



Session: K11

Position for IMS V10 Member Online Change with Global Online Change Migration

IDUG 2008

North America

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Experience IDUG

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Platform: System z

IMS™ Version 10 introduces the ability to add or change individual ACBLIB members (resources) for the IMSplex online, without having to perform a system-wide, full-library switch. The immediate benefit is less quiesced resources and, in turn, higher availability! One of the prerequisites for this new function is global online change. This feature was introduced in IMS Version 8 and it coordinates online change for all IMSs in an IMSplex, ensuring system synchronization. This session focuses on the specific steps involved in global online change migration, thereby positioning your shop for the Version 10 member online change. Also, the advantages of using the more flexible Member online change will be discussed. Objectives: This session is a must for shops using Local Online Change. Migrating to Global Online Change will not only position a shop for V10's Member Online Change, but will also create the ability to exploit this new function to take advantage of other V10 key features.

Overview



- What is IMS online change?
- IMS online change components
- IMS system synchronization issue
- Global online change solution
 - Common Service Layer
- Global online change migration process
 - Prerequisites
 - Allocation/initialization of OLCSTAT data set
 - PROCLIB member definitions
- Using global online change

2

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As you may know, local online change is an IMS function that changes resources online without having to bring IMS down. Local online change only applies to the local IMS that it is performed on.

This procedure of changing resources online locally uses a dataset called the MODSTAT (for "MODify STATus") to keep track of the online change status.

In order to prepare each IMS for an online change, the /MODIFY PREPARE command must be issued on each IMS in the IMSplex.

Once a PREPARE command has been issued and it has completed successfully, a /MODIFY COMMIT command must be issued to commit the online change for each IMS in the IMSplex.

One other possibility after successful completion of a PREPARE command is to abort the online change. Instead of a commit, if you can basically cancel out the PREPARE you just did by issuing a /MODIFY ABORT command on each IMS you want to abort the online change on.

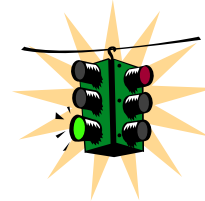
Overview

- Post-migration considerations
- Fallback to local online change
- V10 positioning
 - ACBLIB member online change
 - Dynamic Resource Definition
- Additional references

What is IMS Online Change?



- Important factor for IMS customers: availability, availability, availability!
- IMS function used to change resources online
 - No SYSGEN required to update resources while IMS is running
 - No IMS outage → higher availability



4

What is IMS Online Change?

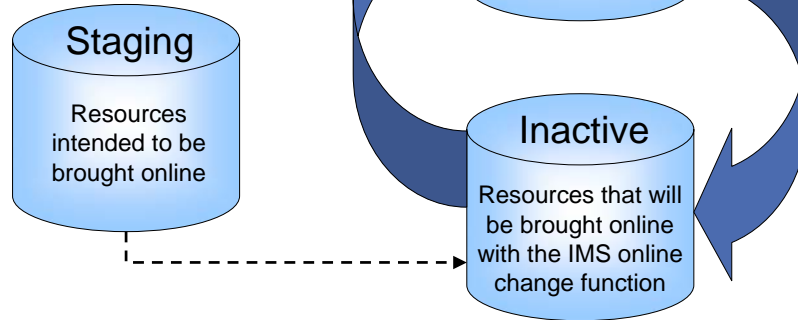


- IMS resources that can be added, changed or deleted online:
 - Databases (DMBs in ACBLIB)
 - Programs (PSBs in ACBLIB)
 - MFS formats (FMTLIB)
 - Database directories (DDIRs in MODBLKS)
 - Program directories (PDIRs in MODBLKS)
 - Routing codes (RCTEs in MODBLKS)
 - Security matrices (associated with MODBLKS)
 - Transactions (SMBs in MODBLKS)

5

IMS Online Change Components

Resources are copied from staging library to inactive library with a utility. Then they are brought online when inactive/active libraries are switched



IMS Online Change Components



- Two parts to online change process
 - /MODIFY PREPARE
 - Ensures no work in progress
 - /MODIFY COMMIT
 - Switches the active/inactive libraries

- Can determine work in progress that would prevent online change from succeeding
 - /DISPLAY MODIFY ALL

IMS Online Change Components



- MODSTAT data set
 - MODSTAT = **MOD**ify **STAT**us of resources
 - Contains online change status (such as active libraries and timestamps of last online changes)
 - Local to each IMS

