IMS Automation with IBM Tivoli System Automation for z/OS

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Agenda

SA z/OS – IMS Automation Overview

• User scenarios – Use cases
  • RECON SPARE dataset for IMS are missing
  • Needed to start spare OLDS to have the minimum in AVAILABLE status
  • IMS users are unable to LOGON to IMS
  • Automatic recovery of ‘ABENDING’ IMS transactions or programs
  • IMS commands based on scheduled timer intervals

• START / Stop details for IMS applications
• Special IMS management
• *IMS Best practices
IMS Architecture overview

- An IMS system has multiple system address spaces
- Transaction programs (MPPs) are managed by the IMS control region
- Batch programs (called “BMPs”) can also be run concurrently
- CICS, DB2, WebSphere... access IMS and add complexity
SA z/OS - IMS Automation main topics

- Recover IMS components
- Recover transactions and/or programs
- Monitor critical resources
  - Monitors number of available **OLDS** and excessive switching
  - Monitors number of available **RECON** datasets
  - Monitors **VTAM** Application ID availability and the enablement of logons
  - **TCO** (Time Controlled Operation)
- Start/stop fast and reliably
  - Dependencies fulfilled: IMS and all connectivity actually works
- Resolve alert messages or escalate through **SA IOM**
- Proactive automation through **OMEGAMON** integration
- Special IMS start types. Three standard shutdown types
- Internal IMS messages can be automated
- Sysplex-wide automation
- … and a lot more…
Agenda

• SA z/OS – IMS Automation Overview

  ➢ User scenarios – Use cases
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    • Needed to start spare OLDS to have the minimum in AVAILABLE status
    • IMS users are unable to LOGON to IMS
    • Automatic recovery of 'ABENDING' IMS transactions or programs
    • Several IMS commands should be issued based on scheduled timer intervals

• START / STOP details for IMS applications
• Special IMS management
• *IMS Best practices
Scenario A: Monitoring of Recovery Control Data Sets (RECON)

**Problem:** IMS RECON SPARE datasets are missing

**Solution:** SA z/OS allows the monitoring of recovery control data sets of IMS control regions → add definitions in the SA z/OS Policy database

- Monitoring routine **INGRMIRE** is used to monitor the RECON datasets
  → a **MTR resource** must be defined to monitor number of available RECON data sets
- Relationships have to be defined between MTR resource and IMS control region

### Meaning of Return Codes of INGRMIRE

<table>
<thead>
<tr>
<th>Return Code</th>
<th>Health Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BROKEN</td>
<td>Severe error occurred</td>
</tr>
<tr>
<td>2</td>
<td>FAILED</td>
<td>RMLIST command timeout / no response</td>
</tr>
<tr>
<td>3</td>
<td>NORMAL</td>
<td>Everything is just fine (3 RECON DSN found in status COPY1, COPY2 and SPARE)</td>
</tr>
<tr>
<td>4</td>
<td>WARNING</td>
<td>RECON COPY2 missing</td>
</tr>
<tr>
<td>5</td>
<td>MINOR</td>
<td>RECON SPARE missing</td>
</tr>
<tr>
<td>6</td>
<td>CRITICAL</td>
<td>RECON COPY2 and SPARE missing</td>
</tr>
<tr>
<td>7</td>
<td>FATAL</td>
<td>RECON COPY1, COPY2 and SPARE missing</td>
</tr>
</tbody>
</table>
Customization Dialogs Definitions

Monitor command = “INGRMIRE”

MTR resource with “Monitored Object” = RECON

Relationships:
MTR → IMS_control APG
Rely on all required functions
RECON monitoring

<table>
<thead>
<tr>
<th>INGKYST0</th>
<th>SA z/OS - Command Dialogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain ID = IPSFP</td>
<td>Operator ID = HUT</td>
</tr>
<tr>
<td>Sysplex = KEY1PLEX</td>
<td>Cmd: A Update B Start C Stop D INGKST0 E INGKST1 F G Members G DISPTRG H INGSCHED I INGGROUP J M</td>
</tr>
<tr>
<td>CMD Name = Type System = Compound = Desired =</td>
<td></td>
</tr>
<tr>
<td>IMSCtl APL KEY4 DEGRADED AVAILABLE</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INGKYMO1</th>
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</tr>
<tr>
<td>Sysplex = KEY1PLEX</td>
<td>Cmd: M Update N Start O Start P INGKST0 Q INGKST1 R G Members S DISPTRG T INGSCHED U INGGROUP V M DISPMTR W</td>
</tr>
<tr>
<td>CMD Name = Type System = Automation = Startable = Health =</td>
<td></td>
</tr>
<tr>
<td>IMSCtl APL KEY4 IDLE YES MINOR</td>
<td></td>
</tr>
</tbody>
</table>

