IMS 10 Operations: Navigating Through the Setup and Use of New Enhancements

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Agenda

- Operations Manager (OM) Audit Trail
- Global Status
- Sysplex Serial Program Management (SSPM)
- Batch SPOC Utility
- Enhanced Display of System Parameters
- Queuing/dequeuing work to IMS systems
- Dynamic Resource Definition
- ACBLIB Member Online Change
- Completion Code Text Enhancements

"How-to" focus will be on new/enhanced IMS commands

Operations Manager Audit Trail

Operations Manager Audit Trail Enhancement

- OM Audit trail keeps track of IMSplex activity, including:
  - IMS Commands input from OM clients (TSO SPOC, IMS Control Center)
  - Reponses to commands
  - Unsolicited messages
- Consists of OM log records written to z/OS System Logger log stream
  - DFSERA10 exit routines provided for formatting the audit log
    - Interpreted listing (CSLULALE) – most useful
    - "Dump" listing (CSLOERA3)

Operations Manager Audit Trail Enhancement

- Example of interpreted listing (CSLULALE) – unsolicited messages

```
  Display  Filter  View  Print  Options  Help
 ------------------------------------------------------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY CSLULALE JOB00104  DSID   102 LINE 0       COLUMNS 02- 133
 COMMAND INPUT ===> _                                          SCROLL ===> CSR
********************************** TOP OF DATA ***********************************************************************************
CONTROL    CNTL H=EOF DDNAME=SYSUT1
OPTION     PRINT EXITR=CSLULALE,PARM=(F=BYCOL)
END
OM1OM    2008.112 09:40:00.84  CSL0020I OM  READY OM1OM
RM1RM    2008.112 09:40:12.38  CSL0020I RM  READY RM1RM
IMS1     2008.112 09:40:48.82  DFS0578I - READ SUCCESSFUL FOR DDNAME PROCLIB  MEMBER =  DFSDC000 IMS1
IMS1     2008.112 09:40:49.01  DFS0578I - READ SUCCESSFUL FOR DDNAME PROCLIB  MEMBER = DFSDSCMC  IMS1
IMS1     2008.112 09:40:49.02  DFS0578I - READ SUCCESSFUL FOR DDNAME PROCLIB  MEMBER = DFSDSCTC  IMS1
IMS1     2008.112 09:40:49.82  DFS3613I - LUM TCB INITIALIZATION COMPLETE  IMS1
IMS1     2008.112 09:40:49.91  DFS3613I - RLM TCB INITIALIZATION COMPLETE  IMS1
IMS1     2008.112 09:40:49.91  DFS3613I - RLM TCB INITIALIZATION COMPLETE  IMS1
IMS1     2008.112 09:40:49.91  DFS3613I - ALC TCB INITIALIZATION COMPLETE  IMS1
IMS1     2008.112 09:40:49.91  DFS3613I - XCF TCB INITIALIZATION COMPLETE  IMS1
IMS1     2008.112 09:40:49.91  DFS2088I APPC/OTMA SMQ Enablement inactive. Reason = 004 IMS1
IMS1     2008.112 09:40:49.91  DFS2088I APPC/OTMA SMQ Enablement inactive. Reason = 004
IMS1     2008.112 09:40:49.91  DFS3613I - ALM TCB INITIALIZATION COMPLETE  IMS1
IMS1     2008.112 09:40:49.93  DFS3613I - RRS TCB INITIALIZATION COMPLETE  IMS1
IMS1     2008.112 09:40:49.94  DFS0578I - READ SUCCESSFUL FOR DDNAME PROCLIB  MEMBER = DFS62DTC         IMS1
IMS1     2008.112 09:40:49.94  DFS0578I - READ SUCCESSFUL FOR DDNAME PROCLIB  MEMBER = DFS62DTC
IMS1     2008.112 09:40:50.10  DFS0579W FIND FAILED FOR DDNAME PROCLIB  MEMBER=DFSYDTC  IMS1
IMS1     2008.112 09:40:50.10  DFS0579W FIND FAILED FOR DDNAME PROCLIB  MEMBER=DFSYDTC
IMS1     2008.112 09:40:50.36  DFS814I INITIALIZATION FAILED FOR FOLLOWING LINEGROUPS:  IMS1
```

Operations Manager Audit Trail Enhancement

- Example of interpreted listing (CSLULALE) – command input/output

```
 Display  Filter  View  Print  Options  Help
-------------------------------------------------------------------------------------------------------------------------------
SDSF OUTPUT DISPLAY CSLULALE JOB00104  DSID   102 LINE 5,926   COLUMNS 02- 133
COMMAND INPUT ===>                                            SCROLL ===> CSR
   Response for: QRY TRAN NAME(A*) SHOW(ALL)
   Trancode MbrName    CC PSBname  LCls    LQCnt  LLCT LPLCT LPLCTTime LCPRI LNPRI LLPRI LSegSz LSegNo LParLim RegCnt LMaxRgn
   -------- -------- ---- -------- ---- -------- ----- ----- --------- ----- ----- ----- ------ ------ ------- ------ -------
   ADDINV   IMS1        0 DFSSAM04    4        0     2 65535   6553500     7     7    10      0      0   65535      0       0
   ADDPART  IMS1        0 DFSSAM04    4        0     2 65535   6553500     7     7    10      0      0   65535      0       0
   AOBMP    IMS1        0 TS2IAOB0   23        0 65535 65535   6553500     0     0     0      0      0   65535      0       0
   AOP      IMS1        0 TS1IAOP0    4        0     4     4       500    10    10    12      0    500   65535      0       0
   APOL11   IMS1        0 APOL1       1        0 65535 65535   6553500     1     1     1      0      0   65535      0       0
   APOL12   IMS1        0 APOL1       1        0 65535 65535   6553500     9     9     9      0      0   65535      0       0
   APOL13   IMS1        0 APOL1       1        0 65535 65535   6553500     1     1     1      5      3   65535      0       0
   APOL14   IMS1        0 APOL1       1        0 65535 65535   6553500     1     1     1  65535  65535   65535      0       0
   APOL15   IMS1        0 APOL1       1        0 65535 65535   6553500     1     1     1     80      1   65535      0       0
   APOL16   IMS1        0 APOL1       1        0 65535 65535   6553500     1     1     1     80      3   65535      0       0
   APOL17   IMS1        0 APOL1       1        0 65535 65535   6553500     1     1     1      0      0   65535      0       0
   APOL18   IMS1        0 APOL1       1        0 65535 65535   6553500     1     1     1      0      0   65535      0       0
   APOL21   IMS1        0 APOL1       1        0 65535 65535   6553500     1     1     1      0      0   65535      0       0
   APOL22   IMS1        0 APOL1       1        0 65535 65535   6553500     1     1     1      0      0   65535      0       0
   AUTRAN1H IMS1        0 AUTPSB1H    1        0     2 65535   6553500     7     7    10      0      0   65535      0       0
   AUTRAN11 IMS1        0 AUTPSB11    1        0     2 65535   6553500     7     7    10      0      0   65535      0       0
   AUTRAN12 IMS1        0 AUTPSB11    1        0     2 65535   6553500     7     7    10      0      0   65535      0       0
   AUTRAN2H IMS1        0 AUTPSB1H    1        0     2 65535   6553500     7     7    10      0      0   65535      0       0
   A1111111 IMS1        0 A11APP      1        0 65535 65535   6553500     1     1     1      0      0   65535      0       0
   A3270    IMS1        0 A3270       1        0 65535     1   6553500     8     8     8      0      0   65535      0       0
```

