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

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Version Date: June 25, 2007

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Search for title under the category of “White Papers".

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Abstract

The purpose of this white paper is to describe the required migration tasks to transition from using Local Online Change to Global Online Change. While the primary focus will be on migration, the benefits of Global Online Change will be discussed and its commands will be summarized.

Migrating to Global Online Change will position your shop to take advantage of two optional capabilities in IMS Version 10. Even if your shop only uses one IMS system, migrating to Global Online Change will be beneficial since it is a prerequisite for a new function being introduced in this release called ACBLIB Member Online Change. Member Online Change in turn, complements another new function in IMS Version 10 called Dynamic Resource Definition. These new capabilities will also be highlighted.

Acknowledgements

- Rich Lewis (Certified IT Specialist, IMS Advanced Technical Support) for reviewing this document
- Suzie Wendler (Certified IT Specialist, IMS Advanced Technical Support) for reviewing this document
- Sandy Stoob (IMS Systems Development) for the Local Online Change and Global Online Change diagrams

IMS Online Change - The Pathway to Higher Availability

IMS online change allows resources such as programs, databases, routing codes and transactions to be added, changed or deleted online without an IMS outage. It does this by switching between a set of active/inactive libraries, with the active library containing the resources to be used by IMS. Prior to IMS Version 8, online change needed to be performed on each individual IMS system in an IMSplex, requiring a manual coordination of online change among all IMS systems. Each IMS used its own local data set (known as the MODify STATus or MODSTAT data set) to keep track of its online change status. This type of online change is known as local online change (LOLC). Because online change was being performed on each individual IMS, the user had to coordinate this process to ensure that each system was in sync, pointing to the same online change libraries. This improved IMS availability since an IMS outage and SYSGEN were no longer required in order to update IMS resources. However, issues arose when online change completed on some IMS systems, but failed on other systems in the IMSplex due to errors. This situation proved to be a difficult one to resolve, especially when there were a large number of IMS systems in an IMSplex. For a visual representation of LOLC, please see *Diagram A* included in the Reference Section of this white paper.

A Quandary - How do We Keep IMS Systems Synchronized?

There are several scenarios which could cause online change to fail, such as when there is an attempt to change resources that are in use with work in progress. Using LOLC, some IMS systems could encounter this situation and fail an online change attempt while others could succeed. At this point, the IMS systems in the IMSplex would not be pointing to the same online change libraries. This causes confusion and makes extra procedures necessary to ensure that all of the IMS systems are kept synchronized.

We needed to eliminate the possibility of this scenario occurring, and it happened in IMS Version 8 with global online change (GOLC)! This new function resolved the issue by coordinating the online change process so that all IMS systems' online change status is synchronized, pointing to the same online change libraries. Always. How does it do that, you ask? The GOLC status of all IMS systems in an IMSplex is stored in one shared data set, called the OLCSTAT (OnLine Change Status) data set, rather than each IMS storing its local status in its own MODSTAT data set. Please see *Diagram B* in the Reference Section for a picture of how GOLC operates compared to LOLC. In addition, the Common Service Layer is instrumental to GOLC as we will see now...

The Common Service Layer Behind the Scenes

The driver of global online change is existing local online change function supported by the Common Service Layer (CSL). Therefore, the CSL is a prerequisite and must be set up before GOLC can be used. It consists of three components: Resource Manager (RM), Operations

Manager (OM) and Structured Call Interface (SCI). Global Online Change uses each of these components in its processes. RM coordinates the phases of GOLC among the IMS systems in an IMSplex with no requirement to have a resource structure. OM enables command entry from a single point of control with its application programming interface and chooses an IMS to be the "command master", which will ultimately receive a consolidated command response that represents the processing result from all IMS systems. SCI allows communication between the IMSplex components by providing a common interface. For a visual illustration of how the CSL components facilitate GOLC, please see *Diagram C* in the Reference Section.

1, 2, 3...Let's Migrate!

Now that we understand the benefits of GOLC, we will now explore the required steps to migrate to it from LOLC.