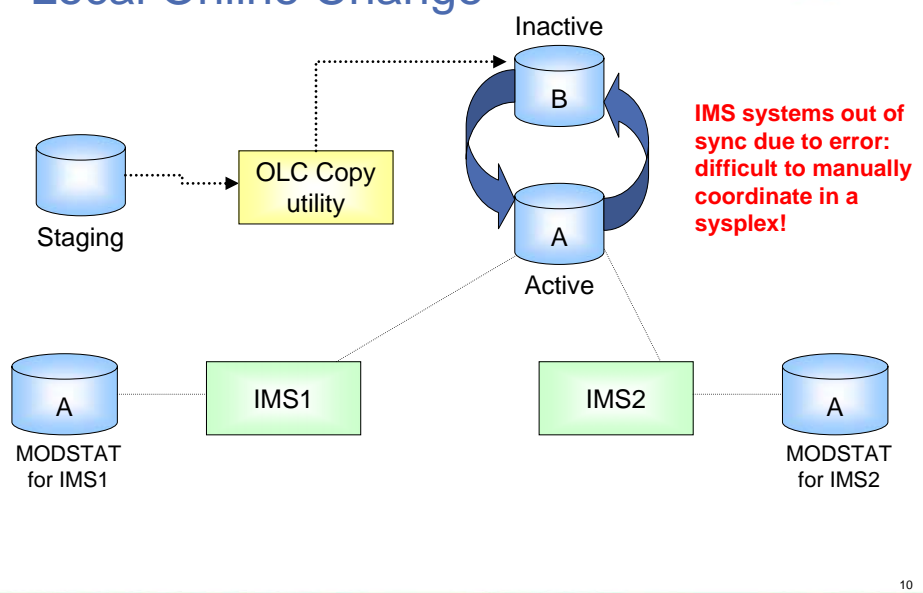
- Cloned IMS systems with data sharing require the user to manually coordinate online change activity among the systems in the IMSplex
 - This is known as LOCAL online change

8

Issue: Keeping IMS Systems Synchronized

- IMS systems always point to the same online change libraries UNLESS online change succeeds on some systems, fails on others
- Resulting issue: IMS systems out of sync
- Difficult to resolve, especially with a large number of IMS systems in sysplex

Local Online Change

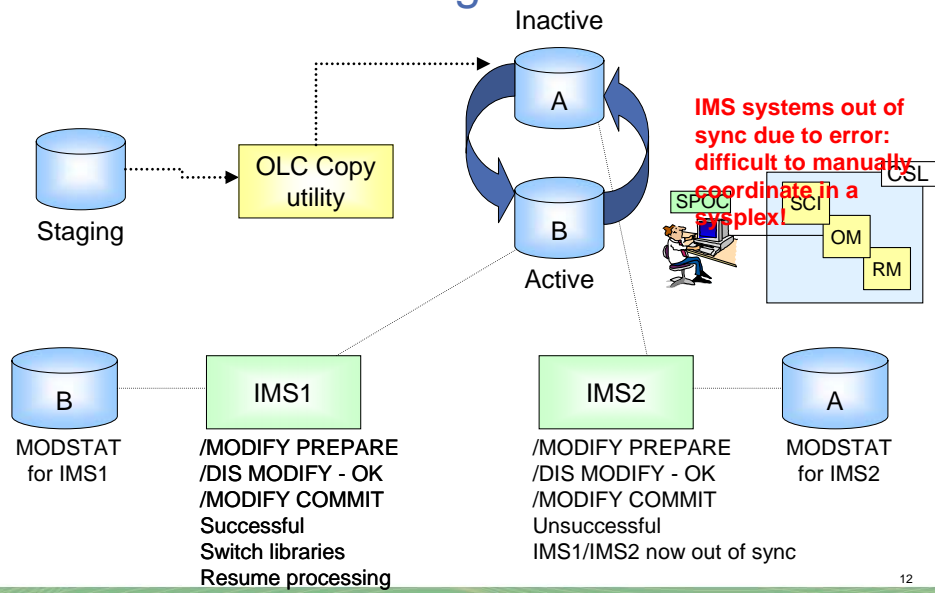


Global Online Change Solution



- Online change status kept synchronized across all IMS systems in IMSplex
- Each IMS always points to same online change libraries
- One shared data set used: OLCSTAT
 - “OnLine Change STATus”
- AKA “coordinated” online change

Global Online Change



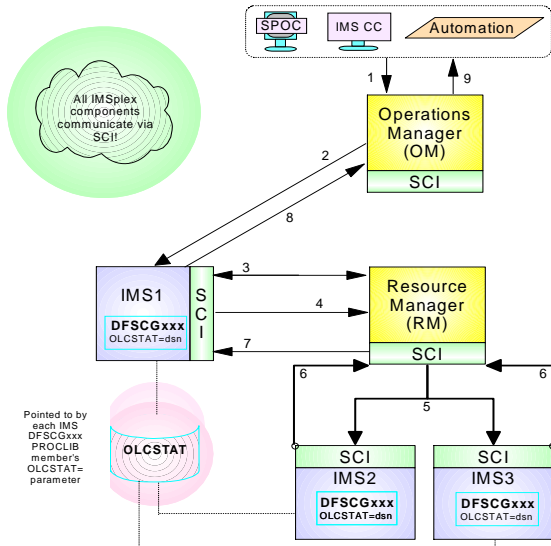
Global Online Change Solution



- Based on existing local online change logic
- Uses Common Service Layer (CSL)
 - Resource Manager (RM)
 - Coordinates online change phases among IMS systems
 - Operations Manager (OM)
 - Enables command entry from single point of control with its application programming interface
 - Structured Call Interface (SCI)
 - Allows communication between IMSplex components

13

CSL Enables Global Online Change



- ### Legend
1. Global Online Change command entered using OM API from TSO SPOC, IMS Control Center or through automation
 2. OM selects an IMS to be command master (in this case, IMS1)
 3. IMS1 calls RM to initiate a plex-wide process for the command, then returns control to master IMS1, instructing it to perform a local online change
 4. Master IMS performs a local online change and if it succeeds, it then instructs RM to send the same directive to the other IMS systems in the IMSplex
 5. RM uses SCI to send directive to the non-master IMS systems: IMS2 and IMS3
 6. IMS2 and IMS3 complete OLC processing, sending the success/fail result back to RM (note: response times for each non-master IMS are sent independently of one another)
 7. RM sends the results of IMS2 & IMS3 online change processing results back to the master IMS1
 8. IMS1 creates an aggregate response (with an overall return/reason code and if applicable, error text) and sends it back to OM
 9. OM sends this aggregate command response to TSO SPOC, IMS Control Center, or to automation

