IBM System Automation for OS/390 Version 2 Release 1 Automates Parallel Sysplex Applications

Overview

The unique and rich functions of System Automation for OS/390® (SA OS/390) V2.1 can ease z/OS and OS/390 management, reduce costs, and increase application availability. SA OS/390 automates I/O, processor, and system operations and includes “canned” automation for IMS™, CICS®, Tivoli® OPC, and DB2®. Its focus is on Parallel Sysplex® automation, including multi- and single-system configurations, and on integration with Tivoli enterprise solutions, like the Tivoli Enterprise Console™ (TEC). With the new manager/agent design, it is now possible to automate Parallel Sysplex applications by virtually removing system boundaries for automation.

Parallel Sysplex Application Automation

A Parallel Sysplex application can be automated as a whole, no matter how many resources it consists of and where they are. Resources can have complex dependencies, can be started as required, and can be moved to other systems.

Simpler Operations through Goal-Driven Automation

The automation manager decides when and where resources need to be made available or unavailable using its awareness of status, dependencies, and location of all resources and prioritized operator requests and policy goals specified by the automation administrator. This goal-driven automation greatly simplifies operations: operators just request what they want, and SA OS/390 takes care of any dependencies and resolution of affected or even conflicting goals.

Reduction of Complexity with Groups

Sysplex-wide grouping of resources and definition of aggregate or business applications can greatly reduce the complexity of automation definition and operations. Groups free operators from knowing the various pieces of the application.

The Graphical User Interface (GUI)

The system operations GUI is based on Tivoli NetView® for OS/390. The easy to implement, flexible GUI displays comprehensive system and application information including dependencies and offers point-and-shoot operation with easy-to-use context sensitive command menus. The I/O operations GUI is based on OS/390 HCM V2R9 to achieve maximum I/O configuration integration.

Key Prerequisites

- IBM OS/390 V2.6 or V2.9* (5647-A01) or z/OS (5694-A01)
- Tivoli NetView for OS/390 V1.3 (5697-B82) or higher
- IBM MQSeries® for OS/390 V2.1 (5655-A95) or
- IBM MQSeries for OS/390 V5.2* (5655-F10) with shared queues
  * Required for sysplex-wide automation

Planned Availability Date

October 6, 2000

At a Glance

System Automation for OS/390 Version 2.1 (SA OS/390) can help customers with single OS/390 or z/OS systems and Parallel Sysplex clusters to:

- Automate Parallel Sysplex applications through a new manager/agent design
- Simplify automation definition and operations by grouping of resources and definition of aggregate or business applications
- Model their configuration with powerful dependency support
- Simplify operations by goal-driven automation; just request what you want
- Increase availability with application move, dynamic automation policy refresh, and highly reliable automation, which can even recover from system outages
- Take advantage of newly integrated automation for IMS, CICS, OPC, and DB2
- Reduce automation definition efforts by improved customization dialogs, and new advanced policy and cloning support

For ordering, contact:
Your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL Reference: LE001
The main goal of System Automation for OS/390 (SA OS/390) V2.1 is to make a Parallel Sysplex cluster no more difficult to operate or manage than a large single system. The previous version (1.3) offered unique sysplex automation functions like enterprise-wide single point of control, sysplex-wide single system image, and the Parallel Sysplex Operation Center. Version 2.1 includes all this and much more.

To automate Parallel Sysplex applications, new concepts are required to handle cross-system dependencies, reduce complexity, increase availability, ease operations, and model your configuration (refer to the Supplemental Information for details). SA OS/390 V2.1 introduces these required new concepts and makes automation of true Parallel Sysplex applications a reality by offering:

- A new manager/agent design
- Grouping of resources and definitions of business applications
- Powerful dependency support for modeling a configuration
- Goal-driven automation

Elements of the automation engine have been separated in SA OS/390 2.1. Those that observe, react, and take action remain within the NetView address space. This portion is known as the automation agent and must be present on every system to be automated.

The coordinating, decision-making, and controlling elements are grouped into a single new address space known as the automation manager. It is loaded with a model of all the automated resources defined across the entire Parallel Sysplex cluster.

The automation manager communicates with the automation agents on each system via XCF (Cross-System Coupling Facility) and MQSeries for OS/390 V5.2 shared queues. It receives updates about the status of resources in its automation model and sends orders to the agents when various conditions within the model are encountered.

The real beauty of this design is that multiple systems can be automated from a shared automation policy that is maintained in a central location. For the first time, a true single S/390® automation instance is possible.

**Group and Conquer**

For SA OS/390 V2.1, a group is a collection of resources that can be distributed within a Parallel Sysplex cluster. A group can be a part of any dependency or other group. Resources can be members of multiple groups and are referred to by a sysplex- or system-wide unique name.

Exploiting groups is beneficial in many ways:

- Automation definition and operations can be greatly simplified through grouping resources and even business application definitions.
- Groups enable you to monitor the most important business applications and to be sure that everything they require is available.
- Groups make operations easier by showing the aggregated status of resources and by group actions like startup or shutdown.

- Through groups, operators are freed from knowing the various pieces that make up an application, their dependencies, how to start or stop them, and so on.

