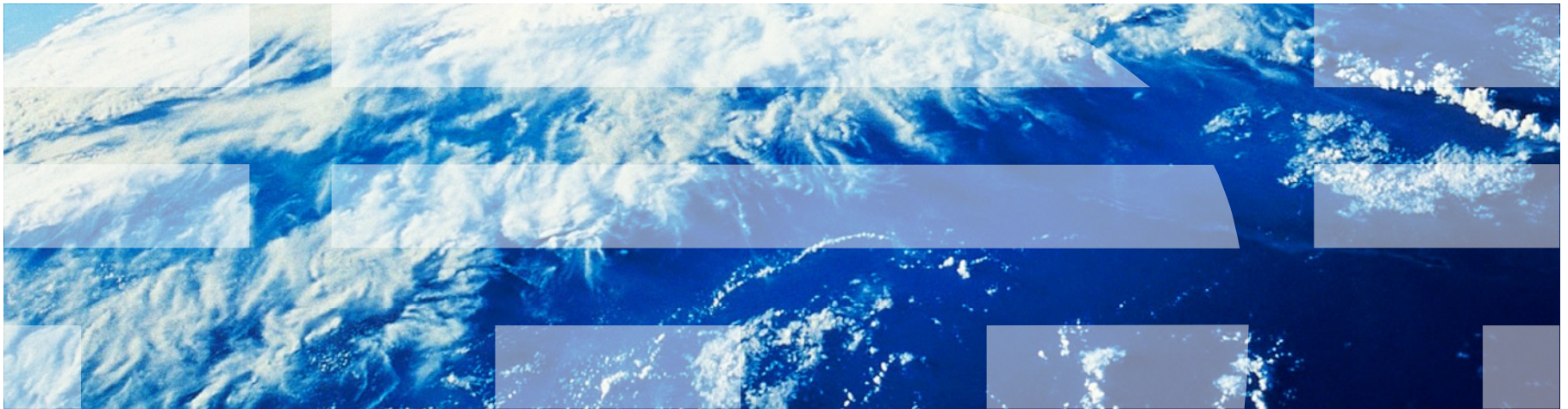


System Automation for z/OS for Sysprogs



Jürgen Holtz, holtz@de.ibm.com

Copyright and Trademarks

© Copyright IBM Corporation 2010

The following names are trademarks of the IBM Corp. in USA and/or other countries and may be used throughout this presentation:

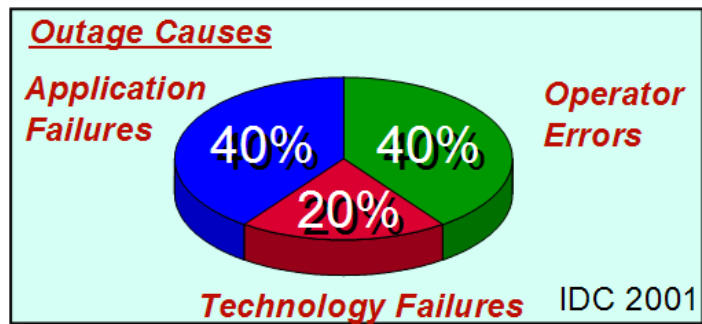
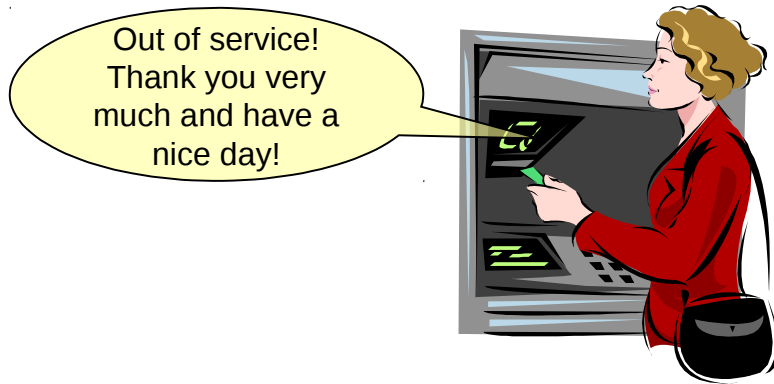
CICS, DB2, eLiza, IBM, IMS, MVS/ESA, MQSeries, NetView, OMEGAMON, RMF, RACF, S/390, Tivoli, VTAM, VSE/ESA, VM/ESA, WebSphere, z/OS, z/VM, zSeries, System z, System p, System i

Other company, product and service names may be trademarks or service marks of others.

Agenda

- Motivation and basic automation requirements
- System Automation Overview
- Basic tasks
 - Start application
 - Issue commands and replies
 - Stop application
 - System shutdown
 - System IPL
- Other operator assistance
- Summary

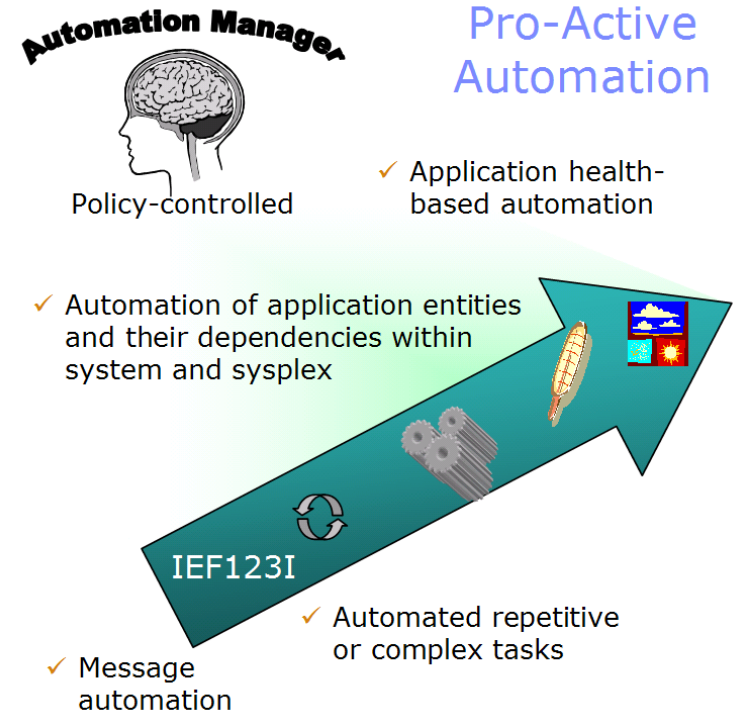
Motivation – Why do we need Automation?



- OnDemand challenges
 - Downtime unaffordable
 - Heterogeneous by nature
 - Environment is complex to manage
- Customer pressures
 - Application availability
 - Operations complexity and costs
 - Skills and education requirements
 - Rapid change of IT-infrastructure
- Avoid serious consequences
 - **Loss** of business
 - **Loss** of customers – the competition is just a mouse-click away
 - **Loss** of credibility, brand image, and stock value

Automation Tasks

- Event (message) filtering
 - Reduction of event traffic to necessary minimum
- Automated event response
 - Fast and consistent reaction on application and system incidents
- Offers simple human interface for complex tasks
 - System IPL or shutdown can be handled with single command
 - Applications can be started and stopped in a consistent way
- Continuous monitoring and recovery
 - Availability of business critical applications
 - Application health monitoring for pro-active automation
- Failover capabilities for planned and unplanned outages
 - Provides High-Availability solutions in clustered environments