IMS Version 10 Positioning



- ACBLIB member online change (MOLC)
 - New capability in V10 that global online change is a prerequisite for
 - Allows user to add/change ACBLIB resources by individual member
 - No requirement to switch active/inactive libraries
 - ★ – Immediate benefit: higher availability due to less quiesced resources (compared to global online change)
 - Ready to use once global online change in place and V10 has been installed

15

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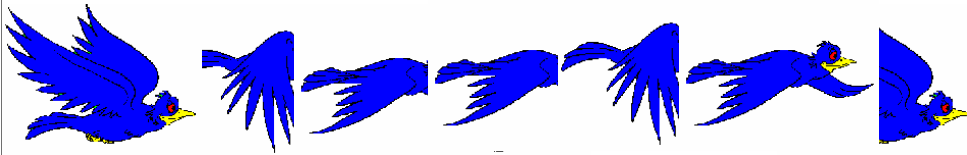
Whew! So migrating to GOLC wasn't so challenging after all. Now you no longer must be concerned with the coordination of IMSplex-wide online change activity. Your IMS systems stay synchronized across multiple online changes, always pointing to the same libraries containing the same IMS resources. You start to use GOLC and enjoy the new freedom and higher IMS availability that comes with the automatic global coordination of online change. But you realize that just like with LOLC, GOLC quiesces the resources in the libraries that are specified on the input command in preparation to be changed online. Until its processing is complete, these resources are not available for use and cannot be changed online. This may seem minor, but if the libraries contain a large amount of resources/members, this can result in availability issues.

IBM's solution to this issue is in IMS Version 10. It introduces a new capability called ACBLIB Member Online Change (MOLC), which allows you to add or change specific ACBLIB members online without having to switch the entire active/inactive libraries. Thus, only the individual members involved in the online change will be quiesced, eliminating availability issues previously encountered while using GOLC.

Let's Migrate!



1. Set up and start Common Service Layer
2. Prepare OLCSTAT data set
3. Add global online change parameters to DFSCGxxx PROCLIB member



16

Setup/Start Common Service Layer



- CSL execution parameters in DFSCGxxx PROCLIB member

IMS Version 8	<ul style="list-style-type: none">▪ <i>Installation Volume 2: System Definition and Tailoring (GC27-1298)</i><ul style="list-style-type: none">– Chapter 7. Tailoring the IMS System to Your Environment, Specifying IMS PROCLIB Members, Member DFSCGxxx
IMS Version 9	<ul style="list-style-type: none">▪ <i>Installation Volume 2: System Definition and Tailoring (GC18-7823)</i><ul style="list-style-type: none">– Chapter 8. Tailoring the IMS System to Your Environment, Specifying IMS PROCLIB Members, Member DFSCGxxx
IMS Version 10	<ul style="list-style-type: none">▪ <i>System Definition Reference (GC18-9966)</i><ul style="list-style-type: none">– Chapter 63. DFSCGxxx

17

Setup/Start Common Service Layer

CSL initialization parameters in:

- CSLRlxxx (RM)
 - CSLOlxxx (OM)
 - CSLSlxxx (SCI)
- Suffix “xxx” should be the same for each parameter and is specified on the CSLG= parameter of IMS system

Setup/Start Common Service Layer



- CSL component (RM, OM, SCI) initialization:

IMS Version 8/9	<ul style="list-style-type: none">▪ <i>Common Service Layer Guide and Reference (SC18-7816/SC27-1293)</i><ul style="list-style-type: none">– Chapter 3. <i>CSL Operations Manager, CSL OM Definition and Tailoring, CSL OM Initialization Parameters PROCLIB Member</i>– Chapter 4. <i>CSL Resource Manager, CSL RM Definition and Tailoring, CSL RM Initialization Parameters PROCLIB Member</i>– Chapter 5. <i>CSL Structured Call Interface, CSL SCI Definition and Tailoring, CSL SCI Initialization Parameters PROCLIB Member</i>
IMS Version 10	<ul style="list-style-type: none">▪ <i>System Definition Reference (GC18-9966)</i><ul style="list-style-type: none">– Chapter 60. <i>CSLOlxxx</i>– Chapter 61. <i>CSLRlxxx</i>– Chapter 62. <i>CSLSlxxx</i>

19

- IMS Family
- Library**
- Success stories
- News
- How to buy
- Events
- Training and certification
- Services
- Support

Related links

- IMS tools
- CICS
- DB2 for z/OS
- WebSphere MQ
- IBM zSeries®
- IBM Press

Library

Library items below are for IMS. For other library items, try the [library search](#).