**Powerful Dependency Support**

Resources can have complex dependencies of different kinds in and outside of an application. SA OS/390 V2.1 gives you the power to define these dependencies, so that applications always get what they need, are started in the right order as quickly as possible, and are shut down fast without interference. Thus definitions for resource dependencies can involve:

- Preparing for startup and shutdown
- Startup and shutdown
- Resource availability or unavailability
- Enabling the automation to change a resource’s status to achieve a goal

**Goal-Driven Automation**

In SA OS/390 V2.1, the emphasis has also switched from purely command-driven automation to goal-driven automation. Automation programmers now define the default behavior of the systems and application components in terms of dependencies, triggering conditions, and scheduled requests.

The automation manager works to keep systems in line with these goals and prioritized operator requests by using its awareness of status, dependencies, and location of all resources to decide what resources need to be made available or unavailable, when, and where. The number of checks and decisions it has to make can be very high. A human simply can’t do the same as fast and reliably as the automation manager.

Goal-driven automation greatly simplifies operations. Operators just say what they want, and automation takes care of any dependencies and resolution of affected or even conflicting goals. Sysplex-wide automation also can remove the need for specifying extra configurations for backup purposes. Instead, cross-system dependencies and server and system goals can be used to decide which backup system is to be chosen.

**Graphical User Interfaces**

The system operations GUI for SA OS/390 2.1 is based on the platform-independent NetView Management Console of Tivoli NetView for OS/390. It displays comprehensive system and application information, including dependencies, and offers point-and-shoot operation with easy-to-use, context-sensitive command menus.

Problem management functions allow resource marking to indicate to other operators that a problem is being handled. Exceptions can be created dynamically out of NetView messages and can be added to the graphical interface for visual correlation.

The I/O operations GUI of SA OS/390 is based on OS/390 Hardware Configuration Manager (HCM) V2R9. New functions in OS/390 HCM V2R9 provide visual displays of the I/O operations status for the active S/390 I/O configuration. HCM now cooperates with the SA OS/390 I/O operations component to display color-coded status information and active switch paths directly on the existing HCM configuration diagram. OS/390 operators also can retrieve detailed node element information and issue I/O operations connectivity commands while working at the HCM workstation. These enhancements...
provide powerful new tools for fast and effective problem resolution.

**Year 2000**

This product is Year 2000 ready. When used in accordance with its associated documentation, it is capable of correctly processing, providing, and/or receiving date data within and between the twentieth and twenty-first centuries, provided that all products (for example, hardware, software, and firmware) used with the product properly exchange accurate date data with it.

**Euro Currency**

This program is not impacted by euro currency.

## Product Positioning

With System Automation for OS/390, Version 2 Release 1, IBM continues to deliver OS/390 systems management products that can help you increase your competitiveness by increasing your business application availability and by reducing operations and systems management costs.

Its unique enterprise and Parallel Sysplex support helps you to reduce complexity and to increase manageability. SA OS/390 V2.1 can be a part of your enterprise-wide systems management solution because it exploits Tivoli’s OS/390 event integration and also can provide data for Tivoli Business Systems Manager.

SA OS/390 V2.1 integrates and extends the function of three established licensed programs: Automated Operations Control/MVS (AOC/MVS), Enterprise Systems CONnection (ESCON®) Manager, and Target System Control Facility (TSCF). Such integration also allows for simpler and more consistent installation, customization, maintenance, and automation. SA OS/390 lets you reconfigure a processor’s partitions, perform power-on reset, IPL processors, IPL operating systems (even automatically), investigate and respond to I/O configuration errors, (re)start and stop applications, and monitor resources. SA OS/390 has a broad coverage of the resources of the Parallel Sysplex cluster, providing you with a wealth of information on those resources, a rich set of control functions, and means to access all those functions through user interfaces as well as automation. SA OS/390 V2.1 contains important capabilities to help in the management of Parallel Sysplex clusters but is also valuable if you have not yet implemented a Parallel Sysplex cluster.

<table>
<thead>
<tr>
<th>Hardware and Software Support Services</th>
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**SmoothStart™/Installation Services**

IBM Installation Services are provided for System Automation for OS/390 by IBM Global Services or your IBM Business Partner at an additional cost. For additional information, contact your IBM representative and ask for Installation Services.

## Reference Information

Refer to:

- Software Announcement 298-062, dated February 24, 1998
- Software Announcement 200-347, dated October 3, 2000
- Software Announcement 299-346, dated November 16, 1999
- Software Announcement 200-030, dated February 29, 2000
- Software Announcement 200-330, dated September 26, 2000

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Conceptual Overview

SA OS/390® 2.1 presents a new and advanced approach for automating the resources of your enterprise to ensure comfortable resource maintenance and 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.

- A reworked scheduling concept. Scheduling is now more important to provide automation without manual interaction.

- A dependency relationship for automatic propagation of availability requests to supporting resources if dependent resources are to be made available. More than 100 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 such a way that SA OS/390 automatically makes the supporting groups available before making the dependent groups available.

- 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, by which goals are defined for resources by the automation programmer and SA OS/390 attempts to fulfill these goals until they are satisfied. This contrasts to the earlier command-driven automation.

- Cross-system dependency management, which eliminates system boundaries. You can have dependencies between resources running on different systems.

- Completely reworked graphical interface to use the new Java™-based NetView® Management Console (NMC):
  - More flexibility to adapt graphical monitoring to your needs. This includes defining your own views and events.
  - Only one resource object data manager (RODM) required. RODM on target systems no longer required.
  - Dynamic RODM load, no more need for generating RODM loader files.
  - Preselected command offering for interactive operation on the NMC.