Agenda

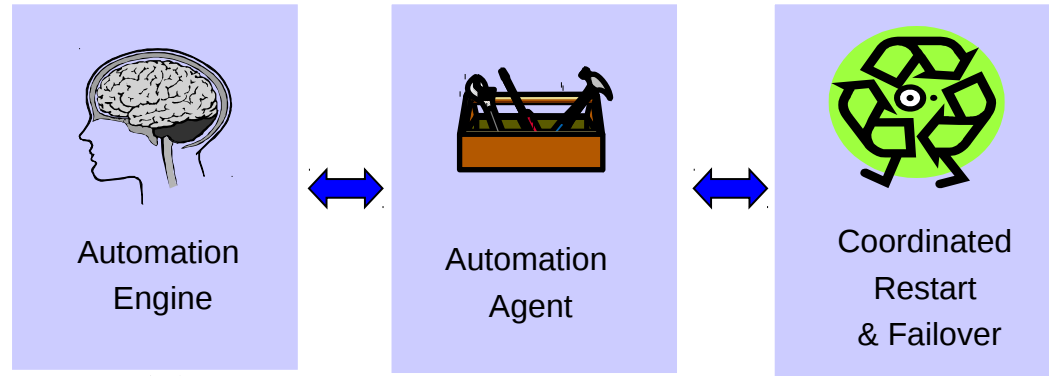
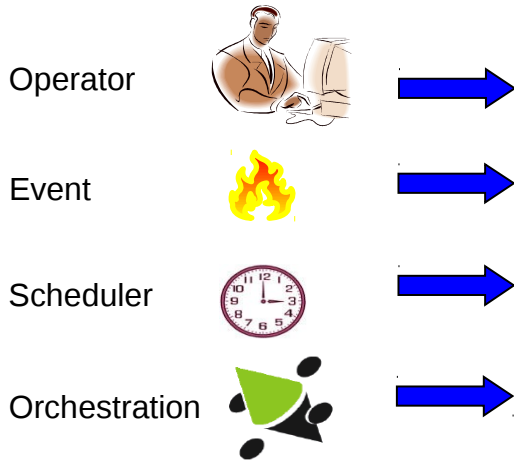
- Motivation and basic automation requirements
- System Automation Overview
- Basic tasks
 - Start application
 - Issue commands and replies
 - Stop application
 - System shutdown
 - System IPL
- Other operator assistance
- Summary

System Automation Principles



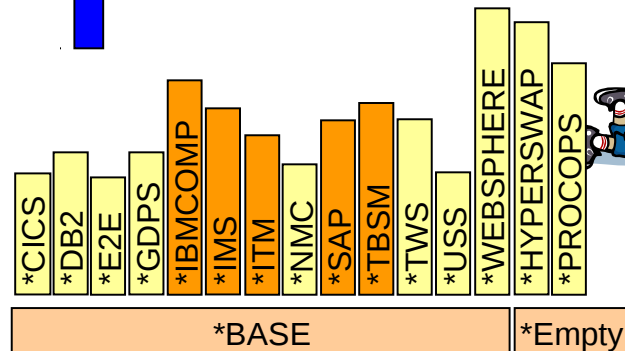
IT Manager

- Automated start and stop of applications
- Continuous availability of IT-resources



- Resources
- Relationships
- Resource groups
- Restart and failover rules

Policy content



Best practice policies



Administrator

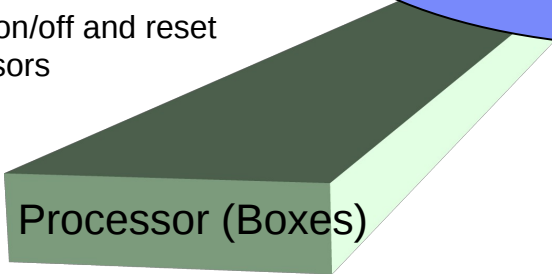
SA z/OS Product Components

SA z/OS V3.3
 ✓ NetView 5.2
 ✓ z/OS V1.9

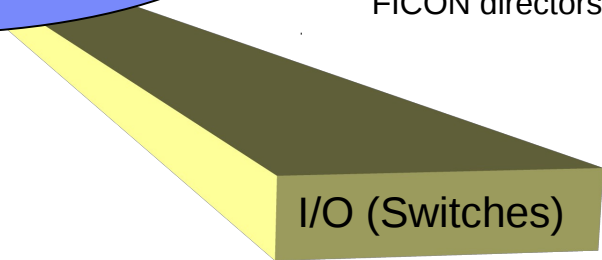
- ✓ Automate applications
- ✓ Automate repetitive and complex tasks
- ✓ Monitor applications, messages, and alerts



- ✓ Automate and control hardware operations
- ✓ Power on/off and reset processors

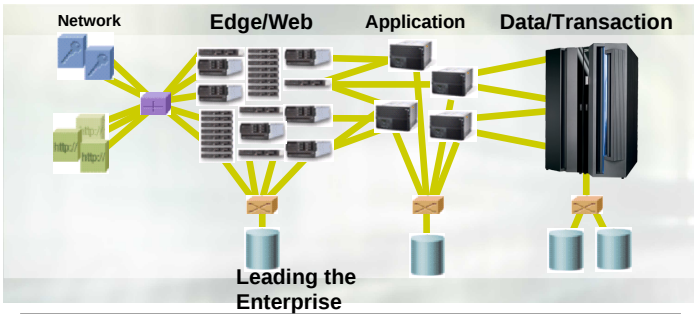


- ✓ Change Switch configuration on the fly
- ✓ Safe through system-integrated switching
- ✓ Management of ESCON and FICON directors



- ✓ Perform system IPL for z/OS, Linux, and VM
- ✓ Automate LPAR settings, e.g. weights and capping

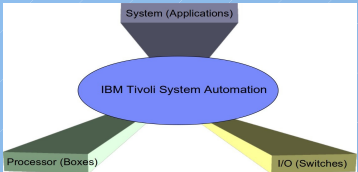
Tivoli System Automation Evolution



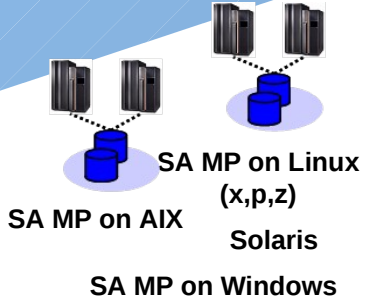
**Step II:
Leverage components
across platforms**



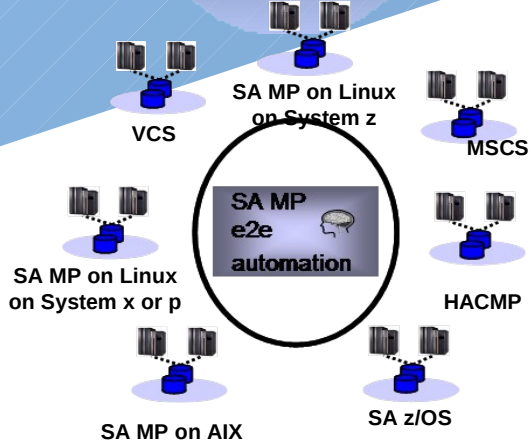
**Step I:
Componentize SA z/OS**



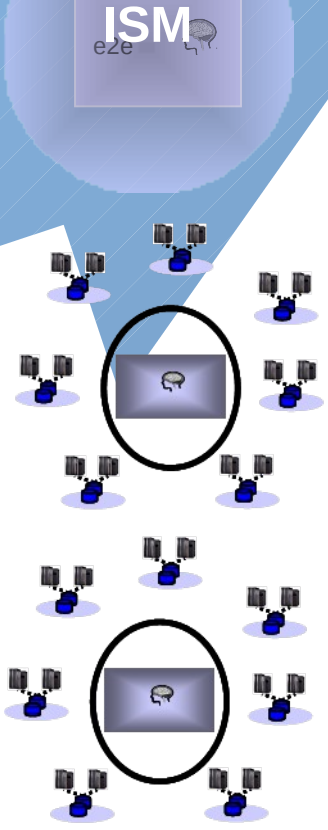
Automation Engine SA z/OS



**Step III:
Integrate operational
capabilities end-to-end**



**Step IV:
Business Continuity:
Leverage automation
technology in IBM
Service Management**



SA z/OS Integration Overview

Resource discovery and status change notification for use within business systems

Management of cross-platform dependencies

Alerting in case of critical events

Notification and escalation in case of pre-defined or user-defined situations (former AF/REMOTE)

SA z/OS resources in context with other configuration data for use by process managers

