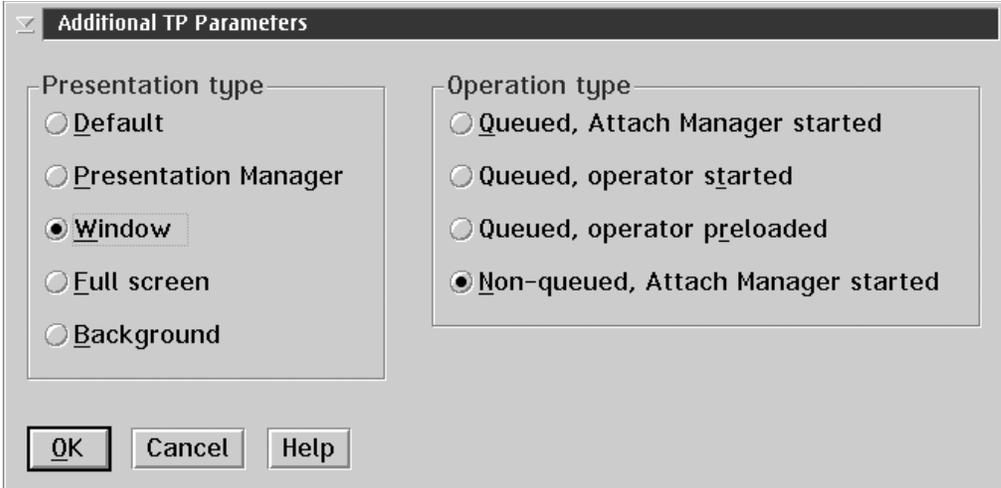
- Specify the OS/2 program path and file name:  
x:\IBMING\ISQ\ISQXERMT.EXE, where x represents the drive where the processor operations distributed feature code is installed.
- As the presentation type, select: *VIO-windowable* (for Communications Manager/2) or *Window* (for Personal Communications)
- As the operation type, select: *Non-queued, Attach Manager started*

If you are using Personal Communications, you enter this information in the panels shown in Figure 56 (where you press the *Continue* push button) and Figure 57.



The dialog box titled "Transaction Program Definition" has a blue header bar. It contains two main sections: "Transaction program definition" and "Optional values". In the first section, there is a checkbox for "Service TP" which is unchecked. Below it are text input fields for "Transaction program (TP) name" (containing "ISQBOOT"), "OS/2 program path and file name" (containing "x:\IBMING\ISQ\ISQXERMT.EXE"), and "Optional comment" (which is empty). The second section, "Optional values", contains a checkbox for "Conversation security required" which is unchecked, and a text input field for "Program parameter string" (which is empty). At the bottom of the dialog are three buttons: "Continue...", "Cancel", and "Help".

Figure 56. Personal Communications: Create a Transaction Program Definition for ISQBOOT



The dialog box titled "Additional TP Parameters" has a grey header bar. It is divided into two columns of radio button options. The left column, "Presentation type", has five options: "Default", "Presentation Manager", "Window" (which is selected), "Full screen", and "Background". The right column, "Operation type", has five options: "Queued, Attach Manager started", "Queued, operator started", "Queued, operator preloaded", and "Non-queued, Attach Manager started" (which is selected). At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

Figure 57. Personal Communications: Create Additional TP Parameters

### ISQREIPL

To configure the transaction program (TP) ISQREIPL, you need to specify the following information.

- Do not specify ISQREIPL to be a Service TP.

## Step 1 — Configuring the Processor Operations PC

- Specify the transaction program name: *ISQREIPL*
- Specify the OS/2 program path and file name: *x:\IBMING\ISQ\ISQXEIPL.EXE*, where *x* represents the drive where the processor operations distributed feature code is installed.
- As the presentation type, select: *VIO-windowable* (for Communications Manager/2) or *Window* (for Personal Communications)
- As the operation type, select: *Non-queued, Attach Manager started*

If you are using Personal Communications, you enter this information as required in the panels shown in Figure 56 on page 189 (where you press the *Continue* push button) and Figure 57 on page 189.

### *IBMING.LANPT.ISQBOOT*

To configure the transaction program *IBMING.LANPT.ISQBOOT*, you need to specify the following information.

- Do not specify *IBMING.LANPT.ISQBOOT* to be a Service TP.
- Specify the transaction program name: *IBMING.LANPT.ISQBOOT*
- Specify the OS/2 program path and file name: *x:\IBMING\ISQ\ISQXELPT.EXE*, where *x* represents the drive where *ISQXELPT.EXE* is installed.
- As the presentation type, select: *VIO-windowable* (for Communications Manager/2) or *Window* (for Personal Communications)
- As the operation type, select: *Non-queued, Attach Manager started*

If you are using Personal Communications, you enter this information as required in the panels shown in Figure 56 on page 189 (where you press the *Continue* push button) and Figure 57 on page 189.

## Step 2 — Connecting the Hardware

The next step to perform is to connect the processor operations PC hardware. Information on how to prepare focal point system connections and target system connections and a discussion of various connection configurations is presented in “Planning to Connect the Hardware” on page 68.

## Step 3 — Redefining Target System Consoles

This section discusses defining the personal computer as a console to the target system. The following console definitions are presented:

- OS/390 target systems
- VM target systems
- TPF target systems
- VSE target systems
- 4381 consoles

**Note:** This section is not applicable to NetView connection. Use *S/390 Managing Your Processors* rather than information in this chapter.

### Target System Considerations

You must be aware of the following when performing the steps for console definitions:

- Console model
- Message suppression
- Console attributes

## Step 3 — Redefining Target System Consoles

**Console Model:** A target system can support a console with a display of up to 132 characters per line, such as a 3278 Model 5 console. However, for the passthru facility using ISQTCC to function, SA OS/390 requires that a target console be defined as a 3278 Model 2 or 3205 console. These console models have displays with 24 lines and eighty characters per line. To use all of the advantages of SA OS/390, the 3278 Model 2 is recommended.

**Message Suppression:** Message suppression facilities at the target system control the messages that are available at the focal point system to SA OS/390, and to the operator who monitors the target system. Make changes as needed to the target system message suppression facilities to ensure that the messages required by SA OS/390 and the operator are available and that unnecessary messages are suppressed.

**Console Attributes:** processor operations does not support extended attributes for target consoles. Note that processor operations requires that the FTA bit is set in a non-SNA 3x74 for a 3270-type console.

### OS/390 Targets

Define the operator console connections for SA OS/390 OS/390 targets as 3278 Model 2 consoles. Define the address of the operator console connection to the personal computer as the primary SA OS/390 operator console.

This is done using the customization dialog described in detail in *System Automation for OS/390 Defining Automation Policy*.

The primary SA OS/390 operator console should be the OS/390 master console. If an alternate operator console is used, this should be the first alternate operator console.

In addition to defining the operator console, you must set the consoles to the correct state in OS/390. Add the following statement to a COMMNDxx statement in the SYS1.PARMLIB data set to run following the initial program load (IPL):

```
K A,NONE  
K S,DEL=N,CON=N
```

Set this definition whenever the console is varied online. (The OS/390 screen handler maintenance functions will reset these console characteristics to those shown above when they are not as shown above.)

The 9672, 9674, 2003 and 3000 processors using console integration are not dependent on screen images.

### VM Targets

Define the operator console connections for SA OS/390 VM targets as 3278 Model 2 consoles. Define the address of the operator console connection to the personal computer as the primary VM operator console.

This is done using the customization dialog described in detail in *System Automation for OS/390 Defining Automation Policy*.

If an alternate operator console is used, this should be the first alternate operator console.

SA OS/390 processor operations does not support the STATUS statement in the logo configuration file (new with VM/ESA Release 2). You must use the uppercase default values.

## Step 3 — Redefining Target System Consoles

### TPF Targets

Define the operator console connections for SA OS/390 TPF targets as 3278 Model 2 consoles. Define the address of the operator console connection to the personal computer as the primary TPF operator console. If an alternate operator console is used, this should be the first alternate operator console.

This is done using the customization dialog described in detail in *System Automation for OS/390 Defining Automation Policy*.

### VSE Targets

Define the operator console connections for SA OS/390 VSE targets as 3278 Model 2 consoles. Define the address of the operator console connection to the personal computer as the primary SA OS/390 operator console.

This is done using the customization dialog described in detail in *System Automation for OS/390 Defining Automation Policy*.

The primary SA OS/390 operator console should be the VSE master console. If an alternate operator console is used, this should be the first alternate operator console.

In addition to defining the operator console, you must set the consoles to the correct state in VSE. For each personal computer, add the following statement to a COMMNDxx statement in the SYS1.PARMLIB data set to run following the IPL:

```
K A,NONE  
K S,DEL=N,CON=N
```

Set this definition whenever the console is varied online.

For running VSE in a distributed environment, VSE recommends that you run in the VSE unattended node support mode. In this mode, VSE automates the IPL procedure at the target/unattended node VSE system. It also suppresses messages to the operator consoles. For more information on this mode of operation, see *VSE/ESA Unattended Node Support*.

### 4381 Integrated Console Function

SA OS/390 does not support the integrated console function of the 4381 processor. The operator console and the system console must be connected to two distinct ports on the 4381 processor. However, both can be integrated console ports. The first port must be used for the system console; any other port can be used for the operator console. Two PC 3270 Connection adapters are required in conjunction with the two 4381 processor ports to make the 4381 processor compatible with SA OS/390.

**Disconnecting the Integrated Console Function:** Perform the following steps on the system console:

1. Go to the System Configuration menu. This is menu QFO.
2. The system must be in the INSTRUCTION STOP mode. If it is not, press the STOP key.
3. Ensure that the port is not connected by typing the letter N in the "CONNECTED" field under the heading P0, P1, P2, or P3 of the appropriate 4381 port that will be used by SA OS/390. This field can be either N (not connected) or Y (connected).

### Step 3 — Redefining Target System Consoles

**Note:** It is recommended that the port P0 remain connected to the actual system console at the 4381 site. Use ports P1, P2, and P3 with the SA OS/390 personal computer. Do not use a printer-defined port.

4. Press the ENTER key.
5. Press the START key.

This completes the process.

When the target hardware processor is in a mode other than 370 mode, the operating system should not use the address of the port used by SA OS/390 in its console search order. If it does, this address will be unavailable after the above process is performed. The other three ports are still available for use.

A list of the ports and their corresponding addresses follows:

4381Port	Address
P0	00F2
P1	00F3
P2	00F4
P3	00F5

Ports 1, 2, and 3 are externally accessible through an opening on the side of the 4381.

When the target hardware processor is in the 370 mode, the user can modify the addresses under the headings P0, P1, P2, and P3. Make sure the address listed under the port used by SA OS/390 is not used by the operating system. The addresses listed under P1, P2, and P3 are still available.

If you do not use P0 with SA OS/390 as recommended, the following steps must be performed before using SA OS/390 to control the 4381:

1. Turn the power on to the 4381.
2. Press the CHG DPLY key on the system console at the 4381 site. The system console screen should no longer be in the manual mode.
3. SA OS/390 can now be used to control the 4381.

Any time you wish to use the system console at the 4381 site, send the following commands to the PC port:

1. #SET MANUAL OFF
2. QZ

To resume control by SA OS/390:

1. Press the CHG DPLY key on the system console at the 4381 site.
2. Issue the following commands to the PC port:
  - a. #SET MANUAL ON
  - b. #MODE SEL

## Step 4 — Installing Processor Operations Distributed Feature Code

### Step 4 — Installing Processor Operations Distributed Feature Code

This chapter describes how to install the processor operations PC code on a single workstation. The process must be repeated for each workstation to be used for SA OS/390 processor operations.

Software Installer is used to install the processor operations PC code. Software Installer can also be used to update (apply maintenance) or delete SA OS/390 processor operations PC code, after first stopping the processor operations PC code with the SHUTDOWN command. In addition, when updating, it is necessary to deselect the 'Save a backup version of the installed product' checkbox in the update dialog.

#### Step 4A — Check if Software Installer is Installed

If the Software Installer is not installed, then follow the instructions listed in "Installing the Software Installer" on page 163.

Software Installer (SI) is needed to:

- Create subdirectories and place the workstation feature files in them.
- Replace any files requiring replacement based on a comparison of date and time when you apply a new level. (As a default option, Software Installer maintains the previous level of the workstation feature.)
- Update the CONFIG.SYS on your workstation.

#### Step 4B — Installing the Processor Operations Distributed Feature Code from an OS/390 Host

1. Log on to an OS/390 user ID with access to the data set containing the workstation feature. This data set is named ING.SINGPWS1 when it is shipped from IBM, but the name may have been changed by host personnel.
2. Change to the directory in which Software Installer resides. SI is installed in SA OS/390's processor operations directory C:\IBMING by default.
3. Start the installation by entering

```
INGINSTS /S:ING.SINGPWS1
```

Replace **ING.SINGPWS1** with the name of the OS/390 data set that contains the code for the workstation feature (see **4** in "Step 1 — SMP/E Installation" on page 101).

4. Select *File* as the choice on the menu bar of the **Installation and Maintenance** window.
5. Select *Open catalog*.
6. Select *Host...* to display the **Open host catalog** window.
7. Select the **Host session** you want to use.
8. Select the *MVS* radio button under **Host operating system**.  
Enter ING.SINGPWS1(INGCATI) in the Filename field under the catalog section. If you are not using the ING.SINGPWS1 data set, replace **ING.SINGPWS1** with the changed data set name.
9. Select the *Open* push button to get the selected catalog file from OS/390.
10. Select *System Automation for OS/390 ProcOps* on the **Installation and Maintenance** window.
11. Select the *Action* menu bar choice.
12. Select *Install* to display the **Install** window.

## Step 4 — Installing Processor Operations Distributed Feature Code

13. If you wish to update the CONFIG.SYS file, select the OK push button.  
If you do not want to update your CONFIG.SYS file on your machine:
  - a. De-select the **Update CONFIG.SYS** option.
  - b. Select the OK push button.
  - c. Reply to the warning message that says that Software Installer will not update your CONFIG.SYS file by selecting the **Yes** push-button.

**Note:**

If the processor operations distributed feature from SA/MVS 1.2 is already installed and you want to install the processor operations distributed feature from SA OS/390 2.1, then do not update the CONFIG.SYS file, because the updates from the SA/MVS 1.2 installation are still valid.

14. When the **Install - Directories** window is displayed, either accept the defaults or enter your own.
15. Select **Install...** to start the download processing.
16. Select the OK push-button when you see the message that indicates successful completion.
17. Close Software Installer. You may do so by selecting **File** and then selecting **Exit**.
18. If you de-selected the **Update CONFIG.SYS** option, you must now update your CONFIG.SYS file. Proceed with "Later Installation Activities" on page 196.
19. If your PC is an ISA bus or an PCI bus PC, edit your CONFIG.SYS file and update the processor operations CUT mode emulator's DEVICE statement. The syntax of the DEVICE statement for a PCI bus and ISA bus PC with 3270 adapters is as follows:

```
DEVICE=drive:\IBMING\ISQ\ISQXSCUT.SYS cardnum1=cardparm1 ...  
cardnum4=cardparm4
```

Here, **cardnumn** is the emulator card number and **cardparmn** is a parameter specifying the type of the emulator card. Up to 4 emulator cards may be specified with **cardnumn** ranging from **cardnum1** to **cardnum4**.

The **cardparm** parameter is either the letter **P** to indicate an Attachmate IRMA 3270 PCI Adapter, or a valid 2-digit hex number to indicate an ISA bus emulator card. In the case of an ISA bus emulator card, the 2-digit hex number represents bits 12 through 19 of the physical address of the RAM buffer to be used by the emulator card. The valid choices for RAM buffer address parameters are **CA, CC, CE, D0, D2, D4, D6, D8, DA, DC, or DE**.

The following are examples of how the DEVICE statement may be updated:

- `DEVICE=D:\ISQING\ISQXSCUT.SYS 1=CA 2=P`

In the above example, the processor operations distributed feature has been downloaded to the PC's D-drive and has two 3270 emulator adapters configured. Card number 1 is an ISA bus card configured to use the base memory buffer address 0CA000h. Card number 2 is an Attachmate IRMA 3270 PCI Adapter in a PCI slot. If more than one Attachmate IRMA 3270 PCI Adapter cards are physically installed in the PC, the device driver will use only the first such card in the enumeration order defined by the computer's PCI BIOS.

## Step 4 — Installing Processor Operations Distributed Feature Code

- DEVICE=D:\ISQING\ISQXSCUT.SYS 1=P 2=P 3=P 4=P

In this example, the maximum of four 3270 emulator adapters is configured. All four cards are expected in PCI slots by the device driver.

- DEVICE=D:\ISQING\ISQXSCUT.SYS 1=CA 2=P 3=CC 4=P

This is an extension of the first example: an additional ISA bus card (card number 3) is installed and configured to use the base memory buffer address 0CC000h. There is also another Attachmate IRMA 3270 PCI Adapter configured to be used as card number 4.

**Note:** It is **not** recommended to use Attachmate IRMA 3270 PCI Adapter cards in applications other than processor operations while simultaneously using the same computer as a processor operations PC: the other application's device driver would very likely conflict with the processor operations PC CUT mode device driver. The processor operations PC CUT mode device driver will always access as many Attachmate IRMA 3270 PCI Adapter cards as are configured via the **cardnum=P** parameters in its DEVICE statement, and it will always access the *first* of such cards as enumerated by the PCI BIOS. It will not, however, access Attachmate IRMA 3270 PCI Adapter cards beyond the number specified in its DEVICE statement. Thus, another application using a PCI 3270 card can coexist with processor operations only if **its** device driver can be configured to use a specific card **not** used by the processor operations PC CUT mode device driver.

20. If you used Software Installer to update your CONFIG.SYS file, reboot your workstation and you are done.

**Later Installation Activities:** If you later choose to update your CONFIG.SYS file and if you de-selected the *Update CONFIG.SYS* option when you installed the workstation feature on your machine *or* after you applied a service level to the workstation feature that affects the values in the CONFIG.SYS file, you should:

1. Compare CONFIG.ADD to CONFIG.SYS.
2. If SA OS/390 processor operations values are the only differences between the two files, rename the CONFIG.ADD file to become the CONFIG.SYS file.
3. Reboot your workstation.

If you want to apply a new service level to your processor operations distributed feature code perform the steps as described in "Applying a New Service Level" on page 167.

### Step 4C — Select Case for Messages

The SA OS/390 personal messages have an installation default of mixed case. To change that to all upper case, enter ISQUPPER from an OS/2 window on the workstation. To return to mixed case messages, enter ISQMIXED.

---

## Installing and Customizing the TEC Event Server Workstation

The TEC event server can either run on a UNIX workstation or on a Windows NT workstation. So you may install this part on your LAN passthru PC or the NMC workstation. The following example describes the installation on UNIX. For the Windows NT installation, please use Windows NT command syntax.

1. Download the package file INGPTEC containing the workstation code from the host system to your workstation as a binary file. To download the package, you can, for example, use *FTP*. Choose as target path name any directory where you want to store the tarfile temporarily and unpack it for installation.

## Installing and Customizing the TEC Event Server Workstation

Using FTP, the command is for example:

```
ftp <hostname>
```

You will be prompted for your user ID and password. After logon to your OS/390 system, type:

```
binary
```

```
get <dataset>(INGPTEC) <PATH>/satec.tar
```

```
quit
```

2. On your workstation, type:

```
cd <PATH>
```

3. Unpack the package file <PATH>/satec.tar.

```
tar -xvf <PATH>/satec.tar
```

This will unpack the workstation code for subsequent installation into the current directory (<PATH>).

On Windows NT, you can find the tar command in

```
c:\tivoli\bin\w32-ix86\tools\tar.exe
```

4. Install the appropriate Tivoli install package
  - a. From the Tivoli desktop select **Install->Install Product** and follow the Install Product dialog
  - b. Set the media path to the <PATH> which contains the SA OS/390 specific install packages.
  - c. Select the product to be installed.
  - d. Close the Install Product dialog after installation.
5. Verify the installation. The files listed in Table 28 should be stored in the correct directories.

### Note:

After installation, the binary files are stored in the following directory:  
\$BINDIR/SAOS390/NotificationService

The environment variable **BINDIR** is set when installing the Tivoli Framework. As default, it points to  
/usr/local/Tivoli/bin/\$INTERP

The environment variable **INTERP** denotes the platform where Tivoli is used, and can be for example *aix4-r1*.

Table 28. Notification Service Product Workstation Files

Member Name	Type	Purpose
tecad_sa390msg.baroc	TEC <i>baroc</i> file	defines event classes
tecad_sa390msg.rls	TEC <i>rls</i> file	defines rules
nvcons.ksh	korn shell script ( <i>ksh</i> )	starts NetView 3270 Management Console for UNIX
nvcons.bat	batch file	starts NetView 3270 Management Console for Windows NT
tecad_sa390msg.tll	task library definition	contains the task library

If the NetView 3270 Management Console is not yet installed on your workstation, you can download it from the internet:

## Installing and Customizing the TEC Event Server Workstation

[http://www.tivoli.com/z\\_nv390/javaclient.html](http://www.tivoli.com/z_nv390/javaclient.html)

### Activating the Installed Files

You need to activate the following files of type:

- *rls* files
- *baroc* files
- *tll* files

### Loading Classes and Rules

After downloading the files on the Tivoli workstation, several files are available in the directory

```
$BINDIR/SAOS390/NotificationService
```

The following instructions describe the steps required to activate the installed files at the TEC event server. These steps are necessary in order to exploit the GEM Event/Automation Service for sending SA OS/390 events to TEC. See the *Tivoli Enterprise Console User's Guide Volume II* for a detailed description of the following commands:

- Use an existing rule base with GEM classes imported.
- Import the class file (.baroc) into the rule base:  

```
wimprbclass tecad_sa390msg.baroc <rname>
```
- Import the rules file (.rls) into the rule base:  

```
wimprbrules tecad_sa390msg.rls <rname>
```
- Compile the rule base:  

```
wcomprules <rname>
```
- Load the rule base into the TEC event server:  

```
wloadrb -u <rname>
```
- Stop the TEC event server:  

```
wstopesvr -d
```
- Start the TEC event server:  

```
wstartesvr
```

### Creating the System Automation Task Library

If the NetView 3270 Management Console is installed on a workstation in your network managed by Tivoli, you can use a task provided in the System Automation Task Library to start the NetView Client from the Tivoli Enterprise Console.

Depending on the platform where the NetView 3270 Management Console is installed, either a shell script (nvcons.ksh) for UNIX platforms or a batch file (nvcons.bat) for the Windows NT platform needs to be modified.

**Note:**

**Windows NT setup:**

- Modify the PATH variable via *System Setup* and add the path where *Java* is installed.
- Modify *Tivoli Object Dispatcher Service* via *System Setup* and allow the service to interact with the desktop in order to display the NetView Console.

- Edit the according file as appropriate:

## Installing and Customizing the TEC Event Server Workstation

### CLASSPATH variable (UNIX and Windows NT)

Set to the path where java classes are installed, add NetView class directory (see NetView documentation for details).

### NV variable (UNIX only)

Set to path where NetView 3270 Management Console is installed on your system.

### Java variable (UNIX only)

Set to path where Java is installed on your system.

### CD <NetViewDir> (Windows NT only)

Set to directory where the NetView 3270 Management Console is installed on your system.

Example for UNIX (nvcons.ksh):

```
export NV=/IBMFLB
export JAVA=/develop_driver/java/Java
export CLASSPATH=$JAVA/classes:$NV:$NV/sguide:$NV/sguide/SGJ023A.ZIP
:$NV/sguide/sguide.zip:$NV/src/ibmflb:$NV/jhelp
```

Example for Windows NT (nvcons.bat):

```
set CLASSPATH=.;C:/users/java/lib/classes.zip
cd \IBMFLB
```

- Import the Task Library by using the wtll command (see the *Tivoli Management Platform Reference Guide* for details on this command).

```
wtll -p <policy region> -P <preprocessor> tecad_sa390msg.tll
```

where

#### <policy region>

specifies the policy region in which to create the new task library. The policy region must exist within the local TMR.

#### <preprocessor>

specifies the path to the program to use as a preprocessor on the import file before it is parsed. The import file `tecad_sa390msg.tll` does not need to be preprocessed, so instead of specifying for example a C or C++ preprocessor, the command `/bin/cat` could be used.

## Customization of the Tivoli Enterprise Console

Before you perform the steps described in this section, you should be familiar with the Tivoli terms *event groups* and *event sources*. These are introduced in *Tivoli Enterprise Console User's Guide Volume 1*.

In Tivoli, you may monitor events belonging to a group which may originate from a certain source or from different sources. In order to enable the TEC event server to handle the SA OS/390 specific events, you may need to define the appropriate source to TEC.