- Processor operations resource automation with:
  - XCF message automation
  - Processor operations integration into system operations, monitor and control processor operations resources with system operations commands

In SA OS/390 2.1, you must define all automation policies 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). Because the processing of automation is distributed between a sysplex 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. 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.

Application move refers to the process of stopping an active set of resources and starting an alternative set in a coordinated fashion. The move functions that you can specify against a group are:

- Automatic group management to maintain application availability. This includes the activation of backup/alternate resources in response to resource or system failure.

- The ability to move resources away from a system en-masse, on either a group/subgroup level or a system level.

- The ability to query and dynamically change a group’s policy so as to cause one instance of a resource to be stopped and another started.

- The ability to estimate the impact of those changes before committing them.

- The ability to perform actions resulting from the above in a delayed, nondisruptive fashion.

- The ability to return resources to their normal systems in a delayed, nondisruptive fashion.

Automation Concepts

In SA OS/390, the automation function is split up:

- 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 (propagating status changes to the automation manager)
You define the resources that you want to automate with SA OS/390 using the customization dialog. Thus the automation manager contains a model of all of the automated resources within the sysplex. The automation agents are the automation manager’s eyes and arms. They feed the automation manager with status information and perform the actions that the automation manager tells them to. The automation manager is the brain of automation. It does all of the decision making that involves interaction between one or more resources. The automation manager provides sysplex-wide automation. So its main purpose is to provide one central point of bookkeeping of all resources within a sysplex, that is, the automation manager knows:

- The grouping of resources
- The dependencies between resources
- The statuses of resources
- The goals for the resources, that is, when any particular resource is to be made available or unavailable

According to the available information, the automation manager makes decisions and instructs the corresponding automation agent where the resource is located to put the resource into the desired state. The automation manager knows five different statuses from each of the resources:

- The observed status
- The desired status
- The automation status
- The startability status
- The compound status

Decision-making is done by the automation manager with the help of so-called “goals.” Goals are either defined by the automation programmer who defines permanent automation policy using the customization dialog, or created interactively by operators who issue commands to define goals.

Goal-Driven Automation

A basic concept of SA OS/390 is to distinguish between the desired state of a resource, which is either AVAILABLE or UNAVAILABLE, and (broadly speaking) its actual state. The desired state, which is also called the automation goal, can be different from the actual state; a resource whose desired state is to be running (AVAILABLE), can actually be down. SA OS/390 always tries to keep the actual state in line with the desired state, but sometimes this is not possible. SA OS/390 is called goal driven because all requests that can be made to it from the outside refer to the desired state of the target resource. When an operator passes a start request for a resource to SA OS/390, what he or she does in fact require is to set the desired state of the resource to AVAILABLE. It is up to SA OS/390 to decide whether (1) this is at all possible and, if so, whether (2) the actual state can be modified accordingly:

1. Making a request does not automatically lead to a change of the desired state of the target resource. Rather, SA OS/390 compares the priority of the new request with that of the last successful request. Only when the new request has a higher priority does SA OS/390 change the desired state of the resource.

Note that this presupposes that the old request is still available.

2. The latter decision mainly depends on the dependencies between the target resource and other resources, and on the triggers that may have been associated with it. Dependencies and triggers are defined, and triggers associated with applications, in the policy database.

A request is persistent until it is either processed, overridden, or revoked. A command in earlier releases was either successfully processed immediately or unsuccessfully rejected. 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.

One of the main tasks of system automation when starting or stopping a resource is to consider the dependencies that exist between the resource to be started or stopped and other resources. Certain resources can be started only when certain other resources are already running (start dependencies), and certain resources can be stopped only when certain other resources are already down (stop dependencies). Such dependencies can be specified in the policy database. The only restriction is that the dependent and the supporting resource must belong to the same sysplex (they need not reside on the same system). SA OS/390 takes dependencies into account when it is requested to start or to stop a resource. By default, it will try to start or stop all resources on which the target resource of the request directly or indirectly depends.

Application Groups

Modern applications often consist of more than one component, and these different components can be distributed among different systems. SA OS/390 provides the possibility to combine different components of an application on one or more systems within a sysplex into an application group. This allows you to start and stop a complex application by a single command, and to integrate it into automation processes as a whole.

Feature Integration

CICS®/IMS™ Automation is integrated into SA OS/390. The feature code is automatically installed with the base code and resides in the same set of libraries. CICS and IMS regions must be defined in the policy database as subsystems by linking CICS/IMS applications to systems in order to be available to CICS/IMS Automation. Triggers and service periods for CICS/IMS regions are also defined as for any other application.

NMC

The NetView Management Console (NMC) is part of the Tivoli® NetView for OS/390 product and is used for monitoring and controlling network resources. As SA OS/390 is based on NetView, it also exploits the graphical capabilities of the NMC. You can monitor and control your whole enterprise by means of NMC. It is also possible to monitor your enterprise from a single workstation (single point of control). This holds for system operations as well as for processor operations.