CICSplex event monitoring for health based automation

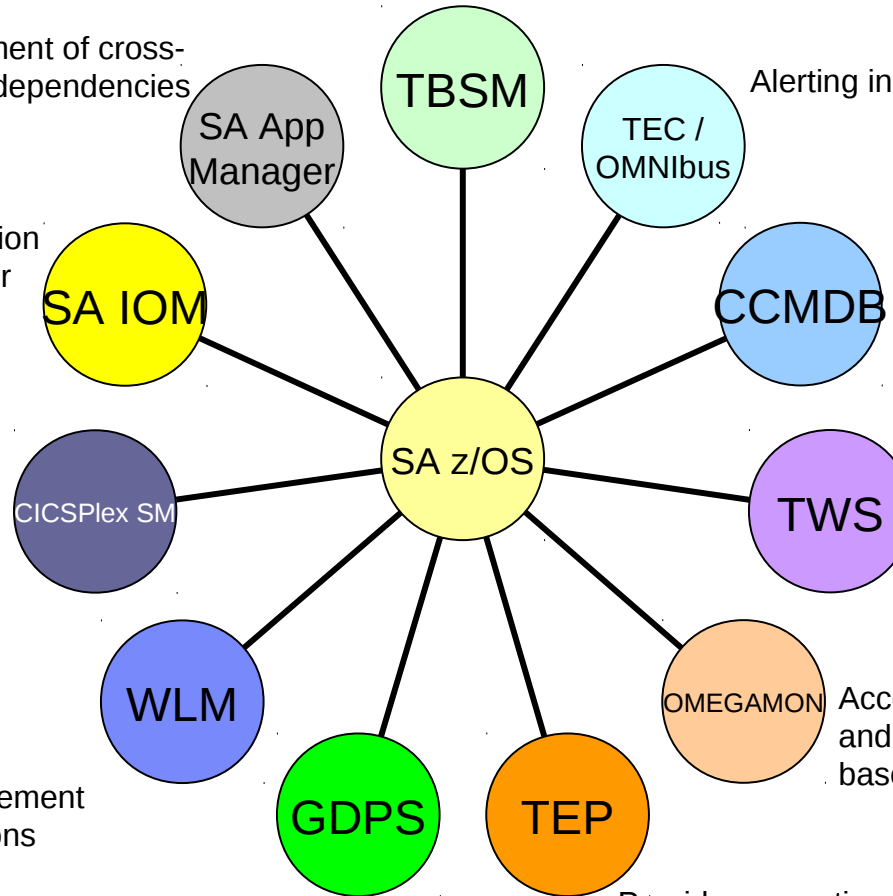
Flexible command interface for TWS administrators to issue SA and NetView commands

Resource aware application management for MOVE-operations

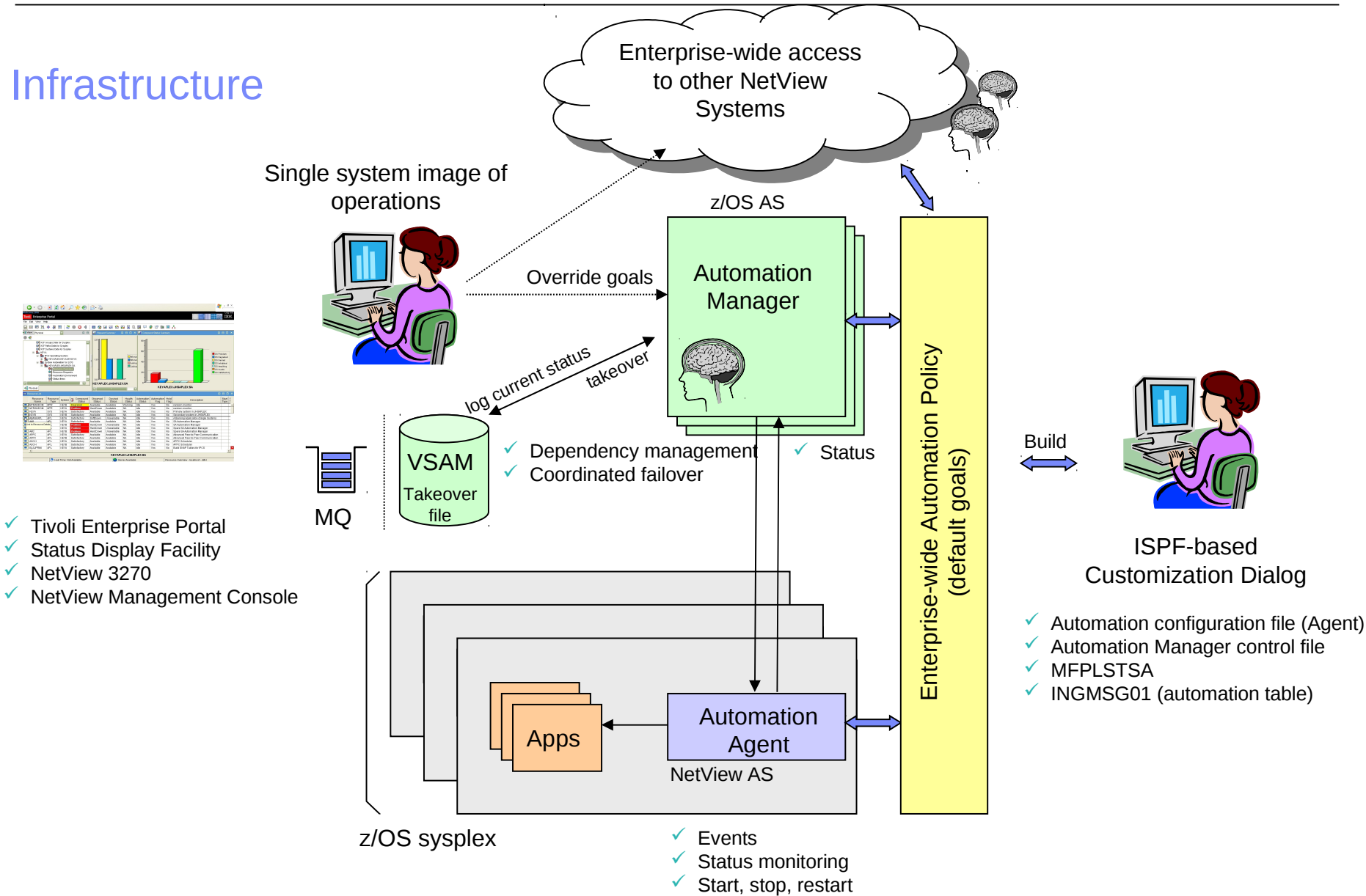
Access to wealth of performance and availability data for health based automation

SA z/OS is basis for GDPS for start / stop of systems

Provides operational perspective side by side with performance and availability data



Infrastructure



- ✓ Tivoli Enterprise Portal
- ✓ Status Display Facility
- ✓ NetView 3270
- ✓ NetView Management Console

- ✓ Automation configuration file (Agent)
- ✓ Automation Manager control file
- ✓ MFPLSTSA
- ✓ INGMMSG01 (automation table)

Agenda

- Motivation and basic automation requirements
- System Automation Overview
- Basic tasks
 - Start application
 - Issue commands and replies
 - Stop application
 - System shutdown
 - System IPL
- Other operator assistance
- Summary

