Maximize Availability with IMS 10 Dynamic Resource Definition and Online Change Enhancements

Angie Greenhaw

IT Specialist, IMS Advanced Technical Support

greenhaw@us.ibm.com

IMS V10

Overview

- Dynamic Resource Definition (DRD)
  - MODBLKS resources
  - Modifying resource definitions without DRD
  - DRD Objective/How does it work?
  - DRD components
  - Modifying resource definitions with DRD
  - Required environment
  - Enabling DRD
  - MODBLKS resource loading during IMS restart
  - Descriptors
  - Recoverability of resources/descriptors
  - Commands/How to use – CREATE, DELETE, UPDATE, QUERY
  - Availability benefits

Overview

- ACBLIB Member Online Change
  - ◆ DRD as a complement
  - ◆ Required environment/definitions
  - ◆ Availability benefits
  - ◆ Commands/How to use

Dynamic Resource Definition

IMS V10

MODBLKS Resources

- An IMS *MODBLKS Resource* is represented by a control block defining the resource and its attributes to the online system
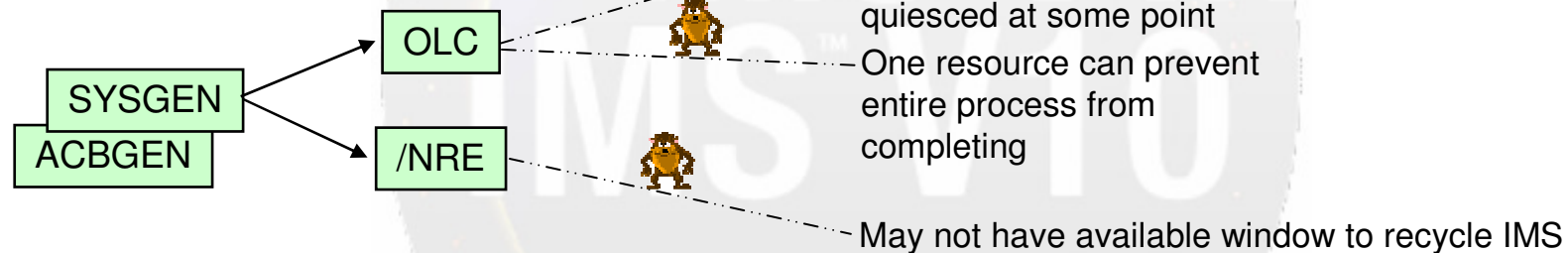
RESOURCE TYPE	SYSGEN MACRO	CONTROL BLOCK
Database	DATABASE (DB/TM, DBCTL)	DDIR (Database Directory)
Application Program	APPLCTN (DB/TM, DBCTL, DCCTL)	PDIR (Program Directory)
Transaction	TRANSACT (DB/TM, DCCTL)	SMB (Scheduler Message Block)
Routing Code	RTCODE (DB/TM, DCCTL)	RTCE (Routing Code Table Entry)

MODBLKS Resources

- Resources have control blocks with the names, attributes, and status of the resource

  - Name
    - 1-8 characters – with all the usual restrictions
      - Alphanumeric (A through Z, 0 through 9, #, $, and @)
      - Cannot begin with DFS and cannot be BASICEDT, DBCDM, DBRC, ISCEDT, MSDB, SDB, or WTOR

  - Attribute
    - A property of the resource specified during resource definition