To enable Tivoli administrators to monitor events on their event consoles, you need to define one or more appropriate event groups (with events from the defined event sources) and assign these groups to the respective administrators' event consoles.

The following sections outline a sample sequence of definition steps you may perform to:

- define the appropriate *event source* to TEC
- define an event group

## Customization of the Tivoli Enterprise Console

- assign the defined event group to an Tivoli administrator's Tivoli Enterprise Console

All steps described in this subchapter can be performed from the Tivoli desktop.

After you configured each event adapter you plan to use, the first step in the process of customizing the Tivoli Enterprise Console is to define *event sources*. This is outlined in the following section. A Tivoli administrator called *tmeadm1* is used in the sample dialogs.

### Defining Event Sources

The following sources are available after you installed Tivoli GEM Event/Automation Service and TEC Notification by SA OS/390 in your environment:

- *NV390MSG*
- *NV390ALT*

To define them to the Tivoli Enterprise Console select **Sources...** from the **Event Server** icon's pop-up menu to display the *TEC Source List* dialog as shown in Figure 58).

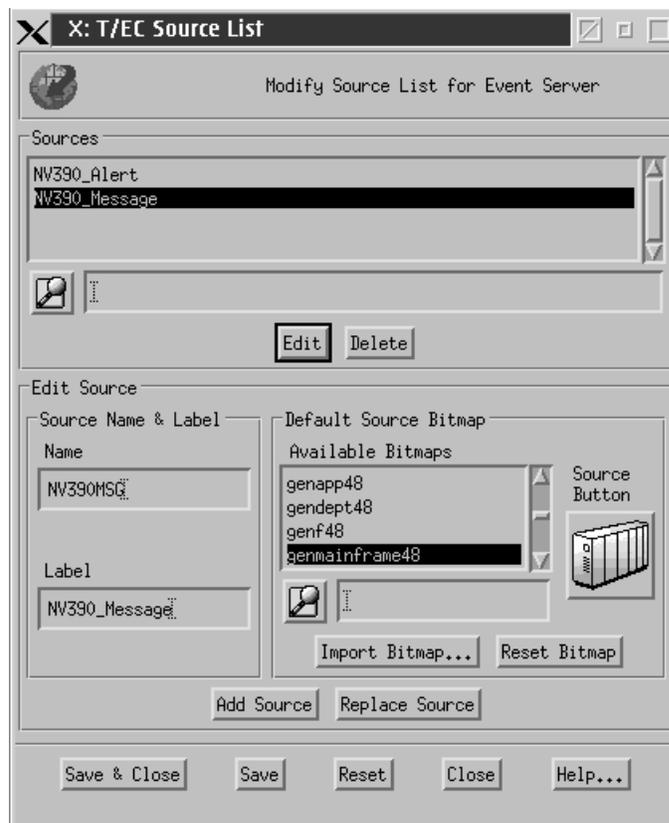


Figure 58. TEC Source List Dialog

In this dialog you enter one of the names of the available sources into the *Name* entry field and a description of the source into the *Label* entry field. You can also assign an icon that will represent the source on the Tivoli desktop. For details see *Tivoli Enterprise Console User's Guide Volume I*.

### Creating and Defining Event Groups

TEC uses event groups to direct events to the appropriate Tivoli administrator's TEC event console. You must configure a set of filters to determine which incoming events are included in an event group.

To create an event group select **Event Groups...** from the **Event Server** icon's pop-up menu to display the *Event Group Management* dialog.

Then select **New...** from the **Event Group** menu to display the *New Event Group* dialog as shown in Figure 59.



Figure 59. New Event Group Dialog

In this dialog you enter a name for the event group into the *Enter New Event Group Name* entry field, like **All SA OS/390 Events** in our example. You can also assign an icon that will represent the event group on the Tivoli desktop. For more details see *Tivoli Enterprise Console User's Guide Volume I*. After having assigned an icon to the event group, press the **Create** push button to create the event group **All SA OS/390 Events** and display the *Edit Event Group Filters* dialog as shown in Figure 60 on page 202 to specify filter criteria for events that you may want to belong to this event group.

## Customization of the Tivoli Enterprise Console



Figure 60. Edit Event Group Filters Dialog

An event group filter defines the events that are considered to be member of an event group. To create the filter for an event group, define the filter by setting the desired values for the desired attributes.

- All events originating from SA OS/390 messages have *NV390MSG* as source and *SAOS390\_SysOps* as subsorce.
- All events originating from SA OS/390 alerts have *NV390ALT* as source and *SAOS390\_ProcOps* as subsorce.

You may want to make use of this when defining your event group filters. The sample shows the definition of an event group filter for all SA OS/390 related events.

Press the *Add Filter* push button when you have specified all of the filter criteria.

More details about filter criteria for event groups are in *Tivoli Enterprise Console User's Guide Volume I*.

Press the *Set & Close* push button to save the filter. The Tivoli Enterprise Console branches back to the *Event Group Management* dialog where you can select **Save** from the **Event Group** menu to save your changes.

### Assign Event Groups to Event Consoles

The last step in customizing your Tivoli Enterprise Console is to assign event groups to the event consoles of certain Tivoli administrators. This ensures that a Tivoli administrator will only see events that fulfil the filter criteria of the event group that you want to assign to that special Tivoli administrator. To invoke the dialog *Assign Event Groups* that lets you achieve this, select **Assign Event Groups...** from the Tivoli administrator event console icon's pop-up menu (in our

## Customization of the Tivoli Enterprise Console

sample, the *tmeadm1* icon) to display the *Assign Event Groups* dialog as shown in Figure 61.

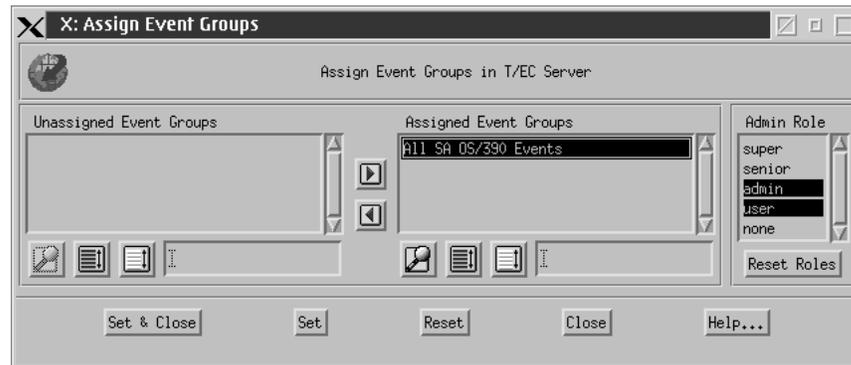


Figure 61. Assign Event Groups Dialog

The result of the customization could look similar to the Tivoli desktop shown in Figure 62. This figure shows the desktop as it might be seen by our sample Tivoli administrator *tmeadm1*.



Figure 62. Customized Tivoli desktop of Tivoli administrator *tmeadm1*

## Installing and Customizing Netfinity in an SA OS/390 Environment

In this section you will find information supplementing the installation instructions available in the Netfinity online documentation supplied by the product.

## Installing and Customizing Netfinity in an SA OS/390 Environment

### Installing the Netfinity Manager

With SA OS/390, the Netfinity Manager can be installed on any workstation and platform supported by Netfinity. In order to utilize the Netfinity capabilities for remote problem determination, remote maintenance, and remote operation for SA OS/390, the Netfinity manager can be installed on:

- NetView Management Console (NMC client with OS/2, Windows NT)
- LAN passthru PC (OS/2)
- Operator Workstation (Windows 95, Windows NT, OS/2)

### Installing the Netfinity Client on the Processor Operations PC

When installing the Netfinity client services code, you can select from the following install options:

- Active client operation
- Passive client operation
- Stand alone operation

For remote processor operations PCs the recommended option is Passive client operation since this option supports the Remote System Manager of the Netfinity Manager workstation. Also make sure that the Remote Workstation Control function is selected to be installed on the client side.

### Installing the Netfinity Client on the HMC

If the remote client workstation is a HMC, the Netfinity client code may be already installed. In this case, a subdirectory NETFIN is available on the C: drive, containing the product data.

## Customizing Netfinity in an SA OS/390 Environment

In this section you will find information supplementing the customization instructions available in the Netfinity online documentation supplied by the product.

### Customizing the Netfinity Manager

1. Network Driver Configuration

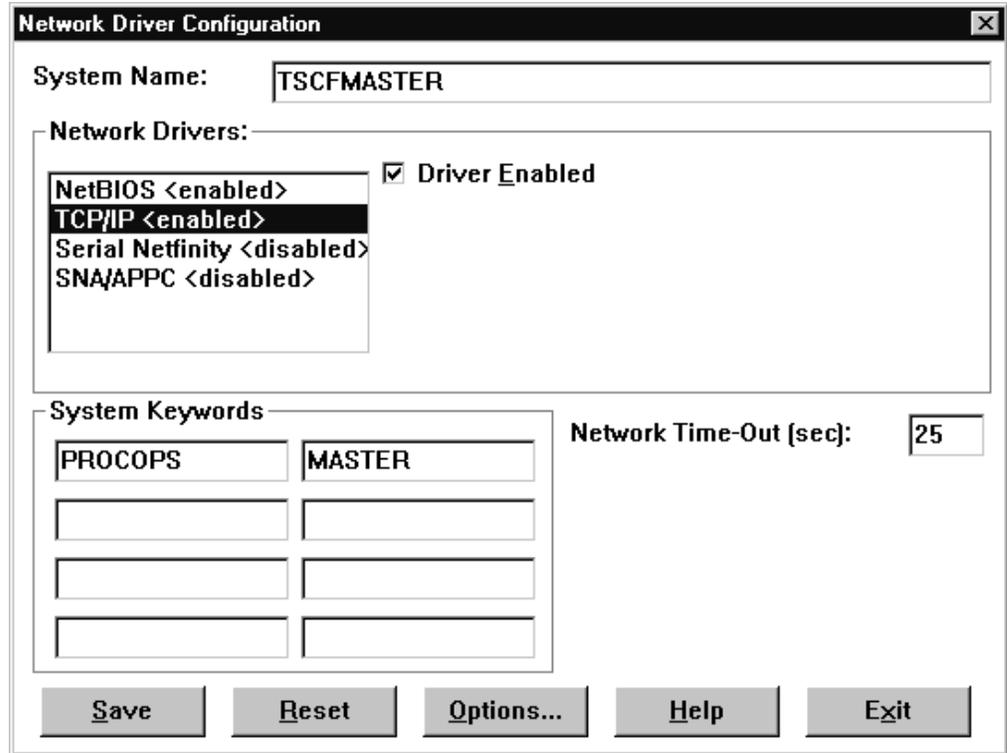


Figure 63. Netfinity Network Driver Configuration Window

In order to communicate with the Netfinity clients, enable one or more network drivers supported by the client. Enabling more than one driver has the advantage of providing a backup in case a network protocol fails. In the SA OS/390 processor operations environment it is recommended that you select alternatives to SNA/APPC.

2. Remote System Manager - System Group Management

## Installing and Customizing Netfinity in an SA OS/390 Environment

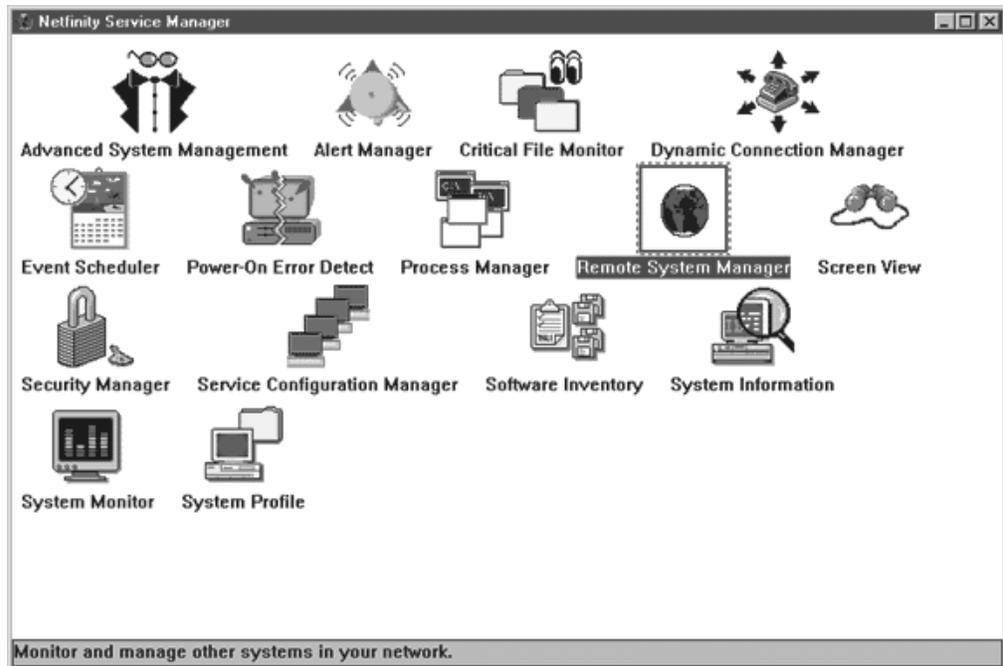


Figure 64. Netfinity Service Manager Window

From the service manager window you can select Netfinity services that are related to the manager workstation itself or you can invoke the Remote System Manager (highlighted in Figure 64) to display and configure groups of client workstations.

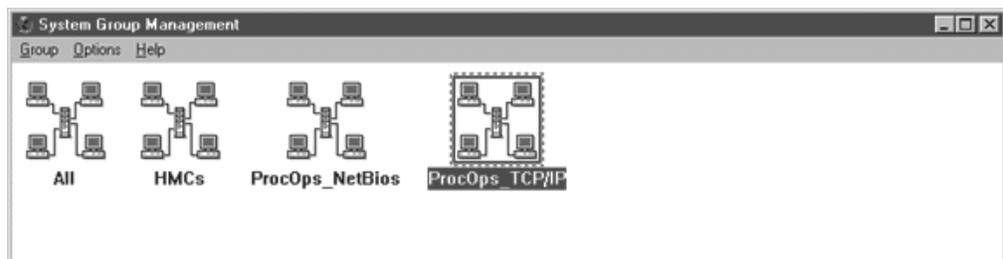


Figure 65. System Group Management Window

After clicking on the Remote System Manager object, the System Group Management window is displayed. From here you can define new groups or change existing ones by clicking on them (in Figure 65, clicking on *ProcOps\_TCP/IP* will bring you to Figure 66 on page 207). You can also specify recognition keywords for each group that Netfinity uses to detect in which group(s) a client workstation is a member. In a SA OS/390 environment you may use client types, protocols used, or a location code as a criteria to group the clients.

## Installing and Customizing Netfinity in an SA OS/390 Environment

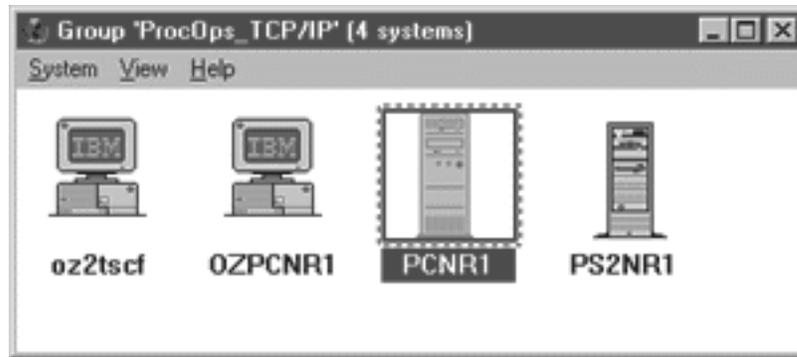


Figure 66. Displaying the Selected Group

Selecting a client workstation from this window allows you to change its network characteristics. From here you can Start a Netfinity session to it and initiate a reboot.

### Customizing the Netfinity Client on the Processor Operations PC and the HMC

After using the NFCONFIG utility to configure the network driver, use the Security Manager function to customize the Netfinity access to your client workstation. This is highly recommended for the SA OS/390 processor operations PC - and HMC-clients since these workstations allow access to system and operator consoles where access should be controlled. The Netfinity default access is <PUBLIC> with all services selected.

---

## Installing and Customizing Desktop On-Call in an SA OS/390 Environment

In this section you will find information supplementing the installation instructions available in the Desktop On-Call documentation supplied by the product.

Since Desktop On-Call only needs a Java enabled Web browser on the Guest-PC, there is no extra installation required. However there may be some installation or upgrade steps necessary in order to have the required Java level installed together with your browser.

### Installing Desktop On-Call on the Processor Operations PC

If your Host-PC is an OS/2 based processor operations PC, choose the Desktop On-Call OS/2 version for installation. Since Desktop On-Call requires TCP/IP, it might be necessary to install it together with the required Java level and an Internet browser. The processor operations distributed feature code itself does not require TCP/IP, it uses SNA/APPC as network protocol.

### Installing Desktop On-Call on the HMC

If the Host-PC is a HMC and the Desktop On-Call software is not already installed, use the HMC documentation for more information on how to install other applications and features on a Hardware Management Console. Special care must be taken when selecting a drive letter for the installation. Some drive letters are reserved for HMC use and should not be used by other applications.

## Installing and Customizing Desktop On-Call in an SA OS/390 Environment

### Customizing Desktop On-Call in an SA OS/390 Environment

In this section you will find information on how to customize Desktop On-Call on the processor operations PC and the HMC. This information is supplementing the customization instructions available in the Desktop On-Call online documentation supplied by the product.

As a setup action at Desktop On-Call installation time, you use the logon dialog to specify a user ID and a password for a user who needs to access the Host-PC remotely.

After the installation you can use the Desktop On-Call settings notebook (shown in Figure 67) to add or change access for user IDs, view the access log, or specify a port number for the HTTP server of Desktop On-Call.



Figure 67. Desktop On-Call Settings Notebook

## Installing and Customizing Desktop On-Call in an SA OS/390 Environment

**Note:** If the web server is configured on your HMC, make sure that the port number of the HMC web server and the port number for Desktop On-Call are different. This is necessary because on the HMC the web server and Desktop On-Call have the same IP address. The differentiation has to be made with the port number.



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## Part 3. Appendixes



---

## Appendix A. Authorizing Users

This appendix describes how to install security options on your system.

---

### Securing Focal Point Systems and Target Systems

Your operations staff and automation facilities at both focal point system and target systems need to be authorized to manage the resources in their environment. You can control human and automation operator authority through the password security provided by either:

- NetView
  - Operator definition file (DSIOPF)
  - Automation table
  - RODM access information
- A SAF-based security product such as RACF

The NetView facilities limit use of commands and keywords to authorized operators and limit an operator's span of control to specific systems. Access to the SA OS/390 graphic interface is controlled by user ID, password, and RODM access information. Logic in the NetView automation table or in your automation routines can verify the source of a message before taking an action.

RACF can be used to limit the use of OS/390 system commands to authorized operators.

When a target system is in the same sysplex as the focal point system, and your security product supports it, it is recommended that you share security definitions.

---

### Operator Profiles

This sections provides information about operator profiles in two environments, in migrated ones and in RACF-based NetView ones.

#### Migrated Environments

Whether your operators work in a NetView environment that is RACF based or not RACF based, their authorization is:

```
AUTH CTL=GLOBAL
```

The following are all members of ING.SINGNPRF:

- AOFPRFAO
  - For all of system operations except the automatic restart management (ARM) element restart checker
- AOFPRFPI
  - For system operations automatic restart management element restart checker
- ISQPROF
  - For processor operations autotasks

#### Controlling Access to Console Commands for I/O Operations

The steps for doing this are

1. Define I/O console commands to RACF

## Operator Profiles

2. Define consoles to RACF
3. Define TSO users who use the CONSOLE command to RACF
4. Allow consoles or TSO users to access I/O console commands

Use the procedure name you use to start I/O operations in the place of *ioproc*. This is either the name on the EXEC statement in the procedure, or if there is no name, the name of the member in SYS1.PROCLIB (or other procedure library that you use).

If you have already defined users and consoles to RACF, you need to do only the following:

```
RDEFINE OPERCMDS MVS.*.*.ioproc.* UACC(NONE)
PERMIT MVS.*.*.ioproc.** ID(userid) CLASS(OPERCMDS) ACC(UPDATE)
SETROPTS RACLIST(OPERCMDS) REFRESH
```

**Defining I/O Console Commands to RACF:** The information that follows describes the steps needed to tell RACF about I/O commands entered from an OS/390 console.

*All-or-Nothing Control:* The following commands prevent any console user from controlling I/O operations:

```
SETROPTS GENERIC(OPERCMDS)
RDEFINE OPERCMDS MVS.*.*.ioproc.* UACC(NONE)
SETROPTS RACLIST(OPERCMDS) REFRESH
```

These commands do the following:

```
SETROPTS GENERIC(OPERCMDS)
```

### SETROPS

This command tells RACF to use generic names for the class of resources called OPERCMDS (for operator commands). This means that the "\*" character can be used to replace any name, and "\*\*" can replace any subsequent names including no name at all.

```
RDEFINE OPERCMDS MVS.*.*.ioproc.* UACC(NONE)
```

### RDEFINE

This command defines to RACF the resource name. In this case the name is the one that is used to protect a certain command. The positional parameter, OPERCMDS, tells RACF what kind of resource the name is used for.

Next the name is supplied, using generics. This name follows the OS/390 resource naming convention. Using this name, OS/390 console services can check with RACF for users' authority to invoke commands through console interfaces. In this case, the first \* means we are protecting *any* console command that can affect I/O. These are the START, STOP, MODIFY, CANCEL, and FORCE commands. OS/390 offers a further distinction between FORCE with and without the ARM parameter.

The second "\*" is necessary because OS/390 allows you to protect either submitted jobs (using JOB as the third position in the resource name) or started tasks (using STC, for Started Task Control, as the third position).

**Note:** A started task can be given a different name, or identifier, when it is started. For example, if SA OS/390's procedure is called INGEIO but operators want to use IO0PS, they can start SA OS/390 with the following command:

```
START INGEIO.IO0PS,SUB=MSTR
```

From then on, only IOOPS or INGEIO.IOOPS can be used to identify the SA OS/390 task in operator commands, while INGEIO will be unknown.

The \*\* in the RACF profile lets OS/390 find the correct profile whether or not there is an identifier.

Then we supply the default access level, called UACC (for Universal Access). (The UACC levels are NONE, READ, UPDATE, CONTROL, and ALTER). UACC(NONE) keeps every user away from this command, unless we specifically give them authority.

```
SETROPTS RACLIST(OPERCMD5) REFRESH
```

### SETROPTS

This command updates the RACF profile information that the system is using at this moment. This updates all of the access control information relating to operator command protection, since we've just been changing it. After this command, or after the next IPL, no unauthorized user will be allowed to use any SA OS/390 command from any console interface.

*Granular Control:* You might want to allow some operators to have complete control over SA OS/390, but keep others from starting, stopping or cancelling it. These instructions allow you to pick and choose exactly which operators are allowed to issue which console commands.

The following commands will prevent any console user from controlling I/O operations:

```
RDEFINE OPERCMDS MVS.START.*.ioproc.** UACC(NONE)
RDEFINE OPERCMDS MVS.STOP.*.ioproc.** UACC(NONE)
RDEFINE OPERCMDS MVS.MODIFY.*.ioproc.** UACC(NONE)
RDEFINE OPERCMDS MVS.CANCEL.*.ioproc.** UACC(NONE)
RDEFINE OPERCMDS MVS.FORCEARM.*.ioproc.** UACC(NONE)
RDEFINE OPERCMDS MVS.FORCE.*.ioproc.** UACC(NONE)
```

### Notes:

1. See "Mixing Generic and Specific Resource Names" on page 217 for a description and examples of when to use specific resource names.
2. OS/390 does not have the ability to distinguish between different product commands entered with the MODIFY operator command. So an operator who has been authorized to enter a non-intrusive command such as MODIFY IOOPS,DISPLAY TIMEOUT is also authorized to enter a more impacting command, such as MODIFY IOOPS,BLOCK (C0) \* FORCE.

Much greater granularity is available to protect the use of SA OS/390 commands accessed through the application programming interface (API), which include access from ISPF, NetView, and the graphical workstation. If you need more levels of control, do not permit access of SA OS/390 commands through the console interface. Use API controls instead.

3. These examples continue using the practice of replacing STC and JOB resource names with "\*". You do not need to use the resource names with JOB, but you might still want to use "\*" instead of STC.