The communication between SA OS/390 and the NMC is maintained by the SA OS/390 topology manager. An SA OS/390 topology agent on each target system retrieves the enterprise data from the automation manager. The SA OS/390 topology manager on the focal point provides...
The information into RODM. GMFHs takes care that the information in RODM gets converted to graphical information on the NMC workstation. The following sketches the main tasks of the SA OS/390 topology manager for system operations. For processor operations, the mode of operation is similar. The retrieved information includes all resources, for example, applications, application groups, systems, and groups of systems, with their mutual dependencies and relationships. The SA OS/390 topology manager stores these resources together with their dependency information within RODM.

The SA OS/390 topology manager calls BLDVIEWS to build the views that are necessary for these resources to be displayed on the NMC. The definitions for the views must be supplied by the users. On the NMC workstation, you can see the graphical visualization of what is automated in system operations and processor operations. For system operations, the automation manager knows about the configuration of the sysplex and the resources running in it. For processor operations, it is the processor operations focal point that knows about the processor operations configuration. In order to issue a command against a resource, click on this resource with the right mouse button to open a context menu. This menu contains only those system operations or processor operations commands that are applicable to the respective resource. Some SA OS/390 commands are not provided because they cannot be reasonably connected to a resource. When the state of the resource is affected by the command, the state information (event component of the label, color of the icon) is actualized on the NMC.

**Topology**

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. For reasons of high availability, SA OS/390 offers the concept of the primary and secondary automation manager (PAM and SAM), where the SAM can take over the work of the PAM without loss of any information or without any requests being processed twice. Secondary automation managers are able to take over the function whenever a primary automation manager fails. In a systplex, the automation agents communicate with each other using XCF. Automation managers communicate with the automation agents using MQSeries®.

**Processor Operations PC**

SA OS/390 V2.1 is the last release providing the processor operations PC component including the SA workstation with its ProcOps LAN Passthru function. This PC is used for remote operator console access and for the system console of pre-CMOS processors. Operator console access is now being provided by:

- z/OS Master Console Support via SNA or TCP/IP
- The 2074 and any Telnet 3270 client like Tivoli NetView for OS/390 V1R3 (refer to APAR OW43438)

Processor operations continue to provide console automation for processors supporting the Operations Command Facility (OCF).

**More Information**

For more details about System Automation for OS/390, visit:

http://ibm.com/s390/sa/

For more details about MQSeries, visit:

http://ibm.com/software/mqseries

Note: MQSeries offers a PRPQ at 15% of the SA OS/390 price titled “Restricted MQSeries for OS/390 V2 for use with other nominated IBM products.”

For more details about Tivoli NetView for OS/390, visit:

http://tivoli.com/products/index/netview_390/

**Technical Information**

**Specified Operating Environment**

**Hardware Requirements:** The target system can run in any hardware environment that supports the required software.

**IBM System Automation for OS/390 Processor Operations:** IBM System Automation for OS/390 processor operations supports monitoring and control functions for both screen-oriented processors (9121, 9021, 3090™, 308x, and 4381) and S/390® microprocessor-based processors (such as 9672, 9674, 2003, or 3000) and all CMOS processors that can be operated via Operations Command Facility (OCF). IBM System Automation for OS/390 processor operations supports logical partitioning of any of these processors that also support logical partitioning.

**IBM System Automation for OS/390 System Operations:** The IBM System Automation for OS/390 system operations base program can run on any processor supported by NetView.

**IBM System Automation for OS/390 I/O Operations:** The IBM System Automation for OS/390 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 IOC P
2. Any ES/9000® or higher processor

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

**Software Requirements**

**Functional Requisites:** One of the following:

- OS/390 Version 2 Release 6 or 7 (5647-A01) for single systems automation functions with some UNIX® System Services (USS) restrictions
- OS/390 Version 2 Release 8 (5647-A01) for single systems automation functions and special USS considerations
- OS/390 Version 2 Release 9 or higher (5647-A01) for sysplex automation functions and USS considerations
- z/OS (5694-A01) for sysplex automation functions
OS/390 Base Elements or Optional Features:

- Security Server (or compatible products) optional feature in OS/390 V2R6 for sysplex-based authorization and SAF-based NetView authorization
- Hardware Configuration Manager (HCM V2R9) for the I/O operations GUI

Other Program Products:

- BookMaster® Release 4.0 (5688-015) for customization reports
- IBM MQSeries 2.1 for OS/390 (5655-A95) for single system automation functions
- IBM MQSeries for OS/390 V5.2 (5655-F10) with shared queues for sysplex automation functions

Workstation Requisites:

- Tivoli NetView for OS/390 1.3 (5697-B82) with NetView Management Console Server and Client and NetView Management Console 3270 for NMC Exploitation
- Processor Operations PC
  - OS/2® Warp Server for e-business (5639-F93)
  - Personal Communications/3270 Version 4.2 for OS/2 with Access Feature (5622-981)
  - APPC functions used by LAN passthru and processor operations PC

IBM System Automation for OS/390 Processor Operations monitors and controls target systems with the following operating systems:

- OS/390, MVS/ESA™, or 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 or VSE/ESA™ 1.1.0 or higher.

Compatibility: System Automation for OS/390, 1.3 is upwardly compatible with System Automation for OS/390, Version 1.3 (5645-005). The single point of control is supported in this mixed environment.

Even Automation Control Files (ACF) from AOC/MVS can be migrated. Policy databases back to AOC/MVS, Release 2, can be converted automatically.