Health status MINOR results in compound=DEGRADED on IMS Control region

Check for details on DISPMTR details panel

Look also at MTR resources on SDF, NMC and TEP
Scenario B: Monitoring of Online Log Data Sets (OLDS)

Problem: Need SPARE OLDS
Solution: Add definitions to SA z/OS

- Monitoring routine INGRMIOL is used
  → Two MTR resources must be defined to monitor
    • number of available OLDS
      → Monitored Object = OLDS
    • excessive OLDS switching
      → Monitored Object = OLDS_SWITCH

- Relationships between MTR resources and IMS control region

<table>
<thead>
<tr>
<th>Return Code</th>
<th>Health Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BROKEN</td>
<td>Monitor encountered a severe error</td>
</tr>
<tr>
<td>2</td>
<td>FAILED</td>
<td>DISPLAY OLDS failed</td>
</tr>
<tr>
<td>3</td>
<td>NORMAL</td>
<td>No problem found by OLDS monitoring</td>
</tr>
</tbody>
</table>
| 4           | WARNING      | One of the following occurred:  
• Needed to start spare OLDS to have the minimum in AVAILABLE status  
• AUTOMATIC ARCHIVE is off |
| 5           | MINOR        | Could not start enough spare OLDS to have the minimum in AVAILABLE status |
| 6           | CRITICAL     | Number of OLDS in BACKOUT status exceeds maximum limit |

IMS display cmd to analyze status of OLDS
→ Spare OLDS started!
Define ‘OLDS’ MTR resource

Status messages for passive monitoring to trigger health status updates and recovery actions.

MTR resource with “Monitored Object” = OLDS

Monitor command = “INGRMIOL”

Status “Check” ➔ Health State must be re-evaluated via INGRMIOL

Msg DFS3258A indicates problem ➔ select health status = CRITICAL
Define OLDS monitoring

Special message id: OLDS

Minimum number of available OLDS

Spares to be activated in case of too less available OLDS

Number of acceptable OLDS data sets with an OTHER-STS of BACKOUT.
Define ‘IMS OLDS Switch Frequency’
- MTR resource

<table>
<thead>
<tr>
<th>Command ====&gt;</th>
<th>Monitor Resource Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Type</td>
<td>Monitor Resource</td>
</tr>
<tr>
<td>Entry Name</td>
<td>IMS10LDS2</td>
</tr>
<tr>
<td>PolicyDB Name</td>
<td>KEYAPLEX_V320</td>
</tr>
<tr>
<td>Enterprise Name</td>
<td>KEYAPLEX</td>
</tr>
<tr>
<td>Monitored Object</td>
<td>OLDS SWITCH</td>
</tr>
<tr>
<td>Monitored Jobname</td>
<td>IMS9KAOCLONE1.1C4</td>
</tr>
<tr>
<td>Activate command</td>
<td></td>
</tr>
</tbody>
</table>

**Notices:**
Don't forget to define thresholds levels for minor resource DFS3257I for IMS control region.

---

MTR resource with “Monitored Object” = OLDS SWITCH

<table>
<thead>
<tr>
<th>Command ====&gt;</th>
<th>Command Definitions for the Health Status Update (INGMON → status change) related to the Switch Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Name</td>
<td>IMS1CTL</td>
</tr>
<tr>
<td>Message ID</td>
<td>DFS3257I</td>
</tr>
<tr>
<td>Enter commands to be executed when resource issues the selected message or define this message as status message.</td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>(‘?’ for selection list)</td>
</tr>
<tr>
<td>Pass/Selection Automated Function/’*’</td>
<td></td>
</tr>
<tr>
<td>INFR</td>
<td>INGMON_OLDS_SWITCH,JOBNAME=&amp;SUBSJOB,STATUS=WARNING,INFO=(MSG,INFREQUENT THRESHOLDS LIMIT REACHED FOR OLDS SWITCHING)</td>
</tr>
<tr>
<td>FREQ</td>
<td>INGMON_OLDS_SWITCH,JOBNAME=&amp;SUBSJOB,STATUS=MINOR,INFO=(MSG,FREQUENT OLDS SWITCHING DETECTED)</td>
</tr>
<tr>
<td>CRIT</td>
<td>INGMON_OLDS_SWITCH,JOBNAME=&amp;SUBSJOB,STATUS=Critical,INFO=(MSG,Critical OLDS Switching Frequency Reached)</td>
</tr>
<tr>
<td>ALWAYS</td>
<td>INGMON_OLDS_SWITCH,JOBNAME=&amp;SUBSJOB,STATUS=Normal,INFO=(MSG,OLDS Switching Frequency is Normal)</td>
</tr>
</tbody>
</table>
Spare OLDS required