  - Status
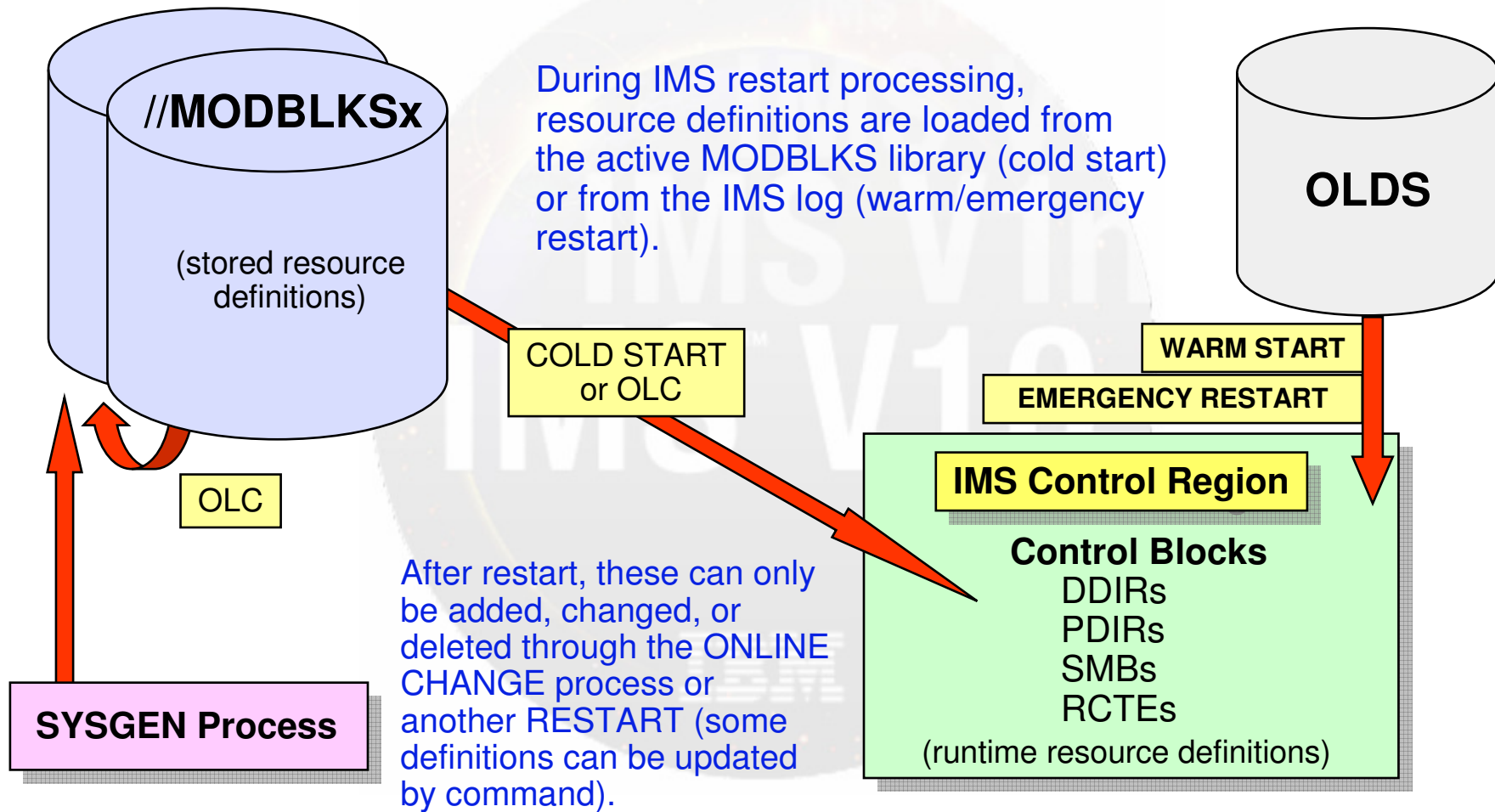   - The availability or usability of the resource

Modifying Resource Definitions without DRD

- To add, change, or delete MODBLKS resources in a running IMS system requires

  - ◆ MODBLKS Sysgen

  - ◆ ACBGEN - if database (DDIR) or program (PDIR) change

  - ◆ Way to bring the new MODBLKS resources online

    - ▪ Online change

    - ▪ IMS restart

SYSGEN
ACBGEN

→ OLC

→ /NRE

During online change processing, all activity is quiesced at some point

One resource can prevent entire process from completing

May not have available window to recycle IMS

- Process is more complex with multiple IMSs running in an IMSplex

  - ◆ Coordinated online change || multiple coordinated system restarts

Modifying MODBLKS Resources without DRD

//MODBLKSx

(stored resource definitions)

During IMS restart processing, resource definitions are loaded from the active MODBLKS library (cold start) or from the IMS log (warm/emergency restart).

OLDS

COLD START or OLC

WARM START

EMERGENCY RESTART

OLC

IMS Control Region

Control Blocks
DDIRs
PDIRs
SMBs
RCTEs

(runtime resource definitions)

SYSGEN Process

After restart, these can only be added, changed, or deleted through the ONLINE CHANGE process or another RESTART (some definitions can be updated by command).

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Dynamic Resource Definition (DRD)