The generated backlevel Automation Control File (ACF) can be used by:

- System Automation for OS/390, Release 3
- AOC/MVS, Release 4, if "ignore syntax errors" is activated

The recommended migration starts with the automatic conversion of your policy database and its usage also for backlevel systems. You can then implement SA OS/390 V2.1 on one system and expand it system by system without having two policy databases, thus avoiding integrity and productivity issues.

The gateway processing, including SDF and SENDCMD, which now is INGSEND, is also compatible back to AOC/MVS.

For easy migration, SA OS/390 can interoperate with ESCON Manager. Also the ESCON Manager API and commands are still supported. For more information refer to Appendix E of System Automation for OS/390 V2R1 Planning and Installation (SC33-7038).

Performance Considerations: Compiling the REXX CLISTS, which are part of the product, will improve performance. The REXX compiler must be ordered separately.

User Group Requirements

<table>
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<tr>
<th>Description</th>
<th>Requirement</th>
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<tbody>
<tr>
<td>Improve flexibility of monitors</td>
<td>REQ00004117</td>
</tr>
<tr>
<td>Provide the ability for flexible start commands</td>
<td>REQ00010234, REQ00010234_1, REQ00012500</td>
</tr>
<tr>
<td>Provide GROUP definitions similar to CICS/IMS features. Enhance shutdown command and provide startup command. Applications must be stopped and started individually this is time intensive for the operators. Many applications need to be manipulated in groups. The group status is an aggregate of its members’ status.</td>
<td>REQ00041071, REQ00041071_1</td>
</tr>
<tr>
<td>Add VFY=YES/NO to SETSTATE command</td>
<td>REQ00045827</td>
</tr>
<tr>
<td>Enterprise reports to not contain any automation policy</td>
<td>REQ00048732</td>
</tr>
<tr>
<td>Reduce AOC/MVS initialization time</td>
<td>REQ00049916</td>
</tr>
<tr>
<td>One-time JES2 cold start capability (Note: Can be accomplished by means of the flexible start command support.)</td>
<td>REQ00054119</td>
</tr>
<tr>
<td>Save last BUILDF run-time options for next time</td>
<td>REQ00054839</td>
</tr>
<tr>
<td>Enhance the sysplex automation aspects of AOC/MVS product</td>
<td>REQ00056611, REQ00056611_1</td>
</tr>
<tr>
<td>Multiple parent support (more than six parents)</td>
<td>REQ00059277</td>
</tr>
<tr>
<td>Introduce option to avoid expiration of AOC Gateway operator password</td>
<td>REQ00060188</td>
</tr>
<tr>
<td>Provide closer ARM integration (policy sharing)</td>
<td>REQ00061437</td>
</tr>
<tr>
<td>Enhancement to ACF command to show date/time that the current control file is built and loaded</td>
<td>REQ00061831, REQ00062438</td>
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<tr>
<td>Audit trail for SHUTSYS command</td>
<td>REQ00062378, REQ00062378_1</td>
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<tr>
<td>Description</td>
<td>Requirement</td>
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<tr>
<td>Alternate/Exceptional startup</td>
<td>REQ00062435</td>
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<tr>
<td>Want a form of semi-automation to AOF603D like AON</td>
<td>REQ00062244</td>
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<tr>
<td>Ability to dynamically move applications and groups from one system to another system in the sysplex.</td>
<td>REQ00064415, REQ00073541</td>
</tr>
<tr>
<td>Need to have the ability to automate resources that have cross-system relationships and requirements.</td>
<td>REQ00064416</td>
</tr>
<tr>
<td>Startup/shutdown groups of applications. Ability to define, startup, and shutdown application in groups. Fewer definitions are needed, such as timers, when managing groups.</td>
<td>REQ00064417</td>
</tr>
<tr>
<td>Enhance BUILD process to allow build of ACF for a system or sysplex (partially)</td>
<td>REQ00064418</td>
</tr>
<tr>
<td>Make SA OS/390 smart enough to do a cold start after a partial BUILD</td>
<td>REQ00064428</td>
</tr>
<tr>
<td>Permit CONSOLE and AUTH parms on AOFRGCON invocation</td>
<td>REQ00064641</td>
</tr>
<tr>
<td>ACFname and SYSname should be the same</td>
<td>REQ00064782</td>
</tr>
<tr>
<td>Nonalphabetical startup of children</td>
<td>REQ00064963</td>
</tr>
<tr>
<td>More robust ACF command for 7/24 operations</td>
<td>REQ00065074</td>
</tr>
<tr>
<td>Dynamic Dump dataset &amp;EHKVAR1 IEA611I ...</td>
<td>REQ00065947</td>
</tr>
<tr>
<td>ACF reload should interpret AOFACFMP member</td>
<td>REQ00066831</td>
</tr>
<tr>
<td>Queue OPC requests while reloading ACF</td>
<td>REQ00066833</td>
</tr>
<tr>
<td>Shorter navigation path through installation dialogs (partially)</td>
<td>REQ00066836</td>
</tr>
<tr>
<td>Provide programming interface to change start type of subsystem</td>
<td>REQ00067240</td>
</tr>
<tr>
<td>ACF MEMBER= should be nondisruptive</td>
<td>REQ00068237</td>
</tr>
<tr>
<td>Extend SA OS/390 command length fields in the cust. dialogs</td>
<td>REQ00069057, REQ00069064</td>
</tr>
<tr>
<td>Provide user option from AOC command (AOFPOPER panel)</td>
<td>REQ00070229</td>
</tr>
<tr>
<td>Timer length restriction in policy must be removed</td>
<td>REQ00070390</td>
</tr>
<tr>
<td>ACFPLOAD does not honor objectclass so we need delete ability</td>
<td></td>
</tr>
</tbody>
</table>
Description Requirement

DISPFLGS needs wildcard ability and a tune up

REQ00074275

Provide LOCATE command in cust. dialog selection panels

REQ00075250

Enhancements to AOFTRREE

REQ00075835

AOCCICS need the ability to select a domain, ...