*Define Consoles to RACF:* In the CONSOLxx member of SYS1.PARMLIB, there are several statements and attributes that you should be aware of:

### The DEFAULT statement

can be used to control the initial security mechanism for consoles. The options are LOGON(AUTO), LOGON(OPTIONAL), and LOGON(REQUIRED).

## Operator Profiles

The default value is `OPTIONAL`, which is the least intrusive to most installations' current operating procedures. The most secure is `REQUIRED`, and the easiest is `AUTO`.

The `LOGON` attribute is used to describe how and when operators must use the `LOGON` operator command. If the console operator does not use `LOGON`, the console has the authority level that is specified for it in the `AUTH` attribute of the `CONSOLE` statement.

### The `NAME` attribute of the `CONSOLE` statement

is used to give each console a unique name.

You use the console name to tell RACF about the console. Rather than manage a new type of profile, RACF considers a console a user. So you tell RACF about a console by adding a RACF user profile with the console name as the user ID, like this:

```
ADDUSER (consoleid) PASSWORD(password)
```

Like other passwords with RACF, the password is initialized expired, so each console and console user is prompted to change the password the first time they logon.

### The `AUTH` attribute of the `CONSOLE` statement

describes the *old* authorization level. If you don't use `OPERCMD` authorization, you are using `AUTH` levels. The levels are `INFO`, `SYS`, `I0`, `CONS`, and `MASTER`. The `ALL` authority is also available, which includes all of the `SYS`, `I0`, and `CONS` authorities.

The operator commands in question (such as `START`, `STOP`, `MODIFY`) are all in the `SYS` class of commands.

Typically, most consoles are given `ALL` or `MASTER` authorities, which means very little console security is in place. Using `LOGON(AUTO)` or `INFO` authority, or both, might be a big change to some installations, but it will provide much greater security for console operations.

Operators can use the `LOGON` command even when a console is already logged-on to another *userid*, although the previous *userid* will be automatically logged-off. In this way, operators can walk up to any console, issue `LOGON` with their *userid* and password, issue their desired operator commands, then `LOGOFF` before leaving. They can `LOGON` even while logged on to another console. This is so that operators are not locked out if they haven't issued `LOGOFF` from their usual console, but you could also have several consoles used with the same *userid* to share the same authorization class. It might not be as convenient as many operators are used to, but it is secure.

*Define TSO Users Who Use the CONSOLE Command to RACF:* You have to create a RACF profile for each TSO user who intends to use the TSO `CONSOLE` command.

```
RDEFINE OPERCMDS MVS.MCSOPER.userid UACC(NONE)
PERMIT MVS.MCSOPER.userid CLASS(OPERCMD) ID(userid) ACC(READ)
SETROPTS RACLIST(OPERCMD) REFRESH
```

These commands tell RACF about a profile, in the class of operator commands, that control access for the user *userid* to the Master Console Services for operator commands (`MCSOPER`). Initially, no one has access to the ability, but the `PERMIT` command specifies that user *userid* has access to the profile, thus the ability is permitted.

Like always, it doesn't take effect until after the SETROPTS RACLIST(OPERCMD5) REFRESH command.

**Note:** Some installations need to give RACF more information than normal for users who intend to use the CONSOLE command. Often this requires additional TSO parameters, such as accounting information, region size, or logon procedure name.

*Allow Consoles or TSO Users to access SA OS/390 Console Commands:* Once the resource and console profiles are defined, controlling access to the commands is simple:

```
PERMIT MVS.*.*.ioproc.** ID(userid) CLASS(OPERCMD5) ACC(UPDATE)
```

This command permits user *userid* to access the function described by the profile MVS.\*.\*.ioproc.\*\*. The user is given UPDATE authority. This authority is sufficient for the START, STOP, MODIFY, and CANCEL commands. The FORCEARM and FORCE commands require CONTROL authority.

To allow user *userid* to issue MODIFY commands to I/O operations, but not START or STOP it, use:

```
PERMIT MVS.MODIFY.*.ioproc.** ID(userid) CLASS(OPERCMD5) ACC(UPDATE)
SETROPTS RACLIST(OPERCMD5) REFRESH
```

Always make certain that you update the in-storage security information with the SETROPTS command after you have changed resource or profile information.

*Mixing Generic and Specific Resource Names:* You do not have to control each command with a specific resource name. RACF looks for a specific resource name before looking for a generic resource name. If a specific resource name is found, authorization is checked for it, otherwise authorization is checked against the generic name. You could easily protect all operator commands, then further protect the MODIFY command, then further protect modifying I/O operations with:

```
RDEFINE OPERCMD5 MVS.** UACC(NONE) RDEFINE OPERCMD5 MVS.MODIFY.**
UACC(NONE) RDEFINE OPERCMD5 MVS.MODIFY.*.ioproc.** UACC(NONE)
```

When describing granular control in "Granular Control" on page 215, we defined specific resource names (with a "\*" for J0Bor STC) for each operator command that can control SA OS/390, such as START or MODIFY.

One approach is to offer two types of SA OS/390 access: one for operators who can issue the MODIFY command, but no other commands and one for other operators who have access to all commands. In such a case, you might make a generic access resource and a specific resource for MODIFY, and grant MODIFY access to the first group and both MODIFY and generic to the second group, like this:

```
RDEF OPERCMD5 MVS.*.*.ioproc.**      UACC(NONE)
RDEF OPERCMD5 MVS.MODIFY.*.ioproc.** UACC(NONE)
PE MVS.*.*.ioproc.**      ID(userid) CLASS(OPERCMD5) ACC(CONTROL)
PE MVS.MODIFY.*.ioproc.** ID(userid) CLASS(OPERCMD5) ACC(UPDATE)
PE MVS.MODIFY.*.ioproc.** ID(modify_id) CLASS(OPERCMD5) ACC(UPDATE)
```

If most operators need a "base level" of access and only a few need to issue the other commands, and you want to easily add and remove these base level commands, you can define specific resource names for the commands that need special protection, and the generic resource is used for access to the base. This

## Operator Profiles

example defines a general authorized operator *userid* to START, STOP, and CANCEL, and *modify\_id* to have access to all commands:

```
RDEF OPERCMDS MVS.*.*.ioproc.**      UACC(NONE)
RDEF OPERCMDS MVS.MODIFY.*.*.ioproc.**  UACC(NONE)
RDEF OPERCMDS MVS.FORCEARM.*.*.ioproc.** UACC(NONE)
RDEF OPERCMDS MVS.FORCE.*.*.ioproc.**   UACC(NONE)
PE MVS.MODIFY.*.*.ioproc.**   ID(modify_id) CLASS(OPERCMDS) ACC(UPDATE)
PE MVS.FORCEARM.*.*.ioproc.** ID(modify_id) CLASS(OPERCMDS) ACC(CONTROL)
PE MVS.FORCE.*.*.ioproc.**   ID(modify_id) CLASS(OPERCMDS) ACC(CONTROL)
PE MVS.*.*.ioproc.**         ID(modify_id) CLASS(OPERCMDS) ACC(UPDATE)
PE MVS.*.*.ioproc.**         ID(userid) CLASS(OPERCMDS) ACC(UPDATE)
```

This method allows you access from a console to all of I/O operations or to none of it.

## RACF-Based NetView Environments

The following information does not address general administration of RACF-based security in the NetView environment or all that is involved in deciding to migrate to RACF-only security. To learn about that, see *Resource Access Control Facility (RACF) Security Administrator's Guide*

Full RACF checking for SA OS/390 includes:

- Verifying that an operator (whose identity was already authenticated at logon time) is permitted to perform a specific function with a specific operand or option
- Using NetView to check that the operator who originally issued the command is authorized. This is more secure than checking to see that the operator who sends the command is authorized on the system where the command is sent.

To enable full RACF authorization checking, set these option statements with the following NetView keywords and values:

Name of NetView Member	Function within NetView	Keyword and Value	Purpose of Change
DSIDMN	NetView domain definition member	OPERSEC=SAFDEF	Set NetView to use RACF for general operator authentication and authorization. The broadest of all security settings.
		OPSPAN=SAF	Sets authorization of the START SPAN command. This value is the default and is the only possible choice when OPERSEC= SAFDEF is set.
		CMDAUTH=SAF	Sets NetView to use RACF for general command authorization.
		BACKTBL= <i>table_name</i>	Provides a backup authorization mechanism to be in place when RACF is not available.

Name of NetView Member	Function within NetView	Keyword and Value	Purpose of Change
		AUTHCHK=SOURCEID	Sets NetView to perform authorization against the ID of the original command issuer.
		SAFNODEC={PASS   FAIL}	Tells NetView what decision it should make on its own when RACF is not available or under certain other circumstances. See the NetView documentation for the consequences of using the default PASS or changing it to FAIL.
DSIUINIT	Initialization member for the DSIUDST task that handles RMTCMD data services	RMTSECUR...SAF	Causes RACF authorization checking for the initial RMTCMD request and ENDTASK requests, based on the RACF RMTOPS class
DSICMD	NetView command definition sample	CMDCML...SEC=DE	Controls authorization at an individual command level.

NetView operators' authorizations are set up by:

- Creating a profile for each instance of NetView in the APPL class. This is done with RDEF and by using as the resource name the DOMAINID from the NCCFID statement in DSIDMN.
- Issuing RACF PERMIT commands for each operator, specifying the resource name (as defined with RDEF), the class (APPL), the operator ID, and the access level for the operator.

Authorizations are stored in a NetView segment for each operator. This is done by specifying a value for CTL with the RACF ALTUSER command with OPERSEC=SAFDEF. Assuming that operator *AUTBASE* has been defined by

```
AUTBASE OPERATOR PASSWORD=XYZ123
PROFILEN AOFPRFAO
```

in the definitions pulled into DSIOPF and

```
AOFPRFAO PROFILE IC=AOFPARCR
AUTH CTL=GLOBAL
OPCLASS 1,2
END
```

in the operator profile, then the new definitions for the RACF environment are:

```
ADDUSER AUTBASE PASSWORD(XYZ123)
ALTUSER AUTBASE NETVIEW(IC(AOFPARCR) CTL(GLOBAL) OPCLASS(1,2))
```

Operator definitions, written in ADDUSER and ALTUSER format, are shipped as part of the SA OS/390 product.

To authorize a NetView operator to start a span (assuming that OPSPAN=SAF is set), you need to:

- Create a profile for the span in the NETSPAN class with RDEF

## Operator Profiles

- Other existing definition steps for the span such as listing the span name in the SPANLIST statement in DSISPN are unchanged.
- Set up for each operator PERMITS with access authority appropriate for the function that the operator is allowed to execute within that span.
  - UPDATE authority is often the one required to make changes in important commands like VTAM VARY.
- Authorize use of the individual commands.

To check an operator's access to a certain resource, you can use either:

- NetView QRS command or DSIQRS macro, in which the check can be by resource name or by RODM object ID
- CNMSCOP service, which determines whether a particular user is authorized to use a specific command, keyword, or value combination. This is available from a high-level language.

To assign a default extended MCS console name for operators, you can use either:

- The CONSNAME field of the NetView segment when OPERSEC=SAFDEF and ALTUSER AUTOBASE NETVIEW(...CONSNAME(AMZ\$123)...) )
- GETCONID CONSOLE=x where the console ID is x. This method is preferred to the default name in CONSNAME and must be used when the default name is already in use or defaulting to the NetView task name or operator ID (if nothing is specified in CONSNAME).

### Protecting Commands Defined to NetView

Some SA OS/390 commands can be defined to NetView. After these have been activated with SETR CLASSACT(NETCMD) and SETR GENERIC(NETCMD), you can establish their security restrictions by issuing RACF RDEF definitions for each command, keyword, and value and combination of these.

When this is used, the resource name is in the form

NETID.LUNAME.COMMAND.KEYWORD.VALUE

where

#### NETID

The netID from the last VTAM activation. You may chose to use something generic here if your situation makes that preferable.

#### LUNAME

Name specified in the NCCFID statement in DSIDMN, the NetView domain ID

#### COMMAND

Name on the CMDMDL statement in DSICMD for the command. This is not a synonym defined by the CMDSYN statement

#### KEYWORD

Name required only if you desire to have operand and value-level checking

#### VALUE

Name required only if you desire to have operand and value-level checking

Then issue RACF PERMIT commands for each operator, specifying the resource name (as defined with RDEF), the class (APPL), the operator ID, and the access level for the operator. The standard access level required for NetView commands is READ.

In the NetView CMDMDL statement in the DSICMD member, the keyword SEC can have one of these values:

- BY** Indicates that NetView should bypass authority
- CH** Indicates that NetView should check authority
- DE** Indicates that NetView should defer a decision about checking until the command is issued and make the decision then based on whether the command is or is not issued from the automation table. If the command is issued from the automation table, authorization is checked if AUTOSEC=CHECK is set by use of the DEFAULTS command and not checked if AUTOSEC=BYPASS. If the command is not issued from the automation table, authorization is always checked.

When the SEC keyword is not specified in the CMDMDL statement or there is no such statement for the command or command procedure. SEC=DE is the default.

---

## Installing the SA OS/390 Password Protection Feature (Optional)

The SA OS/390 password protection feature allows SA OS/390 to use a Security Authorization Facility (SAF) program such as RACF to manage gateway operator IDs and passwords. This feature is intended for systems that establish gateway sessions with two or more other systems. After installing SA OS/390 and the SAF, the steps for installing the SA OS/390 password protection feature are as follows:

1. Edit the DSIDMN member of the NetView DSIPARM data set.
2. Define gateway operator IDs to the SAF program.
3. Define entries for the SA OS/390 password data set.
4. Customize SA OS/390 password protection for a shared SAF environment.
5. Set up I/O operations security
6. Recycle NetView

The steps are described in more detail in this section, and reference the example automation network shown in Figure 68, which shows a focal point system connected to two target systems. All systems are named by their NetView domain IDs: ING01, ING02, and ING03.

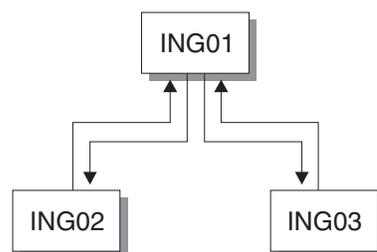


Figure 68. Automation Network Example for SA OS/390 Password Protection

## Installing the SA OS/390 Password Protection Feature (Optional)

### Step 1 — Edit the DSIDMN Member of the NetView DSIPARM Data Set

Change the VERIFY parameter of the OPTIONS statement to VERIFY=MAXIMUM. See *Tivoli NetView for OS/390 Security Reference* for information about the OPTIONS statement.

### Step 2 — Define Gateway Operator IDs to the SAF Program

A Security Authorization Facility (SAF) program such as RACF manages all user IDs that are associated with a system or group of systems. Each system in an automation network can have its own password data set; or several systems in the network can share one password data set.

A security administrator usually manages the SAF for a DP enterprise, creating user IDs and assigning passwords. To define gateway operator IDs and passwords for your automation network, do the following:

1. Identify the gateway operator IDs that each system in your automation network needs. For example, referring to Figure 68 on page 221, systems ING02 and ING03 would both need a gateway operator ID (GATING01) to enable the logon from the outbound gateway operator on system ING01. System ING01 would need two inbound gateway operator IDs: one to enable the logon from system ING02, another to enable the logon from system ING03.
2. Ask your security administrator to define these gateway operator IDs to the SAF program on the appropriate systems. Also, request the passwords for those gateway operator IDs.

If you use RACE, and your DP enterprise does not have a security administrator, see *Resource Access Control Facility (RACF) Command Language Reference* for information about the ADDGROUP and ADDUSER commands.

### Step 3 — Define Entries for the SA OS/390 Password Data Set

The SA OS/390 password data set contains only gateway operator IDs and passwords for systems to which your system connects. To create the SA OS/390 password data set, ING.ING01.PASSWORD, and define entries for it, do the following:

1. Allocate VSAM space for the SA OS/390 password data set.  
Copy and edit job INGESYSA, which resides in the SINGSAMP data set, to allocate space for the SA OS/390 password data set.  
Before you run job INGESYSA, do the following:
  - a. Enter your JOB statement information by modifying the example job card.
  - b. Enter the correct data set names and any other information that is unique to your environment.
  - c. Comment job step 1 unless you want to delete the existing SA OS/390 password data set. If you want to delete the existing SA OS/390 password data set, leave job step 1 without comment signs.  
  
**Note:** Job step 1 calls member INGESYSA, which also deletes the couple data set. If you want to delete only the SA OS/390 password data set, edit the INGESYSA member, and be sure that the DELETE statement for the SA OS/390 password data set (ING.ING01.PASSWORD) is not a comment, and the DELETE statement for the coupling facility data set is commented.
- d. Comment job step 2.

## Installing the SA OS/390 Password Protection Feature (Optional)

- e. Remove comment signs from job step 3. Job step 3 uses member INGESYSA to allocate space for the SA OS/390 password data set, ING.ING01.PASSWORD.
2. Define the SA OS/390 password data set to NetView by adding the following statement to the NetView application startup procedure:

```
//AOFPSWD DD DSN=ING.ING01.PASSWORD,  
// DISP=SHR,AMP=AMORG
```

ING.ING01.PASSWORD is the default SA OS/390 password data set for which space was allocated earlier.

3. Add gateway operator IDs and passwords to the SA OS/390 password data sets.

Use the SA OS/390 INGPW command on each system in the automation network to add gateway operator ID and password entries to their SA OS/390 password data sets. For example, a system programmer at system ING01 would enter the following commands to add gateway operator IDs and passwords for systems ING02 and ING03:

```
INGPW GATING01 ING02,INIT=ABCPASS1  
INGPW GATING01 ING03,INIT=ABCPASS2
```

GATING01 is the ID for the outbound gateway operator on system ING01. ABCPASS1 and ABCPASS2 are the passwords the system programmer received from the security administrator.

See *System Automation for OS/390 Programmer's Reference* for detailed information about the INGPW command and an example of how to define entries for a shared SAF environment.

## Step 4 — Customize SA OS/390 Password Protection for a Shared SAF Environment

If your automation network shares a RACF or other SAF data set, you must define how the data set is to be shared. This applies only to systems that are connected to two or more other systems, which share the same RACF or other SAF data set. Use the customization dialog to specify the systems that share the data set and the system that owns the outbound gateway operator that connects to these systems. For example, if the automation network shown in Figure 68 on page 221 were sharing a RACF or other SAF password data set, a system programmer at system ING01 would use the customization dialog to make the following entries in the System Authorization Facility (SAF) Environment Definition panel as shown in Figure 69 on page 224.

## Installing the SA OS/390 Password Protection Feature (Optional)

```

COMMANDS  ACTIONS  HELP
-----
SA OS/390 - SAF Environment Definition      ROW 1 TO 16 OF 20
Command ==> _____          SCROLL==> PAGE

Entry Type : Network          PolicyDB Name : DATABASENAME
Entry Name : NW01            Enterprise Name : YOUR_ENTERPRISE

If a standard password format has been established, enter the corresponding
password generation mask. ==> _____

If you have NetView domains that share the same SA OS/390 password data set,
enter the following information.
Actions: M = Move  B = Before  A = After  I = Insert

Action  Owner  Group  Share
-----  ----  ----  -----
_____  ING01  ___   ING02,ING03_____
_____  _____
_____  _____

```

Figure 69. Customizing Password Protection: SAF Environment Definition

The Action field is for Actions that change the order in which the rows of information are presented. Valid actions are M (Move), B (Before), A (After), and (I) Insert. The Owner field shows the system that owns the outbound gateway operator that connects to systems ING02 and ING03. The Share fields show the systems to which the ING01 system connects. The Group fields show the group name assigned to multiple systems.

The password generation mask field describes the format to be used when generating new passwords for gateway autotasks. See *System Automation for OS/390 Defining Automation Policy* for more information on the INGPW command, and on defining a password mask and for information about customizing policy for the SA OS/390 password protection feature.

### Step 5 — Recycle NetView

Stop NetView and restart it. See *Tivoli NetView for OS/390 User's Guide* for information about stopping and starting NetView.

### Step 6 — Define a RACF Profile for I/O Operations

Assign authorization levels using RACF/SAF for individual commands or generically for all commands. Use the RACF RDEF command with a class of FACILITY.

FUNCTION	COMMAND
To define the profile for the PROHIBIT command	RDEF FACILITY IHV.PROHIBIT
To define a profile that would allow all users to enter a command (for example, UNLOCK)	RDEF FACILITY IHV.UNLOCK UACC(READ)
To permit the use of generics for a Class of Service facility	SETROPTS GENERIC FACILITY
To prevent unauthorized use of commands you can enter this RACF command to prohibit use of commands	RDEF FACILITY IHV.* UACC(NONE)

**Note:** If you have prohibited all user IDs from using these commands, you must explicitly assign RACF authorization to designated user IDs.

## Installing the SA OS/390 Password Protection Feature (Optional)

### Assign RACF Authorization

To give RACF authorization to a user ID, enter the RACF PERMIT command and its parameters.

**Assign a Profile Parameter:** The profile parameter is *IHVcommandname*, where:

- *IHV.* is the three-character ID, followed by a period (.).
- *commandname* is the name of the command

#### Notes:

1. The profile parameter (for example, IHV.ALLOW, IHV.VARY, IHV.REMOVE.SWITCH) determines the authorization level of the user ID identified in the ID parameter.

2. The ACCESS parameter identifies the authorization given.

You can use an asterisk to designate a generic class on the PERMIT parameters. For example, to allow all users to send all commands that require read authority, enter:

```
PERMIT IHV.* ACCESS(READ) CLASS(FACILITY)
ID(*)
```

### Assign Authorization by ACCESS Level

You can authorize a user ID to enter one command at a given access level by entering one command.

For example, to allow a user (SUWAJDA) to send commands requiring control authorization, enter:

```
PERMIT IHV.* ACCESS(CONTROL) CLASS(FACILITY)
ID(SUWAJDA)
```

For example, to authorize another user (FISHER) to enter all commands that require the update authorization, enter:

```
PERMIT IHV.* ACCESS(UPDATE) CLASS(FACILITY)
ID(FISHER)
```

**Assign Authorization by Command:** You can use the PERMIT command to let all users send individual commands. For example, to authorize everyone to use the Unlock command, enter:

```
PERMIT IHV.UNLOCK ACCESS(READ) CLASS(FACILITY)
ID(*)
```

To authorize a user (DONC) to send all connectivity commands with the Noforce option, enter:

```
PERMIT IHV.* ACCESS(UPDATE) CLASS(FACILITY)
ID(DONC)
```

**Use Specific Profile Names:** Either specific profile names or generic profile names can be used in the PERMIT command. Use specific profile names to authorize use of specific I/O operations commands.

For example, to authorize a user (PHILOP) to use only the Allow and Prohibit commands with the Noforce option, enter:

```
PERMIT ING.ALLOW ACCESS(UPDATE) CLASS(FACILITY) ID(PHILOP)
PERMIT ING.PROHIBIT ACCESS(UPDATE) CLASS(FACILITY) ID(PHILOP)
```

On the NMC focal point the following is necessary to define users and access levels to RODM:

## Installing the SA OS/390 Password Protection Feature (Optional)

1. Define a general resources class named RODMMGR. This is the default class name used in EKGCUST initialization member for RODM.
2. Define instances of the RODMMGR resource class, for example,

```
RDEF EKGXRODM1 CLASS(RODMMGR) UACC(NONE)
RDEF EKGXRODM2 CLASS(RODMMGR) UACC(NONE)
RDEF EKGXRODM3 CLASS(RODMMGR) UACC(NONE)
RDEF EKGXRODM4 CLASS(RODMMGR) UACC(NONE)
RDEF EKGXRODM5 CLASS(RODMMGR) UACC(NONE)
RDEF EKGXRODM6 CLASS(RODMMGR) UACC(NONE)
```

3. Define new users AUTIO1 and AUTIO3 to RACF.
4. Grant read access to the new users for the appropriate access levels, for example,

```
PERMIT EKGXRODM1 CLASS(RODMMGR) ID(AUTIO1) ACC(READ)
PERMIT EKGXRODM2 CLASS(RODMMGR) ID(AUTIO1) ACC(READ)
PERMIT EKGXRODM3 CLASS(RODMMGR) ID(AUTIO1) ACC(READ)

PERMIT EKGXRODM1 CLASS(RODMMGR) ID(AUTIO3) ACC(READ)
PERMIT EKGXRODM2 CLASS(RODMMGR) ID(AUTIO3) ACC(READ)
PERMIT EKGXRODM3 CLASS(RODMMGR) ID(AUTIO3) ACC(READ)
```

For more information on the RACF commands, see *Resource Access Control Facility (RACF) Command Language Reference*.