- OBJECTIVE: *To improve the availability* of the IMS Online Environment
    - Allow user to *dynamically* define and enable *MODBLKS resource definitions*
        - *Databases*
        - *Programs*
        - *Transactions*
        - *Routing Codes*
    - Allow user to dynamically UPDATE MSC definitions
    - No requirement for IMS Sysgen + IMS restart/Online Change
    - Result: reduced resource unavailability
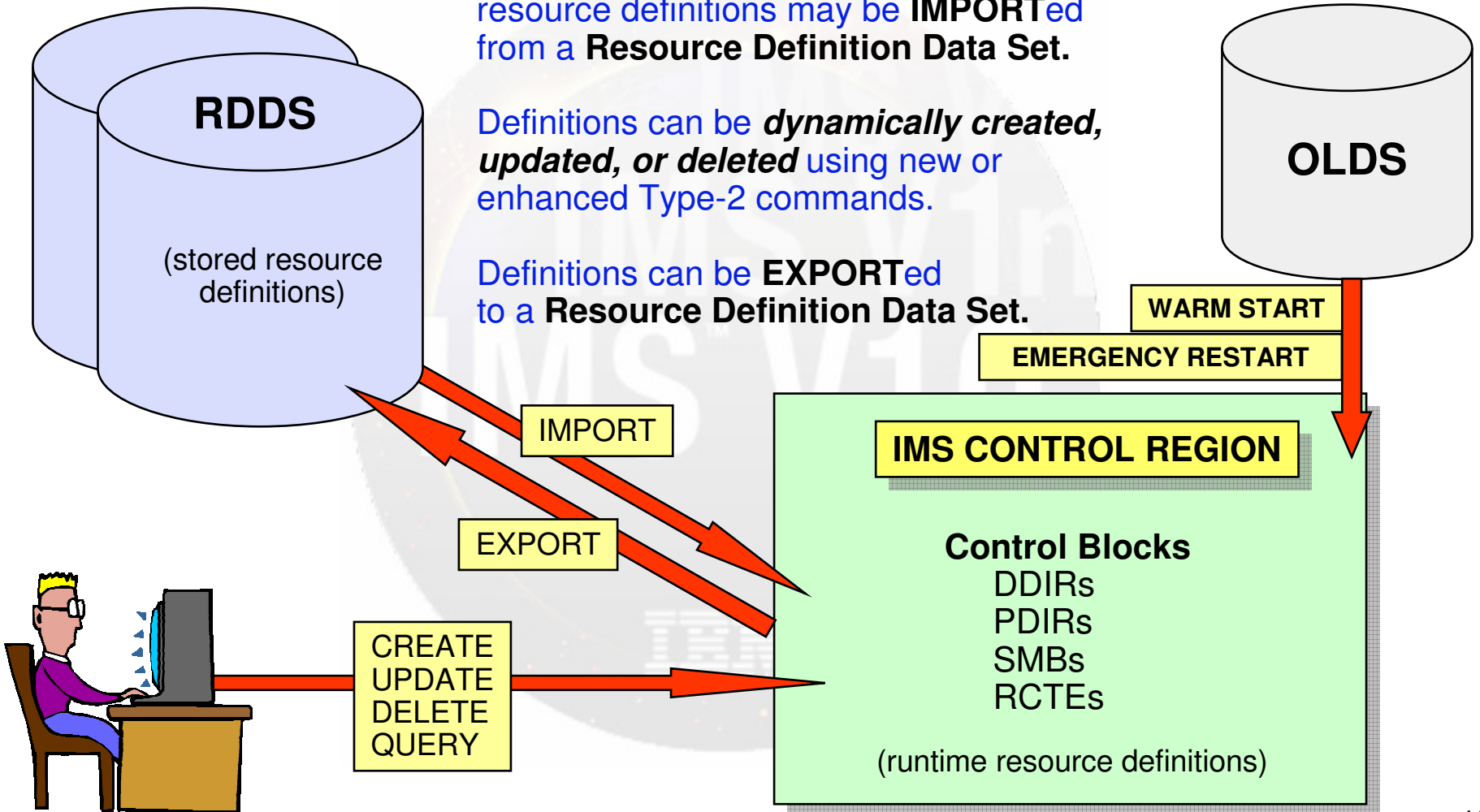   - MODBLKS Online change process not required

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DRD Components

- Type-2 commands: CREATE, DELETE, UPDATE

- Set of *resource definition data sets* (RDDS)
  - ◆ Contains statically (SYSGEN) and dynamically created definitions
    - ▪ Resource definitions
    - ▪ Model descriptors

- New function to automatically IMPORT and EXPORT resource definitions from/to a resource definition data set

- Enhanced Type-2 command to QUERY the attributes of defined IMS resources and descriptors

- Enhanced DFSINSX0 (Destination Creation) user exit to dynamically create program and transaction resources

Modifying MODBLKS Resources with DRD

RDDS

(stored resource definitions)

OLDS

During IMS cold start processing, resource definitions may be **IMPORT**ed from a **Resource Definition Data Set.**

Definitions can be *dynamically created, updated, or deleted* using new or enhanced Type-2 commands.

Definitions can be **EXPORT**ed to a **Resource Definition Data Set.**

WARM START

EMERGENCY RESTART

IMPORT

EXPORT

IMS CONTROL REGION

CREATE
UPDATE
DELETE
QUERY

Control Blocks
DDIRs
PDIRs
SMBs
RCTEs

(runtime resource definitions)

MODBLKS Resources Loading During IMS Restart

- When DRD is not enabled, control blocks are loaded from:
    - MODBLKS library (cold start)
    - Prior system log (warm or emergency restart)

- When DRD is enabled, control blocks are loaded from:
    - RDDS or MODBLKS (cold start)
    - Prior system log (warm or emergency restart)
    - Not at all

DRD Environment

- DRD requires IMS V10 with:

  - Common Service Layer with Structured Call Interface and Operations Manager (CSL with SCI/OM)

    - Resource Manager is not required

  - IMS PROCLIB members with DRD enablement parameters

    - DFSDFxxx (new in IMS V10)

    - DFSCGxxx (CSL parameters - can be replaced by section of DFSDFxxx)

  - Data sets to hold resource definitions (RDDSs)

  - Entry point for DRD commands

    - TSO Single Point Of Control (SPOC), IMS Control Center, or other OM interface

DRD Environment

- All IMS online environments supported, including data sharing and shared queues

- No longer required
    - MODBLKS Sysgen process
    - MODBLKS online change process
    - MODBLKS staging, active, and inactive data sets

Enabling DRD

- Define DRD parameters DFSDFxxx
  - New System Definition PROCLIB member in V10

- Define CSL parameters in DFSCGxxx or DFSDFxxx
  - Set MODBLKS=DYN

- Define Resource Definition Data Sets (RDDS)

- Cold start IMS
  - Required to switch to/from DRD
  - Export MODBLKS definitions to RDDS
    - If 1st time using DRD, this will capture existing definitions

- Use new Type-2 commands to create, update, and delete resource definitions

Descriptors

- A descriptor is a model for defining (creating) a resource or another descriptor
  - Establishes *defaults* for attributes not set in the CREATE command

- IMS-defined descriptors
  - Provided with the IMS product:
    - DFSDSDB1 (database)
    - DFSDSPG1 (program)
    - DFSDSTR1 (transaction)
    - DBFDSRT1 (routing code)

- User-defined descriptors
  - Created or updated by the user

- Current system default descriptor
  - Each resource type will have one *default descriptor*
    - IMS-defined or user-defined with DEFAULT(Y)

Recoverability

- Resource and descriptor definitions

    - Exist for the life of IMS or until deleted

    - Are recovered from logs across warm and emergency restart
        - Definitions are logged when created, updated, or deleted, and at system checkpoint time

    - Are lost across cold start unless both:
        - Previously exported to RDDS
        - Imported during next cold start

Commands Used in Dynamic Resource Definition

- Type-2 commands entered through OM interface

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	RCTE	RTC	RTCDESC

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

DRD Command Entry and Response

- Operations Manager (OM)
  - Commands must be entered through an OM interface
  - OM will consolidate responses from all IMSs in IMSplex
- If any IMS returns a non-zero return/reason code to OM
  - OM will return a non-zero return/reason code to SPOC, plus a completion code for each resource
    - If CC not 0, CCText explains reason
  - SPOC displays completion code and text for each IMS and resource

DRD Command Entry and Response

- Sample command input and response:

```
CREATE PGM NAME(PGM1,PGM2) SET(SCHDTYPE(SERIAL))
```

PgmName	MbrName	CC	CCText
PGM1	IMS1	11	RESOURCE ALREADY EXISTS
PGM2	IMS1	0	

- PGM2 created even though command failed for PGM1

DRD Command Entry and Response

- In some cases, an "Error Text" will also be returned

- *IMS V10 Command Reference* documents, for each command

    - Return and reason codes

    - CC (Completion Codes)

    - CCText (meaning of completion code – if non-zero)

    - ErrorText (further explanation – if applicable)

DRD Command Entry and Response

- Sample command input and response

DELETE DB NAME(ACCTMSTR,CUSTMSTR)				
DBName	MbrName	CC	CCText	ErrorText
ACCTMSTR	IMS1	11	REFERENCED BY PROGRAM	ACCTUPDT
CUSTMSTR	IMS1	0		

◆ PSB for ACCTUPDT references ACCTMSTR DB

CREATE(CRE) Command

- 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 (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 cause this descriptor to become current system default descriptor

CREATE Command – Setting Attributes

- All attribute values are set either explicitly by SET command keyword or by default

- Hierarchy of attribute setting:

    - SET command keyword – takes precedence over all others

    - LIKE command keyword
        - Attributes not SET are obtained from the specified model
        - Can be LIKE DESC or LIKE RSC
        - Takes precedence over current default descriptor

    - If LIKE command keyword not specified
        - Attributes not SET will be gotten from current system default descriptor, which can be either:
            - DFSDSxx1
            - User descriptor created with DEFAULT(Y)

CREATE Command

- Examples

  - ◆ DFSDSTR1 is IMS default descriptor for transactions

  - ◆ All attributes defined; for example

    - ▪ PARLIM = 65535

    - ▪ PLCT = 65535

    - ▪ PLCTTIME = 6553500

    - ▪ MAXRGN = 0

  - ◆ Can change these values (and others) in user-defined descriptor

```
CRE TRANDESC NAME(ACCTMODL)
    SET(PARLIM(5),PLCT(20),PLCTTIME(2)),MAXRGN(5))

CRE TRAN NAME(ACCTUPDT) LIKE(DESC(ACCTMODL)
    SET(MAXRGN(8),PGM(ACCTPGM))

CRE TRAN NAME(ACCTDLET) LIKE(RSC(ACCTUPDT))
```