- | | | |
|------------------------|-----------------------|-------------------------|
| ↓ Announcement letters | ↓ Information centers | ↓ Product documentation |
| ↓ Books | ↓ Newsletters | ↓ White papers |
| ↓ Data sheets | ↓ Presentations | |

Information centers**IMS Product Library - All Versions**

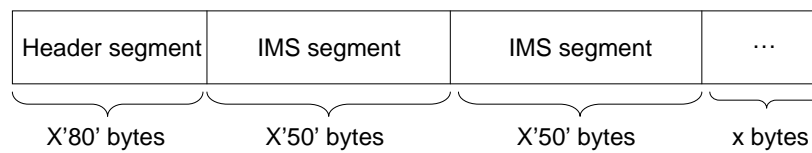
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-  [DB2 QMF Version 9](#)
-  [DB2 QMF Version 8](#)
-  [IMS Version 10](#)
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OLCSTAT data set

- Used to contain the global online change status for IMS systems in a sysplex
- Contains one variable-length record
- BSAM data set
- Maximum size = 5028 bytes
- Record made up of header segment followed by 1+ IMS segment(s):



OLCSTAT Header Segment



- Contents:
 - Version of IMS that the data set was initialized for use with
 - Modify ID
 - Active online change libraries (A/B)
 - Y/N indicator for whether a library was switched in the last online change
 - Lockword indicating an online change is in progress (not present if no OLC in progress)

23

OLCSTAT IMS Segment



- One segment for each coldstarted IMS that is current with online change libraries
- Contains:
 - IMSID of the IMS system
 - Timestamps of last online change prepare/commit for the IMS system

Prepare OLCSTAT data set

- Allocate, then initialize
- Recommended allocation attributes
 - DSORG: Sequential
 - RECFM: V
 - LRECL: 5204
 - BLKSIZE: 5208
- Be sure to catalog data set

Initialize OLCSTAT data set

- Use Global Online Change Utility
 - Invoked using DFSUOLC0 procedure
 - Added to IMS.PROCLIB after SYSGEN Stage 2
 - Example JCL:

```
//PROC FUNC=,ACBS=,MDBS=,FMTS=,MDID=,PLEX=,SOUT=A
//STEP1 EXEC
PGM=DFSUOLC0,PARM=(&FUNC,&ACBS,&MDBS,&FMTS,&MDID,&PLEX)
//STEPLIB DD DSN=IMS.&SYS2..SDFSRESL,DISP=SHR
//SYSUDUMP DD SYSOUT=&SOUT
//OLCSTAT DD DSN=IMSPLEX.OLCSTAT,DISP=OLD
//SYSPRINT DD SYSOUT=&SOUT
//SYSIN DD DUMMY
```

Global Online Change Utility Parameters



- FUNC: specific function to perform on OLCSTAT data set
 - INItialize
 - ADD
 - DELeTe
 - UNLock
- ACBS: active ACBLIB suffix
- MDBS: active MODBLKS suffix
- FMST: active FMSTLIB suffix
- MDID: modify ID
- PLEX: XCF CSL IMSplex group (use with FUNC=UNL)
- SOUT: SYSOUT DD statement class

27

We will discuss the ADD, DELETE and UNLOCK functions later in the presentation.

Global Online Change Utility Parameters

- Must specify a value for each Global Online Change Utility parameter
 - Exception: SOUT=A is default if not explicitly specified

Global Online Change Utility Functions



FUNC= <parm>	Description
INI	<ul style="list-style-type: none"> Function to initialize the OLCSTAT data set. ACBS, MDBS, FMDS, and MDID must also be specified. An optional list of one or more IMSs can be specified with the SYSIN DD statement. If no IMSs are specified with the SYSIN DD statement, the list of IMSs is deleted from the OLCSTAT data set. The INI function is required before the first IMS in the IMSplex cold starts the first time to initialize the OLCSTAT data set. If the OLCSTAT record contents are lost and must be reconstructed, you must run the Global Online Change utility INI function to construct its contents with the correct values for the online change identifier and online change library ddnames. You might also want to add IMSs that are current with the online change libraries using the SYSIN DD statement. Keep track of the current online change libraries and modify id so that you can reconstruct the OLCSTAT data set contents in case of failure.
ADD	<ul style="list-style-type: none"> Add one or more IMS members to the list of IMSs that are current with the online change libraries. Add an IMS when the OLCSTAT data set suffered an error that made it unusable and you are trying to recreate the OLCSTAT data set contents. The IMSs to add must be specified with the SYSIN DD card. Add IMSs that are current with the online change libraries; for example, IMSs that are currently up. Attention: If you add an IMS that is not current with the online change libraries, and warm start that IMS, the warm start might fail.
DEL	<ul style="list-style-type: none"> Delete one or more IMSs from the list of IMSs that are current with the online change libraries. Delete an IMS when you never intend to bring the IMS up again, so that the <code>INITIATE OLC</code> command does not need to be specified with the FRCABND or FRCNRML keyword. The IMSs to delete must be specified with the SYSIN DD card.
UNL	<ul style="list-style-type: none"> Function to reset the OLCSTAT data set lock after all IMSs failed during online change. The UNL function of the Global Online Change utility is required to reset the OLCSTAT data set lock, in the case where all IMSs in the IMSplex failed during an online change. Online change sets a lock field in the OLCSTAT data set to prevent other IMSs from initializing during the online change. IMS initialization fails if a global online change is in progress (between the prepare and commit phases), because the OLCSTAT data set lock is set. When an IMS tries to initialize after all IMSs failed during online change, IMS initialization is rejected because the OLCSTAT data set lock is set. In this case, you must run the Global Online Change utility with the UNL function to reset the OLCSTAT data set lock. No IMS can initialize until the OLCSTAT data set lock is reset. The UNL function should rarely need to be used. It is needed only if all the IMSs fail during an online change.

