

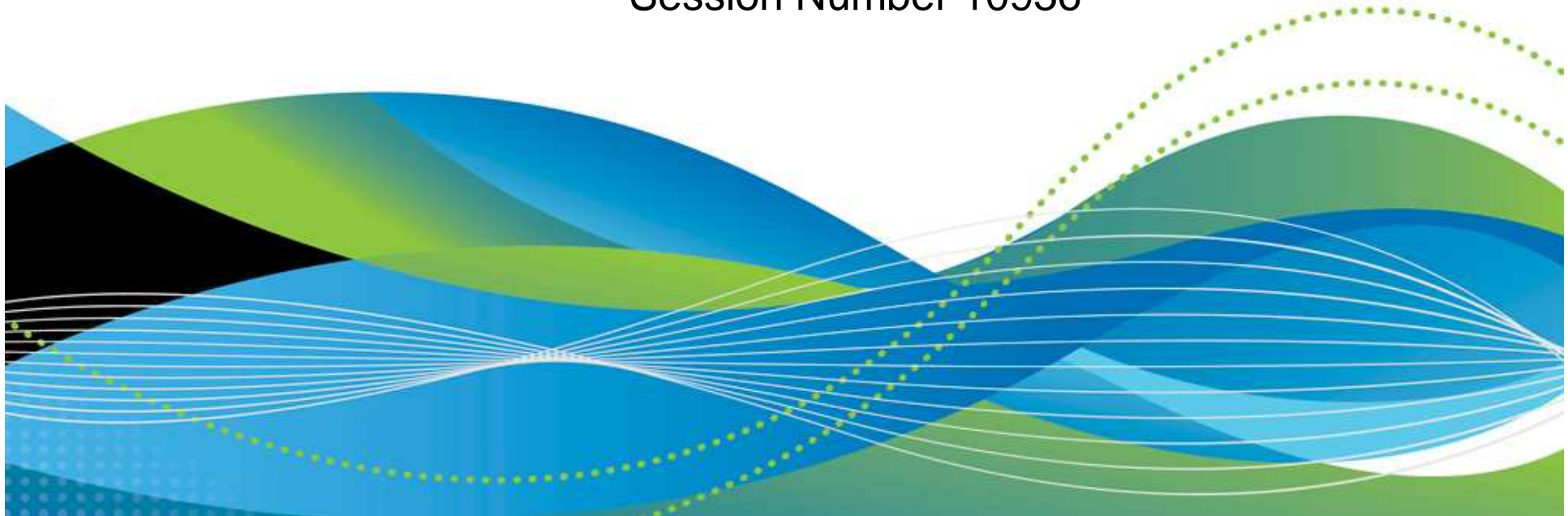
# DFSMS Basics: How to Create/Modify an SMS Configuration and Write ACS Routines - Demo

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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
    - 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

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# ACS Walk-thru 1

- **NOTE: These ACS exercises are an exercise in syntax, NOT logic.**
- 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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