Operations Manager Audit Trail Enhancement

- Example of “dump" listing (CSLOERA3) – unsolicited messages

```
  Display  Filter  View  Print  Options  Help
 ------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY CSLOERA3 JOB00105  DSID   102 LINE 8       COLUMNS 02- 133
 COMMAND INPUT ===>                                           SCROLL ===> CSR
CONTROL    CNTL H=EOF DDNAME=SYSUT1
OPTION     PRINT EXITR=CSLOERA3
END
CSLOERA3  -  OM FORMATTED LOG PRINT
0901 RECORD - 2008-04-21 16:40:00.840374 UTC - CSLOMOUT UNMODIFIED BY OM OUTPUT EXIT
  000000  00000306 09010100 C247508F 90AB6085  C3E2D3D7 D3C5E7F1 F0F1F3F0 00000020  *........B.&...-eCSLPLEX10130....*
  000020  0BA15D08 F7F30001 0A95F9B8 C247508F  310E0002 D6D4F1D6 D4404040 00010300  *..).73...n9.B.&.....OM1OM   ....*
  000040  00024040 40404040 4040D6D4 F1404040  40408000 00000000 E0000000 00000000  *..        OM1     ..............*
  000060  00000000 00000000 00000000 00000000  00000000 00000000 E0000000 00000000  *..............................*
    LINES 000080 TO 00019F SAME AS ABOVE
  0001A0  00000000 00000000 00000000 00000000  00000000 0000C3E2 D3F0F0F2 F0C940D6  *.....................CSL0020I O*
  0001C0  D44040D9 C5C1C4E8 40D6D4F1 D6D44040  40404040 40404040 40404040 40404040  *M  READY OM1OM                  *
  0001E0  40404040 40404040 40404040 40404040  40404040 40404040 40404040 40404040  *                                *
    LINES 000200 TO 0002DF SAME AS ABOVE
  0002E0  40404040 40404040 40404040 40404040  40404040 4040C247 508F90AB 60854040  *                    B.&...-e    *
  000300  40404040 4040                                                            *                                *
0901 RECORD - 2008-04-21 16:40:12.387108 UTC - CSLOMOUT UNMODIFIED BY OM OUTPUT EXIT
  000000  00000306 09010100 C247509A 93B24187  C3E2D3D7 D3C5E7F1 F0F1F3F0 00000020  *........B.&.l..gCSLPLEX10130....*
  000020  0BA15D08 F7F30002 0A95F870 C247509A  86110003 D9D4F1D9 D4404040 00010300  *..).73...n8.B.&.f...RM1RM   ....*
  000040  0003E2D5 C7D3D9D4 4040D9D4 F1404040  40408000 00000000 E0000000 00000000  *..SNGLRM  RM1     ..............*
  000060  00000000 00000000 00000000 00000000  00000000 00000000 E0000000 00000000  *..............................*
    LINES 000080 TO 00019F SAME AS ABOVE
  0001A0  00000000 00000000 00000000 00000000  00000000 0000C3E2 D3F0F0F2 F0C940D9  *.....................CSL0020I R*
```

Operations Manager Audit Trail Enhancement

- Example of “dump" listing (CSLOERA3) – command input/output

```
  Display  Filter  View  Print  Options  Help
--------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY CSLOERA3 JOB00105  DSID   102 LINE 15,417  COLUMNS 02- 133
 COMMAND INPUT ===> _                                  SCROLL ===> CSR
0801 RECORD - 2008-04-21 17:25:49.529096 UTC - CSLOMRSP UNMODIFIED BY OM OUTPUT EXIT
  000000  00043310 08010000 C2475ACC EB408C05  C3E2D3D7 D3C5E7F1 F0F1F3F0 00000020  *........B.!.. ..CSLPLEX1M130...*
  000020  0BA15D08 F7F30001 0A95F9B8 C247508F  310E0002 E4E2D9E3 F0F0F240 00000000  *..).73...n9.B.&....USRT002 ....*
  000040  00084040 40404040 40400000 00000000  00000000 00000000 E4E2D9E3 F0F0F240  *..        ..........USRT002 *
  000060  E4E2D9E3 F0F0F2C3 C1D9E340 40404040  1247508E F354E100 D6D4F1D6 D4404040  *USRT002CART     ..&.3..OM1OM   *
  000080  00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000  *................................*
    LINES 0000A0 TO 0000BF SAME AS ABOVE
  0000C0  00000000 00000000 00000000 00000000  00000000 00000000 C2475ACC EB408C05  *........................B.!.. ..*
  0000E0  40404040 40404040 00000000 00010009  7E9C0100 00000000 00000000 00000000  *        ........=.............*
  000100  00000000 00000000 40404040 40404040  40404040 40404040 40404040 40404040  *........                       *
  000120  40404040 40404040 40404040 40404040  40404040 40404040 40404040 40404040  *                               *
  000140  40404040 40404040 40404040 40404040  40404040 40404040 000431B4 4C6FA794  *                           ....<?xm*
  000160  9340A585 99A28996 957E7FF1 4BF07F6F  6E4C5AC4 D6C3E3E8 D7C54089 94A296A4  *l version="1.0"?><!DOCTYPE imsou*
  000180  A340E2E8 E2E3C5D4 407F8994 A296A4A3  4B84A384 7F6E4C89 94A296A4 A36E4C83  *t SYSTEM "imsout.dtd"><imsout><c*
  0001A0  A3936E4C 96949581 94856ED6 D4F1D6D4  4040404C 61969495 8194856E 4C9694A5  *tl><omname>OM1OM   </omname><omv*
  0001C0  A2956EF1 4BF34BF0 4C619694 A5A2956E  4CA79493 A5A2956E F2F04040 4C61A794  *sn>1.3.0</omvsn><xmlvsn>20  </xm*
  0001E0  93A5A295 6E4CA2A3 81A38994 856EF2F0  F0F84BF1 F1F240F1 F77AF2F5 7AF4F94B  *lvsn><statime>2008.112 17:25:49.*
  000200  F5F2F9F0 F9F64C61 A2A381A3 8994856E  4CA2A396 A3899485 6EF2F0F0 F84BF1F1  *529096</statime><stotime>2008.11*
  000220  F240F1F7 7AF2F57A F4F94BF5 F9F8F1F1  F04C61A2 A396A389 94856E4C A2A381A2  *2 17:25:49.598110</stotime><stas*
  000240  85986EC3 F2F4F7F5 C1C3C3C5 C2F4F0F8  C3F0F54C 61A2A381 A285986E 4CA2A396  *eq>C2475ACCEB408C05</staseq><sto*
  000260  A285986E C3F2F4F7 F5C1C3C3 C6C3F1F9  C5C4F9F8 4C61A2A3 96A28598 6E4C9998  *seq>C2475ACCFC19ED98</stoseq><rq*
  000280  A2A3A392 95F16EE4 E2D9E3F0 F0F2C3C1  D9E34040 4040404C 619998A2 A3A39295  *sttkn1>USRT002CART     </rqsttkn*
  0002A0  F16E4C99 836EF0F0 F0F0F0F0 F0F04C61  99836E4C 99A2956E F0F0F0F0 F0F0F0F0  *1><rc>00000000</rc><rsn>00000000*
```