Invoke DISPMTR for further details
Spare OLDS required

<table>
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<td>--- DISPMTR ---</td>
</tr>
<tr>
<td>Operator ID = HUT</td>
<td>Sysplex = KEYAPLEX</td>
</tr>
<tr>
<td>CMD: A Reset E Start C Stop D Details E INGO</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CMD</th>
<th>Monitor</th>
<th>System</th>
<th>Status</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IMS1DC</td>
<td>KEYA</td>
<td>ACTIVE</td>
<td>NORMAL</td>
</tr>
<tr>
<td>d</td>
<td>IMS1OLDS1</td>
<td>KEYA</td>
<td>ACTIVE</td>
<td>WARNING</td>
</tr>
<tr>
<td></td>
<td>IMS1OLDS2</td>
<td>KEYA</td>
<td>ACTIVE</td>
<td>NORMAL</td>
</tr>
</tbody>
</table>

Look under DISPMTR → details for more information

<table>
<thead>
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<th>SA z/OS - Command Dialogs</th>
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<tr>
<td>Domain ID = IPXFG</td>
<td>--- DISPMTR ---</td>
</tr>
<tr>
<td>Operator ID = HUT</td>
<td>Sysplex = KEYAPLEX</td>
</tr>
<tr>
<td>Line 1 of 01</td>
<td>Date = 01/17/06</td>
</tr>
</tbody>
</table>

Monitor System Description
---キーA | IMS1 OLDS Monitor
Monitored Object: OLDS
Monitored Jobname: IMS1OLDS Monitor
Inform list: SBF
Commands...
Activate
Deactivate
Monitoring
INGRMIOL
Interval: 00:15
Last termination: 18:38:25 on 01/15/08
Last start: 18:46:14 on 01/15/08
Monitor Status: ACTIVE at 2008-01-17 09:51:23
Health Status: WARNING

Detailed infos for Health state WARNING

Needed to start spare OLDS to have the minimum in AVAILABLE status
Scenario C :
Monitoring of VTAM ACB

- Monitor routine **INGRMIDC** is used
  - Define **MTR** resource to monitor
    - the status of the VTAM ACB
    - status message (**DFS2111I**) for passive DC monitoring
  - Define relationships between MTR resources and IMS Control region

<table>
<thead>
<tr>
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<th>Health Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>BROKEN</td>
<td>Monitor encountered a severe error</td>
</tr>
<tr>
<td>2</td>
<td>FAILED</td>
<td>DISPLAY ACTIVE DC failed</td>
</tr>
<tr>
<td>3</td>
<td>NORMAL</td>
<td>VTAM ACB is OPEN and LOGONS enabled</td>
</tr>
<tr>
<td>4</td>
<td>WARNING</td>
<td>LOGONs are not enabled</td>
</tr>
</tbody>
</table>

**Problem:** IMS users are unable to LOGON to IMS (VTAM ACB has been closed)

**Solution:** Add definitions in the SA z/OS Policy database
Define MTR resource

a) ACTIVE monitoring in a defined time interval

b) PASSIVE monitoring via message “DFS2111I VTAM ACB CLOSED.”

- MTR resource with “Monitored Object” = DC
- Jobname of IMS control region
- Monitor command = “INGRMIDC” (⇒ DISPLAY ACTIVE DC)
- Select appropriated Status message for passive monitoring.
VTAM ACB closed...

IMS control region has Status DEGRADED ...

... results from Health status WARNING from MTR resource
Logon enabled again ...