---

## Establishing Authorization With Network Security Program (NetSP)

If you have installed NetSP, you can create an authorization system requiring only one sign on for each user. With it, a user who logs on from a workstation has access to RACF-protected host applications. These include 3270 emulation and log on scripts and APPC communications. This authorization is controlled by NetSP's PassTicket, which is recognized by the SAF-based security system and is valid for a fixed period of time.

To establish authorization for your users, you need to create in NetSP recorded input files as log on transfer scripts. This is done either by recording keystrokes in the emulator session or by entering them directly in a file with a text editor. How to do this is described in *Network Security Product Secured Network Gateway Guide*.

---

## Appendix B. Syntax for INGTOPOF File

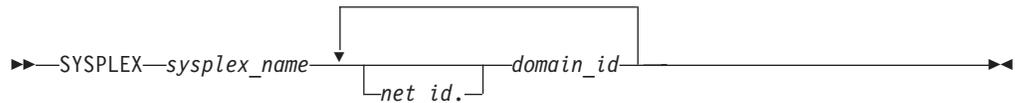
The INGTOPOF file contains configuration information for the SA OS/390 topology manager. It must reside in any of the data sets allocated under the DSIPARM concatenation. The records of the file consist of a keyword with one or more parameters. Comment lines must start with an asterisk (\*). A '+' at the end of a line indicates that the record is continued in the next line.

There are six keywords that can occur in the INGTOPOF file: SYSPLEX, PROCOPS, LOCATION, ANCHOR, BLDVIEWS, and OPTION.

---

### The SYSPLEX Statement

For every sysplex, the SA OS/390 topology manager must be told which systems of the sysplex are able to communicate with it. This is done with the SYSPLEX statement according to the following format:



The *sysplex\_name* must be different from every name that you specify in a PROCOPS statement (see "The PROCOPS Statement" on page 228). The systems must be identified to the SA OS/390 topology manager by their NetView domain ID. If the *net\_id* is omitted, it is assumed to be the same as that of the focal point. The INGTOPOF file must contain at least one SYSPLEX statement; in particular, you cannot have a PROCOPS statement in the INGTOPOF file without a SYSPLEX statement.

The SA OS/390 topology manager tries to contact the systems in the order in which they appear in the list. When it finds a system that contains a functional SA OS/390 topology agent, it searches no further, but gathers the SA OS/390 information from the automation manager through this SA OS/390 topology agent. It then stores the retrieved information within RODM, prefixing all resource names with the *sysplex\_name* that it found in the SYSPLEX statement.

It follows from this that the order in which the domains are specified should reflect eventual decisions about primary and backup systems for communication with the SA OS/390 topology manager. Also, the sysplexes as defined in the INGTOPOF file must correspond to the sysplex groups in the policy database.

Since stand-alone systems are treated as sysplexes, they must also be introduced to the SA OS/390 topology manager by a SYSPLEX statement. In this case, the list of domain IDs will comprise just one item.

If you want to have a network anchor for a system, this system's domain ID must be included in the SYSPLEX statement.

### The PROCOPS Statement

With this statement, you specify a focal point for processor operations and its backup focal point. It has the following format:

```
►►—PROCOPS—procops_name—focal_point—backup_focal_point—————►►
```

The *procops\_name* must be different from every name that you specify in a SYSPLEX statement. The focal point processor and its backup must be identified to the SA OS/390 topology manager by a NetView domain ID. If the *net\_id* is omitted, the SA OS/390 topology manager assumes it to be identical to that of its own focal point.

There must be at least one SYSPLEX statement in the INGTOPOF file if you want to insert a PROCOPS statement.

---

### The LOCATION Statement

The LOCATION statement is used to group system related events, for example, geographically rather than logically. The events that are attached to a LOCATION must be posted to the SA OS/390 topology manager by the user with the INGPOST command. For more information on the INGPOST command, see *System Automation for OS/390 Operator's Commands*.

The Location statement has the following format:

```
►►—LOCATION—target_domain—location_name—————►►
```

#### *Examples:*

```
*  
* TSCF1 thru 3 are in Boeblingen, 4 and 5 are in Perth  
*  
LOCATION T2 BB_LAB  
LOCATION NETOZ.CNMT4 PERTH  
LOCATION NETOZ.CNMT5 PERTH  
*  
* AOCA thru D are in Boeblingen  
*  
LOCATION AOCPLEX BB_LAB  
*  
* OZ1 thru OZ4 are in Perth  
*  
LOCATION OZPLEX PERTH
```

---

### The ANCHOR Statement

The ANCHOR statement serves to define anchors for arbitrary user defined events.

Anchors are objects that occur in RODM, but not within the automation manager. They serve to collect events of a certain type that are to be displayed on the NMC. Anchors play the role of major resources for events of this type, and the events themselves are treated as minor resources of their anchor. The SA OS/390

topology manager automatically creates anchors for certain events such as WTORs. For more information on anchors and events see *System Automation for OS/390 User's Guide*.

With the ANCHOR statement, you can introduce your own anchors for any events. These events must be posted to the SA OS/390 topology manager with the INGPOST command; the anchor must be specified in the command as the major resource (RESOURCE parameter). For more information on the INGPOST command, see *System Automation for OS/390 Operator's Commands*; for information on major and minor resources, see *System Automation for OS/390 Defining Automation Policy*

The ANCHOR statement has the following format:

▶▶—ANCHOR—*sysplex\_name*—*anchor\_name*—▶▶

## The BLDVIEWS Statement

A RODM resource can only be displayed on the NMC when it is included in a view. With the BLDVIEWS statement, you can pass data sets (members) that contain view definitions for BLDVIEWS to the SA OS/390 topology manager. The SA OS/390 topology manager will then call the BLDVIEWS tool for (all or some of) these data sets (members) in order to build or rebuild the specified views. The view definitions must be supplied by the customer.

Every BLDVIEWS statement associates one sysplex (as defined by a SYSPLEX statement) or one processor operations focal point configuration (as defined by a PROCOPS statement) with a list of such data sets (members). This enables the SA OS/390 topology manager to rebuild views at runtime only for those sysplexes (sets of target processors) whose SA OS/390 information has in fact changed.

The BLDVIEWS statement has the following format:

▶▶—BLDVIEWS—*sysplex\_name*—*procops\_name*—*data\_set\_or\_member*—▶▶

You can exploit the association of the data sets (members) to sysplexes to reduce the overhead caused by rebuilding views at runtime. Suppose, for example, that all your sysplex views either contain objects from only one sysplex or from all sysplexes. Then you should proceed as follows.

1. For every sysplex, create a separate data set (member) with the view definitions specific for that sysplex.
2. Create one data set (member) for the common views.
3. Code a BLDVIEWS statement for every sysplex, where the list of data sets (members) comprises two items, namely the data set (member) with the views specific for this sysplex, and the data set (member) with the common views.

In this way, the sysplex specific views are rebuilt only when the SA OS/390 resources for the sysplex in question have changed within RODM in such a way that a rebuild is necessary.

## Syntax for INGTOPOF File

For more details on view definitions, see *System Automation for OS/390 User's Guide*.

---

### The OPTION Statement

With the OPTION statements you can:

- control whether or not dependencies and major/minor resource relationships are stored in RODM, and are therefore represented on the NMC, and
- specify the default layout for the automatically generated subviews of group objects.

The OPTION statement has the following format:



The parameters have the following meaning:

#### PARENTS

Dependency relationships are stored in RODM (and displayed on the NMC in network views). This is the default.

#### NOPARENTS

Dependency relationships are not stored in RODM.

#### LINKMINOR

Relationships between major and minor resources are stored in RODM (and displayed in network views). This is the default.

#### NOLINKMINOR

Relationships between major and minor resources are not stored in RODM.

#### MDL\_RADLINK

The automatically created subviews are radially arranged. The default for this option is defined in RODM.

#### MDI\_GRID

The automatically created subviews are arranged in a grid. The default for this option is defined in RODM.

---

### Sample INGTOPOF File

A sample INGTOPOF file as shown in the following example can be found in member INGTOPOF in the data set SINGNPRM.

```
*****
*
* This file holds the mapping from target domain to 'SA Sysplex'.
* It should match you actual domain setup. The Non_SNA column should
* contain a unique 8 character string that will be used for the
* NMG_Class and the Non_SNA_Domain class objects that will be created
* to represent the agents within that sysplex. The domain list is
* simply a list of 5 character domain names for the target systems
* that are a part of that domain.
* For a description of all keywords pls refer to the
* System Automation for OS/390 Planning and Installation guide.
```

```
*
* Use a trailing '+' for continuation.
*
* Non_SNA Domain lists
* -----
*
**SYSPLEX FOC1PLEX
*
* LOCATION FOC1PLEX BB_LAB
* SYSPLEX FOC1PLEX DOM01 DOM02
* BLDVIEWS FOC1PLEX BLD1 BLD2
* PROCOPS POPS1 DOM01
*
**SYSPLEX SAMPLES
*
* TSTPLEX1 DOM01 DOM02 DOM03 DOM04
* TSTPLEX2 DOM05 DOM06 DOM07 DOM08 DOM09 DOM10 DOM11 DOM12 +
*          DOM13 DOM14 DOM15
* PRODPLEX DOM20 DOM21 DOM22
*
```

## Syntax for INGTOPOF File

---

## Appendix C. Miscellaneous Information

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This section tells you how to do the additional installation tasks involved in using the enterprise monitoring functions of SA OS/390.

---

### Running Two NetViews on the NMC Focal Point System

If your focal point system runs one NetView for automation (Automation NetView) and another NetView for networking (Networking NetView) that includes an NMC focal point system, you must install SA OS/390 on both NetViews. The SA OS/390 installation on the NetView used for networking involves only a subset of SA OS/390 code, called an SA OS/390 satellite, and fewer installation steps are required.

If you are intending to use the Networking NetView as the enterprise monitoring focal point, then both NetViews (that is, the SA OS/390 and Networking NetView) need to have a DSIQTSK connected to the RODM. You need to create a unique DSIQTSKI member for each NetView, specifying different PPI receiver ID's for each.

The following additional customization is required when running two NetViews on the NGMF Focal Point System:

**DSIQTSKI:** When running more than one NetView on a system, update the CMDRCVR keyword to ensure that each NetView has a unique receiver ID specified.

Ensure that each NetView DSIQTSKI member has the ID keyword of the REP statement specified and that each has a unique RODM connection ID.

Where the Networking NetView is an enterprise monitoring focal point, the SA OS/390 NetView's DSI6INIT Parm should specify the Networking NetView on the same system as its focal point. The focal point needs to receive heartbeats from the SA OS/390 domain on the same system to set the necessary RODM focal point fields.

Installation of an SA OS/390 satellite is covered as an optional step. See "Step 24 — Install an SA OS/390 Satellite" on page 149.

---

### Users and RODM Authorization

When RODM is installed on your system, it is necessary to authorize users and applications to access RODM services. This authorization is accomplished using RACF or an equivalent security application. See *Tivoli NetView for OS/390 Resource Object Data Manager and GMFHS Programmer's Guide* for details about specifying RODM authorization. This section describes any additional user IDs that must be created for system operations enterprise monitoring and indicates whether they

## Users and RODM Authorization

require RODM authorization.

*Table 29. RODM Authorization for user IDs*

User ID	RODM Authorization Required?
NetView Graphic Monitor Facility operators	No
SA OS/390 operators	Yes
User ID for bulk updates from NetView (specified in AOFRODM)	Yes
User ID for GMFHS to connect to RODM (defined when you install GMFHS and RODM)	Yes
User ID for DSIQTSK to connect to RODM	Yes

Graphic Monitor Facility Host Subsystem (GMFHS) operator IDs are usually created to be the same as NetView operator IDs so that operators can use the same ID and password to log on to GMFHS as they use to log on to NetView. RODM authorization is not required for use of GMFHS, but the IDs may require authorization for other purposes such as using RODMVIEW.

**Note:** If you assign an GMFHS operator ID of 0PER1 on the NMC focal point system, GMFHS automatically uses the same GMFHS operator ID on other NetViews within the enterprise as the target for commands.

In addition to logging on to GMFHS, operators using system operations enterprise monitoring need to log on to SA OS/390. You may choose to use the same set of IDs for SA OS/390 as you do for NetView and GMFHS. However, SA OS/390 IDs must be authorized to RODM. Because an ID can only be used to connect to RODM from one application at a time, you should create a unique system operations ID for each operator who connects to RODM from another application.

## Verifying Installation of SA OS/390 Satellite (Optional)

You should now test your Networking NetView (with added system operations satellite). An outline procedure for this is:

1. Schedule a testing period. You will require your focal point system and expertise on how the Networking NetView should behave.
2. Shut down your Networking NetView. This means you no longer have any network automation.
3. Start your Networking NetView with the SA OS/390 satellite.
4. Check that it initializes without error.
5. Check that your Networking NetView still works.
6. Start the NetView with the satellite installed and the SA OS/390 topology manager configured. At this point, the SA OS/390 topology manager should automatically contact all defined target sysplexes, retrieve their configuration information and create corresponding objects within RODM. Finally it will run the BLDVIEWS statements that you have defined for each sysplex. These will create views within RODM allowing you to see the objects created by the SA OS/390 topology manager.
7. Start an NMC server connected to the focal point system and then connect to it from an NMC client. You should see the views defined by your BLDVIEW statements. These should contain objects representing the automated resources on the target sysplexes. There should be a green heartbeat icon for each active target sysplex.

8. If you select an icon representing an automated resource and right-click, you should see SA OS/390 commands on its context menu. Select INGINFO and see that the command is issued properly.
9. Shut down the new Networking NetView, bring up the former one, and plan for production cutover.

## Customizing Host System Components

1. Customize NetView DSIPARM concatenation

**Note:** Most of the necessary customization of the NetView DSIPARM concatenation has already been done as a result of the concatenation of an additional SA OS/390-specific data set to the DSIPARM concatenation.

Make the described changes to the following members in a NetView DSIPARM concatenation:

### AOFMSG01

Customization of the AOFMSG01 member should have been done during installation of the SA OS/390 automation base. See page 117 for details.

For enterprise monitoring you may need to make one further change. If you are running only one NetView on the workstation focal point system, remove the comment signs from the %INCLUDE for AOFMSGST in the AOFMSG01 member for this system.

### AOFRODM

Copy and edit the AOFRODM member, which resides in ING.SINGNPRM, as follows:

- Specify a RODM name by changing RODMNAME=NONE to RODMNAME=xxxxxxx, where xxxxxxx is your RODM name.
- Specify a user ID by changing RODMUSER=XXAOCFR to RODMUSER=xxxxxxx, where xxxxxxx is your user ID for batch updates from NetView.

2. Customize the SYS1.PARMLIB data set.

### IEAAPFxx

Customization of the IEAAPFxx member should have been done during installation of the SA OS/390 automation base.

---

## Resident Automation Procedures

SA OS/390 has a large number of NetView REXX automation procedures (also known as REXX command lists or REXX CLISTS). The customization dialog's *Resident CLIST Definitions* panel can be used to specify which automation procedures are to be made storage resident. The choice of which automation procedures should be made resident is important because of the performance improvements that can be gained in a trade-off against the use of storage.

The following is a list of available groups of CLISTS, with indications as to when to make them resident.

CLIST GROUP NAME	PURPOSE
AOF_BASIC	System operations basic routines; should always be resident

## Resident Automation Procedures

CLIST GROUP NAME	PURPOSE
AOF_CMD_SLAVE	System operations command slaves; should be resident if you intensively use the SA OS/390 commands (as described in the <i>System Automation for OS/390 Operator's Commands</i> ).
AOF_COMMON	System operations common routines (APIs); should be resident if you use your own code which exploits these common routines documented in <i>System Automation for OS/390 Programmer's Reference</i> .
AOF_GENERIC	System operations generic routines; should always be resident because they are internally used by SA OS/390

These groups of CLISTS are included in the SA OS/390 sample policy databases. You can view these groups by creating a new policy database from one of the sample policy databases and then selecting option 41 (Resident CLISTS) from panel *SA OS/390 Entry Type Selection* in the customization dialog.

These recommended automation procedures should be considered a starting point. You should check the usage of automation procedures and add or delete them from the resident list as appropriate.

---

## Enabling SA OS/390 Support for Extended Multiple Console Support (EMCS)

This section describes how to set up extended multiple console support and also describes EMCS's restrictions and limitations.

### Setting Up EMCS

- Assign each CSSIR task a unique TSKID name within the sysplex. To do this, CNMCSIR needs to be replaced with a unique name in DSIDMN for supported NetView below 1.4, and in DSIMSG00 and DSIMSG01 for all supported NetView.
- Update the synonym %AOF\_SIRTASK%, in member AOFMSGSY, to reflect the new name of the NetView CNMCSIR task.
- Code MSGIFAC=SYSTEM on both the NetView task (in DSIDMNK) and the SSI task (in the procedure itself).
- Add the AOCGETCN command to the initial CLIST of your operator profiles.
- Switch on the SA OS/390 global variable AOF\_EMCS\_AUTOTASK\_ASSIGNMENT, to assign an autotask to EMCS consoles.

### EMCS Restrictions and Limitations

- You must code MSGIFAC=SYSTEM on both the NetView and SSI tasks.
- There must be only one NetView running SA OS/390 in each machine.
- Do not:
  - Use route codes to route messages to any NetView task console
  - Deactivate the action message retention facility (AMRF) (by coding COM='K M,AMRF=N' in the COMMNDxx member of SYS1.PARMLIB)
  - Change the MSCOPE setting on the xxxCSSIR task/console
  - Define the AUTO attribute for any NetView task/console under the RACF OPERPARMS

## Enabling SA OS/390 Support for Extended Multiple Console Support (EMCS)

- Define a SAF OPERPARM definition for extended MCS console authority to anything other than MASTER
- Issue the MVS MONITOR JOBNAMES command on any NetView task.

If the MN JOBNAMES function is already active, associating it with an active NetView task will cause duplicate automation on messages. An example of an association with an active NetView task could be if MN JOBNAMES is issued from an autotask with an EMCS console, and the MN JOBNAMES function is not associated with a console outside NetView.

Following are the messages that are sent to consoles which monitor job names:

```
IEF142I, IEF272I, IEF403I, IEF404I, IEF450I,  
IEF451I, IEF452I, IEF453I, IEF742I.
```

For these messages duplicate automation might occur and might seriously impact your system automation. Exception: If all master consoles are lost, issuing MN JOBNAMES for a NetView autotask console is a valid recovery action. In this case arrangements can be made to start the MN JOBNAMES monitor on a NetView autotask, but it **must** be ensured that it will be disabled again once the master console comes back online and reactivates its monitor.

Violation of these restrictions will cause unpredictable results.



---

## Appendix D. Processor Operations Samples

This appendix contains the following samples that will help you use processor operations:

- “Host VTAM Definitions for a NetView Connection through an NCP”
- “Host VTAM Definitions for a NetView Connection through an OSA Adapter” on page 240
- “Comtask LU VTAM Definitions Example” on page 241
- “Sample LU6.2 Definition” on page 241
- “Sample Logmode Table Entry” on page 242

---

### Host VTAM Definitions for a NetView Connection through an NCP

```
*****
TSCF CDRSCS ON MVSG          *
*****
TSCFCDRS VBUILD    TYPE=CDRSC
*
GBIBMIYA NETWORK NETID=GBIBMIYA
*
MVS13   CDRSC CDRM=CPPG           <----- SE LU name
MVS14   CDRSC CDRM=CPPG           <----- SE LU name
*
IYA7T160 CDRSC CDRM=CPPG           <----- PS/2 LU names
IYA7T170 CDRSC CDRM=CPPG
*
```

-----  
2. Local defs on MVSG (Network Machine owns Token ring)  
-----

```
IYAGTSCF VBUILD TYPE=SWNET
*
IYA7R018 PU   ADDR=C1,           STATION ADDRESS(CAN BE ANY VALUE)  C
              IDBLK=05D,        017 FOR MYTE, 05D FOR COMMS MGR      C
              IDNUM=306BD,      XID. SEE ABOVE FOR CODING DETAILS  C
              DISCNT=NO,        HANG-UP ON LU LOGOFF              C
              MAXDATA=265,      C
              MAXOUT=7,         C
              MAXPATH=1,        NO OF DIAL-OUT PATHS              C
              MODETAB=SNATERM#,  C
              LOGTAB=LOGTAB00,   INTERPRET TABLE IN SYS2.VTAMLIB  C
              USSTAB=UTCPTOK,    C
              SSCPFM=USSSCS,     C
              VPACING=0,PACING=0, C
              PUTYPE=2,ISTATUS=ACTIVE
*
*      PATH DIALNO=010440005A036528*, SEE ABOVE FOR DETAILS      C
*      GRPNM=IGYGLTR,          LOGICAL LINE GROUP IN NCP          C
*      PID=1
*
MVS13   LU    LOCADDR=0, ISTATUS=ACTIVE, MODETAB=MTCICS, DLOGMOD=LU62TSCF
*
MVS14   LU    LOCADDR=0, ISTATUS=ACTIVE, MODETAB=MTCICS, DLOGMOD=LU62TSCF
*
IYA7T182 LU    LOCADDR=2, ISTATUS=ACTIVE
*
IYA7T183 LU    LOCADDR=3, ISTATUS=ACTIVE
*
```

## Processor Operations Samples

```
IYA7T184 LU    LOCADDR=4, ISTATUS=ACTIVE
*
*
..And similar SWNET definitions for IYA7T160/170 TSCF PS/2's:

IYA7T160 LU    LOCADDR=0, ISTATUS=ACTIVE, MODETAB=MTCICS, DLOGMOD=LU62TSCF
IYA7T170 LU    LOCADDR=0, ISTATUS=ACTIVE, MODETAB=MTCICS, DLOGMOD=LU62TSCF
```

---

## Host VTAM Definitions for a NetView Connection through an OSA Adapter

Channel attached Major node:

```
*****
*   VTAM XCA MAJNODE OVER OSA   *
*****
IPSLXCA1 VBUILD TYPE=XCA
IPSLPCA1 PORT  ADAPNO=1,          +
                CUADDR=110E,      +
                MEDIUM=RING,      +
                SAPADDR=04,        +
                TIMER=60
***
***
IPSLXTG1 GROUP DIAL=YES,          +
                DYNPU=YES,         +
                DYNPUFX=PX,        +
                ANSWER=ON,         +
                AUTOGEN=(16,L,P),  +
                CALL=INOUT,        +
                ISTATUS=ACTIVE
***
```

Switched Major Node for a processor operations PC and a support element (SE)

```
*****
*   VTAM SW MAJNODE   *
*****
***
IPSLSWN2 VBUILD TYPE=SWNET, MAXNO=1, MAXGRP=1
***
***
IPSL1T00 PU    ADDR=C1,          +
                IDBLK=05D,       +
                IDNUM=E0000,     +
                CPNAME=IPSL1T00, +
                MAXOUT=7,        +
                MAXPATH=1,       +
                MAXDATA=265,     +
                PUTYPE=2,        +
                DISCNT=NO,       +
                VPACING=0,       +
                PACING=0,        +
                IRETRY=YES,      +
                PASSLIM=1,       +
                ISTATUS=ACTIVE,  +
                MODETAB=AMODETAB, +
                DLOGMOD=D4A32782, +
                USSTAB=USSCP,    +
                SSCPFM=USSSCS
IPSLT0  PATH  DIALNO=010400203529D9CC, GRPNM=IPSLXTG1, CALL=INOUT
***
***
IPSLT000 LU    LOCADDR=0, DLOGMOD=#INTER      ProcOps localLU
IPSLT001 LU    LOCADDR=2, TERM=3277, LOGAPPL=D1ZAVAMP 3270 Session
IPSLT002 LU    LOCADDR=3, TERM=3277, LOGAPPL=D1ZAVAMP 3270 Session
```

```

***
***
IPSL1T01 PU  ADDR=C1,          +
              IDBLK=05D,       +
              IDNUM=D0000,      +
              CPNAME=IPSL1T01,  +
              MAXOUT=7,         +
              MAXPATH=1,        +
              MAXDATA=265,      +
              PUTYPE=2,         +
              DISCNT=NO,        +
              VPACING=0,        +
              PACING=0,         +
              IRETRY=YES,       +
              PASSLIM=1,        +
              ISTATUS=ACTIVE,   +
              MODETAB=SNAMODET, +
              DLOGMOD=D4A3278A, +
              USSTAB=USSCP,     +
              SSCPFM=USSSCS
IPSLT1  PATH  DIALNO=010400203529D9CC,GRPNM=IPSLXTG1,CALL=INOUT
***
***
IPSM100 LU  LOCADDR=0,MODETAB=MTLU6,DLOGMOD=#INTER  Support Element
IPSM101 LU  LOCADDR=2                               3270 SESSION
IPSM102 LU  LOCADDR=3                               3270 SESSION