Operations Manager Audit Trail Enhancement

- User IDs shown with commands entered

```
   File  Action  Manage resources  SPOC  View  Options  Help
 ──────────────────────────────────────────────────────────────
 PLEX1                    IMSplex Audit Trail
 Command ===> ____________________________________________________

 ──────────────────────────────── Members . . _________  Type . . ________
                                                          More:    -+>
 MbrName  Time                    Message
 USRT004  2008.149 09:43:47.14 Cmd input . : QRY DB NAME(B*) SHOW(ALL)
 USRT004  2008.149 09:43:47.14 Response for: QRY DB NAME(B*) SHOW(ALL)
 USRT004  2008.149 09:44:13.42 Cmd input . : UPD DB NAME(BANKTERM) SET(RESIDENT(Y
 USRT004  2008.149 09:44:13.42 Response for: UPD DB NAME(BANKTERM) SET(RESIDENT(Y
 USRT005  2008.149 09:44:54.83 Cmd input . : QRY MEMBER TYPE(IMS) SHOW(ATTRIB)
 USRT005  2008.149 09:44:54.83 Response for: QRY MEMBER TYPE(IMS) SHOW(ATTRIB)
 USRT005  2008.149 09:45:02.18 Cmd input . : QRY TRAN SHOW(ALL) STATUS(DYN,IOPREV
 USRT005  2008.149 09:45:02.18 Response for: QRY TRAN SHOW(ALL) STATUS(DYN,IOPREV
 USRT005  2008.149 09:45:25.23 Cmd input . : QRY DB SHOW(ALL) STATUS(ALLOCF,BACKO
 USRT005  2008.149 09:45:25.23 Response for: QRY DB SHOW(ALL) STATUS(ALLOCF,BACKO
 USRT001  2008.149 09:46:38.78 Cmd input . : QRY MEMBER TYPE(IMS) SHOW(ATTRIB)
 USRT001  2008.149 09:46:38.78 Response for: QRY MEMBER TYPE(IMS) SHOW(ATTRIB)
 USRT001  2008.149 09:46:42.76 Cmd input . : QRY PGM SHOW(ALL)
 USRT001  2008.149 09:46:42.76 Response for: QRY PGM SHOW(ALL)
 USRT001  2008.149 09:47:03.33 Cmd input . : UPD PGM NAME(APOL1)  SET(DOPT(Y))
   F1=Help    F3=Exit    F5=Rfind   F7=Up      F8=Down   F12=Cancel
```

Operations Manager Audit Trail Enhancement

- User IDs shown with commands entered – filtered by User ID

```
  File  Action  Manage resources  SPOC  View  Options  Help

PLEX1                          IMSplex Audit Trail
Command ===>

                                           Members . ( usrt002 ) Type . .
                                                                     More:     -+>
MbrName  Time                     Message
USRT002  2008.148 10:47:26.43 Response for: DIS STATUS
USRT002  2008.148 11:08:37.49 Cmd input . : DIS DB ALL
USRT002  2008.148 11:08:37.49 Response for: DIS DB ALL
USRT002  2008.148 11:08:42.45 Cmd input . : DIS STATUS
USRT002  2008.148 11:08:42.45 Response for: DIS STATUS
USRT002  2008.148 11:39:12.95 Cmd input . : DIS DB ALL
USRT002  2008.148 11:39:12.95 Response for: DIS DB ALL
USRT002  2008.148 11:39:27.71 Cmd input . : DIS STATUS
USRT002  2008.148 11:39:27.71 Response for: DIS STATUS
USRT002  2008.148 12:52:48.28 Cmd input . : QRY TRAN NAME(A*)
USRT002  2008.148 12:52:48.28 Response for: QRY TRAN NAME(A*)
USRT002  2008.148 12:53:01.85 Cmd input . : QRY DB NAME(A*)
USRT002  2008.148 12:53:01.85 Response for: QRY DB NAME(A*)
USRT002  2008.148 12:53:13.26 Cmd input . : DIS DB ALL
USRT002  2008.148 12:53:13.26 Response for: DIS DB ALL
  F1=Help    F3=Exit    F5=Rfind    F7=Up      F8=Down   F12=Cancel
```

Operations Manager Enhancements

- Additional log record (for a total of two records) can be generated if:
  - Command logged before OM Input user exit called
  - Command response logged before OM Output user exit called
    - If it is modified by the exit, then a second log record is written for the modified version
- TSO SPOC and REXX have support for reading the audit trail
- Unsolicited messages from IMS may be sent to OM clients
  - AOP client must subscribe to OM to receive unsolicited messages from IMS

Setting up the OM Audit Trail

- Define AUDITLOG= <MVS log stream> in CSLOIxxx PROCLIB member
- If this parameter is not specified, then OM commands and command responses are not logged.
- Who wants to see an example CSLOIxxx PROCLIB member?

Example CSLOIxxx PROCLIB Member

```
*-------------------------------------------------------------------*
* Sample OM Initialization PROCLIB member.
*-------------------------------------------------------------------*

ARMRST=Y,                       /* ARM should restart OM on failure  */
CMDLANG=ENU,                    /* Use English for Command Desc      */
CMDSEC=N,                       /* No Command Security               */
OMNAME=OM1,                     /* OM Name (OMID = OM1OM)            */
                                /* OM2 AUDIT TRAIL LOG DATASET       */
                                /* IMSplex Name (CSLPLEX1)           */

IMSPLEX(NAME=PLEX1,AUDITLOG=SYSLOG.OM2Q01.LOG),

                                /* CMD Syntax Translation Table      */
CMDTEXTDSN=IMSTESTG.DUMMY.TRNTBL

*-------------------------------------------------------------------*
* End of Member CSLOI000                                            *
*-------------------------------------------------------------------*
```

Global Status

Global Status

- What's "global status"?
  - A global resource state maintained in an Resource Manager (RM) structure for:
    - Databases
    - HALDB partitions
    - DEDB areas
    - Transactions
- Requires Common Service Layer (CSL) with RM

Global Status

- Created by
  - Type-1 command with GLOBAL parameter for database, area or partition (IRLM needs to be active)
    - /START, /STOP, /DBR, /DBD
      - **Default is LOCAL - local resource status will be set**
  - Type-2 command with SCOPE(ALL) for database, area, partition, or transaction
    - UPDATE
      - **Default is SCOPE(ALL) - global resource status will be set**
- Global status commands
  - Processed by all active IMS systems
    - Change the local status
  - Set status in RM structure for the database, area, partition, or transaction

Global Status

- Resources (databases, partitions, areas, and transactions) have local status and global status
  - Examples:
    - Transaction may be stopped globally but started locally in an IMS
      - This transaction may execute in this IMS system
    - Database may be started globally but "DBRed" in an IMS
      - This database is not accessible in this IMS system
  - Global status is used to set local status only when
    1. Global status is set while an IMS system is down

       and
    2. IMS system is restarted
       - This IMS system assumes the global status set while it was down