DELETE Command

- DELETE command syntax

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

- ◆ **rsc-type | desc-type** = resource or descriptor type (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*)

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

DELETE Command

- To delete a resource
  - Resource cannot be "in use"
  - Recommendation: stop resource before attempting to delete

- QUERY command enhanced to display resource work status
  - Show work that might cause delete command (or OLC) to fail

- Examples

```
QRY PGM NAME(ACCTPGM)  SHOW(WORK,TRAN)
/STO PGM ACCTPGM
DEL PGM NAME(ACCTPGM)


QRY TRAN NAME(ACCTDLET,ACCTADD)  SHOW(WORK)
/STO TRAN ACCTDLET, ACCTADD
DEL TRAN NAME(ACCTDLET,ACCTADD)
```

QUERY Command for MODBLKS Resources

- Enhanced in V10 to support:

    - QUERY PGM

    - QUERY RTC

    - New parameter SHOW(WORK) displays work status of resource

- Generally indicates reasons that would prevent online change or some DRD commands from completing successfully

    - Online Change MODBLKS

    - Online Change ACBLIB

    - CREATE resource

    - DELETE resource

    - UPDATE resource

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QUERY Command for MODBLKS Resources

- Examples

```
QRY DB NAME(ACCTMSTR) SHOW(WORK,PGM)

QRY PGM NAME(ACCTPGM) SHOW(WORK,TRAN,RTC)

QRY TRAN NAME(ACCT*) SHOW(WORK)

QRY RTC NAME(ACCT*) SHOW(WORK,REGION)
```

QUERY Command for MSC Resources

● Enhanced in V10 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

QUERY Command for MSC Resources

- Example

```
QUERY MSPLINK NAME(IMSAB)
             SHOW(MSLINK,MSNAME)


QUERY MSLINK NAME(IMSAB1)
             SHOW(PARTNER,MSPLINK)


QUERY MSNAME NAME(LINKA1)
             SHOW(MSLINK,MSPLINK,SYSID)
```

- Additional SHOW keywords, STATUS filters, and TYPE also supported

UPDATE Command

- Enhanced in V10 to support updating:
  - ◆ Resource/descriptor status and attributes
    - ▪ MODBLKS: DB, PGM, TRAN, RCT
    - ▪ MSC: MSPLINK, MSLINK, MSNAME
      - • 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

UPDATE Command

- Examples
  - ◆ Updating MODBLKS resources

```
UPD DB NAME(ACCTMSTR) SET(ACCTYPE(EXC))

UPD PGM NAME(ACCT*) SET(RESIDENT(Y))

UPD TRAN NAME(ACCTUPDT) SET(PARLIM(5),RESP(Y))

UPD TRANDESC NAME(COMPMODL) SET(MAXRGN(10) DEFAULT(Y)
```

UPDATE Command for MSC

- Example
  - Activating previously defined "dummy" definitions between IMSA and IMSB
  - On IMSA

```
UPD MSPLINK NAME(DMYMSP1)
     SET(MSPLINK(IMSAB),NODE(IMSB))

UPD MSLINK NAME(DMYMSL1)
     SET(MSLINK(IMSAB1),MSPLINK(IMSAB))

UPD MSNAME NAME(DMYMSN1)
     SET(MSNAME(LINKA1),(SIDR(30),SIDL(20)))
```

  - Repeat for IMSB

Availability Benefits of Dynamic Resource Definition

- MODBLKS Dynamic Resource Definition
  - Improves IMS availability by allowing dynamic creation, deletion, and updating of MODBLKS resource definitions
    - Reduces the requirements for planned outages
    - Eliminates unavailability associated with MODBLKS OLC
  - Requires
    - Enabling parameters in DFSDFxxx proclib member
    - CSL environment with SCI and OM
    - Cold start

- MSC DRD allows dynamic updating of MSC definitions
  - Requires
    - CSL environment with SCI and OM

