System Automation for z/OS (SA z/OS) is a NetView-based application designed to provide you with a single point of control for a full range of systems management functions. From this single point of control, you can control your sysplex resources without knowing on which system the resources are located, as the commands work sysplex-wide.

SA z/OS gives you the power to manage host operations, remote processor operations, and I/O operations from one location. Also, System Automation for z/OS enables the automation of Parallel Sysplex applications. SA z/OS plays a key role in supplying high-end automation solutions. SA z/OS functions include the monitoring, control, and automation of a large range of system elements spanning both the hardware and software resources of your enterprise.

System Automation for z/OS 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 allows for a simpler and more consistent installation, customization, maintenance, and automation. SA z/OS lets you reconfigure a processor's partition, perform power-on reset, IML processors and IPL operating systems, investigate and respond to I/O configuration errors, re-start and stop applications, and monitor resources. SA z/OS covers all resources of the S/390 sysplex environment, providing you with information on those resources, a rich set of control functions, and means to access all those functions through user interfaces as well as automation.

The unique and rich functions of SA z/OS can ease z/OS management, reduce complexity, and increase application availability. Its focus is on Parallel Sysplex automation, including multi- and single-system configurations, and on integration with end-to-end Tivoli enterprise solutions.

The SA z/OS graphical user interface (GUI) for system operations is based on the platform independent NMC of Tivoli NetView for OS/390. The flexible GUI displays comprehensive system and application information including dependencies, and allows easy operation through context sensitive command menus.

Highlights

SA z/OS provides the following:

Goal-Driven Automation

SA z/OS offers you several methods to specify goals for defined system resources, for example, to be available or unavailable. Once such a goal or request is issued, SA z/OS attempts to fulfill it under consideration of defined conditions, such as scheduled availability times and dependencies between resources.

Grouping Support

SA z/OS provides the possibility to combine different components of an application on one or more systems within a sysplex into an application group.

Moving Applications and Server Management

In SA z/OS you can move applications from one system to another. You can easily stop an active set of resources and start another one instead. This is useful for workload management. You can either perform planned (scheduled) moves, which are defined in the automation policy, where the availability of resources is automatically ensured due to defined availability goals. Or you can perform immediate moves in cases of emergency,
for example, moving an application group to a backup system.

**Relationship Support**

In SA z/OS you can define relationships which describe dependencies between resources. Thus, applications always get the support of other required applications, they are started in the right order as quickly as possible, and are shut down without interference.

**Timed Start/Shutdown of Applications**

Service periods allow users to schedule the availability of resources. According to user-defined schedules, SA z/OS calculates the availability of applications or application groups, and brings these resources to the desired status in time.

**Resource Monitoring**

SA z/OS provides a central point resource monitoring facility for large multiple-system environments. Monitoring results are presented in a simple, easy to use format that provides efficient notification and access to diagnostic tools.

SA z/OS provides monitoring of the following resources:

- Processors and logical partitions
- VM second level systems
- Operating systems
- Coupling facilities and Sysplex Timers
- Subsystems and applications
- Health status of subsystems and applications

SA z/OS provides two basic methods of resource monitoring: dynamic monitoring and user-initiated monitoring.

**Dynamic Monitoring** is performed by the automatic notification functions in SA z/OS and includes enterprise and heartbeat monitoring.

**User-Initiated monitoring** provides operator requested information about system components and applications.

**Resource Control**

SA z/OS provides functions to control system hardware and software resources through the following user and programming interfaces:

User interfaces

- Tivoli NetView Console
- Tivoli NetView Management Console (NMC)
- ISPF dialog
- Operator console

Programming interfaces

- Application Programming Interface (API)
- Automation and processor operation commands defined to NetView

**Resource Automation**

SA z/OS automation facilities allow you to automate many of the repetitive and complex tasks required to maintain the availability of system resources. Resources available for automation procedures include all the hardware and software system elements that can be monitored and controlled by SA z/OS.