Global Status

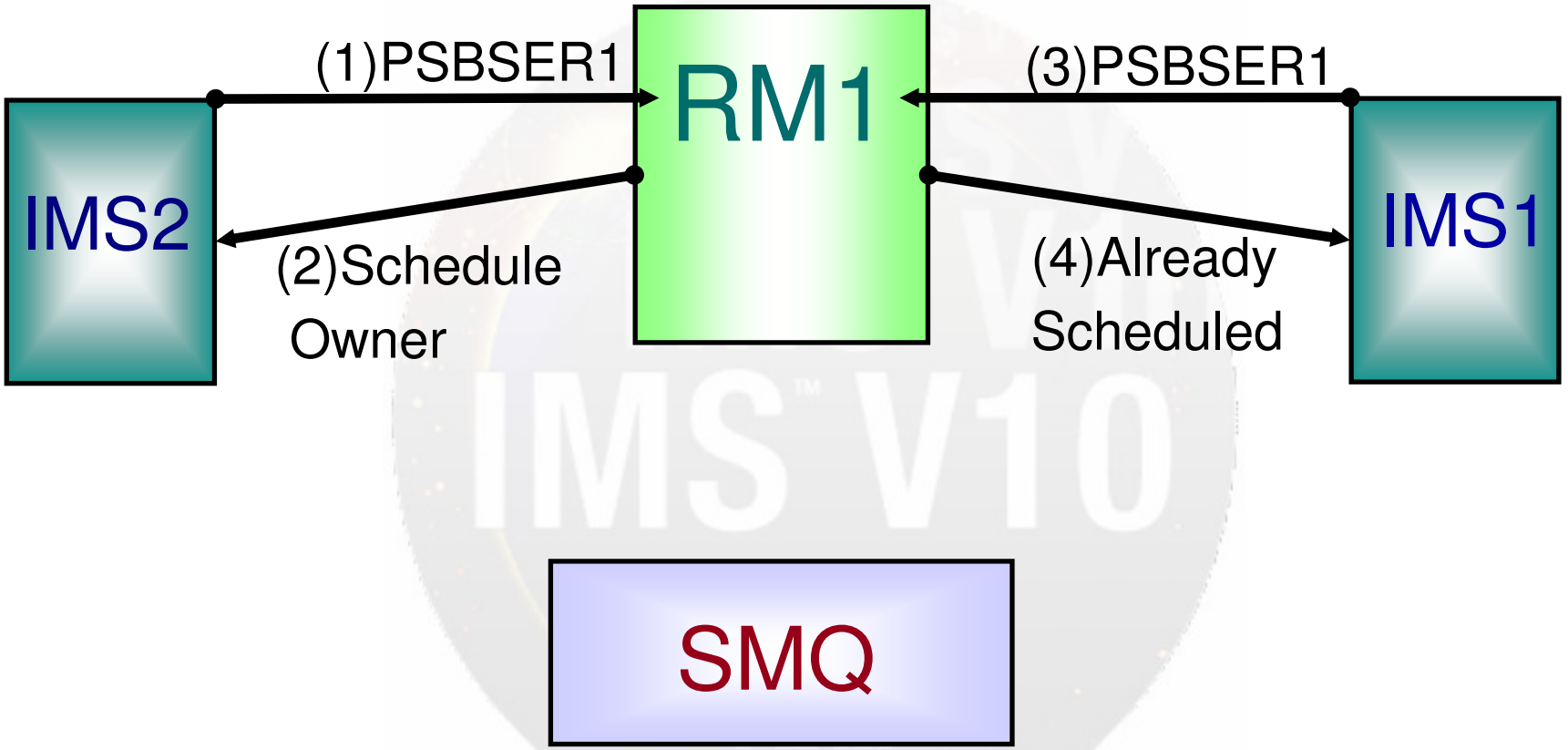
- Benefits
  - Resources may be treated globally
    - Databases and areas
      - START(ACCESS), STOP(ACCESS), STOP(UPDATES), STOP(SCHD), LOCK, OPEN, DBALLOC
    - Transactions
      - START(Q), STOP(Q), START(SCHD), STOP(SCHD), LOCK
  - Each IMS system has its own local status
    - This is effective within this system
  - Restarted IMS systems assume the status that was changed while these systems were down
    - Local status is set to the global status

Sysplex Serial Program Management

Sysplex Serial Program Management (SSPM)

- Optional enforcement of program level serialization across IMSplex
  - SCHDTYP=SERIAL on APPLCTN macro
  - Previous releases
    - Enforced only within each IMS system
  - IMS 10
    - Optionally enforced across all IMSs in IMSplex
    - Requires Shared Queues and RM with an RM structure
      - Lack of any of these components would result in the deactivation of the SSPM capability
    - Serialization done with RM -- schedule will verify with RM that the program is not scheduled
- Benefits
  - Only one copy of the IMS TM program will be scheduled across the entire IMSplex
  - Removes requirement for specialized customer procedures
  - No program changes or definition changes

Sysplex Serial Program Management (SSPM)



Batch SPOC Utility

Batch SPOC Utility

- Provides a capability to submit IMS commands from a batch job step
  - Uses the Operations Manager (OM) interface
- Benefits: Batch jobs may include steps with "online" commands
  - For example, steps to /DBR, reorganize, and /START databases
- Invoked using JCL statements
- Commands defined in SYSIN file
  - Executed serially (one command completes before the next is issued)
- Output to SYSPRINT
  - Responses formatted to look like SPOC screen format

Batch SPOC Utility

- Execution parameters
  - IMSPLEX (required) - 1 to 5 character suffix of the IMSplex name
  - ROUTE (optional) - SYSIDs of IMSplex members that are to execute the command
    - All IMSplex members will execute the command if ROUTE not specified
    - If more than one member is specified, enclose the list in parentheses and separate the names with commas

Batch SPOC Utility

- Execution parameters – cont'd…
  - WAIT (optional) - Wait time for individual commands
    - Format is in minutes and seconds (MMM:SS) or just seconds (SSSSS)
    - Default value is five minutes (5:00)
    - Applies to every command in SYSIN file
    - If a wait time of zero seconds specified, utility will issue command but not wait for a response before issuing next command in SYSIN file
- Now let's see some input/output examples!

Batch SPOC Utility – Input Example

- JCL invokes CSLUSPOC program
- Execution parameters specified with PARM=

```
//SPOCJOB   JOB ,
// MSGCLASS=H,NOTIFY=&SYSUID,USER=&SYSUID
//SPOC      EXEC PGM=CSLUSPOC,
//  PARM=('IMSPLEX=PLEX1,ROUTE=IMS3,WAIT=30')
//STEPLIB   DD DISP=SHR,DSN=IMS.SDFSRESL
//SYSPRINT  DD SYSOUT=*
//SYSIN     DD *
 QRY IMSPLEX SHOW(JOB,TYPE,   +
                  STATUS)

QRY TRAN NAME(INV1*) SHOW(ALL) /* inventory appl */
/*EOF
```

Batch SPOC Utility – Input Example

- SYSIN DD statement includes commands to be issued when utility is run
- Continuation characters
  - Plus sign “+” removes leading blanks from next line
  - Minus sign “-” preserves leading blanks in next line

```
//SPOCJOB   JOB ,
// MSGCLASS=H,NOTIFY=&SYSUID,USER=&SYSUID
//SPOC      EXEC PGM=CSLUSPOC,
//  PARM=('IMSPLEX=PLEX1,ROUTE=IMS3,WAIT=30')
//STEPLIB   DD DISP=SHR,DSN=IMS.SDFSRESL
//SYSPRINT  DD SYSOUT=*
//SYSIN     DD *
 QRY IMSPLEX SHOW(JOB,TYPE,   +
                  STATUS)

QRY TRAN NAME(INV1*) SHOW(ALL) /* inventory appl */
/*EOF
```

Batch SPOC Utility – Input Example

- Specify DD SYSOUT=* to view utility output with SDSF after utility is run

```
//SPOCJOB   JOB ,
// MSGCLASS=H,NOTIFY=&SYSUID,USER=&SYSUID
//SPOC      EXEC PGM=CSLUSPOC,
//  PARM=('IMSPLEX=PLEX1,ROUTE=IMS3,WAIT=30')
//STEPLIB   DD DISP=SHR,DSN=IMS.SDFSRESL
//SYSPRINT  DD SYSOUT=*
//SYSIN     DD *
 QRY IMSPLEX SHOW(JOB,TYPE,   +
                  STATUS)

QRY TRAN NAME(INV1*) SHOW(ALL) /* inventory appl */
/*EOF
```