Global Online Change Utility Parameters



PARAMETER	Description
FUNC	Specifies the Global Online Change utility function to perform.
ACBS	Specifies the IMS JCL IMSACB DD statement suffix for the active ACB library. The suffix can be A or B. A means IMSACBA is the DD statement of the active library. B means IMSACBB is DD statement of the active library.
MDBS	Specifies the IMS JCL MODBLKS DD statement suffix for the active MODBLKS data set. The suffix can be A or B. A means MODBLKSA is the DD statement of the active library. B means MODBLKSB is the DD statement of the active libraries. If DRD is enabled, it is not necessary for IMS to use pre-existing MODBLKS resources. In this case, online change for MODBLKS resources is disabled and you can start IMS without defining MODBLKS DD cards. However, to use the Global Online Change utility to initialize OLCSTAT data sets, you must first define either MDBS=A or MDBS=B, even for an IMS that does not define the MODBLKS data sets. If the MODBLKS data sets are not defined to IMS, the MODBLKS value in the OLCSTAT data set is ignored.
FMTS	Specifies the IMS JCL FORMAT DD statement suffix for the active MFS FORMAT library. The suffix can be A or B. A means FORMATA is the DD statement of the active library. B means FORMATB is the DD statement of the active library. FORMAT contains online MFS definitions to be used as the format library by the online system. MFS-supported terminals and the MFS language utility program require their use. This parameter is required, even if no IMS in the IMSplex uses the MFS format library.
MDID	Specifies the modifyid (online change status identifier) for the INI (initialize) function. This should be initialized to zero to indicate that the number of global online changes performed is zero. The modifyid is used to determine whether an IMS was down for one or more online changes and to determine the kind of restart IMS can perform. The modifyid is used by IMS internal processing to determine whether IMS must cold start. If an IMS participated in the last global online change, its modifyid matches the modifyid in the OLCSTAT data set. This IMS is allowed to warm start. If an IMS did not participate in the last global online change, its modifyid does not match the modifyid in the OLCSTAT data set. It is permitted to warm start if its restart type does not conflict with the last online change that was performed. If the IMS was down for two or more global online changes, it must cold start to recover security status during emergency restart processing.
PLEX	Specifies a 1-5 character identifier that specifies the XCF CSL IMSplex group name for the UNL (unlock) function. PLEX is required for the UNL function. All OM, RM, SCI, IMS, and so on, IMSplex members that are in the same IMSplex sharing group sharing either data bases or message queues must specify the same identifier. The same identifier must also be used for the IMSPLEX= parameter in the CSLSIxxx, CSLOIxxx, CSLRIxxx and DFSCGxxx PROCLIB members.
SOUT	Specifies the class assigned to SYSOUT DD statements.

30

Initialize OLCSTAT data set




- EXEC statement skeleton:

```
PGM=DFSUOLC0 , PARM=( FUNC=&FUNC ,  
ACBS=&ACBS , MDBS=&MDBS , FMTS=&FMTS ,  
MDID=&MDID , PLEX=&PLEX , SOUT=&SOUT )
```

- EXEC statement example:

```
//DFSUOLC0 JOB  
//STEP1 EXEC DFSUOLC , FUNC=INI , ACBS=A , MDBS=A , FMTS=A , MDID=0  
//SYSIN DD *  
/*  
//
```



31

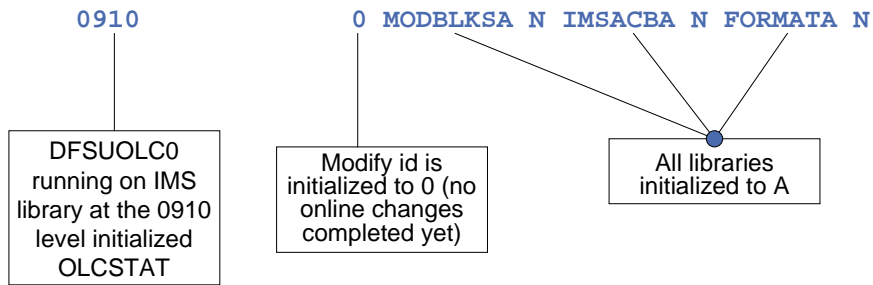
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Here is an example of the recommended parameters that should be used before the first coldstart of the first IMS in the IMSplex:

You can see that the initialization function has been invoked since `FUNC=INI` was specified. Also, the modify ID has been initialized to zero, which will be helpful after several online changes have been completed since it will represent the number of online changes that have occurred since the utility was run to initialize the OLCSTAT data set. Lastly, all of the OLC libraries (ACBLIB, MODBLKS and FMTLIB) have been initialized to the "A" libraries.