VTAM ACB is OPEN again – interval important to reflect actual status
Scenario D:
Recovery of IMS transactions and programs

**Problem:** Automatic recovery of ‘ABENDING’ IMS transactions or programs

**Solution:** Add definitions in the SA z/OS Policy database

What has to be considered....

a) Which transactions should be recovered?

b) At which error threshold level should recovery be stopped?

c) Which ABEND codes need special handling?

d) Which recovery procedure (command, routine, notifications to operators) should be done?

- Example:
  Application program or transaction abends → IMS issues message DFS554A to the master terminal

  - Issue recovery to restart the program or the transaction
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Example:
Application program or transaction abends → IMS issues message DFS554A to the master terminal

- Issue recovery to restart the program or the transaction
Customization Dialog Definitions

IMS subsystem ID must be defined under IMS control region specifications.
Customization Dialog Definitions

### a) Which transactions should be recovered?

<table>
<thead>
<tr>
<th>Command</th>
<th>Minor Resource Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Type</td>
<td>Application</td>
</tr>
<tr>
<td>Entry Name</td>
<td>IMSCTL</td>
</tr>
<tr>
<td>Major Name</td>
<td>IMSCTL</td>
</tr>
<tr>
<td>Action</td>
<td>Minor Resource</td>
</tr>
<tr>
<td></td>
<td>PROG.DEFSIVP4</td>
</tr>
<tr>
<td></td>
<td>PROG.DEFSIVP5</td>
</tr>
<tr>
<td></td>
<td>PROG.EVIRYPP1</td>
</tr>
<tr>
<td></td>
<td>TRAN.IVTED</td>
</tr>
<tr>
<td></td>
<td>TRAN.IVTFM</td>
</tr>
</tbody>
</table>

Specify Transactions and/or Programs to be recovered
\(\rightarrow\) Recovery Automation flag

### b) At which error threshold level should recovery be stopped?

<table>
<thead>
<tr>
<th>Command</th>
<th>Minor Resource Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Type</td>
<td>Application</td>
</tr>
<tr>
<td>Entry Name</td>
<td>IMSCTL</td>
</tr>
<tr>
<td>Major Name</td>
<td>IMSCTL</td>
</tr>
<tr>
<td>Action</td>
<td>Minor Resource</td>
</tr>
<tr>
<td></td>
<td>PROG.DEFSIVP4</td>
</tr>
<tr>
<td></td>
<td>PROG.DEFSIVP5</td>
</tr>
<tr>
<td></td>
<td>PROG.EVIRYPP1</td>
</tr>
<tr>
<td></td>
<td>TRAN.IVTEGDB</td>
</tr>
<tr>
<td></td>
<td>TRAN.IVTFMX</td>
</tr>
</tbody>
</table>

Reminder:
If NO thresholds defined \(\rightarrow\) RECOVERY forever!!

Recovery stopped dependent on THRESHOLDS settings
c) Which ABEND codes needs special handling?

<table>
<thead>
<tr>
<th>Code 1</th>
<th>Code 2</th>
<th>Code 3</th>
<th>Value Returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>U0452</td>
<td>*</td>
<td>EXCLUDE</td>
</tr>
<tr>
<td>*</td>
<td>U0456</td>
<td>*</td>
<td>EXCLUDE</td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>*</td>
<td>INCLUDE</td>
</tr>
</tbody>
</table>

Filter criteria for ABEND codes:
- Recovery done for all ABEND codes except U0452 and U0456
d) Which recovery procedure (command, routine, notifications to operators)?

<table>
<thead>
<tr>
<th>Entry Type</th>
<th>PolicyDB Name</th>
<th>Entry Name</th>
<th>Enterprise Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HUT_OMEGAMON</td>
<td>IMSCTL</td>
<td>OMEGAMON_SA</td>
</tr>
</tbody>
</table>

- Line Commands: S (Cmd), C (Cmd), R (Rep), K (Cod), U (Usr), A (Ad), I, D (insert or delete lines)
- Message ID field length: 14 (1 - 32)
- Cmd Message id: DFS554A
  - Description: Specifications for DFS554A
  - Cmd: 3

<table>
<thead>
<tr>
<th>Entry Name</th>
<th>Message ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSCTL</td>
<td>DFS554A</td>
</tr>
</tbody>
</table>

Enter commands to be executed when recovery issues the selected message or define this message as status message

Status ... (For ...)