REQ022400210

Planning Information

Customer Responsibilities: For an easy to use and understand automation guide, refer to Redbook SG24-5515, Automation Using Tivoli NetView OS/390 V1R3 and System Automation OS/390 V1R3.

Direct Customer Support: Direct customer support is provided by IBM Support Line. This fee service can enhance your productivity by providing voice and electronic access into the IBM support organization. IBM Support Line will help answer questions pertaining to usage, how to, and suspected software defects for eligible products.

Installation and technical support is provided by IBM Global Services. For more information on services, call 800-IBM-4YOU (426-4968).

Packaging: System Automation for OS/390, Version 2.1 will be shipped on one SMP/E installable tape which makes up the basic package. The tape includes:

- System Automation for OS/390, Version 2 Release 1

System Integrity

IBM will accept APARs where the installation of this licensed program causes an exposure to the system integrity of OS/390. This program is intended to run unauthorized. OS/390 System Integrity Applies: Yes.

Security, Auditability, and Control

The announced program uses the security and auditability features you have selected in Tivoli Netview for OS/390. This is either inside Tivoli Netview itself or in the SAF you have implemented. You can then use security and auditability features of Tivoli Netview for OS/390 to protect System Automation for OS/390 commands. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Customer Financing

IBM Global Financing offers attractive financing to credit-qualified commercial and government customers and Business Partners in more than 40 countries around the world. IBM Global Financing is provided by the IBM Credit Corporation in the United States. Offerings, rates, terms, and availability may vary by country. Contact your local IBM Global Financing organization. Country organizations are listed on the Web at:

http://www.financing.ibm.com

Ordering Information

The following publications are available now. To order, contact your IBM representative.

<table>
<thead>
<tr>
<th>Title</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>GC33-7036</td>
</tr>
<tr>
<td>General Information</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7037</td>
</tr>
<tr>
<td>Licensed Program Specification</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7038</td>
</tr>
<tr>
<td>Planning and Installation</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7035</td>
</tr>
<tr>
<td>Customization and Programming</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7039</td>
</tr>
<tr>
<td>Defining Automation Policy</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7040</td>
</tr>
<tr>
<td>User’s Guide</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7041</td>
</tr>
<tr>
<td>Messages and Codes</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7042</td>
</tr>
<tr>
<td>Operator’s Commands</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7043</td>
</tr>
<tr>
<td>Programmer’s Reference</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>GI10-9748</td>
</tr>
<tr>
<td>Program Directory</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>GI10-9757</td>
</tr>
<tr>
<td>Memo to Licensees</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7044</td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td>SC33-7046</td>
</tr>
<tr>
<td>IMS Automation Programmer’s Reference and Operator’s Guide</td>
<td></td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1</td>
<td></td>
</tr>
<tr>
<td>OPC Automation Programmer’s Reference and Operator’s Guide</td>
<td></td>
</tr>
</tbody>
</table>

New Licensees

Orders for new licenses can be placed now.

Shipment will not occur before the availability date.

New users of System Automation for OS/390 Version 2.1 should specify:

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5645</td>
<td>006</td>
</tr>
</tbody>
</table>

Basic License: To order a basic license, specify the program number and feature number 9001 for asset registration. Specify the feature number for “PSLC Base, 1 MSU” for a monthly license charge (MLC). When a new release is available, prior releases will no longer be available.

Entry Support License (ESL): To order an ESL, specify the program number, feature number 9001 for asset registration, and the applicable ESL one-time charge (OTC) feature number. Also specify the feature number of the desired distribution medium.
ESL One-Time Charge Feature Number

<table>
<thead>
<tr>
<th>Number</th>
<th>Description for OS/390</th>
</tr>
</thead>
<tbody>
<tr>
<td>5645-006</td>
<td>System Automation 0018</td>
</tr>
</tbody>
</table>

ESL machines can be determined by referring to the IBM Entry End User/390 Attachment (Z125-4379).

**Parallel Sysplex® License Charge (PSLC) Basic License:**
To order a basic license, specify the program number and feature number 9001 for asset registration. Specify the PSLC Base feature. If applicable, specify the PSLC Level A, B, C, and D features and quantity.

If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable PSLC feature numbers and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the PSLC No-Charge (NC) Identifier feature on the licenses.

Also, specify the feature number of the desired distribution medium.