- Hmm…I wonder what the output would look like after I run this JCL…

Batch SPOC Utility – Output Example with wait time specified

```
=============================================================
Log for. . : QRY IMSPLEX SHOW(JOB,TYPE,STATUS)

IMSplex . . . . . : PLEX1
Routing . . . . . : IMS3
Start time. . . . : 2005.132 15:36:28.11
Stop time . . . . : 2005.132 15:36:29.17
Return code . . . : 00000000
Reason code . . . : 00000000
Command master. . : SYS3

IMSplex  MbrName CC  Member  JobName  Type Status
CSLPLEX1 OM1OM   0   USRT002 USRT002  AOP ACTIVE
CSLPLEX1 OM1OM   0   OM1OM   OM1      OM READY,ACTIVE
CSLPLEX1 OM1OM   0   RM1RM   RM1      RM READY,ACTIVE
CSLPLEX1 OM1OM   0   SCI1SC  SCI1     SCI READY,ACTIVE
CSLPLEX1 OM1OM   0   IMS3    IMS3     IMS READY,ACTIVE
CSLPLEX1 OM1OM   0   SYS1    SYS1     IMS READY,ACTIVE
=============================================================
```

Command response included in output

Batch SPOC Utility – Output Example with no wait time specified

```
================================================================
Log for. . : QRY IMSPLEX SHOW(JOB,TYPE,STATUS)

IMSplex . . . . . : PLEX1
Routing . . . . . :
Start time. . . . : 2006.075 15:36:28.11
================================================================
```

No command response included in output

Batch SPOC Utility – Commands Supported

/ACTIVATE
/ALLOCATE
/ASSIGN
/BROADCAST
/CHANGE
/CHECKPOINT
/CLSDST
/CQCHKPT
/CQQUERY
/CQSET
*CREATE
/DBDUMP
/DBRECOVERY
/DELETE
*DELETE
/DEQUEUE
/DISPLAY
/END
/ERESTART
/EXCLUSIVE
/EXIT
/IDLE
*INITIATE
/LOCK
/LOG
/MODIFY
/MONITOR
/MSASSIGN
/NRESTART
/OPNDST
/PSTOP
/PURGE
*QUERY
*QUEUE
/QUIESCE
/RDISPLAY

Batch SPOC Utility – Commands Supported

/RECOVER
/RMCHANGE
/RMDELETE
/RMGENJCL
/RMINIT
/RMLIST
/RMNOTIFY
/RSTART
/RTAKEOVER
/SECURE
/SMCOPY
/START
/STOP
/SWITCH
*TERMINATE
/TEST
/TRACE
/UNLOCK
*UPDATE
/VUNLOAD

Enhanced Display of System Parameters

Enhanced Display of System Parameters

- DFS1929I message is displayed twice
  - At initialization
    - Same as previous releases of IMS
    - Displays each system parameter and the user-specified value, or its default value if the user specified nothing
  - After restart is complete
    - Added in IMS 10
    - Displays actual system parameters that are in effect after reading the log
    - Enhanced information
- Benefits
  - Provides accurate information about actual parameters used

Queuing/dequeuing Work to IMS

Queuing Work to IMS from a SPOC

- Use new QUEUE command to enqueue/dequeue messages to TRANs or LTERMs (must issue from OM API)
- Supported in both local and shared queues environments

```
QUEUE TRAN | LTERM
NAME(tranname | ltermname)
OPTION (ENQ | DEQALL | DEQ1)
DATA (message data) <<< valid for OPTION(ENQ) only
```

- NAME()= specifies the 1-8 character TRAN or LTERM name
- OPTION()= indicates intended action for messages
- DATA()= specifies the message data to be queued to TRAN or LTERM, valid with OPTION(ENQ) only
  - Maximum length = 32,763

QUEUE TRAN command

- OPTION(ENQ)
  - Allows messages to be enqueued to a transaction
  - Default OPTION parameter
  - Output from transaction is sent to OM as unsolicited output
    - MFS formatting not preserved
  - If transaction is not found locally, IMS calls DFSINSX0 (Destination Creation) exit that can create the transaction for processing

QUEUE TRAN command

- OPTION(ENQ) – cont'd…
  - Command not processed if transaction is stopped for queuing locally or globally
  - Transaction can be conversational but not in conversational mode with OM
  - Transaction types not supported:
    - Full-function response mode
    - Fast Path
    - Remote

QUEUE TRAN command

- DATA(message data)
  - Valid only when OPTION(ENQ) specified
  - Variable length and can be in mixed case
  - Data is enqueued as a single segment message
    - Leading and embedded blanks included
- OPTION(ENQ) supported in local and shared queues environments
  - Command is processed by only 1 IMS
  - Note: cannot QUEUE with affinity to any particular IMS in shared queues environment

QUEUE TRAN command – queuing examples

```
QUEUE TRAN NAME(PART) DATA(message1)

Trancode   MbrName   CC
PART       IMS2       0
```

```
QUEUE TRAN NAME(ADDADDR) DATA(SMITH 555 BAILEY AVE SAN JOSE)

Trancode   MbrName   CC
ADDADDR    IMS2       0
```

QUEUE TRAN command

- OPTION(DEQALL)
  - Indicates that all messages currently enqueued to the transaction should be dequeued and discarded
- OPTION(DEQ1)
  - Indicates that the first/oldest message enqueued to the transaction should be dequeued and discarded
- Considerations for OPTION (DEQALL | DEQ1)
  - The transaction must be stopped locally before messages can be dequeued
  - Writes a X'22' subcode 99 log record for diagnostics (not processed at IMS restart)

QUEUE TRAN command

- OPTION(DEQALL | DEQ1) in local queues environment
  - All IMS systems that receive the command process it, returning response output to OM
  - Example

```
QUEUE TRAN NAME(ADDINV) OPTION(DEQALL)
Trancode   MbrName   CC   CCtext                          LQcnt
ADDINV     IMS2       0                                      2
ADDINV     IMS3       0                                      0
ADDINV     IMS1       8D RESOURCE IS NOT STOPPED             0
```

QUEUE TRAN command

- OPTION(DEQALL | DEQ1) in a shared queues environment
  - Only the command master IMS processes the command
  - Example

```
QUEUE TRAN NAME(ADDINV) OPTION(DEQALL)
Trancode   MbrName   CC   Qcnt
ADDINV     IMS2       0      2
```

QUEUE LTERM command

- OPTION(ENQ)
  - Allows messages to be enqueued to an LTERM
  - Default OPTION parameter
  - Command not processed if LTERM is stopped for queuing locally or globally
  - If LTERM is not found locally and ETO is enabled, IMS calls DFSINSX0 (Destination Creation) exit to dynamically create the LTERM for processing
  - Similar to a /BROADCAST (a multi-segment Type-1 command used to send a message to terminals in one or more IMS systems)
  - Remote LTERMS are not supported

QUEUE LTERM command

- DATA(message data)
  - Valid only when OPTION(ENQ) specified
  - Variable length and can be in mixed case
  - Data is enqueued as a single segment message
- OPTION(ENQ) in a local queues environment
  - All IMS systems that receive the command process it, returning response output to OM