Pass/Selection Automated Function/*'
Command Text
PROG
MVS &SUBSSUBIDSTA PGM &EHKVAR2

TRAN
MVS &SUBSSUBIDSTA TRAN &EHKVAR1


...send msgs to operator

Commands to be issued for Program recovery
DFS554A msg -> SA z/OS actions

IMS subsystem ID followed by IMS master terminal command

Program name

Transaction id

...now SA z/OS compares contents of DFS554A msg with recovery definitions in PDB

...Transaction restarted due to PDB definitions
Scenario E:
Time Controlled Operations (TCO)

Problem: Several IMS commands should be issued based on scheduled timer intervals
Solution: Add definitions in the SA z/OS Policy database

- Commands issued under logical terminal DFSTCF
- Several different members could be defined and loaded
Customization Dialogs Definitions

Reserved message ids “TCO” and “TCOMEMBERS”

Specify that the logical terminal DFSTCF is used

Under “USR” the dataset containing the TCO members is defined
Customization Dialogs Definitions

Definitions of the member names under message "TCOMEMBERS"

Entry Type: Application
PolicyDB Name: HUT_OMEGAMON_V320
Entry Name: IMSCTL
Enterprise Name: OMEGAMON_SA_V320

Line Commands: S (Cmd), C (Cmd), R (Rep), K (Cod), U (Usr), A (Aut). O (Ovr), I, D (insert or delete lines)
Message ID field length: 14 (1 - 32)

<table>
<thead>
<tr>
<th>Message ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cmd Message</td>
<td>IMS TC0 members in TCFSLIB</td>
</tr>
</tbody>
</table>

To change keyword-data pair, specify the following:

Keyword
Data
NAME
(DITEST1,'D MESSAGE QUEUE *QBUF* / USER ALL')

NAME
(DITEST2,'DISPLAY MESSAGE QUEUE *QBUF*')

NAME
(DITEST3,'D MESSAGE QUEUE *QBUF* PLUS ACTI')

NAME
(DFSTCF,'DEFAULT MEMBER *DFSTCF* IN TCFSLIB')

NAME
(DISPROP,'DISPLAY PROG ALL AND LIERM DFS*')

NAME
(SVDFSTCF,'OLD DFSTCF WITH STA DC & STA REG')

Member name and descriptive text for it
TCO handling with IMS command interface

**EVIK0000**  
SA z/OS - Command Dialogs

**Domain ID** = IPSFP  
**Operator ID** = HUT

**System** = KEY4  
**Date** = 01/29/08  
**Time** = 13:02:14

**Resource** => **IMSCTL/APL/KEY4**  
**System** => System name, domain ID or sysplex name

**Action** => 9

1. Inquire  
Display an IMS control reg.
2. Start  
Start an IMS subsystem
3. Shutdown  
Shutdown an IMS subsystem
4. Triggers  
Display trigger conditions
5. Service Periods  
Perform scheduling functions
6. Master Terminal  
Perform Master Terminal Commands
7. Critical messages  
Display critical messages
8. Broadcast  
Send message to users
9. TCO Management  
Load/Start/Stop TCO
TCO handling with IMS command interface

- Load TCO member
- Start / Stop the logical terminal

SAMPLE contents of TCO member containing IMS commands

---

<table>
<thead>
<tr>
<th>CMD</th>
<th>Name</th>
<th>Type</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DFSTCF</td>
<td>LTERM</td>
<td>STOP</td>
<td>D MESSAGE QUEUE <em>QBUF</em> USER AL</td>
</tr>
<tr>
<td></td>
<td>BITEST1</td>
<td>MEMBER</td>
<td></td>
<td>DISPLAY MESSAGE QUEUE <em>QBUF</em></td>
</tr>
<tr>
<td></td>
<td>BITEST2</td>
<td>MEMBER</td>
<td></td>
<td>D MESSAGE QUEUE <em>QBUF</em> PLUS ACTI</td>
</tr>
<tr>
<td></td>
<td>BITEST3</td>
<td>MEMBER</td>
<td></td>
<td>DEFAULT MEMBER <em>DFSTCF</em> IN TCFSL</td>
</tr>
<tr>
<td></td>
<td>DISPROG</td>
<td>MEMBER</td>
<td></td>
<td>DISPLAY PROG ALL AND LTERM DFS*</td>
</tr>
<tr>
<td></td>
<td>SVDFSTCF</td>
<td>MEMBER</td>
<td></td>
<td>OLD DFSTCF WITH STA DC &amp; STA REG</td>
</tr>
</tbody>
</table>