```

### Comtask LU VTAM Definitions Example

```

*-----*
*      Comtask LU VTAM Definitions      *
*-----*
RE00NJW0 APPL  ACBNAME=RE00NJW0,          X
                APPC=YES,                 (def) no LU6.2 functions      X
                AUTOSES=0,                (def) # of VTAM sess.autoacts X
                DDRAINL=ALLOW,            Local LU Accepts Deactivates X
                DLOGMOD=DSIL6MOD,          Mode Table entry name       X
                DMINWNL=3,                 (def) Local min content.wins X
                DMINWNR=3,                 (def) Remote min content.wins X
                DRESPL=ALLOW,              Local LU deactivates sessions X
                DSESLIM=6,                 (def) Partner pair session limit X
                EAS=200,                   concurrent LU-LU sessions    X
                ENCR=NONE,                  (def) no special requirements X
                HAVAIL=NO,                  (def) no XRF session         X
                LMDENT=19,                  (def) Hashing algorithm prime X
                MAXPVT=0,                   (def) no addit. private stor X
                MODETAB=ISTINLU6,           Logon Mode Table to use     X
                PARSESS=YES,                No parallel sessions        X
                SECACPT=NONE,               (def) No FMH5 Security Subfields X
                SONSCIP=NO,                 (def) No unbinds in SCIP Exit X
                SRBEXIT=NO,                 (def) No SRB's in Appl's Exits X
                VPACING=0,                  (def) No pacing of requests  X
                VTAMFRR=NO                  (def) VTAM returns control
*      STATOPT=('TSCF LU62 APPL')

```

### Sample LU6.2 Definition

```

*****
*      S D L C L I N K S - This is the group definition      *
*****
G06SDLC1  GROUP LNCTL=SDLC,          *
           DUPLEX=FULL,                FULL DUPLEX FACILITY        *
           DIAL=NO,                     SWITCHED LINES ?           *
           SPEED=9600,                  *
           NRZI=YES,                     USE NRZI                    *

```

## Processor Operations Samples

```

REPLYTO=1,                                WAIT 1 SECOND FOR REPLY      *
RETRIES=(7,4,5),                          *
TYPE=NCP                                    LINES IN NCP MODE          *
*****
*   LINE 096 - SDLC definitions (LU2)      *
*****
L21096  LINE ADDRESS=(096),                HALF DUPLEX                 *
        CLOCKING=EXT,                      PUT =EXT FOR PRODUCTION    *
        LPDATS=LPDA1,                      LPDA SUPP                  *
        DUPLEX=FULL,                       PHYSICAL CHARACTERISTIC OF LINE *
        SERVLIM=5,                         # DEVICES CHECKED FOR SERVICE *
        ISTATUS=ACTIVE                     INITIAL STATUS AT STARTUP   *
*
  SERVICE ORDER=(P21096)
*
P21096  PU  ADDR=01,                       SDLC POLLING ADDRESS      *
        ANS=CONTINUE,                      *
        DATMODE=HALF,                      *
        DISCNT=(NO),                       *
        IRETRY=NO,                         *
        ISTATUS=ACTIVE,                   INITIAL STATUS AT STARTUP  *
        MAXDATA=265,                      256 DATA 6 TH, 3 RH     *
        MAXOUT=7,                         7 FRAMES BEFORE SDLC POLL *
        MODULO=8,                         *
        PASSLIM=12,                       12 FRAMES BEFORE SDLC POLL *
        MODULO=8,                         *
        PASSLIM=12,                       12 FRAMES BEFORE NEXT IN SLOT *
        PUTYPE=2,                         3274 CLUSTER             *
        RETRIES=(,1,4),                   *
        SSCPFM=USSSCS,                    *
        MODETAB=NEWMTAB,                  *
        PACING=0,                         PACING SET IN BIND        *
        PUDR=YES,                         *
        USSTAB=ISTINCDT,                  *
        VPACING=0,                       VPACING SET IN BIND       *
        XID=YES,                          *
        XMONLNK=NO
*
*****
*
*   I M P O R T A N T - An independent LU must be coded with
*                   LOCADDR=00
*
*****
*
T210960Z LU  LOCADDR=00,MODETAB=MTAPPC,DLOGMOD=APPCMODE,LUDR=YES
T2109600 LU  LOCADDR=2,DLOGMOD=DYNRMT
T2109601 LU  LOCADDR=3,DLOGMOD=DYNRMT
T2109602 LU  LOCADDR=4,DLOGMOD=DYNRMT
T2109603 LU  LOCADDR=5,DLOGMOD=DYNRMT
T2109604 LU  LOCADDR=6,DLOGMOD=DYNRMT
T2109605 LU  LOCADDR=7,DLOGMOD=DYNRMT
T2109606 LU  LOCADDR=8,DLOGMOD=DYNRMT
T2109607 LU  LOCADDR=9,DLOGMOD=DYNRMT

```

**Note:** An independent LU is required for the APPC (LU6.2) connection to the personal computer.

---

## Sample Logmode Table Entry

If you decide not to use the DSIL6MOD logmode, here is an example of how to define a different logmode for processor operations.

## Processor Operations Samples

```

//VTAMIX JOB CLASS=J,MSGCLASS=H,MSGLEVEL=(1,1), NOTIFY=VTAM1      00010000
//STEP1 EXEC ASMFCL,PARM.ASM='OBJ,NODECK',                          00020000
// PARM.LKED='RENT,NCAL,LIST,MAP,XREF',                             00030000
// MAC='SYS1.MACLIB'                                                00040000
//ASM.SYSPRINT DD SYSOUT=H                                          00050000
//ASM.SYSIN DD *                                                    00060000
TSCFTAB MODETAB                                                    00070000
        TITLE 'APPCMODE'                                           00080000
*****                                                                00090000

* TSCF LOGMODE "APPCMODE" * 00100000
* INDEPENDENT LU6.2, PARALLEL SESSION MODE ENTRY * 00110000
*****                                                                00120000
APPCMODE MODEENT LOGMODE=APPCMODE, X00130000
        TYPE=0, X00140000
        FMPROF=X'13', TSPROF=X'07', X00150000
        PRIPROT=X'B0',SECPROT=X'B0', X00160000
        COMPROT=X'50B1', X00170000
        SSNDPAC=X'00',SRCVPAC=X'00', X00171000
        RUDSIZES=X'8585',PSNCPAC=X'00', X00172000
        PSERVIC=X'060200000000000000002F00' 00173000
        MODEEND 00173101
        END 00173200
//LKED.SYSLMOD DD DSN=SYS1.VTAMLIB,DISP=SHR 00190000
//LKED.SYSPRINT DD SYSOUT=H 00200000
//LKED.SYSIN DD * 00210000
        ENTRY TSCFTAB 00220000
        NAME TSCFTAB(R) 00230000
/* 00240000

```

## Processor Operations Samples

---

## Appendix E. Migration Information

This appendix provides information about aspects of migration from earlier releases.

---

### Migrating to SA OS/390 2.1

This section describes actions you must take to migrate to SA OS/390 2.1.

If you migrate from SA OS/390 1.2, you must first perform the instructions given in “Migrating to SA OS/390 2.1 from SA OS/390 1.2” on page 248 and then continue with the instructions presented in “Migrating to SA OS/390 2.1 from SA OS/390 1.3”.

### Migrating to SA OS/390 2.1 from SA OS/390 1.3

**Note:**

SA OS/390 2.1 does not accept manually edited automation control files.

The following chapter outlines the required steps to migrate to SA OS/390 2.1.

1. SA OS/390 2.1 requires that the automation control file and the associated automation manager configuration file are consistent and built from the policy database in one step.
  - a. Take a copy of the current policy database.
  - b. Edit the policy database with the SA OS/390 2.1 customization dialog. This will convert it to the SA OS/390 2.1 format.
  - c. Migrate any user include files into the current policy database. For details, see *System Automation for OS/390 Planning and Installation*.
  - d. The following automated functions are mandatory in order to successfully initialize SA OS/390 2.1:

```
BASEOPER  
SYSOPER  
RECOPER  
MSGOPER  
MONOPER  
JESOPER  
NETOPER  
GSSOPER  
RPCOPER  
SHUTOPER  
LOGOPER
```

Some of them have already been added for SA OS/390 1.3 (see “Migrating to SA OS/390 2.1 from SA OS/390 1.2” on page 248). If you want to use GATEWAY connections to other systems you also have to have GATOPER defined.

- e. As SA OS/390 2.1 no longer supports I/O exception monitoring, you must do the following:

## Migration Information

- 1) Exclude message table fragment AOFMSGIO from your NetView message table. This fragment contains all calls for I/O exception monitoring.
  - 2) Delete the following applications from your policy database:
    - IO\_HEARTBEAT\_TASK
    - IO\_MON\_EVENTPROC
    - IO\_MON\_MSGPROC
    - IO\_MON\_QUERYPROC
  - 3) Delete the following automation operator definitions from your policy database:
    - INGOP1
    - INGOP2
    - INGOP3
- f. If you want to use SA OS/390 for product automation (formerly called *Features*), and you want to reuse existing automation control files, then you need to perform certain actions to migrate and convert these automation control files. Information on the required migration and conversion and how it is supported by SA OS/390 2.1 is provided in *System Automation for OS/390 Defining Automation Policy*.
- After these automation control files are converted to the SA OS/390 2.1 policy database format, you need to remove the environment setup user exits from the policy database. You achieve this by editing the policy item AUTOMATION SETUP for entry type *System*.
- Note:** Groups in IMS could contain subsystems that run on different sysplexes. This is no longer possible in SA OS/390 2.1 grouping support.
- g. With the introduction of the automation manager configuration file, there are four new members per sysplex and stand alone system in the automation control file build output data set. Dependent on the configuration data in the policy database, the size of the automation control file build output data set needs to be increased.
  - h. Build the system operations control files (automation control file and automation manager configuration file) from the customization dialog. For more information, see *System Automation for OS/390 Defining Automation Policy*.
2. Delete and re-allocate the automation status file (ASF). Be aware that you will lose:
    - service period overrides
    - current settings of events
    - your user data that you may have stored in the ASF via the ASFUSER command
  3. If you have installed the special program enhancement (SPE) SA OS/390 *Sysplex Automation* (APAR OW39485/PTF UW99278), you need to migrate your policy for automating message IXC102A as delivered with this SPE for SA OS/390 1.3 to the new SA OS/390 2.1 format. Refer to the documentation in *System Automation for OS/390 Customizing and Programming* and adapt your automation policy as described.

## Coexistence with SA OS/390 1.3

It is not expected that a customer will cut over all their systems at the same time from SA OS/390 1.3 to SA OS/390 2.1. This means that the customer will be running both releases at the same time.

The following outlines the support that SA OS/390 provides for such an environment:

- Customers do **not** need to maintain different versions of the policy database. Instead, the customization dialog of SA OS/390 2.1 can be used to maintain the policy database. The ACF built by the customization dialog can be used by a down-level SA OS/390 release but only when no new SA OS/390 2.1 function has been selected. Please refer to “Chapter 2. What is New in SA OS/390 2.1” on page 9 for more information on new SA OS/390 2.1 function.
- SA OS/390 2.1 systems can co-exist with SA OS/390 1.3 systems within the same sysplex. Figure 70 illustrates this: It shows a sysplex with six automated systems and a separate automation manager. Two of the automated systems are of SA OS/390 2.1 and four of them run with SA OS/390 1.3.

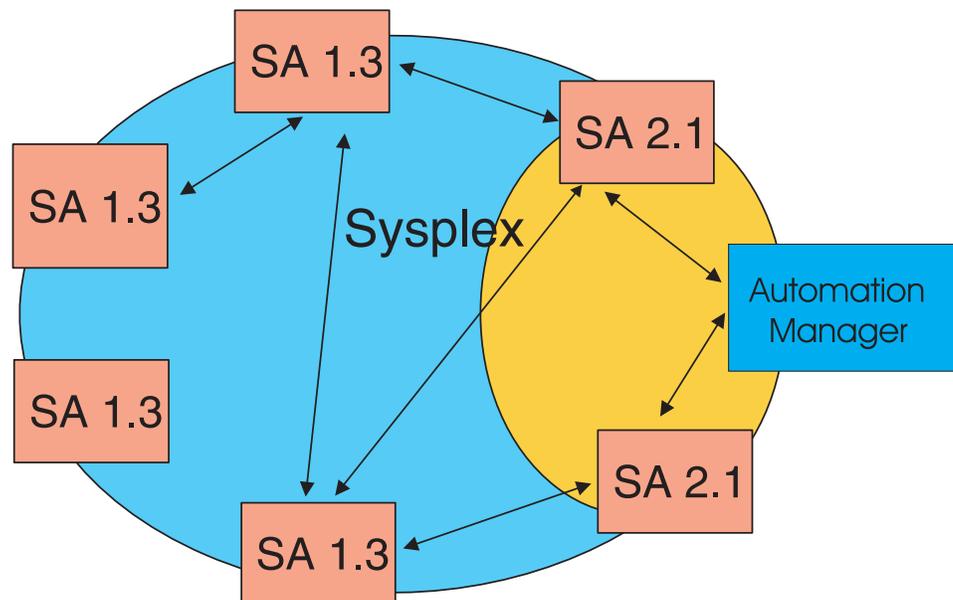


Figure 70. Coexistence of SA OS/390 1.3 and SA OS/390 2.1

The SA OS/390 1.3 systems and the SA OS/390 automation agents register at initialization time, so that each system has knowledge about the resources that run on each of the other systems. This allows the operator on a SA OS/390 1.3 system to control resources (subsystems) that run on a SA OS/390 2.1 system. However, the SA OS/390 1.3 system will not communicate with the SA OS/390 2.1 automation manager.

There are a few other restrictions in such an environment. They are described in *System Automation for OS/390 User's Guide*.

SA OS/390 2.1 does not communicate with SA OS/390 1.2.

## Migration Information

### Coexistence of Service Periods, Events and Triggers with SA OS/390 1.3

Service periods linked to triggers (from SA OS/390 1.3) will not be deleted but will be ignored by SA OS/390 2.1. With the first opening of a policy database from SA OS/390 1.3, SA OS/390 2.1 will automatically link the service periods directly to the applications or application groups to which the trigger has been linked in the SA OS/390 1.3 policy database. For more information refer to *System Automation for OS/390 Defining Automation Policy*.

For reasons of downward compatibility with SA OS/390 1.3 the build functions will build ACF fragments for service periods, events and triggers. These will be ignored by SA OS/390 2.1, as information for these entry types are taken from the AMC file.

For SA OS/390 1.3, if a trigger has a service period which is not referenced in at least one startup and one shutdown condition, the *BUILD* command of the customization dialog generates an ACF entry with one additional startup and/or one additional shutdown condition with the value *SERVICE*.

**Note:**

Due to the different presentation and the different behaviour of the new service period period overrides, the overrides from SA OS/390 1.3 cannot be migrated to SA OS/390 2.1.

---

## Migrating to SA OS/390 2.1 from SA OS/390 1.2

To migrate to SA OS/390 2.1 from SA OS/390 1.2, it is assumed that you perform all the actions described in “Migrating to SA OS/390 2.1” on page 245. This chapter now contains additional steps that you need to perform on top of those described there.

### Updating the Policy Database

1. You must define at least three new A0FWRKnn operators, because the shutdown/startup process is no longer serialized on a per-system basis but is serialized on a per-subsystem basis.

In addition to these you need to pick up the new AOFOPF definitions. If your names do not match those defined in AOFOPF, then change the names in AOFOPF according to your conventions.

Finally you may need to modify the VTAM Application Major Node definition for NetView to add additional Minor Nodes.

**Note:** The maximum number of A0FWRKxx operators to be defined should be the largest number of subsystems at any level in the parent-child hierarchy.

The suggested maximum number may not be equal to the optimal number of defined A0FWRKxx operators as each task in NetView uses additional storage.

You may change the number of work tasks defined to help tune your automation.

2. If you have CICS Automation installed, you need to define ALL of the AUTWRKnn tasks as being authorized to issue CICS shutdown commands.

## Migrating to SA OS/390 2.1 from SA OS/390 1.2

3. If you are using DB2 Automation, and will be monitoring CICS connections, you will need to define ALL of the AUTWRKnn tasks as being authorized to issue CICS CEMT I and DSNCLSTRT commands.
4. For message driven generic status tracking, your message automation table should use the task identified by the %AOFOPGSSOPER% synonym.

**Note:** Once a policy database has been edited with the new release, it should not be re-edited with an older release because some data may be lost.

### Using the Customization Dialog to Define Automation Operators

Depending upon where you are migrating from, various automated functions that are required for SA OS/390, must be defined as automation operators. These automation operators (as shown in Table 30) should be included as part of the BASE\_AUTOOPS set of automation operators provided by SA OS/390. The flow of panels that is used to define the new autotasks is as follows:

- **Entry Type Selection** panel (AOFGETYP)
  - Select #37 for Automation Operators.
- **Entry Name Selection** panel (AOFGENAM) (A list of existing automation operator sets)
  - Select the existing BASE\_AUTOOPS set of automation operators.
- **Policy Selection** panel (AOFGEPOL) (Policy selection items for automation operators)
  - Select OPERATORS policy selection item.
- **Automation Operator Definition** panel (AOFPIAO0)
  - Define an automated function name for each autotask.
  - Specify the messages to be assigned to the automation operator.
- **Automation Operator NetView Userids** panel (AOFPIAO1)
  - Associate each automation operator with a NetView automation operator ID defined in member DSIOPI in the NetView DSIPARM data set.

Table 30. Fields on AOFPIAO0 and AOFPIAO1 for Automation Operator Definitions

Automated Function	Messages for this Operator	Associated NetView user ID
AOFWRK01	(blank)	AUTWRK01
AOFWRK02	(blank)	AUTWRK02
AOFWRK03	(blank)	AUTWRK03
RPCOPER	(blank)	AUTRPC

---

## Migrating to SA OS/390 2.1 from msys for Operations

If you are using msys for Operations and you are going to migrate to SA OS/390 2.1, you may migrate system by system. The msys for Operations functions will cooperate with SA OS/390 2.1, if the same XCF group ID is used. You can achieve this by setting GRPID in the INGXINIT member (for the automation agents) and in HSAPRMxx (for the automation manager) to A0 ('A', zero) during the migration phase.



---

## Appendix F. Syntax for HSAPRM00

### Notes:

1. A sample member called HSAPRM00 is provided in the SINGFSAMP sample library.
2. Records starting with a '\*' in column 1 are treated as comments. Each parameter must be specified on a single line. Trailing comments are not supported.

```
BUILDTIMEOUT={ss | 180}  
CFGDSN=<configuration file data set name>  
COMM={XCF | MQ} DELAY={ss | 0}  
GRPID={xx | ' '}  
LEOPT={<any>}  
MQM=ssid  
NUMQTHDS={n | 3}  
OVRDELETEDELAY={dd | 0}  
PROMPT={YES | NO}  
START={COLD | HOT | WARM}  
STOPDELAY={ss | 30}  
TAKEOVERTIMEOUT=nn
```

### BUILDTIMEOUT

may be used to specify a time limit for the completion of the data structure build process as used during COLD or WARM start of the primary automation manager. A value from 0-999 seconds may be specified, and a value of 180 (3 minutes) will be assumed if omitted. A specification of 0 suppresses timing of the data structure build process.

### CFGDSN

The CFGDSN value will be used only on a COLD start, and may be overridden by an initialization prompt response. On other start types, the default CFGDSN will be that in use when automation was last active. No default CFGDSN value is provided, and will result in a prompt for the data set to be used.

### COMM

This parameter specifies how communication between the automation manager and the automation agents is realized. The possible values are:

**XCF** specifies that the automation manager will use XCF for communication with the automation agents. In this case, the takeover file provides the persistent storage medium for holding the current resource states and settings across automation manager sessions.

Using XCF for communication has the following risks:

- All workitems travelling to, queued in or processed by the automation manager are lost when the automation manager terminates abnormally.
- Orders for the automation agents can be broken because some orders could already have been sent at the time when the automation manager terminated abnormally.
- A warmstart is required when an irrecoverable I/O error occurs while reading from or writing to the takeover file.

## Syntax for HSAPRM00

**MQ** This is the recommended option. It specifies that automation manager will use MQSeries for communication with the automation agents, and also for holding the status information. With this option, the information in the header of the takeover file determines whether MQSeries or the takeover file is used for a HOT start or takeover.

The COMM parameter and the MQ parameter are mutually dependent. When you specify COMM=XCF, the MQ parameter must be left blank. With COMM=MQ you must specify an MQSeries subsystem for the MQ parameter.

### DELAY

is the number of seconds to be used as a default delay prior to determining the operational mode at when the automation manager instance is started. This value may be overridden on an individual instance basis by the start command parameter. A delay value from 0-999 seconds may be specified, and value of 0 (no delay) will be assumed if omitted. This parameter will be ignored when the automation manager instance is started by Automatic Restart Manager or with the specification of TYPE=HOT.

### GRPID

is the same as that currently generated by the SA OS/390 1.3 customization dialog, and will be prefixed with the string INGXSG to create the XCF group name as used by the communication manager function. Note that this value cannot be overridden, and that a null value will be used if not specified.

### LEOPT

may be used to pass run-time options to the LE environment.

#### 1. Options forced by Automation Manager

The following LE runtime options are set by the Automation Manager during initialization:

ALL31(ON)  
POSIX(ON)

**Note:** These options must not be overridden by installation default settings (CEEDOPT) with the NONOVR attribute.

#### 2. Default options set by AM during initialization

The following LE runtime options are set by the Automation Manager during initialization:

ANYHEAP(2m,256K,ANYWHERE,FREE)  
DEPTHCONDLMT(4)  
ERRCOUNT(0)  
HEAP(6M,1M,ANYWHERE)  
STACK(64K,64K,ANYWHERE,KEEP)  
STORAGE(NONE,NONE,NONE,128K)

**Note:** These options may be overridden by the customer.

#### 3. Recommended LE Options

The following LE options are recommended:

NONIPTSTACK=((4K,4K,ANYWHERE,KEEP),OVR), **or**  
THREADSTACK=((ON 4K,4K,ANYWHERE,KEEP,512K,128K),OVR) |

RTLS(OFF)  
 STORAGE(NONE,NONE,NONE,128K)  
 THREADHEAP(4K,4K,ANYWHERE,KEEP)  
 TRACE(OFF,4K,DUMP,LE=0)  
 VCTRSAVE(OFF)  
 XPLINK(OFF)

**Note:** NONIPTSTACK was replaced by THREADSTACK in OS/390 LE Version 2 Release 10.

The following LE options should be tuned using the LE storage reporting facility RPTSTG(ON):

ANYHEAP(2M,256K,ANYWHERE,FREE) \*  
 HEAP(6M,1M,ANYWHERE,KEEP) \*  
 HEAPPOOLS(ON,40,2,64,2,104,2,312,2,624,1,2024,1)  
 STACK(64K,64K,ANYWHERE,KEEP) \*

The following option is used to direct output created as a result of specifying RPTOPTS(ON) or RPTSTG(ON). It is also used to direct diagnostic messages written to CEEMSG and CEEMOUT by the Manager.

MSGFILE(SYSOUT,FBA,121,0,NOENQ)

The following options are recommended for OS/390 LE Version 2 Release 10 or later:

HEAP(6M,1M,ANYWHERE,KEEP,32K,16K)  
 THREADSTACK=((ON 4K,4K,ANYWHERE,KEEP,512K,128K),OVR)

The storage options for the below the line heap need to be tuned.

The following options can be used to gather diagnostic and storage-usage information:

RPTSTG(ON)  
 RPTOPTS(ON)

**Notes:**

1. If an LEOPT= keyword is present in HSAPRM00 it replaces the corresponding Automation Manager default option.
2. When specifying options in HSAPRMxx you may have LEOPT statements on a number of different lines but the total length of all of the options cannot exceed 4096 characters.

Sample LEOPTS statements are supplied in sample member HSAPRM00.

**MQM** This value specifies the subsystem ID (SSID) of the current MQSeries manager.

The MQ parameter and the COMM parameter are mutually dependent. When you specify COMM=XCF, the MQ parameter must be left blank. With COMM=MQ you must specify an MQSeries subsystem for the MQ parameter.

**NUMQTHDS**

The NUMQTHDS parameter controls the number of query threads. This

## Syntax for HSAPRM00

value limits the amount of parallel query activity that can be performed. If not specified, a default value of 3 will be used. A maximum of 15 query threads may be specified.

### OVRDELETEDELAY

is the number of days that a schedule override should be retained before being automatically deleted. A value of 0 days indicates that schedule overrides are not to be automatically deleted and is the default if no value is specified. A maximum of 366 days may be specified.