**Hardware Automation:** Hardware elements that can be automated include:

- Processors and logical partitions
- Channels (ESCON, parallel, etc.)
- ESCON directors and their ports
- Control units
- Sysplex objects (coupling facilities, ETRs, etc.)
- I/O devices (tapes, DASD, printers, etc.)

**Software Automation:**

- Transitional Automation
  SA z/OS provides a transitional automation function for the orderly initialization, start, restart, shutdown, and recovery of software resources including (among many others):
  - ACF/VTAM
  - DB2
  - CICS
  - IMS
  - JES2
  - JES3
  - MVS
  - NetView
  - OPC
  - RMF
  - RODM
  - TSO/E
  - WebShere Application Server

- Steady State Automation

  Steady state automation provides you with routine monitoring of subsystems, applications, systems, and other system resources. It includes automated recovery of resources and
can initiate transitional automation. In addition, steady state automation can be used to respond to messages (WTOs and WTORs) issued by applications and operating systems.

- **Easy Message Management**

  Easy Message Management provides you with automatic generation and maintenance of NetView automation tables.

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### Single System Image and Single Point of Control

System Automation for z/OS provides a single system image appearance for all systems in the sysplex from the operator’s point of view. You can use a system within the sysplex to monitor and control all of the resources and workloads in this sysplex. You can issue sysplex-wide commands without the need to specify a target system.

The implementation of an SA z/OS focal point allows you to see and control all of the resources and workloads in your enterprise from a single point of control. From the SA z/OS focal point you can issue a command to any domain in the enterprise.

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### Sysplex Automation

The sysplex automation function provides self-healing for critical system and sysplex resources and simplifies the day-to-day operation of a z/OS Parallel Sysplex. It monitors sysplex-specific events to avoid single points of failure (such as no alternate couple data set), or sysplex-wide outages due to an operator error or system overload. Critical resources in a sysplex that are provided with these self-healing mechanisms are CDS, System Logger, and WTO(R) buffers.

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### Product Automation

The SA z/OS customization dialog supports special automation of the following products:

- CICS
- DB2
- IMS
- OPC
- UNIX System Services
- WebSphere

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### Flexible Startup

You can define several command sequences which are executed if an application requires a certain type of being started depending on the circumstances, (for example, a cold start, warm start, or recovery start). By issuing a command, you can specify which command sequence should be used.

You can also use this facility for performance improvements by having prestart commands issued to an application while another application is still starting.

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### Event and Trigger Support

Optimizing the availability of applications when they are needed is an important issue in data processing. SA z/OS enables you to define the availability of resources to best meet your company’s needs with the following functions:

- **Events** are certain conditions you define, usually reflecting dependencies between applications. For example, subsystem A can run after subsystem B has finished.

- **Triggers** can be used in combination with events, to let you control the starting and stopping of resources. For example, the startup of application A automatically triggers the shutdown of application B.

Exploiting these facilities makes the availability of your applications more reliable. At the same time it saves time by automating recurring tasks and lets operators focus on other tasks.

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### UNIX System Services Automation

SA z/OS functions enable you to automate applications that run in z/OS UNIX System Services. Using SA z/OS you can start and stop UNIX System Services applications and monitor processes, TCP port, files, and filesystems.

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### SAP High Availability Solution

The SAP High Availability solution, developed in close cooperation with SAP, provides an integrated solution for all SAP and related components running on z/OS. It exploits ARM, dynamic virtual IP Addresses (VIPA), shared HFS, and DB2 data sharing, to guarantee a minimum of system outages along with maximum automation. With the new high availability solution, critical and
non-critical components are monitored and, if necessary, restarted automatically and alerts are issued.

**Notification of the Tivoli Enterprise Console**

In cases where SA z/OS is run with Tivoli NetView for OS/390, SA z/OS notifies the Tivoli Enterprise Console (TEC) whenever messages and alerts are issued that indicate critical situations. All these messages are forwarded by SA z/OS to the TEC event server. Thus, an operator can use TEC as a single point of control for monitoring and handling events, from both the distributed environment and from SA z/OS applications.