ACBLIB Member Online Change

IMS V10

ACBLIB Member Online Change

- Allows user to *add or change one or more members of the active ACBLIB*

  - No need to perform an online change on the entire library

- Reduction in resources quiesced

  - *Only the resources that are affected* by the member online change are quiesced allowing concurrent activity
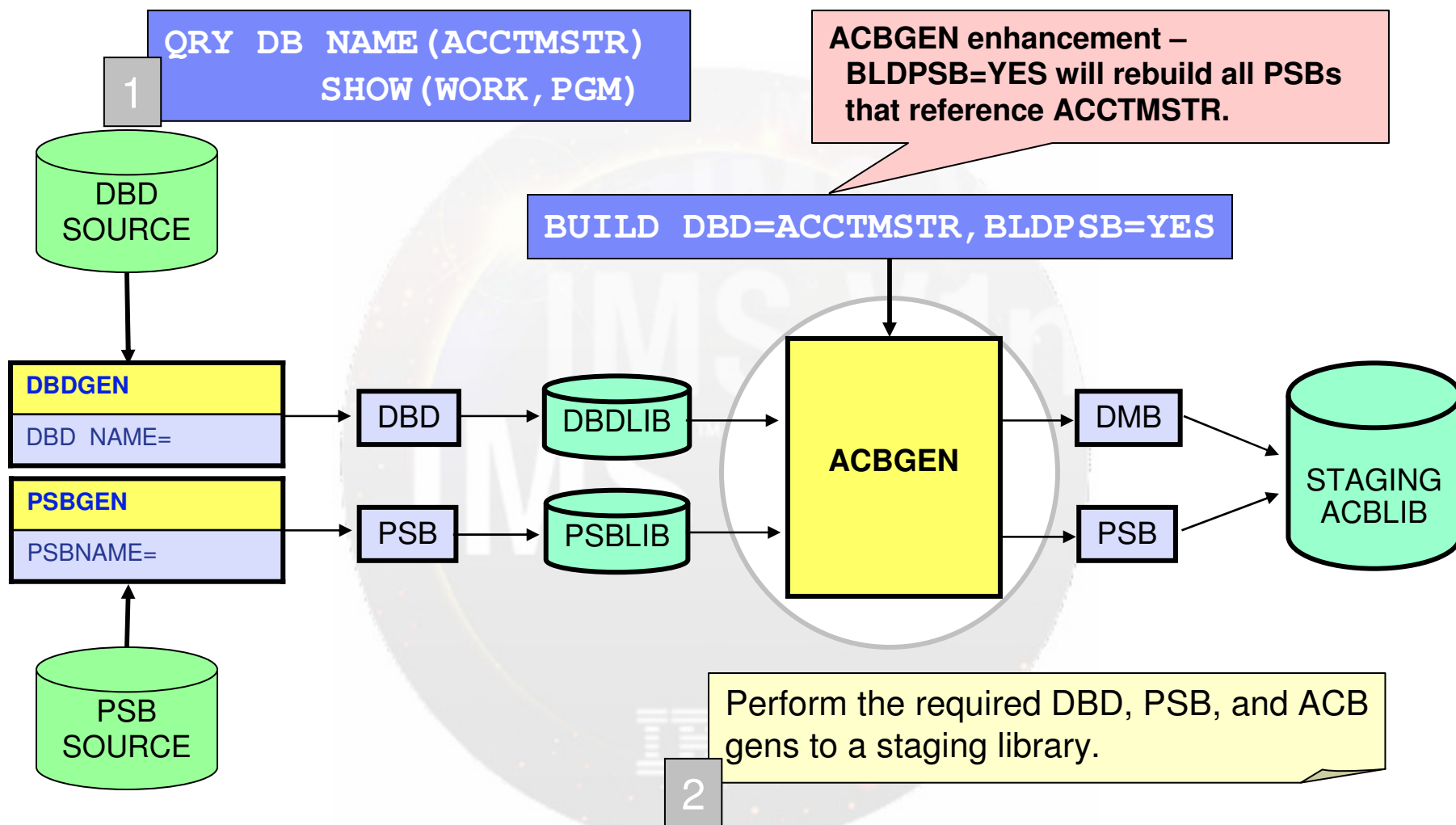
ACBLIB Member OLC

- Uses existing libraries (PSBLIB, DBDLIB, ACBLIB)

- Utilizes existing control block generation procedures (PSBGEN, DBDGEN, ACBGEN)