OLCSTAT Contents

- Example of OLCSTAT data set contents after initialization (using TSO to view):

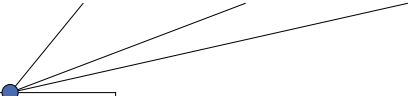


OLCSTAT Contents

- Example of OLCSTAT data set contents after initialization (using TSO to view):

0910

0 MODBLKSA N IMSACBA N FORMATA N



No online changes completed yet so all indicators are N

OLCSTAT Contents



- Coldstart IMSA and IMSB with global online change enabled

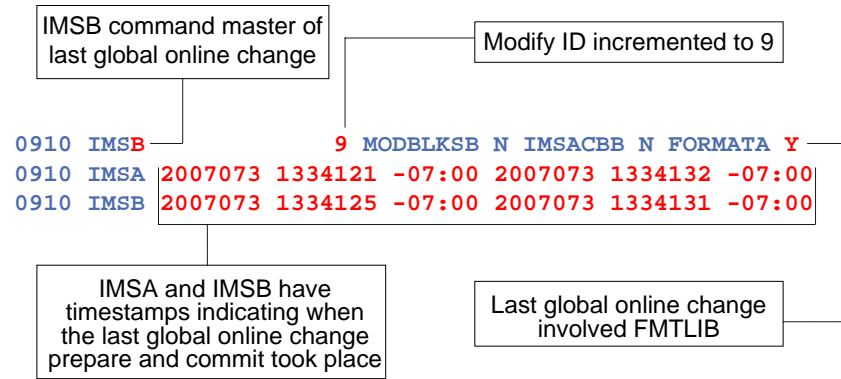
```
0910      0  MODBLKSA N  IMSACBA N  FORMATA N
0910 IMSA
0910 IMSB
```

Entries for each IMS system are added to the OLCSTAT data set

OLCSTAT Contents



- After nine global online changes have been completed



DFSCGxxx PROCLIB Member



- The following parameters must be added to the DFSCGxxx PROCLIB member to enable global online change:
 - OLC=GLOBAL
 - Specifies that global online change is to be used instead of local online change
 - OLCSTAT= <data set name>
 - Designates the OLCSTAT data set that you have allocated and initialized, which will contain global online change status data

36

- NORSCC= <ACBLIB | FORMAT | MODBLKS>
 - Indicates that “no resource consistency checking” is to be performed for the online change libraries specified
 - Can specify one or more of these online change library types

- What is “resource consistency checking”?
 - Verifies that all IMS systems are defined with the same data set names for their active/inactive online change libraries (contents not verified)
 - Data set concatenations must be defined in the same order across the systems in the IMSplex

All of the IMS systems' data set concatenations are validated but again, only the library data set names are checked for consistency. Resource consistency checking does not ensure whether the contents of these data sets are consistent.

– More about resource consistency checking:

- Requires a resource structure
- Must indicate NORSCCC if you do not have cloned IMS systems and your data sets differ across them
- Default value for IMS Version 9 and prior: resource consistency checking will be done for all online change libraries: ACBLIB, FMTLIB and MODBLKS
- Being removed in IMS Version 10

All of the IMS systems' data set concatenations are validated but again, only the library data set names are checked for consistency. Resource consistency checking does not ensure whether the contents of these data sets are consistent.

DFSCGxxx PROCLIB Member Comparison



<i>Local online change</i>	<i>Global online change</i>
<pre>CMDSEC=N, IMSPLEX=PLEX1, OLC=LOCAL /* (default) */</pre>	<pre>CMDSEC=N, /* No cmd authorization */ /* checking */ IMSPLEX=PLEX1, /* IMSplex name */ OLC=GLOBAL /* Global online change */ OLCSTAT=IMSTESTL.IMS01.OLCSTAT NORSCC=(FORMAT) /* No resource consistency */ /* for FMTLIB */</pre>

39

Final Migration Steps

- Shut down IMS system
- Remove MODSTAT DD statements from IMS control region startup JCL (optional)
- If using XRF, remove MODSTAT2 DD statements

Final Migration Steps

- Example of local online change-related DD statements to remove:

```
//STEPLIB DD DSN=IMS.&SYS2.SDFSRESL,DISP=SHR
// DD DSN=IMS.&SYS2.PGMLIB,DISP=SHR
//DFSRESLB DD DSN=IMS.&SYS2.SDFSRESL,DISP=SHR
//IMSACBA DD DSN=IMS.&SYS2.ACBLIBA,DISP=SHR
//IMSACBB DD DSN=IMS.&SYS2.ACBLIBB,DISP=SHR
//MODSTAT DD DSN=IMS.&SYS.MODSTAT,DISP=SHR
//MODSTAT2 DD DSN=IMS.&SYS.MODSTAT2,DISP=SHR
//PROCLIB DD DSN=IMS.&SYS2.PROCLIB,DISP=SHR
```

Final Migration Steps

- For environments with multiple cloned IMS systems: repeat this migration process one IMS system at a time

- Global online change supports a mixed local/global online change environment
 - Keep IMS systems synchronized by manually coordinating them until migration process complete for all systems in IMSplex

Using Global Online Change



- Commands are similar to those used with local online change:

Local Online Change Command	Global Online Change Command	Function
/MODIFY PREPARE	INITIATE OLC PHASE (PREPARE)	Initiate prepare phase of global online change
/MODIFY COMMIT	INITIATE OLC PHASE (COMMIT)	Initiate commit phase of global online change
/MODIFY ABORT	TERMINATE OLC	Abort global online change
/DISPLAY MODIFY	/DISPLAY MODIFY	Displays online change libraries and work in progress
QUERY MEMBER TYPE(IMS)	QUERY MEMBER TYPE(IMS)	Display online change status of IMSs
(No equivalent)	QUERY OLC LIBRARY(OLCSTAT)	Display OLCSTAT dataset contents