**Specified Operating Environment**

**Machine Requirements**

IBM has tested SA z/OS on IBM processors. SA z/OS uses the S/390 interfaces that vendors of other processors capable of running z/OS have stated they support.

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

**SA z/OS Processor Operations**: SA z/OS processor operations supports monitoring and control functions for all processors of the 390-CMOS processor family that can be operated via Operations Command Facility (OCF). Where logical partitioning is supported by any of those processors, it is also supported by SA z/OS Processor Operations.

**SA z/OS System Operations**: The system operations base program can run on any processor supported by NetView and z/OS Version 1 Release 3.

**SA z/OS I/O Operations**: The I/O operations base program can run on any processor supported by z/OS Version 1 Release 3.

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

**Programming Requirements**

SA z/OS programming requirements consist of mandatory and run time requisites.

A **Mandatory Requisite** is a product that is required without exception; SA z/OS will not install or will not function unless this requisite is met.

A **Run Time Requisite** is a product that is not required for the successful installation of SA z/OS or for its basic function, but which is needed at run time for a specific function of this product to work.

For specific information regarding service modification levels or program temporary fixes refer to the Program Directory for System Automation for z/OS.

**Mandatory Requisites:**

- z/OS 1.3, or later
- IBM Tivoli NetView for OS/390 1.4 or later

**Z/OS base elements or optional features:**

- SecureWay Security Server (including RACF and DCE Security Server components)
  **Purpose**: For sysplex-based authorization and RACF-based NetView authorization.

**Other program products:**

- HTML Browser
  **Purpose**: For customization reports.
- WebSphere MQ for z/OS V5.3 or later
  **Purpose**: For automation functions.
- z/VM 4.3 or later
  **Purpose**: For Processor Operations VM Second Level Systems support.

**Workstation Requisites:**

- IBM Tivoli NetView for OS/390 1.4
  **Purpose**: For Topology Manager functions.
- NetView Management Console Server and Client
  **Purpose**: For NMC exploitation.
- NetView Management Console 3270
  **Purpose**: For NMC exploitation.

SA z/OS Processor Operations monitors and controls target systems which have the following operating systems installed:
- OS/390, z/OS, MVS/ESA, MVS/XA (MVS/SP 2.2 or higher)
- VM/SP 6.0, VM/XA 2.1, VM/ESA 1.1.0
- VSE/SP 4.1, VSE/ESA 1.1.0 or higher
- Linux for zSeries.

**Note:** The above products may no longer be serviced.

**Compatibility**

SA z/OS running on the focal point system can communicate with SA OS/390 2.2, SA OS/390 2.1, SA OS/390 1.3 and ESCON Manager Release 1.2 and 1.3. Because TSCF is installed only on the focal point system, coexistence with other levels of TSCF is not required.

**Licensed Program Materials Availability**

Restricted Materials: No. All modules of this licensed program are available with source licensed program materials.

**Supplemental Terms**

**System Integrity**

- This licensed program runs as an application of the NetView program, which provides system level integrity for its applications. IBM will accept APARs where the installation of this licensed program causes an exposure to the system integrity of MVS. Refer to IBM programming announcement P81-174, dated Oct. 21, 1981.

**Designated Machine Identification**

- Designated Machine Identification Required: Yes

**Testing period**

- Basic License: Two months.
- DSLO License: Not applicable.

**Installation/Location License**

- Not applicable. A separate license is required for each designated machine on which the licensed program materials will be used.

**Usage Restriction**

- Not applicable.

**Type/Duration of Program Services**

- IBM will provide Central Service, including the IBM Support Center, only through the customer location designated for the basic license until discontinued by IBM upon six months written notice.
Warranty

This program is warranted as specified in the IBM license.

Licensed Program Specifications may be updated from time to time and such updates may constitute a change in specifications.

For Distributed Systems License Option (DSLO) Licenses, warranty service, if any, will be provided only through the Basic License location.

Following the discontinuance of all program services, this program will be provided “As Is” as specified in the IBM license.

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