### PROMPT

Specifying YES lets you overwrite the *CFGDSN* parameter (the name of the automation manager configuration file). Message HSAM1302A will come up and wait for a response. You may now specify the keyword/value pair *CFGDSN=<fully.qualified.data.set.name>*

or you may use a null or 'U' response to indicate no override values are to be applied.

### START

defines the start mode of the automation manager. While initialization, the automation manager retrieves input from:

- 1** parameter *CFGDSN*
- 2** schedule overrides
- 3** persistent data store (votes, triggers, resource states)

Table 31 shows, where the automation manager retrieves initialization data for the possible values for parameter *START*.

Table 31.

	COLD	WARM	HOT
<b>1</b>	name of automation manager configuration file is taken from PARMLIB, the <i>START</i> command or via <i>PROMPT=YES</i> option	last used value taken	last used value taken
<b>2</b>	deleted	taken from last run	taken from last run
<b>3</b>	deleted	deleted	taken from last run

**Recommendation:** Use COLD for the very first time or when the name of the automation manager configuration file has changed. Use WARM if the automation policy has changed, that is, the automation manager configuration file has been rebuilt. Use HOT in any other case.

### STOPDELAY

is the number of seconds to be used when an MVS F <jobname>,STOP,DEFER command is entered for the primary automation manager. This delay will be invoked only if one or more secondary automation managers are active and ready when the command is received.

### TAKEOVERTIMEOUT

nn may range from 60 to 600 seconds.

## Syntax for HSAPRM00

If the (secondary) automation manager performs a takeover, or an automation manager is started HOT, then it examines whether MQSeries is ready. If this is not the case, the automation manager enters a retry-loop. The TAKEOVERTIMEOUT parameter determines how many seconds the automation manager should wait (retry) until it switches from mode=HOT to mode=WARM.

This parameter does not apply when the COMM parameter is set to XCF.

## Syntax for HSAPRM00

---

## Appendix G. Example Automation Network Configuration

Figure 71 shows an example network of four systems, all running NetView. Two systems are in Chicago, and two are in Atlanta.

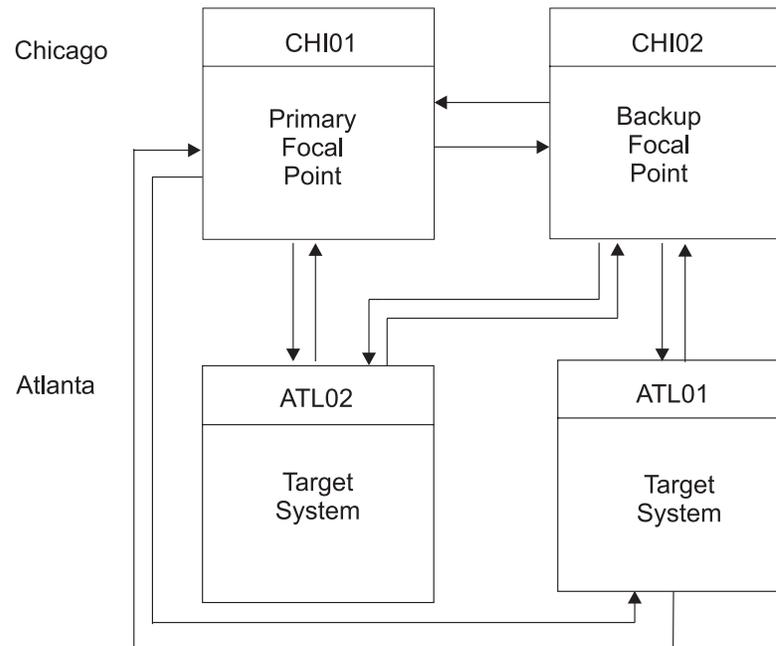


Figure 71. Example Automation Network

Following are desired configuration features of the network shown in Figure 71:

- System CHI01 is the focal point system and system CHI02 is the backup focal point system.
- The gateway session between systems CHI01 and ATL01 is used as a path from system CHI01 to systems ATL02, ATL03, and ATL04.
- The gateway session between systems CHI02 and ATL01 is used as a path from system CHI02 to systems ATL02, ATL03, and ATL04.
- If the gateway session between systems CHI01 and ATL01 is inactive, the gateway session between ATL01 and CHI02 can be used as an alternate path to CHI01.
- The SDF in focal point system CHI01 can be tailored to indicate the status of all other systems.
- All systems use the SA OS/390 password protection feature to generate and maintain gateway autotask passwords.
- Systems CHI01 and CHI02 share the same RACF data set.
- Target systems ATL02 and ATL04 include adjacent NetView definitions of system ATL03 so that commands and responses can be routed between them through system ATL03.

To configure focal point services for the example network, the following definitions are required:

- Automation policy settings (customization dialog values)

## Example Automation Network Configuration

- NetView DSIPARM DSIOPF entries
- NetView DSIPARM DSIDMN entries
- RACF definitions

Customization activities for each system, including entering values in the customization dialog, building an automation control file, and modifying data sets, must be performed on that system. Details on customization activities required for each system follow.

---

## NetView DSIPARM DSIOPF Entries for Example Automation Network

For each system in an automation network, you specify the names of all operator IDs for both inbound and outbound gateway autotasks in NetView DSIPARM data set member DSIOPF. Following are the DSIOPF entries required to configure the example network shown in Figure 71 on page 257.

We recommend to use AOFOPFGW which is included in AOFOPF to do this customization.

### System CHI01:

```
GATCHI01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATCHI02 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
```

### System CHI02:

```
GATCHI01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATCHI02 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
```

### System ATL01:

```
GATCHI01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL02 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL03 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL04 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATCHI02 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
```

### System ATL02:

```
GATATL01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL02 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL03 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
```

### System ATL03:

## Example Automation Network Configuration

```
GATATL01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL02 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL03 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL04 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
```

### System ATL04:

```
GATATL01 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL03 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
GATATL04 OPERATOR PASSWORD=RACFNNT
          PROFILEN AOFPRFAO
```

---

## NetView DSIPARM DSIDMN Entries for Example Automation Network

For each system in an automation network, you add or modify CDMNSESS, and RRD statements in NetView DSIPARM data set member DSIDMN to reflect the automation network configuration. Following are the entries in the NetView DSIPARM data set member DSIDMN entries required to configure the example network shown in Figure 71 on page 257.

### System CHI01:

```
CDMNSESS 04
ATL01 RRD
CHI02 RRD
```

### System CHI02:

```
CDMNSESS 04
CHI01 RRD
ATL01 RRD
```

### System ATL01:

```
CDMNSESS 10
CHI01 RRD
ATL02 RRD
ATL03 RRD
ATL04 RRD
CHI02 RRD
```

### System ATL02:

```
CDMNSESS 04
ATL01 RRD
ATL03 RRD
```

### System ATL03:

```
CDMNSESS 06
ATL01 RRD
ATL02 RRD
ATL04 RRD
```

### System ATL04:

```
CDMNSESS 04
ATL01 RRD
ATL03 RRD
```

### NetView Automation Table Entry for Initiating Gateway Connections

The automation table entry for initiating gateway connections is included by SA OS/390. If you are not using gateways you may want to comment out member AOFMSGGW.

---

### Password Definitions for Example Automation Network

Following are the password definitions in the SA OS/390 password and RACF data sets required to configure the example network shown in Figure 71 on page 257.

**Note:** This example assumes the SA OS/390 password protection feature has been defined on all systems, as described in *System Automation for OS/390 Planning and Installation*.

The SA OS/390 password data set for system CHI01 contains passwords for gateway operator IDs named GATCHI01 on systems CHI02 and ATL01.

The SA OS/390 password data set for system CHI02 contains passwords for gateway operator IDs named GATCHI02 on systems CHI01 and ATL01.

The SA OS/390 password data set for system ATL01 contains a single password entry for logging gateway operator ID GATATL01 on to systems CHI01 and CHI02. There is only one entry for both systems because CHI01 and CHI02 share the same SAF data set. The password data set also contains entries for logging a gateway operator ID named GATATL01 on to systems ATL02, ATL03, and ATL04.

The SA OS/390 password data set for system ATL02 must contain passwords for logging an operator ID named GATATL02 onto systems ATL01 and ATL03.

The SA OS/390 password data set for system ATL03 must contain passwords for logging an operator ID named GATATL03 onto systems ATL01, ATL02, and ATL04.

The SA OS/390 password data set for system ATL04 must contain passwords for logging an operator ID named GATATL04 onto systems ATL01 and ATL03.

On each system, the INGPW command must be issued to initialize the VSAM SA OS/390 password data set with the passwords for gateway operator IDs. The password issued on the INGPW command is the initial password value identified for the operator ID by the your security administrator. The INGPW commands issued for each system are as follows (in these commands the password field contains the actual password for the outbound gateway operator to log on to the specified system):

System CHI01:

```
INGPW GATCHI01 CHI02,INIT=password  
INGPW GATCHI01 ATL01,INIT=password
```

System CHI02:

```
INGPW GATCHI02 CHI01,INIT=password  
INGPW GATCHI02 ATL01,INIT=password
```

System ATL01:

## Example Automation Network Configuration

```
INGPW GATATL01 CHI01,INIT=password  
INGPW GATATL01 ATL02,INIT=password  
INGPW GATATL01 ATL03,INIT=password  
INGPW GATATL01 ATL04,INIT=password
```

System ATL02:

```
INGPW GATATL02 ATL01,INIT=password
```

System ATL03:

```
INGPW GATATL03 ATL01,INIT=password
```

System ATL04:

```
INGPW GATATL04 ATL01,INIT=password
```

## Example Automation Network Configuration

---

## Glossary

This glossary includes terms and definitions from:

- The *IBM Dictionary of Computing* New York: McGraw-Hill, 1994.
- The *American National Standard Dictionary for Information Systems*, ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies can be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018. Definitions are identified by the symbol (A) after the definition.
- The *Information Technology Vocabulary* developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC1/SC1). Definitions of published parts of this vocabulary are identified by the symbol (I) after the definition; definitions taken from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1 are identified by the symbol (T) after the definition, indicating that final agreement has not yet been reached among the participating National Bodies of SC1.

The following cross-references are used in this glossary:

**Contrast with.** This refers to a term that has an opposed or substantively different meaning.

**Deprecated term for.** This indicates that the term should not be used. It refers to a preferred term, which is defined in its proper place in the glossary.

**See.** This refers the reader to multiple-word terms in which this term appears.

**See also.** This refers the reader to terms that have a related, but not synonymous, meaning.

**Synonym for.** This indicates that the term has the same meaning as a preferred term, which is defined in the glossary.

**Synonymous with.** This is a backward reference from a defined term to all other terms that have the same meaning.

## A

**ACF.** Automation control file.

**ACF/NCP.** Advanced Communications Function for the Network Control Program. See *Advanced Communications Function* and *Network Control Program*.

**ACF/VTAM\*.** Advanced Communications Function for the Virtual Telecommunications Access Method. Synonym for *VTAM*. See *Advanced Communications Function* and *Virtual Telecommunications Access Method*.

**ACO.** Automated console operations.

**active monitoring.** In SA OS/390, the acquiring of resource status information by soliciting such information at regular, user-defined intervals. See also *passive monitoring*

**adapter.** Hardware card that enables a device, such as a workstation, to communicate with another device, such as a monitor, a printer, or some other I/O device.

**adjacent hosts.** Systems connected in a peer relationship using adjacent NetView sessions for purposes of monitoring and control.

**adjacent NetView.** In SA OS/390, the system defined as the communication path between two SA OS/390 systems that do not have a direct link. An adjacent NetView is used for message forwarding and as a communication link between two SA OS/390 systems. For example, the adjacent NetView is used when sending responses from a focal point system to a remote system.

**Advanced Communications Function (ACF).** A group of IBM licensed programs (principally VTAM, TCAM, NCP, and SSP) that use the concepts of Systems Network Architecture (SNA), including distribution of function and resource sharing.

**advanced program-to-program communication (APPC).** A set of inter-program communication services that support cooperative transaction processing in a Systems Network Architecture (SNA) network. APPC is the implementation, on a given system, of SNA's logical unit type 6.2.

**alert.** (1) In SNA, a record sent to a system problem management focal point or to a collection point to communicate the existence of an alert condition. (2) In the NetView program, a high-priority event that warrants immediate attention. A database record is generated for certain event types that are defined by user-constructed filters.

**alert condition.** A problem or impending problem for which some or all of the process of problem determination, diagnosis, and resolution is expected to require action at a control point.

**alert focal point system.** See entry for NPDA focal point system under *focal point system*

**alert threshold.** An application service value that determines the level at which SA OS/390 changes the associated icon on the NMC workstation to the alert color. SA OS/390 may also issue an alert. See *warning threshold*

**AMC.** (1) Automation Manager Configuration (2) The Auto Msg Classes entry type

**APF.** Authorized program facility.

**APPC.** Advanced program-to-program communications.

**application.** An OS/390 subsystem or job monitored by SA OS/390.

**Application entry.** A construct, created with the customization dialog, used to represent and contain policy for an application.

**application group.** A named set of applications. An application group is used to represent and contain common policy for the contained applications. Applications in an application group can be automated as an entity. Application groups can behave differently according to their defined nature (BASIC, MOVE, SERVER). An application group can also be used for monitoring purposes.

**ApplicationGroup entry type.** A construct, created with the customization dialog, used to represent and contain policy for an application group.

**application program.** (1) A program written for or by a user that applies to the user's work, such as a program that does inventory or payroll. (2) A program used to connect and communicate with stations in a network, enabling users to perform application-oriented activities.

**ARM.** Automatic restart management.

**ASCB.** Address space control block.

**ASCB status.** An application status derived by SA OS/390 running a routine (the ASCB checker) which searches the OS/390 address space control blocks (ASCBs) for address spaces with a particular job name. The job name used by the ASCB checker is the job name defined in the customization dialog for the application.

**ASCII (American National Standard Code for Information Interchange).** The standard code, using a coded character set consisting of 7-bit coded characters (8-bits including parity check), for information interchange among data processing systems, data

communication systems, and associated equipment. The ASCII set consists of control characters and graphic characters. (A)

**ASF.** automation status file.

**assist mode facility.** An SA OS/390 facility that uses SDF and enables interaction with automation before SA OS/390 takes an automation action. SDF prompts the operator with a suggested action, then provides options for using that action, modifying and using the action, or canceling the action. Also called assist mode, it is enabled using the customization dialog, or dynamically.

**authorized program facility (APF).** A facility that permits identification of programs that are authorized to use restricted functions.

**automated function.** SA OS/390 automated functions are NetView automation operators, that are assigned to perform specific automation functions. However, SA OS/390 defines its own synonyms, or *automated function names*, for the NetView automation operators, and these function names are referred to in the sample policy databases provided by SA OS/390. For example, the automation operator AUTBASE corresponds to the SA OS/390 automated function BASEOPER.

**automated console operations (ACO).** The concept (versus a product) of using computers to perform a large subset of tasks ordinarily performed by operators, or assisting operators in performing these tasks.

**automatic restart management.** An OS/390 recovery function that improves the availability of specified subsystems and applications by automatically restarting them under certain circumstances. Automatic restart management is a function of the Cross-System Coupling Facility (XCF) component of OS/390.

**automatic restart management element name.** In MVS 5.2 or later, OS/390 automatic restart management requires the specification of a unique sixteen character name for each address space which registers with it. All automatic restart management policy is defined in terms of the element name, including SA OS/390's interface with it.

**automation.** The automatic initiation of actions in response to detected conditions or events. SA OS/390 provides automation for OS/390 applications, OS/390 components, and remote systems that run OS/390. SA OS/390 also provides tools that can be used to develop additional automation.

**automation agent.** In SA OS/390, the automation function is split up between the automation manager and the automation agents. The observing, reacting and doing parts are located within the NetView address space, and are known as the *automation agents*. The automation agents are responsible for:

- recovery processing
- message processing
- active monitoring: they propagate status changes to the automation manager

**automation control file (ACF).** In SA OS/390, a file that contains system-level automation policy information. There is one master automation control file for each NetView system on which SA OS/390 is installed. The SA OS/390 customization dialog must be used to build the automation control files. They must not be edited manually.

**automation flags.** In SA OS/390, the automation policy settings that determine the operator functions that are automated for a resource and the times during which automation is active. When SA OS/390 is running, automation is controlled by automation flag policy settings and override settings (if any) entered by the operator. Automation flags are set using the customization dialog.

**automation manager.** In SA OS/390, the automation function is split up between the automation manager and the automation agents. The coordination, decision making and controlling functions are processed by each sysplex's *automation manager*.

The automation manager contains a model of all of the automated resources within the sysplex. The automation agents feed the automation manager with status information and perform the actions that the automation manager tells them to.

The automation manager provides *sysplex-wide* automation.

**Automation Manager Configuration.** The Automation Manager Configuration file (AMC) contains an image of the automated systems in a sysplex or of a stand-alone system.

**Automation NetView.** In SA OS/390 the NetView that performs routine operator tasks with command procedures or uses other ways of automating system and network management, issuing automatic responses to messages and management services units.

**automation operator.** NetView automation operators are NetView autotasks that are assigned to perform specific automation functions. See also *automated function*. NetView automation operators may receive messages and process automation procedures. There are no logged-on users associated with automation operators. Each automation operator is an operating system task and runs concurrently with other NetView tasks. An automation operator could be set up to handle JES2 messages that schedule automation procedures, and an automation statement could route such messages to the automation operator. Similar to *operator station task*. SA OS/390 message monitor tasks and target control tasks are automation operators.

**automation policy.** The policy information governing automation for individual systems. This includes automation for applications, OS/390 subsystems, OS/390 data sets, and OS/390 components.

**automation policy settings.** The automation policy information contained in the automation control file. This information is entered using the customization dialog. You can display or modify these settings using the customization dialog.

**automation procedure.** A sequence of commands, packaged as a NetView command list or a command processor written in a high-level language. An automation procedure performs automation functions and runs under the NetView program.

**automation status file.** In SA OS/390, a file containing status information for each automated subsystem, component or data set. This information is used by SA OS/390 automation when taking action or when determining what action to take.

**automation table.** Also called NetView message automation table. See *NetView message automation table*

**autotask.** See *automation operator*.

**available.** In VTAM programs, pertaining to a logical unit that is active, connected, enabled, and not at its session limit.

## B

**basic mode.** A central processor mode that does not use logical partitioning. Contrast with *logically partitioned () mode*.

**beaconing.** The repeated transmission of a frame or messages (beacon) by a console or workstation upon detection of a line break or outage.

## C

**central processor (CP).** The part of the computer that contains the sequencing and processing facilities for instruction execution, initial program load (IPL), and other machine operations.

**central processor complex (CPC).** A physical collection of hardware that consists of central storage, one or more central processors, timers, and channels.

**central site.** In a distributed data processing network, the central site is usually defined as the focal point for alerts, application design, and remote system management tasks such as problem management.

**CFR/CFS and ISC/ISR.** I/O operations can display and return data about integrated system channels (ISC)

connected to a coupling facility and coupling facility receiver (CFR) channels and coupling facility sender (CFS) channels.

**channel.** A path along which signals can be sent; for example, data channel, output channel. See also *link*.

**channel path identifier.** A system-unique value assigned to each channel path

**CHPID.** In SA OS/390, channel path ID; the address of a channel.

**CHPID port.** A label that describes the system name, logical partitions, and channel paths.

**channel-attached.** (1) Attached directly by I/O channels to a host processor (for example, a channel-attached device). (2) Attached to a controlling unit by cables, rather than by telecommunication lines. Contrast with *link-attached*. Synonymous with *local*.

**CI.** Console integration.

**CICS/VS.** Customer Information Control System for Virtual Storage.

**CLIST.** Command list.

**clone.** A set of definitions for application instances which are derived from a basic application definition by substituting a number of different system-specific values into the basic definition.

**clone ID.** A generic means of handling system-specific values such as the MVS SYSCLONE or the VTAM subarea number. Clone IDs can be substituted into application definitions and commands to customize a basic application definition for the system that it is to be instantiated on.

**CNC.** A channel path that transfers data between a host system image and an ESCON control unit. It can be point-to-point or switchable.

**command.** A request for the performance of an operation or the execution of a particular program.

**command facility.** The component of the NetView program that is a base for command processors that can monitor, control, automate, and improve the operation of a network. The successor to NCCF.

**command list (CLIST).** (1) A list of commands and statements, written in the NetView command list language or the REXX language, designed to perform a specific function for the user. In its simplest form, a command list is a list of commands. More complex command lists incorporate variable substitution and conditional logic, making the command list more like a conventional program. Command lists are typically interpreted rather than being compiled. (2) In SA OS/390, REXX command lists that can be used for automation procedures.

**command procedure.** In the NetView program, either a command list or a command processor.

**command processor.** A module designed to perform a specific function. Command processors, which can be written in assembler or a high-level language (HLL), are issued as commands.

**Command Tree/2.** An OS/2-based program that helps you build commands on an OS/2 window, then routes the commands to the destination you specify (such as a 3270 session, a file, a command line, or an application program). It provides the capability for operators to build commands and route them to a specified destination.

**common commands.** The SA OS/390 subset of the CPC operations management commands.

**common routine.** One of several SA OS/390 programs that perform frequently used automation functions. Common routines can be used to create new automation procedures.

**communication controller.** A type of communication control unit whose operations are controlled by one or more programs stored and executed in the unit or by a program executed in a processor to which the controller is connected. It manages the details of line control and the routing of data through a network.

**communication line.** Deprecated term for *telecommunication line*.

**communications path.** A set of communications facilities that SA OS/390 uses to connect a focal point system to a target system. There are two types: a NetView connection and a workstation.

**communications task.** An SA OS/390 task responsible for all communications with a number of workstations. Communications tasks receive commands from target control tasks and send inbound messages to the message monitoring task. There can be many communications tasks. Communications tasks are defined using the configuration dialogs.

**configuration dialogs.** A user interface for entering the information that defines the SA OS/390 configuration. In SA OS/390 the configuration dialogs are an ISPF application.

**connectivity view.** In SA OS/390, a display that uses graphic images for I/O devices and lines to show how they are connected.

**console automation.** The process of having NetView facilities provide the console input usually handled by the operator.

**console connection.** In SA OS/390, the 3270 or ASCII (serial) connection between a PS/2 computer and a

target system. Through this connection, the workstation appears (to the target system) to be a console.

**console integration (CI).** A hardware facility which if supported by an operating system, allows operating system messages to be transferred through an internal hardware interface for display on a system console. Conversely, it allows operating system commands entered at a system console to be transferred through an internal hardware interface to the operating system for processing.

**consoles.** Workstations and 3270-type devices that manage your enterprise.

**Control units.** Hardware units that control I/O operations for one or more devices. You can view information about control units through I/O operations, and can start or stop data going to them by blocking and unblocking ports.

**controller.** A unit that controls I/O operations for one or more devices.

**couple data set.** A data set that is created through the XCF couple data set format utility and, depending on its designated type, is shared by some or all of the OS/390 systems in a sysplex. See also *sysplex couple data set* and *XCF couple data set*

**coupling facility.** The hardware element that provides high-speed caching, list processing, and locking functions in a sysplex.

**CP.** Central processor.

**CPC.** Central processor complex.

**CPC operations management commands.** A set of commands and responses for controlling the operation of System/390 CPCs.

**CPC subset.** All or part of a CPC. It contains the minimum *resource* to support a single control program.

**CPCB.** Command processor control block; an I/O operations internal control block that contains information about the command being processed.

**CPU.** Central processing unit. Deprecated term for *processor*.

**cross-system coupling facility (XCF).** XCF is a component of OS/390 that provides functions to support cooperation between authorized programs running within a sysplex.

**CTC.** The channel-to-channel (CTC) channel can communicate with a CTC on another host for intersystem communication.

**Customer Information Control System (CICS).** A general-purpose transactional program that controls

online communication between terminal users and a database for a large number of end users on a real-time basis.

**customization dialog.** The customization dialog is an ISPF application. They are used to customize the enterprise policy, like for example the automated enterprise resources and the relationships between resources, or the automation policy for systems in the enterprise.

**CVC.** A channel operating in converted (CVC) mode transfers data in blocks and a CBY channel path transfers data in bytes. Converted CVC or CBY channel paths can communicate with a parallel control unit. This resembles a point-to-point parallel path and dedicated connection, regardless whether it passes through a switch.

## D

**DASD.** Direct access storage device.

**data services task (DST).** The NetView subtask that gathers, records, and manages data in a VSAM file or a network device that contains network management information.

**data set.** The major unit of data storage and retrieval, consisting of a collection of data in one of several prescribed arrangements and described by control information to which the system has access.