---

BROWSE Command: SYS1.IMS.M941.TCFSLIB(DFSTCF) - 01.01

OPN NODE USR1941
OPN NODE USR2941
STA LINE 3
TIME DFSTXIT0 S

---
Agenda

• SA z/OS 3.2 – IMS Automation Overview

• User scenarios – Use cases
  ▪ RECON SPARE dataset for IMS are missing
  ▪ Needed to start spare OLDS to have the minimum in AVAILABLE status
  ▪ IMS users are unable to LOGON to IMS
  ▪ Automatic recovery of ‘ABENDING’ IMS transactions or programs
  ▪ Several IMS commands should be issued based on scheduled timer intervals

➤ START / STOP details for IMS applications

• Special IMS management

• *IMS Best practices
Automation Flags During Lifecycle of a Resource

- InitStart flag (I): Checked after IPL only, when application has a true DOWN status.
- Restart flag (RS): Tested in all other DOWN states.
- Start flag (S): Checked for automation after STARTUP command issued and for POSTSTART commands.
- Terminate flag (T): Controls all shutdown commands and automation during shutdown.
- Recovery flag (R): Controls automation when application is UP or DOWN.
- Automation flag (A): Global automation flag for the resource. **If NO, all flags are NO.**

**Notices:**
- Special ‘feature’ code replaced by generic routines
- ACTIVMSG / TERMMSG
  - NO differences to any other application
Start IMS address spaces

- Start types
  - COLD ➔ restart command in response to DFS810A
  - AUTO ➔ use restart dataset to determine startup type
  - NORM ➔ DEFAULT start type
  - WARMSDBL ➔ restart command in response to DFS810A (load Main Storage Data Base MSDB)
  - BUILDQ ➔ restart command in response to DFS810A (queues are build new)
  - MANUAL ➔ reply to DFS810A with values from INGREQ panel

- Can reply to outstanding WTOR's
- Policy based startup
Starting of IMS control region

Variable &SUBSSUBID contains subsystem ID of IMS control region

Defined REPLYs in PDB for message DFS810A
Stop IMS Address spaces

- **Supported stop types**
  - **NORM**
    - Issue checkpoint, *orderly shutdown*. Cancellation of message regions and control region after predetermined time delay.
  - **IMMED**
    - Issue checkpoint. *Immediate cancellation of message regions*. Cancellation control region after predetermined time delay.
  - **FORCE**
    - *Immediate flushing* of all regions
Stopping of IMS control region

Several retries, because IMS not always accept cmd at the first try!
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INGIMS Operator Command

- Allows operators or automation tasks to issue IMS console commands
  - Any console-enabled IMS type-1 command
  - Any IMS type-2 command if an IMSPlex name is provided (V3.3 only)
  - Send commands to one / more / all members of an IMSPlex (V3.3 only)
  - Auditing of IMS commands (V3.3 only)
- Multiple commands can be issued with a single invocation
- To broadcast messages to all or selected IMS users
- To issue a list of pre-defined transactions and view the output
- Usage: As fullscreen operator dialog or programmable API
INGIMS in SA z/OS V3.3

- Implementation
  - Specification of IMSProcess name in policy
  - Uses Common Service Layer (CSL) of IMSProcess
  - Provides new request types for plex-wide requests
    - Uses Operations Manager (OM) API to issue commands if IMSProcess name is given, else uses the console interface
    - Consolidates responses of multiple IMSProcess members
    - Generates tabular output in the same format for type-1 and type-2 commands, no matter whether the OM API was used or not
    - Displays responses in scrollable window when invoked in fullscreen mode

- Benefits
  - No SYSLOG flooding
  - Slight performance improvements compared to previous SA z/OS releases
IMS Dependent Region

Resource => IMS1CT/L/APL/KEY4
System => _______ System name, domain ID or sysplex name

Action =>
1. Inquire Display an IMS control reg.
2. Start Start an IMS subsystem
3. Shutdown Shutdown an IMS subsystem
4. Triggers Display trigger conditions
5. Service Periods Perform scheduling functions
6. Master Terminal Perform Master Terminal Commands
7. Critical messages Display critical messages
8. Broadcast Send message to users
9. TCO Management Load/Start/Stop TCO
10. Dependent Regions Manage Dependent Regions
99. Local Functions Provide access to user defined local functions
**IMS Dependent Region**