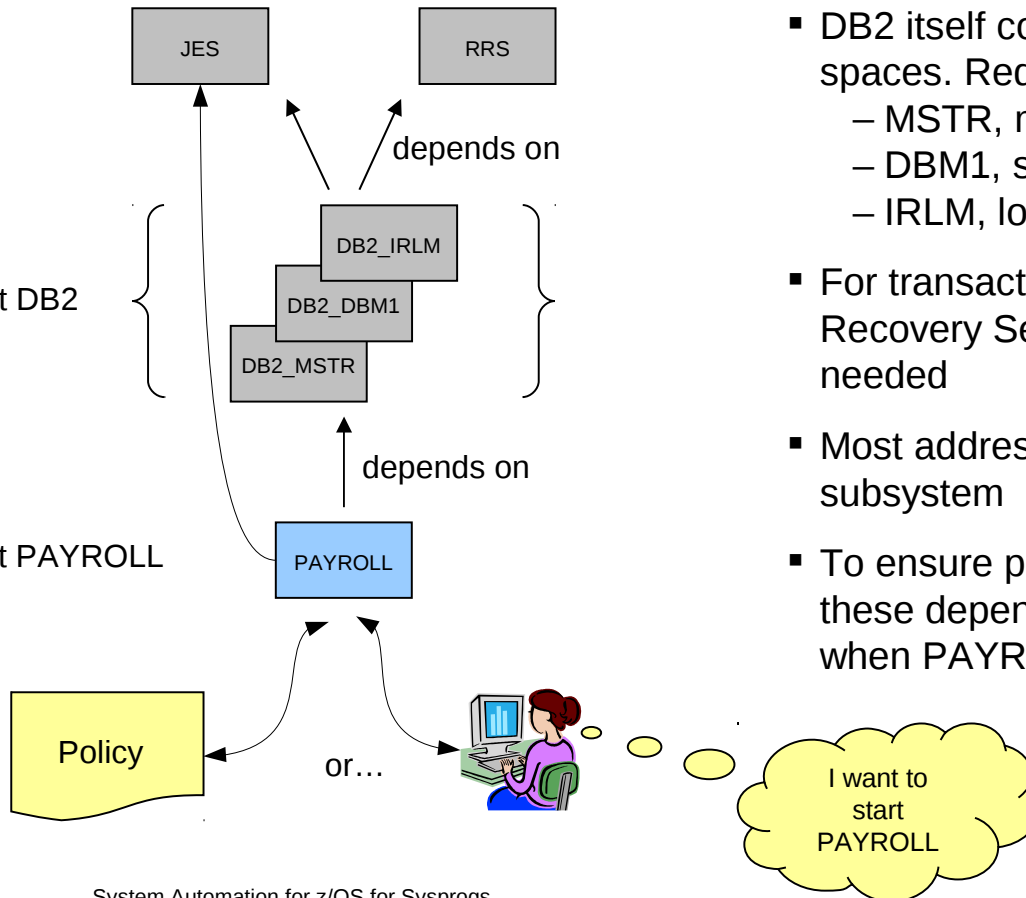
Task – Start Application

SA will...

1 Start JES and RRS

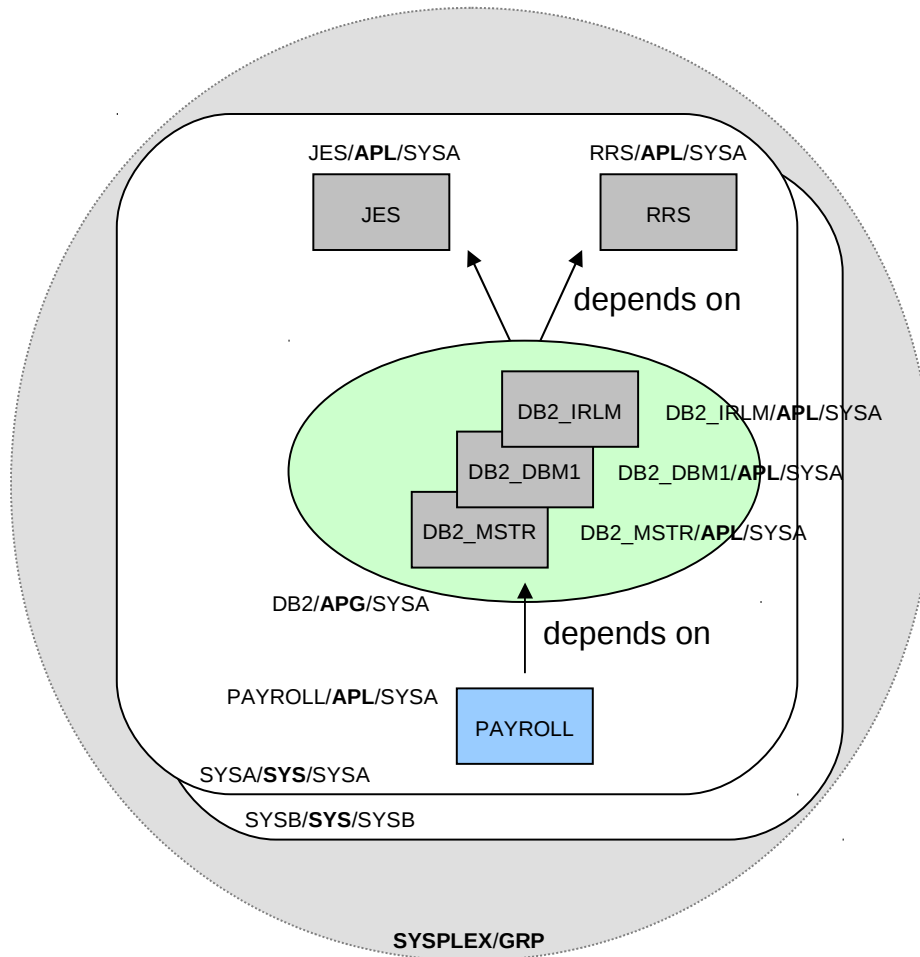
2 Start DB2

3 Start PAYROLL



- Application PAYROLL uses a DB2-database to access employee data
- DB2 itself consists of multiple address spaces. Required are:
 - MSTR, master address space
 - DBM1, services
 - IRLM, lock manager
- For transaction processing the Resource Recovery Services (RRS) address space is needed
- Most address spaces depend on the JES subsystem
- To ensure proper function of PAYROLL, these dependencies must be considered when PAYROLL is started

System Automation Resources



• A System Automation (SA) Resource represents any instance in a z/OS system that can be monitored and automated

• Typical instances are

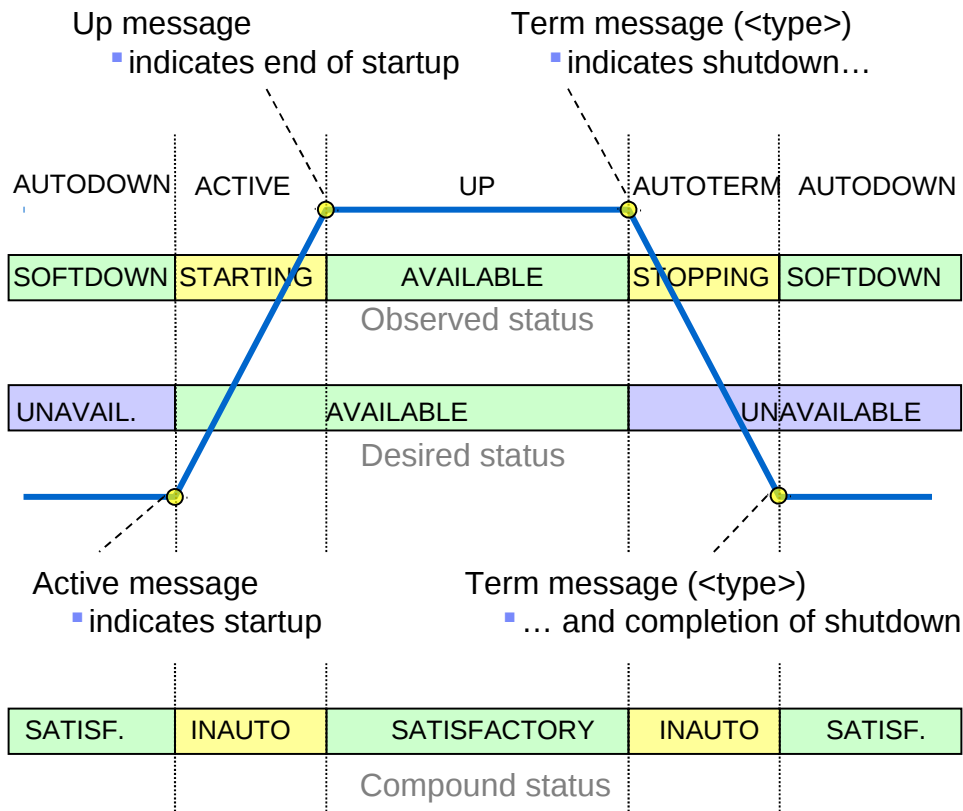
- **Applications** to automate started tasks, USS processes, CICS regions, and many more
- **Groups of applications** to manage their members as one entity or to realize cross-system failover capabilities