<table>
<thead>
<tr>
<th>Machine MSU Capacity</th>
<th>PSLC Feature Number</th>
<th>PSLC Basic License</th>
<th>MLC Feature Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0001</td>
<td>PSLC Base, 1 MSU</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0002</td>
<td>PSLC Base, 2 MSUs</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0003</td>
<td>PSLC Base, 3 MSUs</td>
<td></td>
</tr>
<tr>
<td>4 - 45</td>
<td>0004</td>
<td>PSLC Level A, 1 MSU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0005</td>
<td>PSLC Level A, 42 MSUs</td>
<td></td>
</tr>
<tr>
<td>46 - 175</td>
<td>0006</td>
<td>PSLC Level B, 1 MSU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0007</td>
<td>PSLC Level B, 10 MSUs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0008</td>
<td>PSLC Level B, 50 MSUs</td>
<td></td>
</tr>
<tr>
<td>176 - 315</td>
<td>0009</td>
<td>PSLC Level C, 1 MSU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0010</td>
<td>PSLC Level C, 10 MSUs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0011</td>
<td>PSLC Level C, 50 MSUs</td>
<td></td>
</tr>
<tr>
<td>316 or more</td>
<td>0012</td>
<td>PSLC Level D, 1 MSU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0013</td>
<td>PSLC Level D, 50 MSUs</td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>0014</td>
<td>PSLC NC Identifier</td>
<td></td>
</tr>
</tbody>
</table>

**Example 1:** For a single machine with 11 MSUs, the PSLC features would be:
- 0003 — quantity 1
- 0004 — quantity 8

**Example 2:** For two machines in a Parallel Sysplex, which have an aggregation of 60 MSUs, the PSLC features would be:
- PSLC chargeable license #1:
  - 0003 — quantity 1
  - 0005 — quantity 1
  - 0006 — quantity 5
  - 0007 — quantity 1
- PSLC no-charge license #2:
  - 0014 — quantity 1

**Variable Workload License Charge (VWLC) Basic License:** To order a basic license, specify the program number and feature number 9001 for asset registration. Specify the WLC Base feature. If applicable, specify the WLC Level 1, 2, 3, and 4 features with the appropriate quantity.

Also, specify the feature number of the desired distribution medium.

**VWLC Aggregation:** When z/OS is installed on two or more IBM @server zSeries machines comprising a sysplex, VWLC aggregation applies to z/OS and the S/390 software programs that have VWLC.

Whether there is only one license or more than one license of the program in the sysplex, the charge for all licenses is associated to the “aggregation license” by specifying the applicable WLC feature numbers and quantity represented by the sum of the MSUs (millions of service units) in the sysplex. The “aggregation license” is an additional program license which is ordered and serialized, although there is no shipment associated with it.

For the actual licenses, the charge is reflected as $0.00 by specifying the applicable “registration” VWLC feature numbers and the quantity equal to the MSUs of that license running on the designated machine.

<table>
<thead>
<tr>
<th>Machine MSU Capacity</th>
<th>WLC Feature Number</th>
<th>Usage Pricing WLC Basic License Feature Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 — 45</td>
<td>0460</td>
<td>WLC Base, 45 MSUs</td>
</tr>
<tr>
<td>46 — 175</td>
<td>0480</td>
<td>WLC Level 1, 1 MSU</td>
</tr>
<tr>
<td>176 — 315</td>
<td>3704</td>
<td>WLC Level 2, 1 MSU</td>
</tr>
<tr>
<td>316 — 575</td>
<td>3706</td>
<td>WLC Level 3, 1 MSU</td>
</tr>
<tr>
<td></td>
<td>3708</td>
<td>WLC Level 3, 50 MSUs</td>
</tr>
<tr>
<td>576 or more</td>
<td>3980</td>
<td>WLC Level 4, 1 MSU</td>
</tr>
<tr>
<td></td>
<td>0020</td>
<td>WLC Level 4, 50 MSUs</td>
</tr>
</tbody>
</table>

**Example 1:** For a single machine with the program running at 220 MSUs, the Variable WLC features would be:
- 0460 — quantity 1
- 0480 — quantity 130
- 3704 — quantity 45

**Example 2:** If there are two machines in a sysplex, and a program is running on machine #1 at 190 MSUs and on machine #2 at 140 MSUs, the VWLC feature numbers and quantities to be ordered would be:
- 0460 — quantity 1
- 0480 — quantity 130
- 3704 — quantity 45
• License on machine #1 for 190 MSUs:
  - 3702 — quantity 1
  - 3703 — quantity 174
  - 3705 — quantity 15
• License on machine #2 for 140 MSUs:
  - 3702 — quantity 1
  - 3703 — quantity 139
• Aggregation license for a total of 330 MSUs:
  - 0460 — quantity 1
  - 0480 — quantity 130
  - 3704 — quantity 140
  - 3706 — quantity 15

Growth Opportunity License Charge (GOLC): To order GOLC software, specify the program number, feature number 9001 for asset registration, and the GOLC monthly charge feature number from the table below. Also, specify the feature number for the desired distribution medium.

<table>
<thead>
<tr>
<th>GOLC Category</th>
<th>GOLC Feature Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>H30</td>
<td>0015</td>
</tr>
<tr>
<td>H50</td>
<td>0016</td>
</tr>
<tr>
<td>H70</td>
<td>0017</td>
</tr>
</tbody>
</table>

Single Version Charging: To elect single version charging, the customer must notify IBM and identify the prior program and replacement program and the designated machine the programs are operating on.

Basic Machine-Readable Material

<table>
<thead>
<tr>
<th>Environment</th>
<th>Feature Number</th>
<th>Distribution Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS/390</td>
<td>5801</td>
<td>6250-bpi Distribution Tape</td>
</tr>
<tr>
<td>OS/390</td>
<td>5802</td>
<td>3480 Cartridge Uncompressed</td>
</tr>
<tr>
<td>OS/390</td>
<td>6236</td>
<td>4-mm Data Cartridge; Modified; 2 GB</td>
</tr>
</tbody>
</table>

Customization Options: Select the appropriate feature numbers to customize your order to specify the delivery options desired. These features can be specified on the initial or MES orders.