<table>
<thead>
<tr>
<th>CMD Name</th>
<th>Type</th>
<th>System</th>
<th>IMS Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS1DBRC</td>
<td>APL</td>
<td>KEY4</td>
<td>SATISFACTORY</td>
</tr>
<tr>
<td>IMS1DLS</td>
<td>APL</td>
<td>KEY4</td>
<td>SATISFACTORY</td>
</tr>
<tr>
<td>IMS1FP</td>
<td>APL</td>
<td>KEY4</td>
<td>SATISFACTORY</td>
</tr>
<tr>
<td>IMS1MP</td>
<td>APL</td>
<td>KEY4</td>
<td>SATISFACTORY</td>
</tr>
</tbody>
</table>

**IMS region id number of the region**

**Type of IMS resource**

**Transaction or step running on the appropriate region type**

**Name of the program running in the region.**

**IMS status of the region e.g.**

SCHEDULED, AVAILABLE, TERMINATING, WAIT_SPOOLSPACE, .....
IMS Dependent Region

- “/ASSIGN”
  - assign additional classes to the region

```
EVICYCMD
Domain ID = IPSFP
Operator ID = HUT

Resource => IMS1CTL/APL/KEY4
System => System name, domain
Request => CMD, BROADCAST
IMS Command => ASSIGN CLASS 1 REGION 2
IMS Route =>
IMS Message =>
```

- “/PSTOP”
  - Stop a transaction

```
EVICYCMD
Domain ID = IPXFG
Operator ID = HUT

Resource => IMS1CTL/APL/KEYA
System => System name, domain
Request => CMD, BROADCAST
IMS Command => PSTOP REGION 2 TRANSACTION TRANS32
IMS Route =>
IMS Message =>
```
IMSINFO: Display Information

→ Define your **own commands which should be executed under DISPINFO**

Entry Type: Application  PolicyDB Name: HUT_OMEGAMON_V320
Entry Name: C_IMS_CONTROL  Enterprise Name: OMEGAMON_SA_V320

Line Commands: S (Cmd), C (Cmd), R (Rep), K (Cod), U (Usr), A (Aut), O (Ovr), I, D (insert or delete lines)

Message ID field length: 14  (1 - 32)

<table>
<thead>
<tr>
<th>Cmd</th>
<th>Message id</th>
<th>Description</th>
<th>Cmd Rep Cod Usr</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>IMSINFO</td>
<td>Get IMS Information for DISPINFO cmd</td>
<td>1</td>
</tr>
</tbody>
</table>

**Define for reserved msg IMSINFO cmds**

Command ==> ____________________

**User Defined Data**

Entry Name: C_IMS_CONTROL  Message ID: IMSINFO

To change keyword-data pair, specify the following:

Keyword
Data
IMSCMD
('ACTIVE STATE DC', 'DIS A DC')

**AOFKINFO**

SA z/OS - Command Dialogs
Domain ID = IPSFP  Operator ID = HUT
Subsystem ==> IMSCTL  System ==> KEY4  System or susp

**IMSINFO:**

IMSCMD=('ACTIVE STATE DC', 'DIS A DC')

Command ==> ____________________

PF1=Help  PF2=End  PF3=Return  PF4=INGINFO
PF7=Back  PF8=Forward  PF9=Refresh  PF10=IMS Info

Available under DISПINFO → PF10
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➢ *IMS Best practices
**IMS  Best Practice Policy**

- Exploit SA z/OS base code
- Support FDR (Fast Database Recovery)
- Monitor capabilities
  - DC
  - OLDS
  - OLDS switch
  - RECON
- Diagrams in PDF format available → /usr/lpp/ing/doc/policies
References

- Related SA z/OS V3.3 Documentation
  - Defining Automation Policy (SC34-2572)
  - Product Automation Programmer’s Reference and Operator Guide (SC34-2569)
  - Customizing and Programming (SC34-2570)
  - User’s Guide (SC34-2573)
  - Programmer’s Reference (SC34-2576)
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  http://groups.yahoo.com/group/SA4DIST/
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  This group is for distributed platforms like Linux and others, but not z/OS.
Thank You...