• Additionally, special resources exist such as

- **z/OS Systems** to manage system add/leave
- **Groups of systems** to manage resources in a sysplex
- **Monitor resources** to monitor the health of applications, the system, or any other object in a z/OS system

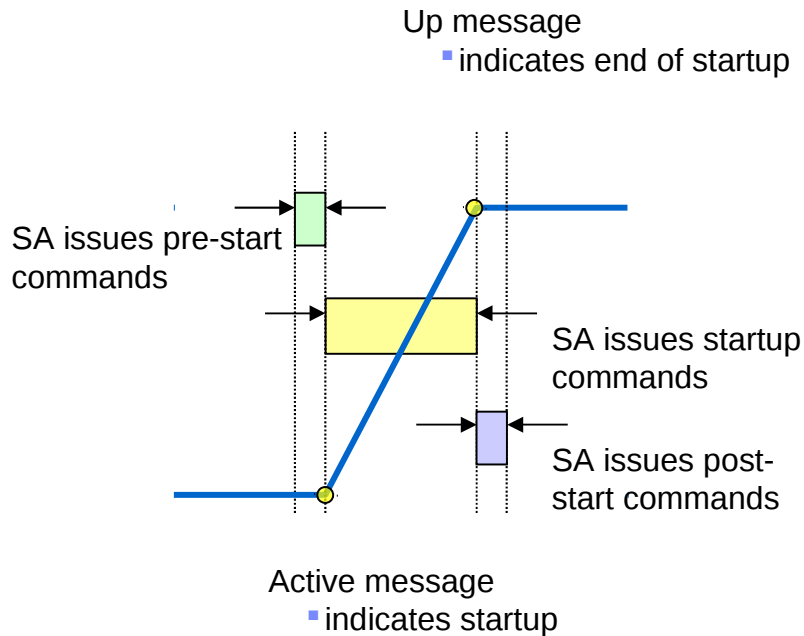
Resource States

Application Lifecycle (simplified):



- SA maintains multiple states for each resource
 - **Observed** status as told by messages or monitors
 - **Desired** status as told by the installation, i.e. the goal
 - ... more states not covered here
 - Compound status, an aggregation of all states
- Messages cause change of resource status
- Status changes cause SA to react such that a satisfactory compound status is reached

Application Startup



•Application startup is done in 3 phases

- Optional pre-start command sequence
- Actual startup command sequence
- Optional post-start command sequence

•Pre-start sequence starts when

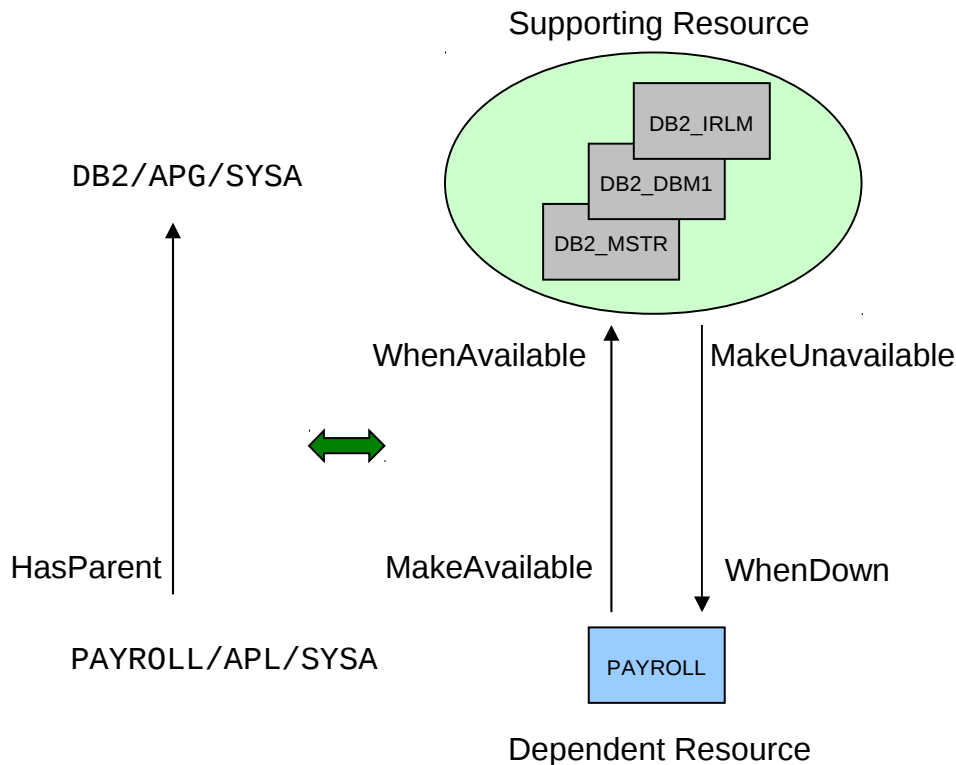
- Application start request is issued by SA
- Optionally, when a supporting resource is available
- Example: Activate VTAM major node for application as soon as VTAM is up

•Post-start sequence starts when

- Up message was received ...
- ... and start request originated from SA

•Different start types can be defined to tell SA, for example, the difference between a JES cold and a warm start

Relationships



• Relationships describe how a particular **dependent** resource depends on one or more **supporting** resources

• The relationship type tells SA what to do with the dependent resource, for example:

- MakeAvailable
- MakeUnavailable
- HasParent

• A condition tells SA what must be fulfilled before an action is executed, for example:

- WhenAvailable
- WhenDown

• Conditions are treated by SA like **goals**, i.e. SA attempts to bring the supporting resource into a state such that the condition is fulfilled

Define an Application

```

COMMANDS  HELP
-----
                                Define New Entry
Command ==>

Define new entry of type Application

Entry name . . . . . PAYROLL_____
Subsystem Name . . . . . PAYROLL_____
Object Type . . . . . INSTANCE      (CLASS INSTANCE)
Application Type . . . . . _____ (IMAGE JES2 JES3 CICS IMS DB2 OPC USS
                                     or blank)
Subtype . . . . . _____        (For types CICS IMS DB2 OPC or blank)
Job Type . . . . . _____        (MVS NONMVS TRANSIENT)
Job Name . . . . . PAYROLL_____
Transient Rerun . . . . . _____ (YES NO)
Scheduling Subsystem . . . . . _____ (MSTR, JES Subsystem)
JCL Procedure Name . . . . . PYPROC1_____

Short description . . . . . Payroll application_____
Long description 1 . . . . . The application is started by SA with_____
Long description 2 . . . . . _____
Long description 3 . . . . . "S PYPROC1,JOBNAME=PAYROLL"_____
Long description 4 . . . . . _____
Long description 5 . . . . . _____
    
```

Entry name resulting from NEW command

Only needed if your procedure is called other than PAYROLL

SA builds this command by default unless you specify your own

Just add a few comments so you remember what you automate

Define Application Status Messages

ACTIONS HELP

Message Processing

Row 1 to 14 of 20

Command ==>

SCROLL==> PAGE

Entry Type : Application

PolicyDB Name : SA101

Entry Name : **PAYROLL**

Enterprise Name : SA101

Define message IDs and their automation actions.

CMD = Command REP = Reply CODE = CODE USER = User Data

AUTO = AT Actions OVR = AT Override

Action	Message ID	Description	Cmd	Rep	Code	User	Auto	Ovr
AUTO	PAY100I	Active message - PAYROLL is starting					*	
	PAY101I	Up message - PAYROLL is available					*	
	PAY102I	Term message - PAYROLL is terminating					*	
	PAY103I	Term message - PAYROLL is terminated					*	

You simply assign the status ACTIVE to this message

- ✓ SA z/OS supports 80+ products with 1000+ messages out-of-the-box – no configuration necessary!