QUEUE LTERM command – Example

- Local queues environment
  - Each IMS processes the command

```
QUEUE LTERM NAME(USER5) DATA(SYSTEM WILL BE SHUTDOWN IN 5 MIN)

Lterm   MbrName   CC   CCText
USER5   IMS2       0
USER5   IMS4      10   NO RESOURCES FOUND
USER5   IMS1       0
USER5   SYS3      8C   RESOURCE IS STOPPED
```

- No OPTION() keyword is specified, so default of OPTION(ENQ) taken

QUEUE LTERM command – Example

- Shared queues environment
  - Only the command master IMS processes the command in a shared queues environment

```
QUEUE LTERM NAME(USER5) OPTION(ENQ) DATA(SYSTEM WILL BE SHUTDOWN IN 5 MIN)

Lterm   MbrName   CC
USER5   IMS2       0
```

QUEUE LTERM command

- OPTION(DEQALL)
  - Indicates that all messages currently enqueued to the LTERM should be dequeued and discarded
- OPTION(DEQ1)
  - Indicates that the first/oldest message enqueued to the LTERM should be dequeued and discarded

QUEUE LTERM command

- Considerations for OPTION (DEQALL | DEQ1)
  - LTERM must be stopped
  - NODE for static LTERM and USER for dynamic LTERM must be stopped
  - In a shared queues environment
    - If STM=NO -- command is processed only by command master
    - If STM=YES -- command is processed by:
      - Command master if USER|NODE not owned
      - Owning system if USER|NODE owned
  - In a local queues environment
    - Processed by all IMS systems that receive the command

QUEUE LTERM command

- OPTION(DEQALL | DEQ1) in local queues environment
  - All IMS systems that receive the command process it, returning response output to OM
  - Example

```
QUEUE LTERM NAME(IMSUS01) OPTION(DEQALL)

Lterm     MbrName   CC   LQcnt
IMSUS01   IMS2       0       3
IMSUS01   IMS3       0       0
```

QUEUE LTERM command

- OPTION(DEQALL | DEQ1) in shared queues environment
  - Only the command master IMS processes the command
  - Example

```
QUEUE LTERM NAME(IMSUS01) OPTION(DEQALL)
Lterm     MbrName   CC   Qcnt
IMSUS01   IMS2       0      4
```

Dynamic Resource Definition

Dynamic Resource Definition (DRD)

- OBJECTIVE: *To improve the availability* of the IMS online environment
- Allows user to *dynamically* define and enable *MODBLKS resource definitions*
  - *Databases*
  - *Programs*
  - *Transactions*
  - *Routing Codes*
- Allows user to dynamically UPDATE MSC definitions
- No requirement for IMS SYSGEN + IMS restart /MODBLKS online change
- Result: reduced resource unavailability

Commands Used in Dynamic Resource Definition

- Type-2 commands entered through OM interface
  - Apply to MODBLKS resources and descriptors
  - Descriptor: a model template used to set default attributes for those not explicitly set in a DRD command

Command	Short Form	Purpose
CREATE	CRE	Create resource or descriptor definition
DELETE	DEL	Delete resource or descriptor definition
UPDATE	UPD	Update attributes of resource or descriptor definition Update status of resource
QUERY	QRY	Query attributes of resource or descriptor definition Query status of resource

Reference Table for Resources & Keywords

Resource Type	SYSGEN Macro	IMS Control Block	Resource Keyword	Descriptor Keyword
Database	DATABASE	DDIR	DB	DBDESC
Program/PSB	APPLCTN	PDIR	PGM	PGMDESC
Transaction	TRANSACT	SMB	TRAN	TRANDESC
Routing Code	RTCODE	RTCE	RTC	RTCDESC

- Examples
  - CREATE PGM…
  - DELETE TRANDESC…
  - UPDATE TRAN…

CREATE Command - Syntax

```
CREATE rsc-type | desc-type
NAME(name1,name2,...)
LIKE(RSC(rsc-name)) | LIKE(DESC(desc-name))
SET(attr1(val1),attr2(val2),...
DEFAULT(Y))   <<< valid for descriptors only
```

- **rsc-type | desc-type** = resource or descriptor type
  - See slide 55 for resource command keywords (e.g., PGM, PGMDESC)
- **NAME()** = resource or descriptor names; they will all have the same attributes; wild cards not supported
- **LIKE()** = resource or descriptor name to use as model
- **SET()** = attribute names and values
- **DEFAULT(Y)** – valid for descriptors only
  - Y causes this descriptor to become current system default descriptor

DELETE Command

- DELETE command syntax

```
DELETE rsc-type | desc-type
    NAME(* | name1,name2,NAME*,...) OPTION(ALLRSP)
```

- **rsc-type | desc-type** = resource or descriptor type
  - See slide 55 for resource command keywords (e.g., PGM, PGMDESC)
- **NAME()** = names of resources or descriptors
  - Can specify multiple names
  - Can use wildcard character
    - NAME(*) – all resources or descriptors (be careful)
    - NAME(PART*) – resource or descriptors starting with PART
    - NAME(ADDPART,BILL*)

DELETE Command

- DELETE command syntax

```
DELETE rsc-type | desc-type
    NAME(* | name1,name2,NAME*,...) OPTION(ALLRSP)
```

- **OPTION(ALLRSP)**
  - Ignored except when NAME(*)
  - Indicates responses to be returned for all resources
    - Default is to return response only for error conditions

- Cannot delete resource if “in use”
  - Recommendation: QUERY and /STOP resource before attempting to delete

QUERY Command for Runtime MODBLKS Resource Definitions

- Enhanced in IMS 10 to support:
  - QUERY PGM (queries information about program resources)
  - QUERY RTC (queries information about Fast Path routing codes)
  - New parameter SHOW(WORK) displays work status of a MODBLKS resource
- Generally indicates reasons that would prevent online change or some DRD commands from completing successfully
  - Online Change MODBLKS / ACBLIB
  - DELETE resource
  - UPDATE resource

QUERY Command for MSC Resources

- Enhanced in IMS 10 to display MSC attributes and status
  - QUERY MSPLINK
    - Displays definitions and status for one or more physical links
  - QUERY MSLINK
    - Displays definitions and status for one or more logical links
  - QUERY MSNAME
    - Displays definitions and status for one or more logical link paths

UPDATE Command

- Enhanced in IMS 10 to support updating:
  - Resource/descriptor status and attributes
    - MODBLKS: DB, PGM, TRAN, RTC
    - MSC: MSPLINK, MSLINK, MSNAME

    } command keywords

      - MSC definitions have no CREATE | DELETE support
- Cannot update resource attribute if resource “in use”
- Recommendation: QUERY and /STOP resource before attempting to update
- Cannot update resource attributes and status in same command
- Updating (or creating) descriptor with DEFAULT(Y) sets this descriptor to current system default descriptor for that resource type

ACBLIB Member Online Change

ACBLIB Member Online Change

- Allows individual additions or changes to members of ACBLIB without the requirements of a full ACBLIB online change
  - Delete not supported
- Availability benefit: reduction in resources quiesced
  - *Only the resources that are affected* by the member online change are quiesced allowing concurrent activity
- ACBGEN enhancement
  - If changing a DBD (and BLDPSB=YES in ACBGEN)
    - All referenced PSBs are automatically generated by ACBGEN and copied to the active during Member OLC

