

DFSMS Basics: How to Create/Modify an SMS Configuration and Write ACS Routines - Demo

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Agenda

- Intro to SMS (Configuration and ACS)
- Configuration Walk-thru
- ACS Walk-thru
- Summary

Introduction to an SMS Environment

- Base Configuration Definition
 - Default device geometry
 - Defines the Systems in the SMS plex
- 4 ACS (Automatic Class Selection) Construct Types
 - Data Class
 - Storage Class
 - Management Class
 - Storage Group
 - ACS Routines are run in this order
- Provides the default allocation values

Introduction to an SMS Environment (cont)



- What is a Data Class?
 - **RECORD or RECFM**
 - **LRECL**
 - **Space**
 - **DSNTYPE**
 - **Volume count**
 - **VSAM attributes**
 - **RETPD or EXPDT**
 - **Compaction**

Introduction to an SMS Environment (cont)



- What is a Storage Class?
 - **This IS the attribute that makes a data set SMS managed**
 - **Performance attributes**
 - **Direct & sequential millisecond response**
 - **Direct & sequential bias**
 - **Initial access response time**
 - **Availability**
 - **Accessibility**
 - **Guaranteed space**
 - **Guaranteed synchronous write**

Introduction to an SMS Environment (cont)



- What is a Management Class?
 - **Space management attributes**
 - Expiration & retention attributes
 - Migration attributes
 - GDG management attributes
 - **Backup attributes**
 - Backup frequency
 - Backup versions
 - Backup retention
 - **Class transition attributes**
 - **Aggregate backup attributes**

Introduction to an SMS Environment (cont)



- What is a Storage Group?
 - **Physical storage managed by SMS**
 - **Collection of DASD volumes**
 - **Volumes in tape libraries**
 - **Volumes in optical libraries**
 - **Virtual I/O storage**
 - **Can be in ENABLE, QUINEW, QUIALL, DISNEW, DISALL or NOTCON status**
 - **Can be set to auto migrate, auto backup and/or auto dump**

Introduction to ACS Environment

- What is an ACS Routine?
 - **User written code to affect an allocation**
 - **Used to determine SMS classes and storage groups**
 - **Used for both data sets and objects**
 - **Can override specifications of SMS classes and groups on:**
 - **JCL DD statements**
 - **Dynamic allocation requests**
 - **DFSMSdssCOPY, RESTORE & CONVERTV**
 - **DFSMSshm RECALL & RECOVER**
 - **IDCAMS DEFINE, ALTER & IMPORT**
 - **OAM STORE, CHANGE & class transition**

Introduction to ACS Environment (cont)

- ACS General Rules
 - **Keep them simple and straightforward**
 - **Minimize exceptions**
 - **Maximize FILTLIST usage**
 - **Keep them easy to maintain and understand**
 - **Use SELECT instead of IF when possible**
 - **EXIT the routine as soon as possible**
 - **Use OTHERWISE whenever possible**
 - **Comments, comments, comments**

Introduction to ACS Environment (cont)

- ACS Language Statements
 - **PROC** - beginning of routine
 - **FILTLIST** – defines filter criteria
 - **DO** – start of statement group
 - **SELECT** – defines a set of conditional statements
 - **IF** – conditional statement
 - **SET** – assigns a read/write variable
 - **WRITE** – sends message to end user
 - **EXIT** – immediately terminates ACS routine
 - **END** – end of statement group

Introduction to ACS Environment (cont)

- ACS Read Only Variables
 - **Majority of the ACS variables**
 - **Contain data and system information**
 - **Reflect what is known at the time of the request**
 - **Can only be used for comparison**

Introduction to ACS Environment (cont)

- ACS Read/Write Variables
 - Used as values in comparisons (READ)
 - Used to assign values (WRITE)
 - 4 Read/Write variables
 - **&DATACLAS**
 - **&STORCLAS**
 - **&MGMTCLAS**
 - **&STORGRP**
- The ACS PROC statement must identify which R/W variable it is setting

Introduction to ACS Environment (cont)

- Translating ACS Routines
 - **Done via ISMF**
 - **Checks for syntax errors**
 - **Converts (compiles) ACS source into object and stores it into the SCDS**
- Validating the SMS Configuration
 - **Also done through ISMF**
 - **Verifies that all classes/groups assigned in the ACS routines exist**
- Activating the SMS Configuration
 - **3 Methods**
 - **SETSMS SCDS(scdsname) operator command**
 - **ISMF option 8 (Control Data Set Application) then select option 5 (Activate)**
 - **Type ACTIVATE on the ISMF command line**
 - **Loads the SCDS into the ACDS**

Storage Administrator Setting

- Set yourself up as a Storage Administrator
 - ISMF
 - 0 - Profile Options
 - 0 - User Mode Selections
 - 2 – Storage Administrator
 - End/Exit 3 times