- Uses TYPE-2 commands to bring online *individual* ACBLIB members

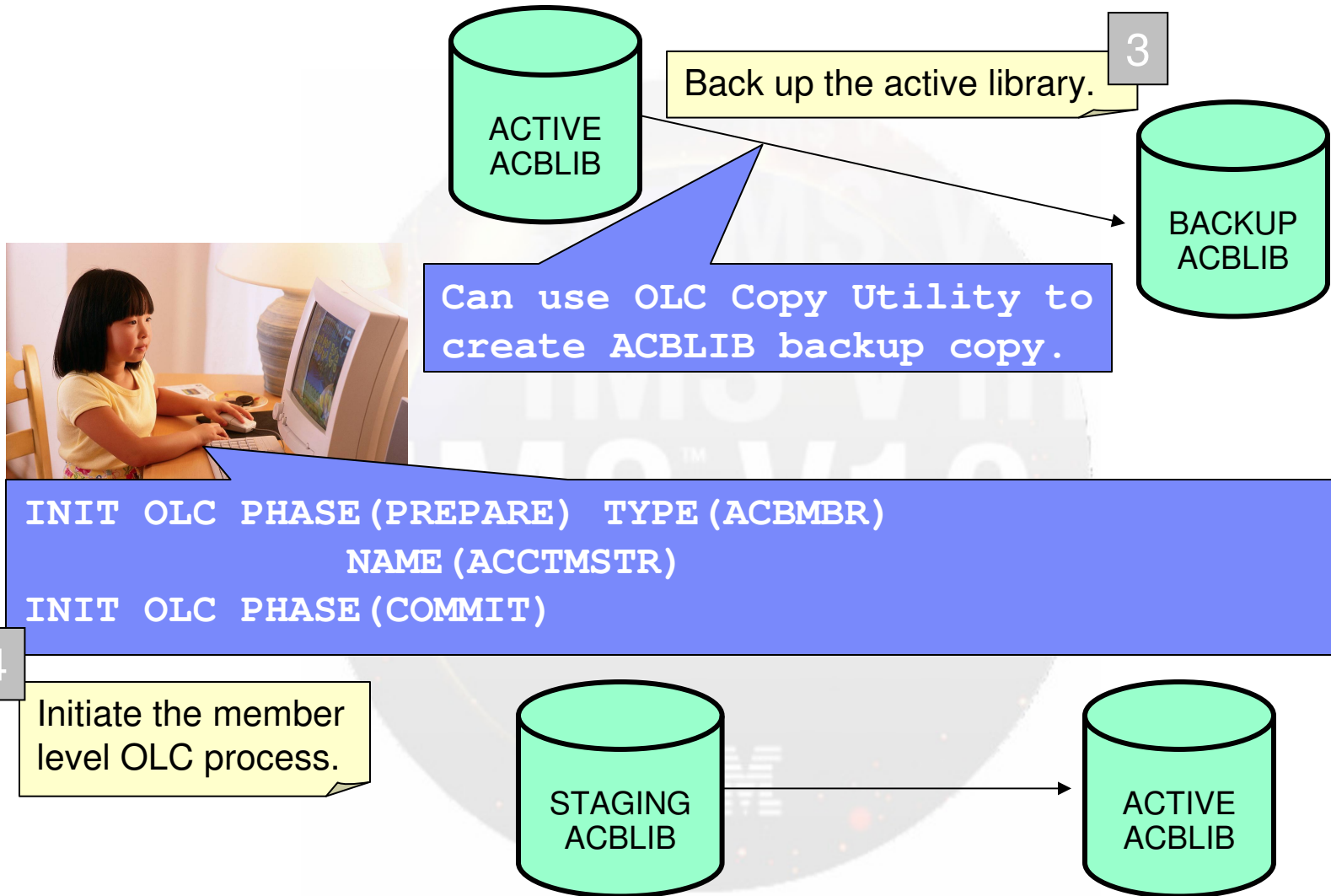- Coexists with global online change library switch capability

ACBLIB Member OLC

- Requirements
  - ◆ CSL environment with
    - ▪ SCI and OM
    - ▪ RM required if multiple IMSs
  - ◆ DFSCGxxx
    - ▪ OLC=GLOBAL
      - • Enables global online change
    - ▪ ACBSHR=Y|N
      - • Are ACBLIBs shared across IMSplex?
  - ◆ Dynamic allocation library
    - ▪ DFSMDA TYPE=IMSACB,DSN=staging-library-name
  - ◆ ACBGEN
    - ▪ New BLDPSB=YES|NO parameter for DBD changes

ACBLIB Member OLC Process

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QRY DB NAME(ACCTMSTR)
SHOW(WORK,PGM)

ACBGEN enhancement –
BLDPSB=YES will rebuild all PSBs
that reference ACCTMSTR.

BUILD DBD=ACCTMSTR,BLDPSB=YES

DBD
SOURCE

DBDGEN

DBD NAME=

PSBGEN

PSBNAME=

PSB
SOURCE

DBD → DBDLIB → ACBGEN → DMB → STAGING ACBLIB

PSB → PSBLIB → ACBGEN → PSB → STAGING ACBLIB

Perform the required DBD, PSB, and ACB
gens to a staging library.

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ACBLIB Member OLC Process

ACTIVE
ACBLIB

3 Back up the active library.

BACKUP
ACBLIB

Can use OLC Copy Utility to create ACBLIB backup copy.

```
INIT OLC PHASE(PREPARE)  TYPE(ACBMBR)
            NAME(ACCTMSTR)
INIT OLC PHASE(COMMIT)
```

4 Initiate the member level OLC process.

STAGING
ACBLIB

ACTIVE
ACBLIB

Availability Benefits of ACBLIB Member OLC

- Allows individual additions or changes to members of ACBLIB without the requirements of a full ACBLIB online change
  - ◆ Delete not supported