43

Using Global Online Change



- More information about how to use global online change can be found in the following documentation:

IMS Version 8/9	<ul style="list-style-type: none">▪ <i>Operations Guide (SC27-1304/SC18-7830)</i><ul style="list-style-type: none">– Chapter 10. Making online changes▪ <i>Command Reference (SC27-1291/SC18-7814)</i>
IMS Version 10	<ul style="list-style-type: none">▪ <i>IMSplex Administration Guide (SC18-9709)</i><ul style="list-style-type: none">– Chapter 3. Common Service Layer overview, Global online change▪ <i>System Administration Guide (SC18-9718)</i><ul style="list-style-type: none">– Chapter 17. Making online changes▪ <i>Command Reference, Volume 1 (SC18-9700)</i>

44

Post-Migration Considerations



- Recovery procedures using the Global Online Change Utility
 - “OLCINP” lockword is present in OLCSTAT data set during global online change processing
 - IMS system could fail before this lockword is removed
 - Use FUNC=UNL to delete lockword
 - If lockword is present and IMS tries to come up, it will abend U2800-0010

45

When using global online change in place of local online change, there are a few additional considerations to account for. For example, if you recall from earlier in the presentation when I was discussing the OLCSTAT data set details, you might recall the lockword that I mentioned that is present in the data set while a global online change is in progress. If you have one IMS system in your shop and it fails or abends during global online change processing, you will need to run the Global Online Change Utility with FUNC=UNL specified. This is also the case for shops that have multiple cloned IMS systems that all fail while a global online change is in progress. Running the utility will remove the lock field that is present in the OLCSTAT data set during global online change processing. If an IMS tries to come up while this lock field is present in the OLCSTAT, it will abend U2800-0010.

Post-Migration Considerations



- An installation should have a procedure in place to recreate the OLCSTAT data set in case of a severe error
 - Keep ACBLIB, MODBLKS and FMTLIB suffixes, as well as IMS list information after each successful global online change
 - Run the Global Online Change Utility with FUNC=INI to recreate the contents, including a list of IMS systems

46

Next, we recommend that you have a procedure in place to recreate the OLCSTAT data set in the event that a severe error occurs (including when the Global Online Change Utility is unintentionally run). To recreate the OLCSTAT data set, we suggest keeping all online change library suffixes and IMS list information after each global online change is successfully completed. With this information, you can specify accurate parameters in the Global Online Change Utility and run it with FUNC=INI to recreate the contents of the data set.

Post-Migration Considerations



- FUNC=ADD will add IMS entries to OLCSTAT data set
- FUNC=DEL will delete an IMS entry from OLCSTAT data set
 - Use when you are shutting down an IMS system with no intention of bringing it up again
 - Alternative: `/CHECKPOINT FREEZE LEAVEPLEX` will shut down the IMS system and automatically delete the IMS entry from the OLCSTAT data set

47

There are two other functions of the Global Online Change Utility: FUNC=ADD and FUNC=DEL. Use FUNC=ADD to add IMS segments to the OLCSTAT data set as part of the OLCSTAT recreation process in the event that it becomes necessary. Use FUNC=DEL to delete an IMS segment from the OLCSTAT data set when you are shutting down an IMS system with /CHECKPOINT FREEZE and do not plan on starting it again. Appending LEAVEPLEX to the /CHECKPOINT FREEZE command will automatically delete the IMS entry from the data set, eliminating the need to remove it later by running the utility with FUNC=DEL specified.

Post-Migration Considerations



- Using global online change when some IMS systems in IMSplex are down
 - Special keywords required (otherwise command will be rejected without any processing attempt)
 - FRCNRML
 - FRCABND
 - Examples:
 - `INITIATE OLC PHASE(PREPARE) TYPE(ALL) OPTION(FRCNRML)`
 - `INITIATE OLC PHASE(PREPARE) TYPE(ALL) OPTION(FRCABND)`

48

If your shop has multiple cloned IMS systems and there are some that are down because they were shut down normally or abended, you may want to perform GOLC on the IMS systems that are still up. To accomplish this, the keywords "FRCNRML" and/or "FRCABND" must be specified on the INITIATE OLC PHASE(PREPARE) command. If you have IMS systems that are down since they were shut down normally, you would include the keyword "FRCNRML" on the command. If there are IMS systems that are down because they abended, you can include the keyword "FRCABND" to attempt GOLC for those systems that are still up. If these options are not specified on the GOLC command and there are IMS systems that are down, the command will immediately be rejected.