**data set members.** Members of partitioned data sets that are individually named elements of a larger file that can be retrieved by name.

**DBCS.** Double-byte character set.

**DCCF.** Disabled console communication facility.

**DCF.** Document composition facility.

**Devices.** You can see information about all devices (such as printers, tape or disk drives, displays, or communications controllers) attached to a particular switch, and control paths and jobs to devices.

**direct access storage device (DASD).** A device in which the access time is effectively independent of the location of the data; for example, a disk.

**disabled console communication facility (DCCF).** An OS/390 component that provides limited-function console communication during system recovery situations.

**disk operating system (DOS).** (1) An operating system for computer systems that use disks and diskettes for auxiliary storage of programs and data. (2) Software for a personal computer that controls the processing of programs. For the IBM Personal

Computer, the full name is Personal Computer Disk Operating System (PCDOS).

**distribution manager.** The component of the NetView program that enables the host system to use, send, and delete files and programs in a network of computers.

**domain.** (1) An access method and its application programs, communication controllers, connecting lines, modems, and attached workstations. (2) In SNA, a system services control point (SSCP) and the physical units (PUs), logical units (LUs), links, link stations, and associated resources that the SSCP can control by means of activation requests and deactivation requests.

**double-byte character set (DBCS).** A character set, such as Kanji, in which each character is represented by a 2-byte code.

**DSIPARM.** This file is a collection of members of NetView's DSIPARM data set. It determines how automation is applied to resources.

**DST.** Data Services Task.

## E

**EBCDIC.** Extended binary-coded decimal interchange code. A coded character set consisting of 8-bit coded characters.

**ECB.** Event control block. A control block used to represent the status of an event.

**EMCS.** Extended multiple console support.

**enterprise.** An organization, such as a business or a school, that uses data processing.

**entry type.** Resources, such as processors or applications, used for automation and monitoring.

**environment.** Data processing enterprise.

**error threshold.** An automation policy setting that specifies when SA OS/390 should stop trying to restart or recover an application, subsystem or component, or off-load a data set.

**ESA.** Enterprise Systems Architecture.

**event.** (1) In the NetView program, a record indicating irregularities of operation in physical elements of a network. (2) An occurrence of significance to a task; for example, the completion of an asynchronous operation, such as an input/output operation. (3) Events are part of a trigger condition, in a way that if all events of a trigger condition have occurred, a *STARTUP* or *SHUTDOWN* of an application is performed.

**exception condition.** An occurrence on a system that is a deviation from normal operation. SA OS/390

monitoring highlights exception conditions and allows an SA OS/390 enterprise to be managed by exception.

**extended recovery facility (XRF).** A facility that minimizes the effect of failures in OS/390, VTAM, the host processor, or high availability applications during sessions between high availability applications and designated terminals. This facility provides an alternate subsystem to take over sessions from the failing subsystem.

## F

**fallback system.** See *secondary system*

**file manager commands.** A set of SA OS/390 commands that read data from or write data to the automation control file. These commands are useful in the development of automation that uses SA OS/390 facilities.

**focal point.** In the NetView program, the focal point domain is the central host domain. It is the central control point for any management services element containing control of the network management data.

**focal point system.** (1) A system that can administer, manage, or control one or more target systems. There are a number of different focal point systems associated with IBM automation products. (2) **SA OS/390 automation focal point system.** The SA OS/390 automation focal point system is an SA OS/390 NetView system that collects status information from other SA OS/390 NetViews within your enterprise. It is supported by SA OS/390, which uses NetView NNT/OST sessions to forward information to it. (3) **SA OS/390 configuration focal point system.** The SA OS/390 configuration focal point is the system on which SA OS/390 is installed. The SA OS/390 policy databases exist on this system and are built into automation control file fragments, and processor control file on this system (if this is being done using SA OS/390). (4) **SA OS/390 workstation focal-system.** The SA OS/390 workstation focal point must be the same as the NMC focal point system. SA OS/390 code is installed on both the workstation and the NMC focal point system. The SA OS/390 workstation focal point system collects status information about systems and applications within your enterprise. It is supported by SA OS/390. (5) **NMC focal point system.** The NMC focal point system is a NetView system with an attached workstation server and LAN which gathers information about the state of the network. This focal point system uses RODM to store the data it collects in the data model. The information stored in RODM can be accessed from any LAN-connected workstation with NetView Management Console installed. (6) **NPDA focal point system.** This is a NetView system which collects all the NPDA alerts that are generated within your enterprise. It is supported by NetView. If you have SA OS/390 installed the NPDA focal point system

must be the same as your NMC focal point system. The NPDA focal point system is also known as the *alert focal point system*. (7) **Status focal point system.** In NetView, the system to which STATMON, VTAM and NLDM send status information on network resources. If you have a NMC focal point, it must be on the same system as the Status focal point. (8) **SA OS/390 focal point system.** This is a NetView system that has SA OS/390 host code installed, and network connections to a number of SA OS/390 workstations. The SA OS/390 focal point system receives messages from the systems and operator consoles of the machines it controls. It provides full systems and operations console function for its target systems. It can be used to IPL these systems. Note that some restrictions apply to the Hardware Management Console for an S/390 microprocessor cluster. (9)

**Hardware Management Console.** Although not listed as a focal point, the Hardware Management Console acts as a focal point for the console functions of an S/390 microprocessor cluster. Unlike all the other focal points in this definition, the Hardware Management Console runs on a LAN-connected workstation,

**frame.** For a System/390 microprocessor cluster, a frame contains one or two central processor complexes (CPCs), support elements, and AC power distribution.

**full-screen mode.** In the NetView program, a form of panel presentation that makes it possible to display the contents of an entire workstation screen at once. Full-screen mode can be used for fill-in-the-blanks prompting. Contrast with *line mode*.

## G

**gateway session.** An NetView-NetView task session with another system in which the SA OS/390 outbound gateway operator logs onto the other NetView session without human operator intervention. Each end of a gateway session has both an inbound and outbound gateway operator.

**generic alert.** Encoded alert information that uses code points (defined by IBM and possibly customized by users or application programs) stored at an alert receiver, such as NetView.

**generic routines.** In SA OS/390, a set of self-contained automation routines that can be called from the NetView message automation table, or from user-written automation procedures.

**Group entry type.** A collection of target systems defined through the customization dialog. An installation might set up a group to refer to a physical site or an organizational entity. Groups can be of type STANDARD or SYSPLEX.

## H

**Hardware Management Console.** A console used by the operator to monitor and control a System/390 microprocessor cluster.

**Hardware Management Console Application (HWMCA).** A direct-manipulation object-oriented graphical user interface that provides single point of control and single system image for hardware elements. HWMCA provides customer grouping support, aggregated and real-time system status using colors, consolidated hardware messages support, consolidated operating system messages support, consolidated service support, and hardware commands targeted at a single system, multiple systems, or a customer group of systems.

**heartbeat.** In SA OS/390, a function which monitors the validity of the status forwarding path between remote systems and the NMC focal point system, and monitors the availability of remote OS/390 systems, to ensure that status information displayed on the SA OS/390 workstation is current.

**help panel.** An online panel that tells you how to use a command or another aspect of a product.

**hierarchy.** In the NetView program, the resource types, display types, and data types that make up the organization, or levels, in a network.

**high-level language (HLL).** A programming language that does not reflect the structure of any particular computer or operating system. For the NetView program, the high-level languages are PL/I and C.

**HLL.** High-level language.

**host system.** In a coupled system or distributed system environment, the system on which the facilities for centralized automation run. SA OS/390 publications refer to target systems or focal-point systems instead of hosts.

**host (primary processor).** The processor at which you enter a command (also known as the *issuing processor*)

**HWMCA.** Hardware Management Console Application. Application for the graphic hardware management console that monitors and controls a central processor complex. It is attached to a target processor (a system 390 microprocessor cluster) as a dedicated system console. This microprocessor uses OCF to process commands.

## I

**images.** A grouping of processors and I/O devices that you define. You can define a single-image mode which allows a multiprocessor system to function as one central processor image.

**IMS/VS.** Information Management System/Virtual Storage.

**inbound.** In SA OS/390, messages sent to the focal-point system from the PS/2 computer or target system.

**inbound gateway operator.** The automation operator that receives incoming messages, commands, and responses from the outbound gateway operator at the sending system. The inbound gateway operator handles communications with other systems using a gateway session.

**Information Management System/Virtual Storage (IMS/VS).** A database/data communication (DB/DC) system that can manage complex databases and networks. Synonymous with IMS.

**INGEIO PROC.** The I/O operations default procedure name; part of the SYS1.PROCLIB

**initial program load (IPL).** (1) The initialization procedure that causes an operating system to commence operation. (2) The process by which a configuration image is loaded into storage at the beginning of a workday or after a system malfunction. (3) The process of loading system programs and preparing a system to run jobs.

**initialize automation.** SA OS/390-provided automation that issues the correct OS/390 start command for each subsystem when SA OS/390 is initialized. The automation ensures that subsystems are started in the order specified in the automation control file and that prerequisite applications are functional.

**input/output support processor (IOSP).** The hardware unit that provides I/O support functions for the primary support processor and maintenance support functions for the processor controller.

**Interactive System Productivity Facility (ISPF).** An IBM licensed program that serves as a full-screen editor and dialog manager. Used for writing application programs, it provides a means of generating standard screen panels and interactive dialogs between the application programmer and the terminal user.

**interested operator list.** The list of operators who are to receive messages from a specific target system.

**internal token.** A *logical token* (LTOK); name by which the I/O resource or object is known; stored in IODF.

**Inter-System Control Facility (ISCF).** A program offering that provides remote operations support for 3090, 4381, and 308x processors. ISCF is a predecessor to SA OS/390. It runs as a command processor on the NetView program and works in conjunction with the ISCF/PC program.

**Inter-System Control Facility/PC (ISCF/PC).** A program offering that runs as an application on an IBM personal computer and works in conjunction with ISCF.

**IOCDs.** I/O configuration data set. The data set that describes the I/O configuration.

**I/O Ops.** See *I/O operations*

**IOSP.** Input/Output Support Processor.

**I/O operations.** The part of SA OS/390 that provides you with a single point of logical control for managing connectivity in your active I/O configurations. I/O operations takes an active role in detecting unusual conditions and lets you view and change paths between a processor and an I/O device, using dynamic switching (the ESCON director).

**I/O resource number.** Combination of channel path identifier (CHPID), device number, etc. See internal token.

**IPL.** Initial program load.

**ISA.** Industry Standard Architecture.

**ISCF.** Inter-System Control Facility.

**ISCF/PC.** Inter-System Control Facility/Personal Computer.

**ISPF.** Interactive System Productivity Facility.

**ISPF console.** From this 3270-type console you are logged onto ISPF to use the runtime panels for I/O operations and SA OS/390 customization panels.

**issuing host.** See *primary host*; the base program at which you enter a command for processing.

## J

**JCL.** Job control language.

**JES.** Job entry subsystem.

**job.** (1) A set of data that completely defines a unit of work for a computer. A job usually includes all necessary computer programs, linkages, files, and instructions to the operating system. (2) An address space.

**job control language (JCL).** A problem-oriented language designed to express statements in a job that are used to identify the job or describe its requirements to an operating system.

**job entry subsystem (JES).** A facility for spooling, job queuing, and managing I/O. In SA OS/390 publications, JES refers to JES2 or JES3, unless distinguished as being either one or the other.

## K

**Kanji.** An ideographic character set used in Japanese. See also *double-byte character set*

## L

**LAN.** Local area network.

**line mode.** A form of screen presentation in which the information is presented a line at a time in the message area of the terminal screen. Contrast with *full-screen mode*.

**link.** (1) In SNA, the combination of the link connection and the link stations joining network nodes; for example, a System/370 channel and its associated protocols, a serial-by-bit connection under the control of synchronous data link control (SDLC). (2) In SA OS/390, link connection is the physical medium of transmission.

**link-attached.** Describes devices that are physically connected by a telecommunication line. Contrast with *channel-attached*.

**local.** Pertaining to a device accessed directly without use of a telecommunication line. Synonymous with *channel-attached*.

**local area network (LAN).** (1) A network in which a set of devices is connected for communication. They can be connected to a larger network. See also *token ring*. (2) A network in which communications are limited to a moderately sized geographic area such as a single office building, warehouse, or campus, and which do not generally extend across public rights-of-way.

**logical partition (LP).** A subset of the processor hardware that is defined to support an operating system. See also *logically partitioned () mode*.

**logical switch number (LSN).** Assigned with the switch parameter of the CHPID macro of the IOCP

**logical token (LTOK).** Resource number of an object in the IODF

**logical unit (LU).** In SNA, a port through which an end user accesses the SNA network and the functions provided by system services control points (SSCPs). An LU can support at least two sessions — one with an SSCP and one with another LU — and may be capable of supporting many sessions with other LUs. See also *physical unit (PU)* and *system services control point (SSCP)*.

**logical unit (LU) 6.2.** A type of logical unit that supports general communications between programs in a distributed processing environment. LU 6.2 is characterized by (a) a peer relationship between session

partners, (b) efficient use of a session for multiple transactions, (c) comprehensive end-to-end error processing, and (d) a generic application program interface (API) consisting of structured verbs that are mapped into a product implementation. Synonym for advanced program-to-program communications (APPC).

**logically partitioned () mode.** A central processor mode that enables an operator to allocate system processor hardware resources among several logical partitions. Contrast with *basic mode*.

**LOGR.** The sysplex logger.

**LP.** Logical partition.

(. Logically partitioned (mode).

**LU.** Logical unit.

**LU-LU session.** In SNA, a session between two logical units (LUs) in an SNA network. It provides communication between two end users, or between an end user and an LU services component.

**LU 6.2.** Logical unit 6.2.

**LU 6.2 session.** A session initiated by VTAM on behalf of an LU 6.2 application program, or a session initiated by a remote LU in which the application program specifies that VTAM is to control the session by using the APPCCMD macro.

## M

**MCA.** Micro Channel\* architecture.

**MCS.** Multiple console support.

**member.** A specific function (one or more modules/routines) of a multisystem application that is defined to XCF and assigned to a group by the multisystem application. A member resides on one system in the sysplex and can use XCF services to communicate (send and receive data) with other members of the same group.

**NetView message automation table.** A table against which the NetView program compares incoming messages. A match with an entry triggers the specified response. SA OS/390 entries in the NetView automation table trigger an SA OS/390 response to target system conditions.

**message class.** A number that SA OS/390 associates with a message to control routing of the message. During automated operations, the classes associated with each message issued by SA OS/390 are compared to the classes assigned to each notification operator. Any operator with a class matching one of the message's classes receives the message.

**message forwarding.** The SA OS/390 process of sending messages generated at an SA OS/390 target system to the SA OS/390 focal point system.

**message group.** Several messages that are displayed together as a unit.

**message monitor task.** A task that starts and is associated with a number of communications tasks. Message monitor tasks receive inbound messages from a communications task, determine the originating target system, and route the messages to the appropriate target control tasks.

**message processing facility (MPF).** An OS/390 table that screens all messages sent to the OS/390 console. The MPF compares these messages with a customer-defined list of messages on which to automate, suppress from the OS/390 console display, or both, and marks messages to automate or suppress. Messages are then broadcast on the subsystem interface (SSI).

**message suppression.** The ability to restrict the amount of message traffic displayed on the OS/390 console.

**Micro Channel architecture.** The rules that define how subsystems and adapters use the Micro Channel bus in a computer. The architecture defines the services that each subsystem can or must provide.

**microprocessor.** A processor implemented on one or a small number of chips.

**migration.** Installation of a new version or release of a program to replace an earlier version or release.

**MP.** Multiprocessor.

**MPF.** Message processing facility.

**Multiple Virtual Storage (MVS).** An IBM licensed program. MVS, which is the predecessor of OS/390, is an operating system that controls the running of programs on a System/390 or System/370 processor. MVS includes an appropriate level of the Data Facility Product (DFP) and Multiple Virtual Storage/Enterprise Systems Architecture System Product Version 5 (MVS/ESA SP5)

**multiprocessor (MP).** A CPC that can be physically partitioned to form two operating processor complexes.

**multisystem application.** An application program that has various functions distributed across OS/390 images in a multisystem environment.

**multisystem environment.** An environment in which two or more OS/390 images reside in one or more processors, and programs on one image can communicate with programs on the other images.

**MVS.** Multiple Virtual Storage, predecessor of OS/390.

**MVS image.** A single occurrence of the MVS/ESA operating system that has the ability to process work.

**MVS/JES2.** Multiple Virtual Storage/Job Entry System 2. An OS/390 subsystem that receives jobs into the system, converts them to internal format, selects them for execution, processes their output, and purges them from the system. In an installation with more than one processor, each JES2 processor independently controls its job input, scheduling, and output processing.

**MVS/ESA.** Multiple Virtual Storage/Enterprise Systems Architecture.

**MVS/ESA SP.** Multiple Virtual Storage/Enterprise Systems Architecture System Product.

**MVS/XA.** Multiple Virtual Storage for Extended Architecture.

## N

**NAU.** (1) Network accessible unit. (2) Network addressable unit.

**NCCF.** Network Communications Control Facility.

**NCP.** (1) Network Control Program (IBM licensed program). Its full name is Advanced Communications Function for the Network Control Program. Synonymous with *ACF/NCP*. (2) Network control program (general term).

**NetView.** An IBM licensed program used to monitor a network, manage it, and diagnose network problems. NetView consists of a command facility that includes a presentation service, command processors, automation based on command lists, and a transaction processing structure on which the session monitor, hardware monitor, and terminal access facility (TAF) network management applications are built.

**network accessible unit (NAU).** A logical unit (LU), physical unit (PU), control point (CP), or system services control point (SSCP). It is the origin or the destination of information transmitted by the path control network. Synonymous with *network addressable unit*.

**network addressable unit (NAU).** Synonym for *network accessible unit*.

**NetView automation procedures.** A sequence of commands, packaged as a NetView command list or a command processor written in a high-level language. An automation procedure performs automation functions and runs under the NetView program.

**NetView Command list language.** An interpretive language unique to NetView that is used to write command lists.

**NetView (NCCF) console.** A 3270-type console for NetView commands and runtime panels for system operations and processor operations

**NetView hardware monitor.** The component of NetView that helps identify network problems, such as hardware, software, and microcode, from a central control point using interactive display techniques. Formerly called *network problem determination application*

**NetView log.** The log in which NetView records events pertaining to NetView and SA OS/390 activities.

**NetView-NetView task (NNT).** The task under which a cross-domain NetView operator session runs. Each NetView program must have a NetView-NetView task to establish one NNT session. See *operator station task*

**NetView paths via logical unit (LU 6.2).** A type of network-accessible port (VTAM connection) that enables end users to gain access to SNA network resources and communicate with each other. LU 6.2 permits communication between processor operations and the workstation.

**NetView-NetView task session.** A session between two NetView programs that runs under an NetView-NetView task. In SA OS/390, NetView-NetView task sessions are used for communication between focal point and remote systems.

**network.** (1) An interconnected group of nodes. (2) In data processing, a user application network. See *SNA network*.

**Network Communications Control Facility (NCCF).** The operations control facility for the network. NCCF consists of a presentation service, command processors, automation based on command lists, and a transaction processing structure on which the network management applications NLDM and NPDA are built. NCCF is a precursor to the NetView command facility.

**Network Control Program (NCP).** An IBM licensed program that provides communication controller support for single-domain, multiple-domain, and interconnected network capability. Its full name is Advanced Communications Function for the Network Control Program.

**Networking NetView.** In SA OS/390 the NetView that performs network management functions, such as managing the configuration of a network. In SA OS/390 it is common to also route alerts to the Networking NetView.

**Network Problem Determination Application (NPDA).** An NCCF application that helps you identify network problems, such as hardware, software, and microcode, from a central control point using interactive display methods. The alert manager for the network. The precursor of the NetView hardware monitor.

**NMC focal point system.** See *focal point system*

**NMC workstation.** The NMC workstation is the primary way to dynamically monitor SA OS/390 systems. From the windows, you see messages, monitor status, view trends, and react to changes before they cause problems for end users. You can use multiple windows to monitor multiple views of the system.

**NIP.** Nucleus initialization program.

**NNT.** NetView-NetView task.

**notification message.** An SA OS/390 message sent to a human notification operator to provide information about significant automation actions. Notification messages are defined using the customization dialog.

**notification operator.** A NetView console operator who is authorized to receive SA OS/390 notification messages. Authorization is made through the customization dialog.

**NPDA.** Network Problem Determination Application.

**NPDA focal point system.** See *focal point system*

**NTRI.** NCP/token-ring interconnection.

**nucleus initialization program (NIP).** The program that initializes the resident control program; it allows the operator to request last-minute changes to certain options specified during system generation.

## O

**OCA.** In SA OS/390, operator console A, the active operator console for a target system. Contrast with *OCB*.

**OCB.** In SA OS/390, operator console B, the backup operator console for a target system. Contrast with *OCA*.

**OCF.** Operations command facility.

**OCF-based processor.** A central processor complex that uses an operations command facility for interacting with human operators or external programs to perform operations management functions on the CPC. Contrast with *screen-oriented processor*.

**OPC/A.** Operations Planning and Control/Advanced.

**OPC/ESA.** Operations Planning and Control/Enterprise Systems Architecture.

**operating system (OS).** Software that controls the execution of programs and that may provide services such as resource allocation, scheduling, input/output control, and data management. Although operating systems are predominantly software, partial hardware implementations are possible. (T)

**OS/2.** A software operating system for personal computers (workstations). OS/2 supports sophisticated business applications and gives you multiple simultaneous host sessions, DOS sessions, Windows sessions, and OS/2 sessions with a graphic interface that lets you select resources by clicking on an icon with a mouse.

**operations.** The real-time control of a hardware device or software function.

**operations command facility (OCF).** A facility of the central processor complex that accepts and processes operations management commands.

**Operations Planning and Control/Advanced (OPC/A).** A set of IBM licensed programs that automate, plan, and control batch workload. OPC/A analyzes system and workload status and submits jobs accordingly.

**Operations Planning and Control/ESA (OPC/ESA).** A set of IBM licensed programs that automate, plan, and control batch workload. OPC/ESA analyzes system and workload status and submits jobs accordingly. The successor to OPC/A.

**operator.** (1) A person who keeps a system running. (2) A person or program responsible for managing activities controlled by a given piece of software such as OS/390, the NetView program, or IMS. (3) A person who operates a device. (4) In a language statement, the lexical entity that indicates the action to be performed on operands.

**operator console.** (1) A functional unit containing devices that are used for communications between a computer operator and a computer. (T) (2) A display console used for communication between the operator and the system, used primarily to specify information concerning application programs and I/O operations and to monitor system operation. (3) In SA OS/390, a console that displays output from and sends input to the operating system (OS/390, VM, VSE, or TPF). Also called *operating system console*. In the SA OS/390 operator commands and configuration dialogs, OC is used to designate a target system operator console.

**operator station task (OST).** The NetView task that establishes and maintains the online session with the network operator. There is one operator station task for each network operator who logs on to the NetView program.

**OS/390 component.** A part of OS/390 that performs a specific OS/390 function. In SA OS/390, component refers to entities that are managed by SA OS/390 automation.

**OS/390 subsystem.** Software products that augment the OS/390 operating system. JES and TSO/E are examples of OS/390 subsystems. SA OS/390 includes automation for some OS/390 subsystems.

**OS/390 system.** An OS/390 image together with its associated hardware, which collectively are often referred to simply as a system, or OS/390 system.

**OSA.** I/O operations can display the open system adapter (OSA) channel logical definition, physical attachment, and status. You can configure an OSA channel on or off.

**OST.** Operator station task.

**OS/2.** The IBM Operating System/2 program.

**OS/2 program.** The IBM Operating System/2\* program. SA OS/390 uses the intersystem communication and emulation services of the Communication Manager.

**outbound.** In SA OS/390, messages or commands from the focal-point system to the PS/2 computer or target system.

**outbound gateway operator.** The automation operator that establishes connections to other systems. The outbound gateway operator handles communications with other systems through a gateway session. The automation operator sends messages, commands, and responses to the inbound gateway operator at the receiving system.

## P

**page.** (1) The portion of a panel that is shown on a display surface at one time. (2) To transfer instructions, data, or both between real storage and external page or auxiliary storage.

**panel.** (1) A formatted display of information that appears on a terminal screen. Panels are full-screen 3270-type displays with a monospaced font, limited color and graphics. (2) By using SA OS/390 panels you can see status, type commands on a command line using a keyboard, configure your system, and passthru to other consoles. See also *help panel*. (3) In computer graphics, a display image that defines the locations and characteristics of display fields on a display surface. Contrast with *screen*.