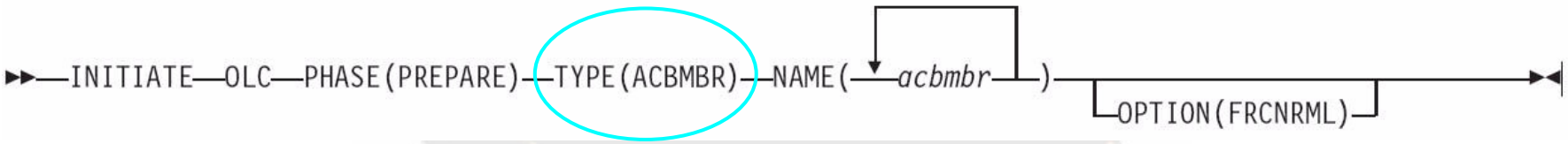
ACBLIB Member Level Online Change Commands

- Existing commands enhanced with new parameter support for member level online change
  - INIT OLC PHASE(PREPARE) TYPE(ACBMBR) NAME(mbrname)
  - QRY OLC SHOW(RSCLIST)

- Existing commands now applicable to member level online change
  - INIT OLC PHASE(COMMIT)
  - TERMINATE OLC
  - QUERY MEMBER TYPE(IMS)

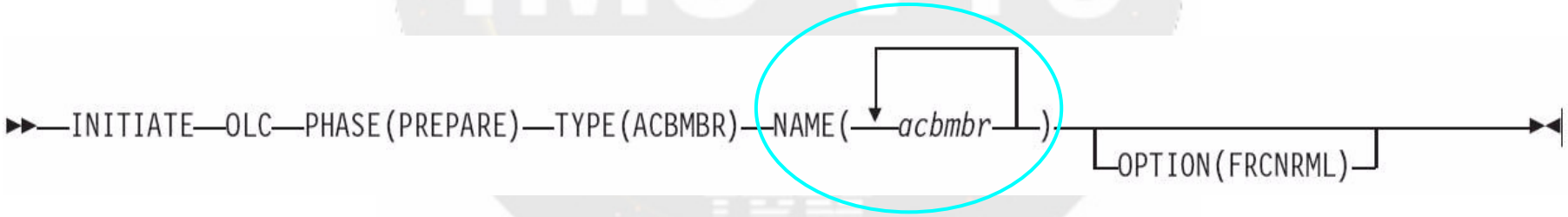
INIT OLC PHASE(PREPARE) Command

- All IMSs in OLCSTAT must be IMS Version 10, otherwise command will fail
- TYPE(ACBMBR) parameter
  - Specifies that a member level online change is to be performed for ACBLIB members included in NAME parameter
  - Mutually exclusive with any other TYPE parameter, including TYPE(ALL)



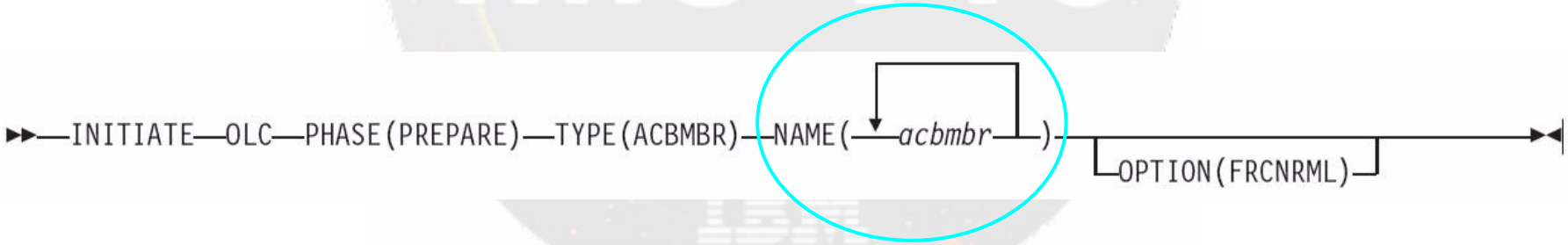
INIT OLC PHASE(PREPARE) Command

- NAME parameter
  - Required when TYPE(ACBMBR) specified on INIT OLC command
  - PSB name
    - PSB will be copied from staging ACBLIB to active ACBLIB
  - DBD name
    - DBD will be copied from staging ACBLIB to active ACBLIB
    - DBD, all referencing PSBs, and external referenced DBDs are copied from staging ACBLIB to active ACBLIB



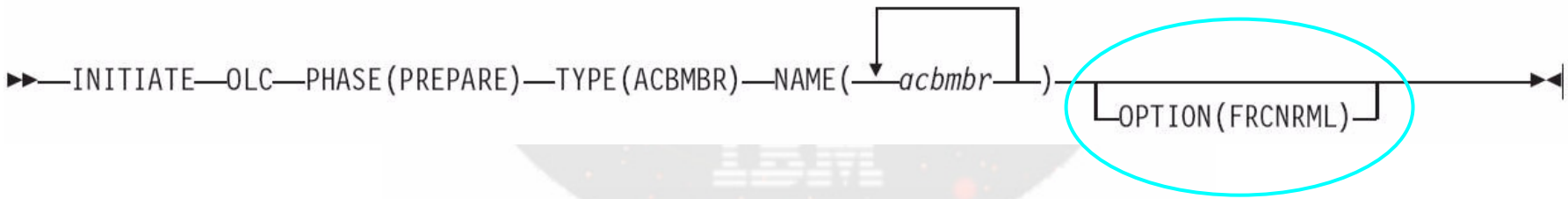
INIT OLC PHASE(PREPARE) Command

- DBD name (continued)
  - Referencing PSBs and external references need not be specified on INIT OLC command
  - ACBGEN must be done with default of BLDPSB=YES so that associated PSBs are rebuilt in staging ACBLIB
- Restrictions
  - Cannot be a wildcard or ALL
  - Only able to be specified with TYPE(ACBMBR)



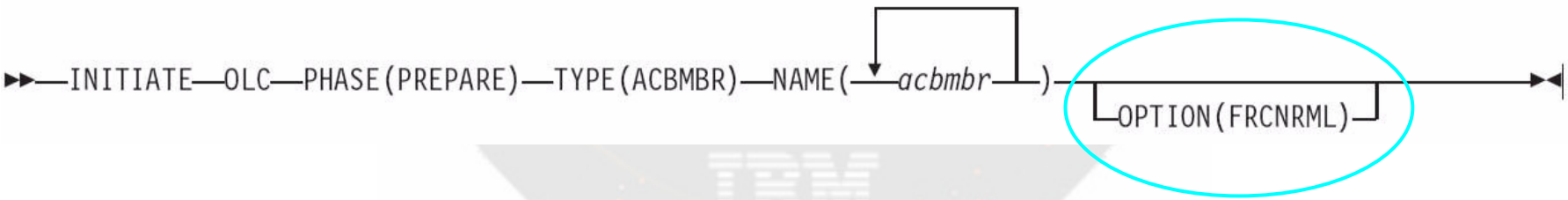
INIT OLC PHASE(PREPARE) Command

- OPTION(FRCNRML) parameter
  - Only valid OPTION when TYPE(ACBMBR) specified
  - Allows a member level online change to be processed if any IMS in OLCSTAT shutdown normally
  - IMS that is down removed from OLCSTAT dataset
    - When this IMS restarts and it has missed a member level online change, DFS3433W message issued indicating a member level online change modify ID mismatch



INIT OLC PHASE(PREPARE) Command

- OPTION(FRCNRML) parameter - continued
  - No OPTION(FRCABND) support - if an IMS is down due to an abend the INIT OLC PHASE(PREPARE) TYPE(ACBMBR) command will fail
    - Rationale: complex restart implications such as an IMS that made database updates before its abend would not be able to restart
    - To bring in ACBMBR changes despite an IMS being abended, user can do a full library switch with global OLC