Define Relationship to DB2/APG

```

COMMANDS  HELP
-----
                                Define Relationship

Command ==>

Entry Type : Application          PolicyDB Name   : SA101
Entry Name : PAYROLL             Enterprise Name : SA101

Subj. . . . . PAYROLL
Description. . . . . DB2 is required by PAYROLL

Relationship Type. . . . . HASPARENT
                                MAKEAVAILABLE MAKEUNAVAILABLE
                                PREPAVAILABLE PREPUNAVAILABLE
                                FORCEDOWN EXTERNALLY HASMONITOR
                                HASPARENT HASPASSIVEPARENT

Supporting Resource. . . . . DB2/APG/=
                                Resource Name
                                Sequence Number (1-99,blank)

Sequence Number. . . . .
                                ACTIVE PASSIVE
                                STRONG WEAK

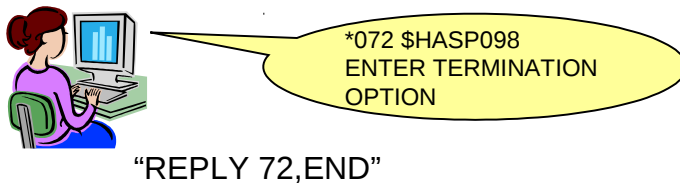
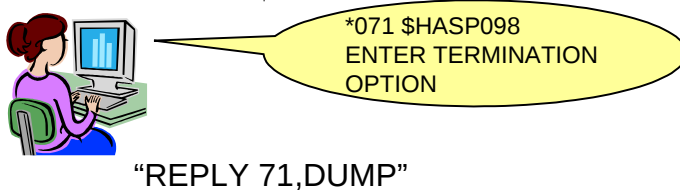
Automation . . . . .
Chaining . . . . .
Condition . . . . .
                                Satisfy condition
                                (? for list of possible values)
    
```

What type of dependency is it?

What is the supporting resource?

Task – Issue Commands/Replies

Example: JES2 main-task error



- When JES terminates due to an error, it asks for the termination option
- When your standard response is DUMP followed by END, then let SA do this for you!

•Messages indicate system incidents

- Errors, e.g. JES2 main-task abend
- Normal operator tasks, e.g. SMF data set switch

•SA allows you to react on messages with

- Replies, e.g. “R xx,END”
- Commands, e.g.
S SMFCLR,MAN=SYS1.MAN1
- Combination of both

•If a message is issued multiple times in a row, you can react differently within each PASS (escalation/sequencing)

•Commands/replies can also be executed based on a SELECTION, e.g. distinguishing the start type

- Example: JES2 cold start vs. JES2 warm start

Example: JES2 Main-Task Error

```

COMMANDS  HELP
-----
                                Reply Processing                Row 1 to 22 of 22
Command ==>                                SCROLL==> PAGE

Entry Name : JES2                                Message ID : $HASP098

Enter the replies to be issued when this resource issues the selected message
or define this message as status message.

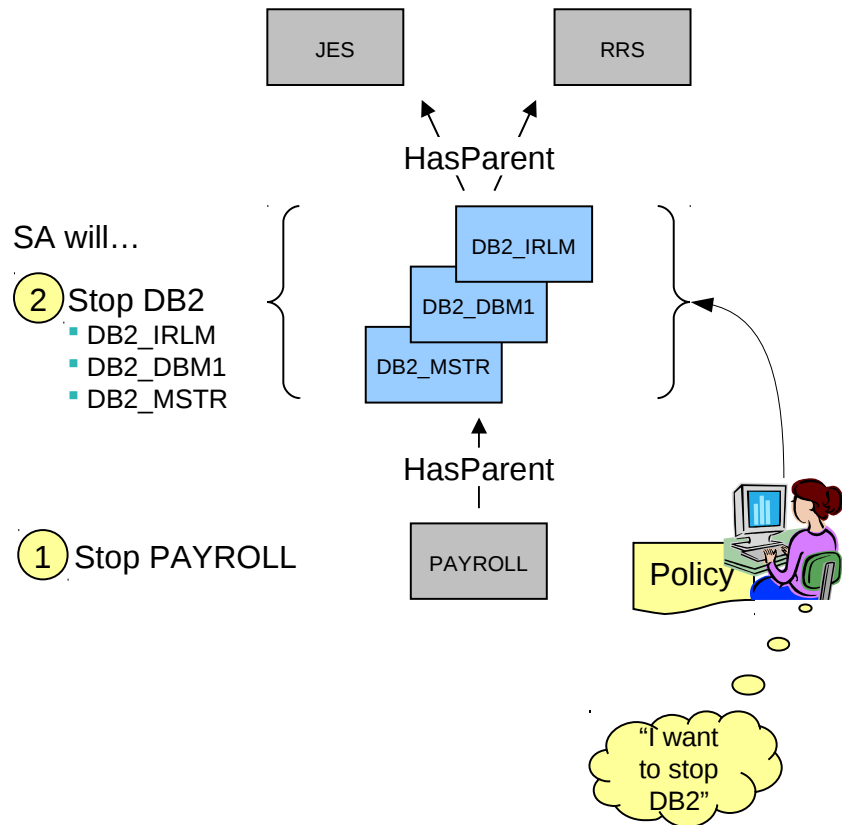
Status . . . _____ ('?' for selection list)

Pass/      Retry Reply Text
Selection  Count
1 _____ DUMP
2 _____ END
_____
_____
    
```

On first instance of \$HASP098, reply with "DUMP"

On second instance of \$HASP098, reply with "END"

Task – Stop Application



- DB2 must be stopped (shut down) for maintenance reasons

- Both, JES and RRS are supporting resources and therefore are not affected

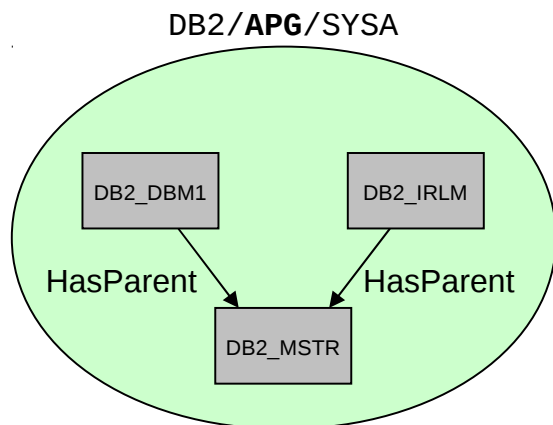
- PAYROLL is a dependent resources that must be shut down before the DB2 group can be stopped

- The IRLM and DBM1 address spaces must be shut down before the MSTR address space is stopped

- In fact, they are started and stopped by the master address space itself – no operator intervention is required

Application Groups

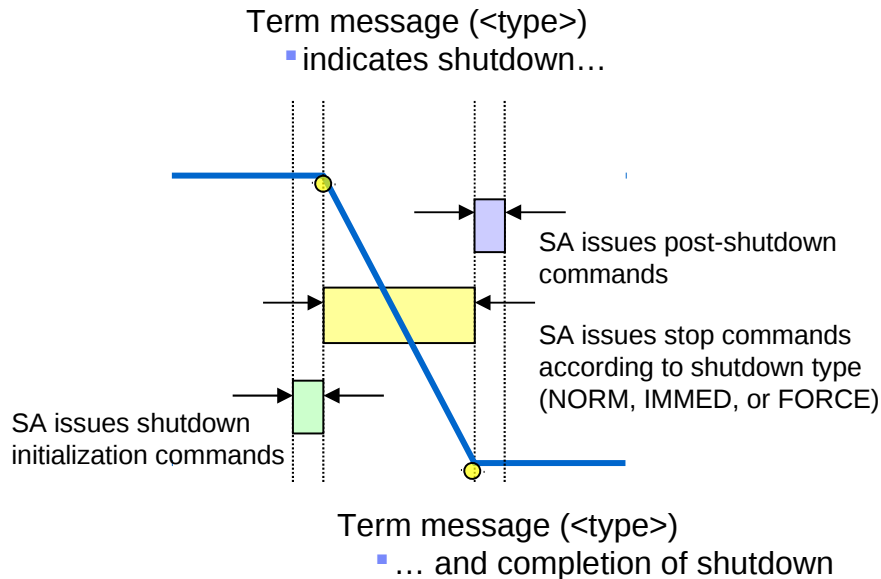
Example: BASIC group DB2



✓ Compound status of the DB2 is **SATISFACTORY**, when all resource members are **AVAILABLE**