Example: If publications are not desired for the initial order, specify feature number 3470 to ship media only. For future updates, specify feature number 3480 to ship media updates only. If, in the future, publication updates are required, order an MES to remove feature number 3480; then, the publications will ship with the next release of the program.

Description | Feature Number |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number Only (suppresses shipment of media and documentation)</td>
<td>3444</td>
</tr>
<tr>
<td>Ship Media Only (suppresses initial shipment of documentation)</td>
<td>3470</td>
</tr>
</tbody>
</table>

Update Shipments

<table>
<thead>
<tr>
<th>Description</th>
<th>Feature Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship Media Updates Only (suppresses update shipment of documentation)</td>
<td>3480</td>
</tr>
<tr>
<td>Ship Documentation Only (suppresses update shipment of media)</td>
<td>3481</td>
</tr>
<tr>
<td>Suppress Updates (suppresses update shipment of media and documentation)</td>
<td>3482</td>
</tr>
</tbody>
</table>

Expediting Shipments

<table>
<thead>
<tr>
<th>Description</th>
<th>Feature Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local IBM Office Expedite</td>
<td>3445</td>
</tr>
<tr>
<td>(for IBM use only)</td>
<td></td>
</tr>
<tr>
<td>Customer Expedite Process Charge</td>
<td>3446</td>
</tr>
<tr>
<td>($30 charge for each product)</td>
<td></td>
</tr>
</tbody>
</table>

Expediting shipments will be processed to receive 72-hour delivery from the time IBM Software Delivery and Fulfillment (SDF) receives the order. SDF will then ship the order via overnight air transportation.

Unlicensed Documentation: A memo, a program directory, and one copy of the following publications are supplied automatically with the basic machine-readable material:

<table>
<thead>
<tr>
<th>Title</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Automation for OS/390 V2R1 General Information</td>
<td>GC33-7036</td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1 Licensed Program Specification</td>
<td>SC33-7037</td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1 Planning and Installation</td>
<td>SC33-7038</td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1 Defining Automation Policy</td>
<td>SC33-7039</td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1 Operator’s Commands</td>
<td>SC33-7042</td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1 Program Directory</td>
<td>GI10-9748</td>
</tr>
<tr>
<td>System Automation for OS/390 V2R1 Memo to Licensees</td>
<td>GI10-9757</td>
</tr>
</tbody>
</table>

Displayable Softcopy Publications: System Automation for OS/390, Version 2.1 manuals are offered in displayable softcopy form. All unlicensed manuals are included except for:

- System Automation for OS/390 V2R1 Licensed Program Specifications
- System Automation for OS/390 V2R1 Program Directory
- System Automation for OS/390 V2R1 Memo to Licensees

The displayable manuals are part of the basic machine-readable material. The files are shipped on CD-ROM.
These displayable manuals can be used with the BookManager® READ licensed programs in any of the supported environments. Terms and conditions for use of the machine-readable files are shipped with the files.

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as long as a license for this software remains in effect. A separate publication order or subscription is not needed.

Terms and Conditions

Licensing: IBM Customer Agreement

Workload License Charges Apply: Yes, refer to the Attachment for zSeries Workload License Charges (Z125-6323).

Variable Charges Apply: No

Indexed Monthly License Charge (IMLC) Applies: No

Location License Applies: No

Use Limitation Applies: No

Educational Allowance Available: Yes, a 15% education allowance applies to qualified education institution customers.

Volume Orders: Not applicable

Products Eligible for Single Version Charging

<table>
<thead>
<tr>
<th>Replaced Program Number</th>
<th>Replaced Program Name</th>
<th>Replacement Program Number</th>
<th>Replacement Program Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>5645-005</td>
<td>SA OS/390 V1</td>
<td>5645-006</td>
<td>SA OS/390 V2</td>
</tr>
</tbody>
</table>

Warranty Applies: Yes

Licensed Program Materials Availability
- Restricted Materials of IBM: Some
- Nonrestricted Source Materials: None
- Object Code Only (OCO): Some
- Publication that Identifies Non-OCO Components: Planning & Installation and Defining Automation Policy (availability date: October 3, 2000)

Testing Period: Two months (basic license only)

Satisfaction Guarantee: Two months for basic licenses

Starts: 10 days after IBM ships, or on the day a non-DSLO additional license is authorized

Program Services

Support Center Applies: Yes

Available until Discontinued: 12 months’ written notice

APAR Mailing Address: IBM Entwicklung GMBH c/o Rita Berg (secretary) ATT. C/T programmer Dept. 3151 Bldg. 71032-14 Schoenaicherstrasse 220 71032 Boeblingen Germany

Support Line: Yes

Charges

Contact your IBM representative for charges information for this announcement.

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Fax: 800-2IBM-FAX
Internet: ibm_direct@us.ibm.com
Mail: IBM Atlanta Sales Center
Dept. LE001
P.O. Box 2690
Atlanta, GA 30301-2690

You can also contact your local IBM Business Partner or IBM representative. To identify them, call 800-IBM-4YOU.

Note: Shipments will begin after the planned availability date.

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