Configuration Walk-thru 1

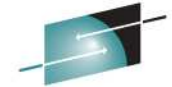
- Create a SCDS
 - Submit SCDS job
- Complete the BCD (Base Configuration Definition)
 - Default Device Geometry
 - Trks/Cyl
 - System Name

Configuration Walk-thru 2

- Create a Storage Class named
 - Default
 - With the desired attributes

Configuration Walk-thru 3

- Create a Storage Group named
 - Default
- Put at least 1 volume in it



SHARE
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ACS Walk-thru 1

- Create an ACS Routine w/ PROC, FILTLIST and SET
 - Create a filter of NAME which encompasses BOB and PETE
- Translate the ACS routine

PROC, FILTLIST and Basic SET Examples



```
000100 PROC STORCLAS
000200 /*          START FILTLISTS          */
000300 FILTLIST NAME    INCLUDE('BOB','PETE')
000400 /*          END FILTLISTS          */
000500 SET &STORCLAS = ''
000600 END
```

ACS Walk-thru 2

- If/Then Logic
 - Add IF/THEN logic
 - Compare the HLQ to the NAME filter and set SC to DEFAULT
- Translate the ACS routine

IF Example

```
000100 PROC STORCLAS
000200 /*          START FILTLISTS          */
000300 FILTLIST NAME    INCLUDE('BOB','PETE')
000400 /*          END    FILTLISTS          */
000410 /****** /
000420 /*          START SC LOGIC          */
000430 IF &HLQ EQ &NAME THEN
000440     DO
000441         SET &STORCLAS EQ 'DEFAULT'
000450         EXIT
000460     END
000470 /*          SET NULL SC IF NOTHING ELSE ASSIGNED */
000500 SET &STORCLAS = ''
000600 END
```

ACS Walk-thru 3

- SELECT
 - Add a SELECT statement
 - SELECT on Read Only variable &DSN(1)
 - *2 methods to accomplish this*
 - *When it matches the NAME filter, set the SC to DEFAULT*
- Translate the ACS routine

SELECT Example(s)

```
000600 /*          START SC LOGIC          */
000700 IF &HLQ EQ &NAME THEN
000800     DO
000900         SET &STORCLAS EQ 'DEFAULT'
001000         EXIT
001100     END
001200 /*          SELECT METHOD 1          */
001300 SELECT (&DSN(1))
001400     WHEN ('BOB') SET &STORCLAS EQ 'DEFAULT'
001500     WHEN (&NAME) SET &STORCLAS EQ 'DEFAULT'
001600     END
001700 /*          SELECT METHOD 2          */
001800 SELECT
001900     WHEN (&HLQ EQ 'BOB') SET &STORCLAS = 'DEFAULT'
002000     WHEN (&HLQ EQ &NAME) SET &STORCLAS = 'DEFAULT'
002100     END
002200 /*          SET NULL SC IF NOTHING ELSE ASSIGNED          */
002300 SET &STORCLAS = ''
002400 END
```


ACS Walk-thru 4

- WRITE
 - Add a WRITE statement
 - WRITE 'message'
- Translate the ACS routine

WRITE Examples

```
000600 /*          START SC LOGIC          */
000700 IF &HLQ EQ &NAME THEN
000800     DO
000900         SET &STORCLAS EQ 'DEFAULT'
001000         WRITE 'STORCLAS ROUTINE ASSIGNED STORCLAS: ' &STORCLAS
001100         EXIT
001200     END
001300 /*          SELECT METHOD 1          */
001400 SELECT (&DSN(1))
001500     WHEN ('BOB') SET &STORCLAS EQ 'DEFAULT'
001600     WHEN (&NAME) SET &STORCLAS EQ 'DEFAULT'
001700     END
001800     WRITE 'STORCLAS ROUTINE ASSIGNED STORCLAS: ' &STORCLAS
001900 /*          SELECT METHOD 2          */
002000 SELECT
002100     WHEN (&HLQ EQ 'BOB') SET &STORCLAS = 'DEFAULT'
002200     WHEN (&HLQ EQ &NAME) SET &STORCLAS = 'DEFAULT'
002300     END
002400     WRITE 'STORCLAS ROUTINE ASSIGNED STORCLAS: ' &STORCLAS
002500 /*          SET NULL SC IF NOTHING ELSE ASSIGNED          */
002600 SET &STORCLAS = ''
002700 END
```

Translate and Validate

- Translate the ACS routines via ISMF 7 / 2 to the configuration (SCDS) data set

- Validate the configuration with ISMF 7 / 3 to the configuration (SCDS) data set

Summary

- Upon completion of this session, you should...
 - Have a better understanding of the SMS environment.
 - Understand how to create/modify an SMS Configuration.
 - Understand how to write a basic ACS routine.
 - Understand how to Translate an ACS routine and Validate an SMS Configuration.
 - Understand how to determine what Translate and/or Validate error(s) occurred.

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