- 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

- *Only the resources affected by the change are quiesced*

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 V10, 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)

```
►►──INITIATE──OLC──PHASE(PREPARE)──TYPE(ACBMBR)──NAME(──▼──acbmbr──┐──)─────────────────────►◄
                                                                   └─OPTION(FRCNRML)─┘
```

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

```
▶▶──INITIATE──OLC──PHASE(PREPARE)──TYPE(ACBMBR)──NAME(──acbmbr──)──┬──────────────────┬──▶◀
                                                                    └─OPTION(FRCNRML)──┘
```
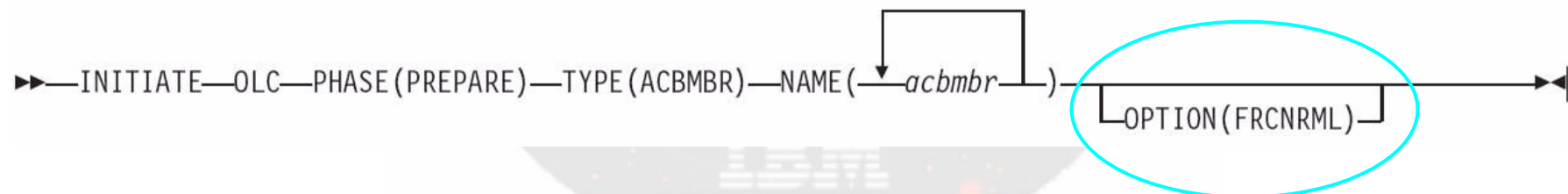
INIT OLC PHASE(PREPARE) Command

- ◆ 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)

```
►►──INITIATE──OLC──PHASE(PREPARE)──TYPE(ACBMBR)──NAME(──acbmbr──)──────────────────►◄
                                                            └─OPTION(FRCNRML)─┘
```
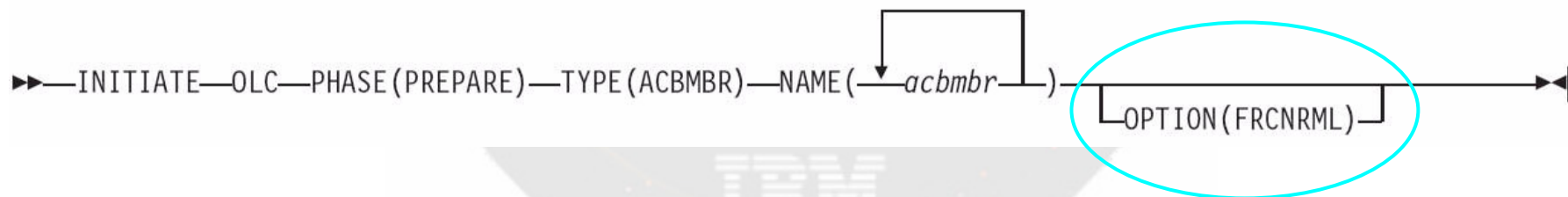
INIT OLC PHASE(PREPARE) Command

- 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

```
►►──INITIATE──OLC──PHASE(PREPARE)──TYPE(ACBMBR)──NAME(──┬─acbmbr─┬──)─┬──────────────────┬──►◄
                                                                      └─OPTION(FRCNRML)──┘
```

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

```
►►─INITIATE─OLC─PHASE(PREPARE)─TYPE(ACBMBR)─NAME(──acbmbr──)──────────────────►◄
                                                          └─OPTION(FRCNRML)─┘
```

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

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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 prepare 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
```

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TERMINATE OLC command

- Used to abort a member level online change that is in progress

- Can be issued after:
  - ◆ INIT OLC PHASE(PREPARE) TYPE(ACBMBR) command
  - ◆ INIT OLC PHASE(COMMIT) error

- New versions of updated members will be deleted from the active ACBLIB…
  - ◆ UNLESS OLCSTAT dataset has been updated after COMMIT complete

TERMINATE OLC Command Example

TERMINATE OLC

```
MbrName    Member       CC

IMS3       IMS2          0

IMS3       IMS3          0

IMS3       SYS3          0
```

INIT OLC PHASE(COMMIT) Command

- Enhanced to support TYPE(ACBMBR) online change

- Final step of Member OLC

- Commits all members that were specified on INIT OLC PHASE(PREPARE) command into active ACBLIB

- Example:

```
INIT OLC PHASE(COMMIT)
```

```
MbrName    Member      CC

IMS3       IMS2         0

IMS3       IMS3         0

IMS3       SYS3         0
```

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)

Summary: IMS V10 Offers Higher Availability

- MODBLKS Dynamic Resource Definition
  - Improves IMS availability by allowing dynamic creation, deletion, and updating of MODBLKS resource definitions
    - Reduces the requirements for planned outages
    - Eliminates unavailability associated with MODBLKS OLC

- ACBLIB Member Online Change
  - Only the resources that are affected by the member online change are quiesced, allowing concurrent activity

Thanks!

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