**parallel channels.** Parallel channels operate in either byte (BY) or block (BL) mode. You can change connectivity to a parallel channel operating in block mode.

**parameter.** (1) A variable that is given a constant value for a specified application and that may denote the application. (2) An item in a menu for which the user specifies a value or for which the system provides a value when the menu is interpreted. (3) Data passed to a program or procedure by a user or another program, namely as an operand in a language statement, as an item in a menu, or as a shared data structure.

**partition.** (1) A fixed-size division of storage. (2) In VSE, a division of the virtual address area that is available for program processing. (3) On an IBM Personal Computer fixed disk, one of four possible storage areas of variable size; one can be accessed by DOS, and each of the others may be assigned to another operating system.

**partitionable CPC.** A CPC that can be divided into 2 independent CPCs. See also *physical partition*, *single-image mode*, *MP*, *side*.

**partitioned data set (PDS).** A data set in direct access storage that is divided into partitions, called *members*, each of which can contain a program, part of a program, or data.

**passive monitoring.** In SA OS/390, the receiving of unsolicited messages from OS/390 systems and their resources. These messages can prompt updates to resource status displays. See also *active monitoring*

**path.** Communication link (either NetView or PS/2) between a processor and console

**PCE.** Processor controller. Also known as the "support processor" or "service processor" in some processor families.

**PDS.** Partitioned data set.

**Personal System/2\* (PS/2) computer.** A family of microcomputers manufactured by IBM Corporation.

**physical partition.** Part of a CPC that operates as a CPC in its own right, with its own copy of the operating system.

**physical unit (PU).** In SNA, the component that manages and monitors the resources (such as attached links and adjacent link stations) of a node, as requested by a system services control point (SSCP) through an SSCP-PU session. An SSCP activates a session with the physical unit to indirectly manage, through the PU, resources of the node such as attached links.

**physically partitioned (PP) configuration.** A mode of operation that allows a multiprocessor (MP) system to function as two or more independent CPCs having separate power, water, and maintenance boundaries. Contrast with *single-image (SI) configuration*.

**POI.** Program operator interface.

**policy.** The automation and monitoring specifications for an SA OS/390 enterprise. See *SA OS/390 policy*

**policy database.** The database where the automation policy is recorded.

**POR.** Power-on reset.

**port.** (1) System hardware to which the I/O devices are attached. (2) On an ESCON switch, a port is an addressable connection. The switch routes data through the ports to the channel or control unit. Each port has a name that can be entered into a switch matrix, and you can use commands to change the switch configuration. (3) An access point (for example, a logical unit) for data entry or exit. (4) A functional unit of a node through which data can enter or leave a data network. (5) In data communication, that part of a data processor that is dedicated to a single data channel for the purpose of receiving data from or transmitting data to one or more external, remote devices. (6) power-on reset (POR) (7) A function that re-initializes all the hardware in a CPC and loads the internal code that enables the CPC to load and run an operating system.

**PP.** Physically partitioned (configuration).

**PPT.** Primary POI task.

**primary host.** The base program at which you enter a command for processing.

**primary POI task (PPT).** The NetView subtask that processes all unsolicited messages received from the VTAM program operator interface (POI) and delivers them to the controlling operator or to the command processor. The PPT also processes the initial command specified to execute when NetView is initialized and timer request commands scheduled to execute under the PPT.

**primary system.** A system is a primary system for an application if the application is normally meant to be running there. SA OS/390 starts the application on all the primary systems defined for it.

**problem determination.** The process of determining the source of a problem; for example, a program component, machine failure, telecommunication facilities, user or contractor-installed programs or equipment, environment failure such as a power loss, or user error.

**processor controller.** Hardware that provides support and diagnostic functions for the central processors.

**processor operations.** The part of SA OS/390 that monitors and controls processor (hardware) operations. Processor operations provides a connection from a focal point system to a target system. Through NetView on the focal point system, processor operations automates operator and system consoles for monitoring and recovering target systems.

**processor operations control file.** Named by your system programmer, this file contains configuration and customization information. The programmer records the name of this control file in the processor operations file generation panel ISQDPG01.

**processor operations workstation.** This 3270-type display echoes commands run by automation and relays commands from the focal point system to the target processor, and messages from the target processor to the focal point system. The display can also be used as operator consoles. The workstation attaches to a processor through the processor controller.

**Processor Resource/Systems Manager\* (PR/SM\*).** The feature that allows the processor to use several operating system images simultaneously and provides logical partitioning capability. See also (.

**ProcOps.** See *Processor Operations*

**product automation.** Automation integrated into the base of SA OS/390 for the products DB2, CICS, IMS, OPC (formerly called *features*).

**program to program interface (PPI).** A NetView function that allows user programs to send or receive data buffers from other user programs and to send alerts to the NetView hardware monitor from system and application programs.

**protocol.** In SNA, the meanings of, and the sequencing rules for, requests and responses used for managing the network, transferring data, and synchronizing the states of network components.

**proxy resource.** A resource defined like an entry type *Application* representing a processor operations target system.

**PR/SM.** Processor Resource/Systems Manager.

**PS/2 computer.** In SA OS/390, an IBM PS/2 computer that runs the OS/2 program and that contains a communication adapter. The PS/2 computer, which is connected to one or more target systems, contains the distributed feature code of SA OS/390. An SA OS/390 workstation may be either an IBM PS/2 computer or an IBM PS/55 computer, unless otherwise stated.

**PS/2 LU name.** In SA OS/390, the focal-point SNA logical unit name of the workstation.

**PS/2 name.** In SA OS/390, the logical name of the workstation.

**PS/2 ports.** On a PS/2 workstation, a port is a cable connector on a 3270 or ASCII logic card that attaches it to a target system. The port is associated with the screen handler for the PS/2 and identified by a port letter.

**PU.** Physical unit.

## R

**remote system.** A system that receives resource status information from an SA OS/390 focal point system. An SA OS/390 remote system is defined as part of the same SA OS/390 enterprise as the SA OS/390 focal point system to which it is related.

**requester.** A requester is a workstation software, which enables users to log on to a domain, that is, to the server(s) belonging to this domain, and use the resources in this domain. After the log on to a domain, users can access the shared resources and use the processing capability of the server(s). Because the bigger part of shared resources is on the server(s), users can reduce hardware investment.

**resource.** (1) Any facility of the computing system or operating system required by a job or task, and including main storage, input/output devices, the processing unit, data sets, and control or processing programs. (2) In NetView, any hardware or software that provides function to the network. (3) In SA OS/390, any OS/390 application, OS/390 component, job, device, or target system capable of being monitored or automated through SA OS/390.

**Resource Access Control Facility (RACF).** A program that can provide data security for all your resources. RACF protects data from accidental or deliberate unauthorized disclosure, modification, or destruction.

**resource group.** A physically partitionable portion of a processor. Also known as a *side*.

**Resource Monitoring Facility (RMF).** A program that measures and reports on the availability and activity of system hardware and software resources, such as processors, devices, storage, and address spaces. RMF can issue reports about system performance problems as they occur.

**Resource Object Data Manager (RODM).** A data cache manager designed to support process control and automation applications. RODM provides an in-memory data cache for maintaining real-time data in an address space that is accessible by multiple applications. RODM also allows an application to query an object and receive a rapid response and act on it.

**resource token.** A unique internal identifier of an ESCON resource or resource number of the object in the IODF

**restart automation.** SA OS/390-provided automation that monitors subsystems to ensure that they are running. If a subsystem fails, SA OS/390 attempts to restart it according to the policy in the automation control file.

**Restructured Extended Executor (REXX).** An interpretive language used to write command lists.

**return code.** A code returned from a program used to influence the issuing of subsequent instructions.

**REXX.** Restructured Extended Executor.

**REXX procedure.** A command list written with the Restructured Extended Executor (REXX) which is an interpretive language.

**RMF.** Resource Measurement Facility.

**RODM.** Resource Object Data Manager.

## S

**SAF.** Security Authorization Facility.

**SA OS/390 automation focal point system.** See *focal point system*

**SA OS/390 customization dialog.** An ISPF application through which the SA OS/390 policy administrator defines policy for individual OS/390 systems and builds automation control data.

**SA OS/390 customization focal point system.** See *focal point system*

**SA OS/390 enterprise.** The group of systems and resources defined in the customization dialog under one enterprise name. An SA OS/390 enterprise consists of connected OS/390 systems running SA OS/390.

**SA OS/390 focal point system.** See *focal point system*.

**SA OS/390 policy.** The description of the systems and resources that make up an SA OS/390 enterprise, together with their monitoring and automation definitions.

**SA OS/390 policy administrator.** The member of the operations staff who is responsible for defining SA OS/390 policy.

**SA OS/390 satellite.** If you are running two NetViews on an OS/390 system to split the automation and networking functions of NetView, it is common to route alerts to the Networking NetView. For SA OS/390 to process alerts properly on the Networking NetView, you must install a subset of SA OS/390 code, called an *SA OS/390 satellite* on the Networking NetView.

**SCA.** In SA OS/390, system console A, the active system console for a target hardware. Contrast with *SCB*.

**SCB.** In SA OS/390, system console B, the backup system console for a target hardware. Contrast with *SCA*.

**screen.** Deprecated term for display panel.

**screen-based processor.** See *screen-oriented processor*.

**screen handler.** In SA OS/390, software that interprets all data to and from a full-screen image of a target system. The interpretation depends on the format of the data on the full-screen image. Every processor and operating system has its own format for the full-screen image. A screen handler controls one PS/2 connection to a target system.

**screen-oriented processor.** A central processor complex that interacts with human operators through line-mode display consoles. For System/390 and System/370 processors, the display consoles use either an IBM 3270 data stream or an ASCII data stream. Contrast with *OCF-based processor*.

**SDF.** Status display facility.

**SDLCL.** Synchronous data link control.

**SDFS.** System Display and Search Facility.

**secondary system.** A system is a secondary system for an application if it is defined to automation on that system, but the application is not normally meant to be running there. Secondary systems are systems to which an application can be moved in the event that one or more of its primary systems are unavailable. SA OS/390 does not start the application on its secondary systems.

**server.** A server is a workstation, that shares resources, which include directories, printers, serial devices, and computing powers.

**service period.** Service periods allow the users to schedule the availability of applications. A service period is a set of time intervals (service windows), during which an application should be active.

**service threshold.** An SA OS/390 policy setting that determines when to notify the operator of deteriorating service for a resource. See *alert threshold* and *warning threshold*

**service language command (SLC).** The line-oriented command language of processor controllers or service processors.

**service processor (SVP).** The name given to a processor controller on smaller System/370 processors.

**session.** In SNA, a logical connection between two network addressable units (NAUs) that can be activated, tailored to provide various protocols, and deactivated, as requested. Each session is uniquely identified in a transmission header by a pair of network addresses identifying the origin and destination NAUs of any transmissions exchanged during the session.

**session monitor.** The component of the NetView program that collects and correlates session-related data and provides online access to this information. The successor to NLDM.

**shutdown automation.** SA OS/390-provided automation that manages the shutdown process for subsystems by issuing shutdown commands and responding to prompts for additional information.

**side.** A part of a partitionable CPC that can run as a physical partition and is typically referred to as the A-side or the B-side.

**single image.** A processor system capable of being physically partitioned that has not been physically partitioned. Single-image systems can be target hardware processors.

**single-image (SI) mode.** A mode of operation for a multiprocessor (MP) system that allows it to function as one CPC. By definition, a uniprocessor (UP) operates in single-image mode. Contrast with *physically partitioned (PP) configuration*.

**SLC.** Service language command.

**SMP/E.** System Modification Program Extended.

**SNA.** Systems Network Architecture.

**SNA network.** In SNA, the part of a user-application network that conforms to the formats and protocols of systems network architecture. It enables reliable transfer of data among end users and provides protocols for controlling the resources of various network configurations. The SNA network consists of network addressable units (NAUs), boundary function components, and the path control network.

**SNMP.** Simple Network Management Protocol (a TCP/IP protocol). A protocol that allows network management by elements, such as gateways, routers, and hosts. This protocol provides a means of communication between network elements regarding network resources.

**solicited message.** An SA OS/390 message that directly responds to a command. Contrast with *unsolicited message*.

**SRPI.** Server-Requester Programming Interface.

**SSCP.** System services control point.

**SSI.** Subsystem interface.

**start automation.** SA OS/390-provided automation that manages and completes the startup process for subsystems. During this process, SA OS/390 replies to prompts for additional information, ensures that the startup process completes within specified time limits, notifies the operator of problems, if necessary, and brings subsystems to an UP (or ready) state.

**startup.** The point in time at which a subsystem or application is started.

**status.** The measure of the condition or availability of the resource.

**status focal point system.** See *focal point system*

**status display facility (SDF).** The system operations part of SA OS/390 that displays status of resources such as applications, gateways, and write-to-operator messages (WTOs) on dynamic color-coded panels. SDF shows spool usage problems and resource data from multiple systems.

**steady state automation.** The routine monitoring, both for presence and performance, of subsystems, applications and systems. Steady state automation may respond to messages, performance exceptions and discrepancies between its model of the system and reality.

**structure.** A construct used by OS/390 to map and manage storage on a coupling facility. See cache structure, list structure, and lock structure.

**subgroup.** A named set of systems. A subgroup is part of an SA OS/390 enterprise definition and is used for monitoring purposes.

**SubGroup entry.** A construct, created with the customization dialog, used to represent and contain policy for a subgroup.

**subsystem.** (1) A secondary or subordinate system, usually capable of operating independent of, or asynchronously with, a controlling system. (2) In SA OS/390, an OS/390 application or subsystem defined to SA OS/390.

**subsystem interface.** The OS/390 interface over which all messages sent to the OS/390 console are broadcast.

**support element.** A hardware unit that provides communications, monitoring, and diagnostic functions to a central processor complex (CPC).

**support processor.** Another name given to a processor controller on smaller System/370 processors; see *service processor*.

**SVP.** Service processor.

**switches.** ESCON directors are electronic units with ports that dynamically switch to route data to I/O devices. The switches are controlled by I/O operations commands that you enter on a workstation.

**switch identifier.** The switch device number (swchdevn), the logical switch number (LSN) and the switch name

**symbolic destination name (SDN).** Used locally at the workstation to relate the VTAM application name

**synchronous data link control (SDLC).** A discipline for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or non-switched links. The configuration of the link connection may be point-to-point, multi-point, or loop. SDLC conforms to subsets of the Advanced Data Communication Control Procedures (ADCCP) of the American National Standards Institute and High-Level Data Link Control (HDLC) of the International Standards Organization.

**SysOps.** See *System Operations*

**sysplex.** A set of OS/390 systems communicating and cooperating with each other through certain multisystem hardware components (coupling devices and timers) and software services (couple data sets).

In a sysplex, OS/390 provides the coupling services that handle the messages, data, and status for the parts of a multisystem application that has its workload spread across two or more of the connected processors, sysplex timers, coupling facilities, and couple data sets (which contains policy and states for automation).

A parallel sysplex is a sysplex which includes a coupling facility.

**sysplex application group.** A sysplex application group is a grouping of applications that can run on any system in a sysplex.

**sysplex couple data set.** A couple data set that contains sysplex-wide data about systems, groups, and members that use XCF services. All OS/390 systems in a sysplex must have connectivity to the sysplex couple data set. See also *couple data set*

**Sysplex Timer.** An IBM unit that synchronizes the time-of-day (TOD) clocks in multiple processors or processor sides. External Time Reference (ETR) is the OS/390 generic name for the IBM Sysplex Timer (9037).

**system.** In SA OS/390, system means a focal point system (OS/390) or a target system (MVS, VM, VSE, TPF or CF).

**System Automation for OS/390.** The full name for SA OS/390.

**system console.** (1) A console, usually having a keyboard and a display screen, that is used by an operator to control and communicate with a system. (2) A logical device used for the operation and control of hardware functions (for example, IPL, alter/display, and reconfiguration). The system console can be assigned to any of the physical displays attached to a processor controller or support processor. (3) In SA OS/390, the hardware system console for processor controllers or service processors of processors connected using SA OS/390. In the SA OS/390

operator commands and configuration dialogs, SC is used to designate the system console for a target hardware processor.

**System Display and Search Facility (SDSF).** An IBM licensed program that provides information about jobs, queues, and printers running under JES2 on a series of panels. Under SA OS/390 you can select SDSF from a pull-down menu to see the resources' status, view the OS/390 system log, see WTOR messages, and see active jobs on the system.

**System entry type.** A construct, created with the customization dialog, used to represent and contain policy for a system.

**System Modification Program/Extended (SMP/E).** An IBM licensed program that facilitates the process of installing and servicing an OS/390 system.

**system operations.** The part of SA OS/390 that monitors and controls system operations applications and subsystems such as NetView, SDSF, JES, RMF, TSO, RODM, ACF/VTAM, CICS, IMS, and OPC.

**system services control point (SSCP).** In SNA, the focal point within an SNA network for managing the configuration, coordinating network operator and problem determination requests, and providing directory support and other session services for end users of the network. Multiple SSCPs, cooperating as peers, can divide the network into domains of control, with each SSCP having a hierarchical control relationship to the physical units and logical units within its domain.

**Systems Network Architecture (SNA).** The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through, and controlling the configuration and operation of, networks.

**System/390 microprocessor cluster.** A configuration that consists of central processor complexes (CPCs) and may have one or more integrated coupling facilities.

## T

**TAF.** Terminal access facility.

**target.** A processor or system monitored and controlled by a focal point system.

**target control task.** In SA OS/390, target control tasks process commands and send data to target systems and workstations through communications tasks. A target control task (a NetView autotask) is assigned to a target system when the target system is initialized.

**target hardware.** In SA OS/390, the physical hardware on which a target system runs. It can be a single-image or physically partitioned processor. Contrast with *target system*.

**target system.** (1) In a distributed system environment, a system that is monitored and controlled by the focal-point system. Multiple target systems can be controlled by a single focal-point system. (2) In SA OS/390, a computer system attached to the focal-point system for monitoring and control. The definition of a target system includes how remote sessions are established, what hardware is used, and what operating system is used.

**task.** (1) A basic unit of work to be accomplished by a computer. (2) In the NetView environment, an operator station task (logged-on operator), automation operator (autotask), application task, or user task. A NetView task performs work in the NetView environment. All SA OS/390 tasks are NetView tasks. See also *communications task*, *message monitor task*, and *target control task*.

**telecommunication line.** Any physical medium, such as a wire or microwave beam, that is used to transmit data.

**terminal access facility (TAF).** (1) A NetView function that allows you to log onto multiple applications either on your system or other systems. You can define TAF sessions in the SA OS/390 customization panels so you don't have to set them up each time you want to use them. (2) In NetView, a facility that allows a network operator to control a number of subsystems. In a full-screen or operator control session, operators can control any combination of subsystems simultaneously.

**terminal emulation.** The capability of a microcomputer or personal computer to operate as if it were a particular type of terminal linked to a processing unit to access data.

**threshold.** A value that determines the point at which SA OS/390 automation performs a predefined action. See *alert threshold*, *warning threshold*, and *error threshold*.

**time of day (TOD).** Typically refers to the time-of-day clock.

**Time Sharing Option (TSO).** An optional configuration of the operating system that provides conversational time sharing from remote stations. It is an interactive service on OS/390, MVS/ESA, and MVS/XA.

**Time-Sharing Option/Extended (TSO/E).** An option of OS/390 that provides conversational time-sharing from remote terminals. TSO/E allows a wide variety of users to perform many different kinds of tasks. It can handle short-running applications that use fewer sources as well as long-running applications that require large amounts of resources.

**timers.** A NetView command that issues a command or command processor (list of commands) at a specified time or time interval.

**TOD.** Time of day.

**token ring.** A network with a ring topology that passes tokens from one attaching device to another; for example, the IBM Token-Ring Network product.

**TP.** Transaction program.

**TPF.** Transaction processing facility.

**transaction processing facility (TPF).** A high-availability, high-performance system, designed to support real-time, transaction-driven applications (such as an airline reservation system). The specialized architecture of TPF is intended to optimize system efficiency, reliability, and responsiveness for data communication and database processing.

TPF provides real-time inquiry and update to a large, centralized database, where message length is relatively short in both directions, and response time is generally less than three seconds. Formerly known as the Airline Control Program/Transaction Processing Facility (ACP/TPF).

**transaction program.** In the VTAM program, a program that performs services related to the processing of a transaction. One or more transaction programs may operate within a VTAM application program that is using the VTAM application program interface (API). In that situation, the transaction program would request services from the applications program using protocols defined by that application program. The application program, in turn, could request services from the VTAM program by issuing the APPCCMD macro instruction.

**transitional automation.** the actions involved in starting and stopping subsystems and applications which have been defined to SA OS/390. This can include issuing commands and responding to messages.

**translating host.** Role played by a host that turns a resource number into a token during a unification process.

**trigger.** On top of requests, triggers, in combination with events, are used to control the starting and stopping of applications in a single system or a Parallel Sysplex. Triggers act as inhibitors for the requested action.

**TSO.** Time Sharing Option.

**TSO console.** From this 3270-type console you are logged onto TSO or ISPF to use the runtime panels for I/O operations and SA OS/390 customization panels.

**TSO/E.** TSO Extensions.

## U

**UCB.** The unit control block; an MVS/ESA data area that represents a device and which is used for allocating devices and controlling I/O operations.

**unsolicited message.** An SA OS/390 message that is not a direct response to a command. Contrast with *solicited message*.

**user task.** An application of the NetView program defined in a NetView TASK definition statement.

## V

**Virtual Machine/System Product (VM/SP).** An IBM licensed program. It is an operating system that manages the resources of a real processor to provide virtual machines to end users. As a time-sharing system control program, it consists of the virtual machine control program (CP), the conversational monitor system (CMS), the group control system (GCS), and the interactive problem control system (IPCS).

**Virtual Storage Extended (VSE).** An IBM licensed program whose full name is Virtual Storage Extended/Advanced Function. It is an operating system that controls the execution of programs.

**Virtual Telecommunications Access Method (VTAM).** An IBM licensed program that controls communication and the flow of data in an SNA network. It provides single-domain, multiple-domain, and interconnected network capability. Its full name is Advanced Communications Function for the Virtual Telecommunications Access Method. Synonymous with *ACF/VTAM*.

**VM/ESA\*.** Virtual Machine/Enterprise Systems Architecture\*

**VM/SP.** Virtual Machine/System Product.

**VM/SP HPO.** Virtual Machine/System Product High Performance Option.

**VSE.** Virtual Storage Extended.

**VTAM.** Virtual Telecommunications Access Method.

## W

**warning threshold.** An application service value that determines the level at which SA OS/390 changes the associated icon on the NMC workstation to the warning color. See *alert threshold*

**workstation.** In SA OS/390 workstation means the *graphic workstation* that an operator uses for day-to-day operations.

**write-to-operator (WTO).** A request to send a message to an operator at the OS/390 operator console. This request is made by an application and is handled by the WTO processor, which is part of the OS/390 supervisor program.

**write-to-operator-with-reply (WTOR).** A request to send a message to an operator at the OS/390 operator console which requires a response from the operator. This request is made by an application and is handled by the WTO processor, which is part of the OS/390 supervisor program.

**WTO.** Write-to-Operator.

**WTOR.** Write-to-Operator-with-Reply.

**WWV.** The US National Institute of Standards and Technology (NIST) radio station that provides standard time information. A second station, known as WWVB, provides standard time information at a different frequency.

## X

**XCF.** Cross-system coupling facility.

**XCF couple data set.** The name for the sysplex couple data set prior to MVS/ESA System Product Version 5 Release 1. See *sysplex couple data set*

**XCF group.** A set of related members that a multisystem application defines to XCF. A member is a specific function, or instance, of the application. A member resides on one system and can communicate with other members of the same group across the sysplex.

**XRF.** Extended recovery facility.

## Numerics

**3090/ACA/ISCF.** 3090 Automated Console Application for Inter-System Control Facility.

**3090/Automated Console Application/ISCF (3090/ACA/ISCF).** A program offering that runs as a NetView application in conjunction with ISCF. It provides some built-in automation and an enhanced user interface. 3090/ACA/ISCF is limited to 3090 OS/390 targets.

**3270 connection card.** A 3270 emulator card installed in a workstation used to connect the workstation to the target system. Four 3270 connection cards can be installed in a workstation.

**37x5.** A 3705, 3725, or 3745 communication controller.

**3x74.** A 3174 or 3274 subsystem control unit. A control unit to which 3270-family display stations are attached.



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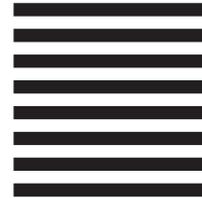
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