Post-Migration Considerations



- Global online change and IMS restart:
 - IMS system that misses 2+ global online changes must coldstart to participate in global online change again
 - IMS system that misses 1 global online change may have to coldstart, depending on last online change type and restart flavor (see next chart)
 - IMS restart could process log records that do not match the current online change libraries defined in OLCSTAT data set

49

Lastly, there are implications that GOLC has on IMS restart. If an IMS is down during two or more global online changes, it will need to coldstart in order to participate in the global online change process again. This is because IMS restart (other than coldstart) could process log records that might not match the current online change libraries defined in the OLCSTAT data set. There are also some scenarios in which an IMS system may have to coldstart if it was down during just one online change. The determining factor is the last type of GOLC that was performed. The following table summarizes the type of restarts that are permitted after each type of GOLC:

Post-Migration Considerations



Global Online Change Type	Restart Commands Permitted
ALL	/NRE CHECKPOINT 0
MODBLKS	/NRE CHECKPOINT 0
ACBLIB	/NRE CHECKPOINT 0 /ERE COLDBASE
FMTLIB	/NRE CHECKPOINT 0 /NRE /ERE /ERE COLDBASE /ERE COLDCOMM

50

Lastly, there are implications that GOLC has on IMS restart. If an IMS is down during two or more global online changes, it will need to coldstart in order to participate in the global online change process again. This is because IMS restart (other than coldstart) could process log records that might not match the current online change libraries defined in the OLCSTAT data set. There are also some scenarios in which an IMS system may have to coldstart if it was down during just one online change. The determining factor is the last type of GOLC that was performed. The following table summarizes the type of restarts that are permitted after each type of GOLC:

Fallback Procedure

1. Replace OLC=GLOBAL with OLC=LOCAL in DFSCGxxx
2. Shutdown IMS system
3. Initialize MODSTAT data set with INITMOD job
4. Put MODSTAT DD statement (and MODSTAT2 DD statement if using XRF) back into IMS control region JCL
5. Coldstart IMS
6. Ensure that local OLC-enabled IMS systems are manually coordinated to maintain synchronization with other IMS systems

IMS Version 10 Positioning



- ACBLIB member online change (MOLC)
 - New capability in V10 that global online change is a prerequisite for
 - Allows user to add/change ACBLIB resources by individual member
 - No requirement to switch active/inactive libraries
 - ★ – Immediate benefit: higher availability due to less quiesced resources (compared to global online change)
 - Ready to use once global online change in place and V10 has been installed

52

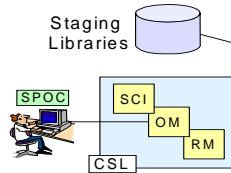
IDUG 2008 North America

Whew! So migrating to GOLC wasn't so challenging after all. Now you no longer must be concerned with the coordination of IMSplex-wide online change activity. Your IMS systems stay synchronized across multiple online changes, always pointing to the same libraries containing the same IMS resources. You start to use GOLC and enjoy the new freedom and higher IMS availability that comes with the automatic global coordination of online change. But you realize that just like with LOLC, GOLC quiesces the resources in the libraries that are specified on the input command in preparation to be changed online. Until its processing is complete, these resources are not available for use and cannot be changed online. This may seem minor, but if the libraries contain a large amount of resources/members, this can result in availability issues.

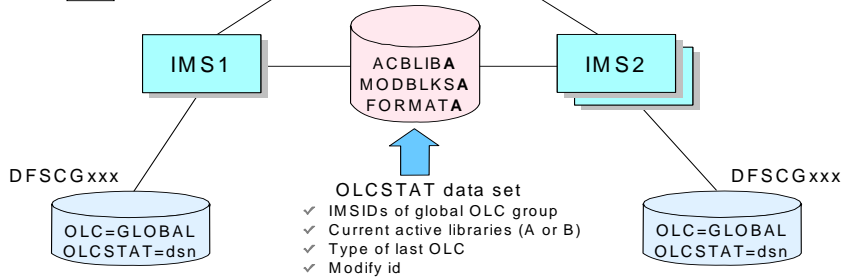
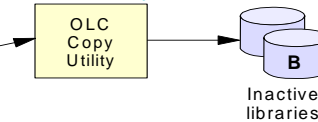
IBM's solution to this issue is in IMS Version 10. It introduces a new capability called ACBLIB Member Online Change (MOLC), which allows you to add or change specific ACBLIB members online without having to switch the entire active/inactive libraries. Thus, only the individual members involved in the online change will be quiesced, eliminating availability issues previously encountered while using GOLC.

ACBLIB Member Online Change

Staging library copied directly
to active libraries



User creates backup of active
library by copying to inactive
library



53

As you can see here, the ACBLIB member online change process is very similar to the global online change process. This makes sense because ACBLIB member online change was built on top of existing global online change logic. Notice that the CSL is still involved in the coordination of the online change process and keeping the IMS systems synchronized. The OLCSTAT data set is still used to keep the online change status, and the same online change libraries are involved

IMS Version 10 Positioning



- Dynamic Resource Definition (DRD)
 - Allows for the dynamic definition of MODBLKS resources:
 - Application programs
 - Transactions
 - Databases
 - Fast Path routine codes
 - Improves IMS availability
 - ★ – Works with ACBLIB member online change
 - MOLC adds PSB/DBDs while DRD creates the MODBLKS PDIR/DDIRs that enable them for use

54

Additional References



- Migration process
 - White paper can be found in Techdocs library at: www.ibm.com/support/techdocs
 - Title: *Position for IMS V10's Member Online Change with Global Online Change Migration*
 - Search for document *WP101048* in White Papers category
- Dynamic Resource Definition
 - Material from session K06 “IMS V10 Dynamic Resource Definition” held yesterday

55

Additional References



- Common Service Layer
 - Material from Diane Goff's sessions:
 - Session K08: The IMS Common Service Layer - Operations Manager and Resource Manager
 - Session J10: Preparing for IMS 10: Setting Up the Common Service Layer

56

Questions



Session K06



Session IMS V10 Dynamic
Resource Definition

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58

Thank you!