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?
  - RECORG 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
    • DFSMShsm 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
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 /*
000300 FILTLIST NAME INCLUDE('BOB','PETE')
000400 */
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 /*
000300 FILTLIST NAME INCLUDE('BOB','PETE')
000400 */
000500 END FILTLISTS */
000600 /*
000700 /***************************/
000800 /*
000900 START SC LOGIC
001000 */
001100 IF &HLQ EQ &NAME THEN
001200 DO
001300 SET &STORCLAS EQ 'DEFAULT'
001400 EXIT
001500 END
001600 */
001700 SET NULL SC IF NOTHING ELSE ASSIGNED
001800 /*
001900 */
002000 SET &STORCLAS = '
002100 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)

```sql
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

```plaintext
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 /* END */
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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