- Application groups are powerful means to
 - Combine multiple components of one application on one system or cross-system
 - Operate those components on a group-level rather than individually
- Application groups have either a system or a sysplex scope
- System Automation supports three 'natures' of groups
 - BASIC – the group is available when all of its resource members are available
 - MOVE – the group is available when one resource member is available
 - SERVER – the group is available when one or more resource members are available

Application Shutdown



•Application shutdown is done in 3 phases

- Optional shutdown initialization command sequence
- Actual shutdown command sequence
- Optional post-shutdown command sequence

•Shutdown initialization sequence starts when

- Application stop request is issued by SA
- Optionally, when a supporting resource is unavailable
- Example: Send warning message to users or quiescing activities

•Post-shutdown sequence starts when

- Term message was received (final = YES) ...
- ... and stop request originated from SA
- Example: shutdown USS file systems when JES has stopped

•Different shutdown types can be defined

- NORM – for normal shutdown commands and replies
- IMMED – for immediate shutdown commands and replies
- FORCE – for forced shutdown commands and replies

Example: Type IMMED Shutdown for DB2_MSTR

```

COMMANDS  HELP
-----
Shutdown Command Processing                               Row 1 to 6 of 22
Command ==>                                           SCROLL==> PAGE

Entry Type : Application                                01
Entry Name : C_DB2_MSTR                               Surprise Name : SA101

Subsystem      : C_DB2_MSTR
Shutdown Phase: SHUTIMMED                             External Shutdown:

Enter commands to be executed when the selected shutdown phase is invoked
for this subsystem.

Pass          Automated Function/'*'
Command text
1_           _____
MVS &SUBSCMDPFX STOP DB2,MODE(FORCE)

2_           _____
MVS C &SUBSJOB_____
    
```

These are the commands for an immediate shutdown

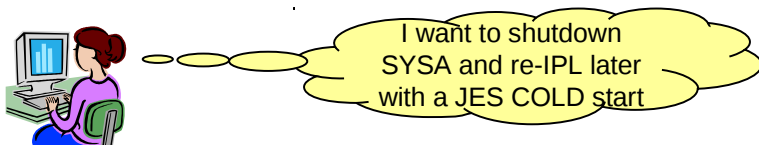
Try STOP DB2 first...

... then, after 'a while'(*), if DB2_MSTR is still not shut down, cancel the job.

* For the detail-oriented: See Shutdown Delay field in application information policy item for how long SA will wait between shutdown passes

Task – System Shutdown

Example: Shutdown on NetView-console



1. INGSET SET **JES2/APL/SYSA** STARTTYPE=**COLD**
2. INGREQ ALL REQ=STOP

✓ That's it !

- You want to shutdown the whole system for maintenance purposes
- After the maintenance is complete, you want to re-IPL using a JES-cold start
- A start type can be set for the next start request
 - The start type is saved by the automation manager
 - It is removed after the request was executed
 - Example: STARTYPE=COLD specifies that all commands with a selection of COLD or no selection are executed during the start initialization, the startup sequence, and post start

Task – System IPL

IEASYSxx:

```
...
CMD=SA
...
```

COMMND**SA**:

```
...
COM='S NETV,SUB=MSTR'
COM='S INGEAMSA,JOBNAME=AM,TYPE=HOT,SUB=MSTR'
... 
```

z/OS console:

```
 AOF767I AUTOMATION OPTIONS: 010
. STOP      - CANCEL AUTOMATION
. PAUSE     - SUSPEND AUTOMATION
. NOSTART   - DO NOT AUTOMATE SUBSYSTEM STARTUP
. NOSAVE    - DO NOT SAVE AUTOMATION CONTROL FILE
. WARM      - WARM START FROM CACHE
. COLD      - COLD START FROM DISK
. TABLE=   - OVERRIDE DEFAULT AUTOMATION TABLE(S)
. ENTER     - CONTINUE WITH 'WARM'
NOTE: CACHE IS CURRENT, NO UPDATE REQUIRED
NOTE: DEFAULT IS: WARM
*002 AOF603D ENTER AUTOMATION OPTIONS OR 'R' (RE-DISPLAY) - DOMAIN IPXFG
```

- **Goal:** manage maximum possible number of products/components through SA
 - including JES, VTAM, etc.
- Default desired status for the resources is AVAILABLE, unless
 - A resource is prevented from being started at IPL
 - The goal in the policy is UNAVAILABLE
- The system starts merely those components necessary to 'bootstrap' SA
 - NetView running Automation Agent
 - An automation manager
 - [NetView Subsystem Interface]
- At SA-initialization time, you can decide to perform a
 - Warm or cold start
 - Nostart or pause

Agenda

- Motivation and basic automation requirements
- System Automation Overview
- Basic tasks
 - Start application
 - Issue commands and replies
 - Stop application
 - System shutdown
 - System IPL
- Other operator assistance
- Summary

Operator assist functions

- Displays basic system information in the sysplex
- Displays all consoles in the sysplex
- Displays and operates coupling facilities and structures
- Displays and operates couple datasets
- Displays IPL information of all the systems in the sysplex
- Control dumps and slip traps

Example 1: Operate with Coupling Facility structures

```

INGLX906          SA z/OS - Command Dialogs          Line 1    of 9
Domain ID   = IPSFP          ----- INGSTR -----   Date = 07/20/10
Operator ID = JMH                                     Time = 15:15:51

Structure names . . ==> I*_____ Status . . . . . : NORMAL
Sysplex . . . . . ==> KEY1PLEX          Permission . . . . . : ALL
Include condition . ==> NO_ (Yes/No - Condition retrieval takes longer)
Include unallocated ==> NO_ (Yes/No)
-----
Cmds: D display details / F force / P stop duplex / R rebuild / S start duplex

  Structure          P D   Old          New          Pref. Location(s)
  -----          - -   -----          -----          -----
_ ISGLOCK                CF01
_ ISTGENERIC              CF02          CF01
_ ISTMNPS                 CF01
_ IXCGRS                  CF01
_ IXCPLEX_PATH1           CF01
_ IXCPLEX_PATH2           CF01
_ IXCPLEX_PATH3           CF02
_ IXCPLEX_PATH4           CF02
_ IXCVLF                  CF01

```

Example 2: Display and operate Couple Datasets ...

```

INGKX300          SA z/OS - Command Dialogs          Line 1 of 21
Domain ID   = IPSFP          ----- INGPLEX CDS -----   Date = 07/20/10
Operator ID = JMH           Sysplex = KEY4PLEX           Time = 15:24:53

System..: KEY4              Interval...: 900              OPNotify: 900
Maxmsg..: 99999            Cleanup...: 60              Retry...: 255
Classlen: 956              Max CFlevel: 16            COUPLExx: COUPLESY
SMREBLD.: 1                Max SMlevel: 16

Cmds: A allocate alternate CDS / C display CHPIDs
      D display CDS information / P switch alternate CDS to primary CDS

Type      MS   Volume   Dev   Couple Dataset Name
-----
SYSPLEX
PRIMARY..: 32   KEY1XA   583D   SYS1.KEY1PLEX.PXCFCDS
ALTERNATE: 32   KEY1XP   483D   SYS1.KEY1PLEX.AXCFCDS
ARM
PRIMARY..: 32   KEY1XP   483D   SYS1.KEY1PLEX.PARMCDS
ALTERNATE: 32   KEY1XA   583D   SYS1.KEY1PLEX.AARMCDS
BPXMCDS
PRIMARY..: 32   KEY1XP   483D   SYS1.KEY1PLEX.PBPXCDS
ALTERNATE: 32   KEY1XA   583D   SYS1.KEY1PLEX.ABPXCDS
d CFRM
PRIMARY..: 32   KEY1XP   PLEX.PXESCDS
ALTERNATE: 32   KEY1XA   PLEX.AXESCDS
    
```