INIT OLC PHASE(PREPARE) Command Response

- New output fields
  - ACBSHR: ACBSHR= value specified in DFSCGxxx PROCLIB member
  - DBDName: DBD resource name
  - PSBName: PSB resource name
  - ADD: Member found in staging ACBLIB but not in active ACBLIB and will be added to active ACBLIB
  - COPY: Member does not have a PDIR for a PSB or DDIR for a DBD in an IMS system. Member will be copied from staging ACBLIB to active ACBLIB and will not be available until the PDIR or DDIR is created
  - CHNG: Member found in both staging and active ACBLIBs and will be changed in active ACBLIB

INIT OLC PHASE(PREPARE) Command Response

- New output fields (continued)
  - RFSH: PSB is refreshed in active ACBLIB (found in staging and active ACBLIBs but is not changing)
  - RSCName: resource name specified on NAME keyword that resulted in error (completion code returned with reason)

INIT OLC PHASE(PREPARE) Command Example

```
INITIATE OLC PHASE(PREPARE) TYPE(ACBMBR) NAME(OLCDB105 OLCDX111)
```

```
MbrName   Member      CC ACBSHR DBDName   PSBName   ADD
IMS2      IMS1         0 Y
IMS2      IMS2         0 Y
IMS2      IMS1         0         OLCDB105            Y
IMS2      IMS2         0         OLCDB105            Y
IMS2      IMS1         0         OLCDB111            Y
IMS2      IMS2         0         OLCDB111            Y
IMS2      IMS1         0         OLCDI111            Y
IMS2      IMS2         0         OLCDI111            Y
IMS2      IMS1         0         OLCDX111            Y
IMS2      IMS2         0         OLCDX111            Y
IMS2      IMS1         0                   OLCPB105  Y
IMS2      IMS2         0                   OLCPB105  Y
IMS2      IMS1         0                   OLCPB111  Y
IMS2      IMS2         0                   OLCPB111  Y
```

QUERY OLC Command

- SHOW(RSCLIST) parameter support added
  - Valid only when a TYPE(ACBMBR) online change is in progress after an INIT OLC PHASE(PREPARE) has been completed
  - Returns the ACBLIB members that will be added/copied to or changed in the active ACBLIB
  - Mutually exclusive with SHOW(ALL)
    - SHOW(ALL) includes SHOW(ACTVLIB,DSN,LASTOLC, MBRLIST,MODID)
  - Need not specify LIBRARY(OLCSTAT) as is case with global OLC
- Syntax: QUERY OLC SHOW(RSCLIST)
- New output fields
  - Same as INIT OLC PHASE(PREPARE) TYPE(ACBMBR) minus ACBSHR

QUERY OLC SHOW(RSCLIST) Command Example

```
QUERY OLC SHOW(RSCLIST)
```

```
MbrName     CC  DBDName   PSBName   ADD
IMS1         0  OLCDB105             Y
IMS2         0  OLCDB105             Y
IMS1         0  OLCDB111             Y
IMS2         0  OLCDB111             Y
IMS1         0  OLCDI111             Y
IMS2         0  OLCDI111             Y
IMS1         0  OLCDX111             Y
IMS2         0  OLCDX111             Y
IMS1         0           OLCPB105  Y
IMS2         0           OLCPB105  Y
IMS1         0           OLCPB111  Y
IMS2         0           OLCPB111  Y
```

QUERY MEMBER TYPE(IMS) Command

- Can be issued after an INIT OLC PHASE(PREPARE) command has been successfully completed
- New OLCMACB status added to command response to indicate that a member level online change is in progress
- All other global online change status will be returned in command response as well

QUERY MEMBER TYPE(IMS) Command

Status	Meaning	Scope
LEOPT	Language Environment options	LCL
OLCMACB	Member OLC in progress	GBL
OLCABRTC	OLC abort completed	LCL
OLCABRTI	OLC abort in progress	LCL
OLCCMT1C	OLC commit phase 1 completed	LCL, GBL
OLCCMT1I	OLC commit phase 1 in progress	LCL, GBL
OLCCMT2C	OLC commit phase 2 completed	LCL, GBL
OLCCMT2F	OLC commit phase 2 failed	LCL
OLCCMT2I	OLC commit phase 2 in progress	LCL, GBL
OLCMSTR	OLC command master	GBL
OLCPREPC	OLC prepare phase completed	LCL, GBL
OLCPREPF	OLC prepare phase failed	LCL
OLCPREPI	OLC prepare phase in progress	LCL, GBL
OLCTERMC	OLC terminate completed	GBL
OLCTERMF	OLC terminate failed	LCL
OLCTERMI	OLC terminate in progress	GBL
XRFALT	XRF alternate system	LCL

QUERY MEMBER TYPE(IMS) Command Example

QUERY MEMBER TYPE(IMS) SHOW(STATUS)

```
MbrName     CC   Status                                  LclStat
IMS1         0                                          OLCCMT1C,OLCCMT2I
IMS2         0                                          OLCCMT1C,OLCCMT2I
IMS2         0   OLCMSTR,OLCMACB,OLCCMT1C,OLCCMT2I
IMS3         0                                          OLCCMT1C,OLCCMT2I
```

New Completion Codes

DFSCMDRR Completion Code (CC)	Meaning
120	Staging library is empty
121	Resource in command has no change
122	Not all PSBs rebuilt for this DMB
123	Staging library level not compatible with current IMS
124	DOPT PSB will not be copied to active ACBLIB by member OLC
125	No PSB rebuilt for this changed DMB
126	ACBLIB member level OLC previous commit failed
127	ACBLIB member level OLC commit member failed
128	ACBLIB member level OLC refresh member failed
129	ACBSHR mismatch
130	Allocation of staging ACBLIB failed
131	Allocation of active ACBLIB failed
132	Open of staging ACBLIB failed
133	I/O error of active ACBLIB

New Completion Codes - continued

DFSCMDRR Completion Code (CC)	Meaning
134	Open active ACBLIB failed
135	I/O error of staging ACBLIB
136	Max concatenations for active ACBLIB

New reason code X'4303'

- Signifies that the IMS attempting the member level online change is lower than V10 and therefore not at the minimum release level
- Issued after a failed INIT OLC PHASE(PREPARE) TYPE(ACBMBR) attempt with return code of X'10' (environment error)

Completion Code Text Enhancements

Completion Code (CC) Text Enhancements

- Explanation of non-zero CCs included in output of all Type-2 commands
  - If all CCs are zero, TSO SPOC does not display CCText column

```
UPD DB NAME(ACCTMSTR) STOP(ACCESS)
DBName     MbrName  CC   CCText
ACCTMSTR   IMS1     AA   DB IN USE-BMP
ACCTMSTR   IMS2      0
ACCTMSTR   DBC3     AB   DB IN USE-DBCTL LONG THREAD
```

```
QRY DB NAME(ACCTHIST,CUSTHST) SHOW(ACCTYPE,LOCAL)
DBName     MbrName  CC   CCText                        ACCTYPE
ACCTHIST   IMS1      0                                 UP
CUSTHST    IMS1     10   NO RESOURCES FOUND
```

- Complete list of CC and CCText documented in *Command Reference Guide*

Summary

Summary

- Operations Manager (OM) Audit Trail
- Global Status
- Sysplex Serial Program Management (SSPM)
- Batch SPOC Utility
- Enhanced Display of System Parameters
- Queuing/dequeuing work to IMS systems
- Dynamic Resource Definition
- ACBLIB Member Online Change
- Completion Code Text Enhancements

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