DFSMS Basics: How to Create/Modify an SMS Configuration and Write ACS Routines Part 1

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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 an SMS Environment (cont)

- Translating the ACS Routines
  - **Done through ISMF**
  - **Converts (compiles) the ACS source and puts it in the SCDS**
- Validating the SMS Configuration
  - **Done through ISMF**
  - **Verifies that all classes/groups assigned in the ACS routines exist**
- Activate the new configuration
  - **Done through ISMF**
  - **Loads the SCDS into an ACDS**

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**

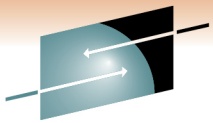
Introduction to ACS Environment (cont)

- 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**
- More info can be found in the pub hand-out

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**
- More info can be found in the pub handouts

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
- More info can be found in the pub handouts

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 SYSTEM which encompasses SYS1 and SYS2
- 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    EXIT
001800 /*                        SELECT METHOD 2                         */
001900 SELECT
002000    WHEN (&HLQ EQ 'BOB') SET &STORCLAS = 'DEFAULT'
002100    WHEN (&HLQ EQ &NAME) SET &STORCLAS = 'DEFAULT'
002200    END
002300    EXIT
002400 /*              SET NULL SC IF NOTHING ELSE ASSIGNED              */
002500 SET &STORCLAS = ''
002600 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'
000910       WRITE 'STORCLAS ROUTINE ASSIGNED STORCLAS: ' &STORCLAS
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
001610       WRITE 'STORCLAS ROUTINE ASSIGNED STORCLAS: ' &STORCLAS
001700    EXIT
001800 /*                      SELECT METHOD 2                         */
001900 SELECT
002000    WHEN (&HLQ EQ 'BOB') SET &STORCLAS = 'DEFAULT'
002100    WHEN (&HLQ EQ &NAME) SET &STORCLAS = 'DEFAULT'
002200    END
002210       WRITE 'STORCLAS ROUTINE ASSIGNED STORCLAS: ' &STORCLAS
002300    EXIT
```

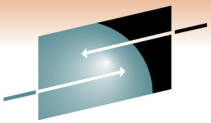
Translate and Validate

- 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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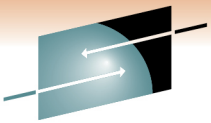

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