Also supported but not shown:
LOGR, SFM, WLM

Look for details

Example 2: Display and operate Couple Datasets (cont.)

```

INGKX311          SA z/OS - Command Dialogs          Line  1    of 5
Domain ID   = IPSFP          ----- INGPLEX CDS ----- Date = 07/20/10
Operator ID = JMH              Sysplex = KEY4PLEX          Time = 15:29:43
                                CFRM Couple Data Set Information
  
```

Data Set Information

Volume	Device	FORMAT	TOD	Data Set Name
KEY1XP	483D	03/09/2005	14:48:35	SYS1.KEY1PLEX.PXESCDS
KEY1XA	583D	03/09/2005	15:54:27	SYS1.KEY1PLEX.AXESCDS

Control Card Information

MS	POLICY	CF	STR	CONNECT	SMREBLD	SMDUPLEX	MSGBASED
32	8	16	255	64	1	1	0

Policy Information

Cmnds: D display policy / S start policy

Name	CF	Str	Date	Time	Userid	
HIRPOLG	2	90	09/19/2006	17:25:43	HIR	
HIRPOL1T	1	107	02/09/2009	14:38:38	HIR	
SYSPOL1	ACTIVE	3	93	08/11/2009	09:40:02	EMIL
SYSPOL10	2	90	06/26/2008	13:02:52	HIR	
SYSPOL2	2	49	09/04/2006	14:09:45	FREI	

Example 3: Display IPL details ...

```

INGLX200          SA z/OS - Command Dialogs          Line  1    of 18
Domain ID   = IPSFP          ----- INGPLEX IPL -----          Date = 07/20/10
Operator ID = JMH                                     Time  = 18:36:04

System . . . . . ==> _____ Max. number of IPL records/system : 10
Sysplex . . . . . ==> KEY1PLEX  Suppression of PARMLIB comments . : Y
-----
Cmds: C compare record / D display details / E erase record

  System  IPL Timestamp  Dev  Volume  OpSys  Release  FMID
-----
  d KEY1    2010-07-07 18:14  501B 100019  z/OS   SP7.1.0  HBB7750
  _ KEY1    2010-06-02 19:22  501D 190019  z/OS   SP7.0.9  HBB7740
  _ KEY1    2010-05-05 20:14  501D 190019  z/OS   SP7.0.9  HBB7740
  _ KEY2    2010-07-07 18:25  501B 100019  z/OS   SP7.1.0  HBB7750
  _ KEY2    2010-07-01 15:18  501B 100019  z/OS   SP7.1.0  HBB7750
  _ KEY2    2010-06-02 19:36  501B 100019  z/OS   SP7.1.0  HBB7750
  _ KEY2    2010-05-05 20:21  501B 100019  z/OS   SP7.1.0  HBB7750
  _ KEY2    2010-04-07 21:14  5010 100004  z/OS   SP7.1.0  HBB7750
  _ KEY3    2010-07-07 18:30  501B 100019  z/OS   SP7.1.0  HBB7750
  ...

```

Current record

Previous records

Example 3: Display IPL details (cont.)

```

INGLX201          SA z/OS - Command Dialogs          Line 1 of 32
Domain ID   = IPSFP          ----- INGPLEX IPL -----          Date = 07/20/10
Operator ID = JMH                                          Time = 18:46:06

System . . . . . : KEY1          IPL timestamp . . . . . : 2010-07-07 18:14
Sysplex . . . . . : KEY1PLEX     IPL device/volume : 501B      / 100019
BCP name . . . . . : z/OS        BCP release/FMID  : SP7.1.0   / HBB7750
Load parameters . . . . . : 410000 1          LPAR / CPC name . . . . . : KEY1      / G14
Node descriptor . . . . . : 002084.B16.IBM.02.000000016F7A
Configuration id . . . . . : MVSVM          Active IODF . . . . . : SYS4.IODF00
MCAT volume / dsn . . . . . : KEYLIB / SYS1.CATALOG.VKEYLIB
-----
Cmds: C(S) compare (single) member(s) / D(S) display (single) member(s)

Param.  Member Suffix(es)
-----
___     LOAD    00
___     IEASYM  IEASYM ZF DP N0 00 S0 01
___     SYSPARM IEASYS 00 10 S0 01
___     ALLOC   ALLOC  00
___     APF     IEAAPF
___     CLOCK  CLOCK  00 ET
___     CMD     COMMND 00 S0 10 01
...
    
```

General IPL information

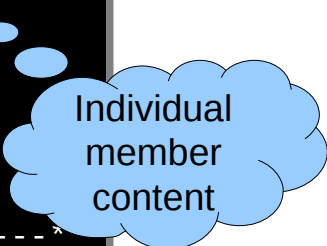
Parmlib members and concatenation

d

Example 3: Display IPL details (cont.)

- Member details for parameter type selected

```
CNMKWIND OUTPUT FROM PIPE (NAME LBDISP3) QSAM 'AOC.IPSFP.JM' LINE 0 OF 7
*----- Top of Data -----*
===== CLOCK = 00 =
OPERATOR NOPROMPT
TIMEZONE E.02.00.00
===== CLOCK = ET =
ETRMODE YES
ETRZONE YES /* */
ETRDELTA 10 /* */
*----- Bottom of Data -----*
```



Individual
member
content

Agenda

- Motivation and basic automation requirements
- System Automation Overview
- Basic tasks
 - Start application
 - Issue commands and replies
 - Stop application
 - System shutdown
 - System IPL
- Other operator assistance
- Summary

Summary

Tivoli System Automation for z/OS

- ✓ Eases System z and z/OS management, reduces costs and increases application availability
- ✓ Helps operators to perform their tasks in a more robust way and reduces domain-specific skill requirements
- ✓ Reduces automation implementation time, coding, and support effort through policy based automation
- ✓ Increases availability and performance through proactive automation
- ✓ Eases end-to-end automation of multi-tiered business applications
- ✓ Protects existing investments when implementing or extending a disaster recovery solution

Bibliography



- Related Documentation
 - SA z/OS V3.3 Defining Automation Policy (SC34-2572)
 - SA z/OS V3.3 User's Guide (SC34-2573)
 - SA z/OS V3.3 Programmer's Reference (SC34-2576)
 - SA z/OS V3.3 Customizing and Programming (SC34-2570)
 -

- White Papers
 - IBM Tivoli System Automation for z/OS V2.3:
A Primer to Monitor Resources
 - Performance Driven Automation with OMEGAMON and System
Automation for z/OS

End of Presentation



Thank you very much for your attention

Visit our home page at

IBM Tivoli System Automation for z/OS:

<http://www-01.ibm.com/software/tivoli/products/system-automation-zos/index.html>

<http://www-03.ibm.com/servers/eserver/zseries/software/sa/>

IBM Tivoli System Automation for Multiplatforms:

<http://www-01.ibm.com/software/tivoli/products/sys-auto-multi/>

IBM Tivoli System Automation Application Manager:

<http://www-01.ibm.com/software/tivoli/products/sys-auto-app-mgr/>

IBM Tivoli System Automation for Integrated Operations Management:

http://www-01.ibm.com/software/tivoli/products/sys-auto-iom/features.html?S_CMP=wspace

User forums

<http://groups.yahoo.com/group/SAUSERS/>

*The purpose of this group is to discuss technical issues related to **IBM Tivoli System Automation for z/OS** with your peers.*

<http://groups.yahoo.com/group/SA4DIST/>

*The purpose of this group is to discuss technical issues related to **IBM Tivoli System Automation** with your peers.*

This group is for distributed platforms like Linux and others, but not z/OS.