Step 1: Set Up and Start Common Service Layer

Since the focus of this white paper is the migration process for GOLC, we will only briefly discuss CSL implementation here, with references to the IMS manuals that describe the process in full detail.

The CSL execution parameters are defined in the DFSCGxxx PROCLIB member, whereas each CSL component's initialization parameters are defined in a separate PROCLIB member (CSLRIxxx for RM, CSLOIxxx for OM and CSLSIxxx for SCI). All of these IMSplex members must share the same suffix, which is specified by the CSLG= startup parameter of the IMS system.

For more detailed information related to defining the DFSCGxxx member, please refer to the following IMS manuals:

IMS Version 8	*Installation Volume 2: System Definition and Tailoring,* *Chapter 7. Tailoring the IMS System to Your Environment,* *Specifying IMS PROCLIB Members,* *Member DFSCGxxx*
IMS Version 9	*Installation Volume 2: System Definition and Tailoring,* *Chapter 8. Tailoring the IMS System to Your Environment,* *Specifying IMS PROCLIB Members,* *Member DFSCGxxx*
IMS Version 10	*System Definition Reference, Chapter 63. DFSCGxxx*

To learn more about defining each CSL component's initialization member, please see the following IMS manuals:

IMS Version 8/9	*Common Service Layer Guide and Reference,* *Chapter 3. CSL Operations Manager,* *CSL OM Definition and Tailoring,* *CSL OM Initialization Parameters PROCLIB Member* *Chapter 4. CSL Resource Manager,* *CSL RM Definition and Tailoring,* *CSL RM Initialization Parameters PROCLIB Member* *Chapter 5. CSL Structured Call Interface,* *CSL SCI Definition and Tailoring* *CSL SCI Initialization Parameters PROCLIB Member*
IMS Version 10	*System Definition Reference,* *Chapter 59. CSLOIxxx* *Chapter 60. CSLRIxxx* *Chapter 61. CSLSIxxx*

To locate the manuals referred to in this white paper, visit www.ibm.com/ims and click on the "Library" link in the upper left corner of the page. On the next page, scroll down and you will find links to the documentation for the different IMS versions.

Step 2: Prepare OLCSTAT Data Set

As previously mentioned, the data set used with GOLC is called the OLCSTAT data set. It contains one record of variable length, with a maximum total size of 5208 bytes. This record contains multiple segments which contain information about GOLC status and the IMS systems that are current with it. Let's look at these segments in a bit more detail. The first segment is a header which contains the GOLC status information, including:

- 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)

Following the header are segments for the IMS systems that are current with the online change libraries. Each IMS segment includes the following:

- IMSID of the IMS system current with the active online change libraries
- Timestamp of the last online change prepare/commit for that IMS

One of the first steps in migrating to GOLC is changing the data set used in the online change process. Users of LOLC are already familiar with the MODSTAT data set local to each IMS that is specified using DD statements in the IMS control region startup JCL. These DD statements

can be removed later in the migration process when the IMS is shutdown in preparation for restarting with GOLC enabled.

Step 2.1: Allocate OLCSTAT Data Set

To use GOLC, the OLCSTAT data set must be allocated, initialized and then specified in the DFSCGxxx PROCLIB member. Let's take a look at each of these steps in more detail.

IBM recommends that the OLCSTAT data set be allocated with the following attributes, which will allow for up to 65 IMS systems:

DSORG:	Sequential
RECFM:	V
LRECL:	5204
BLKSIZE:	5208

Once the OLCSTAT data set has been allocated and catalogued, it must be initialized with the Global Online Change Utility before the first coldstart of the first IMS in the IMSplex.

Step 2.2: Initialize OLCSTAT Data Set

Next, initialize the OLCSTAT data set with the Global Online Change Utility, specifying FUNC=INI in the DFSUOLC0 EXEC. Before we discuss the details involved in initializing the OLCSTAT data set, we must have an understanding of the utility's different aspects such as parameters, syntax, functions and how to invoke it.

The Global Online Change Utility is invoked by the DFSUOLC0 procedure which is added to IMS.PROCLIB after stage 2 of SYSGEN has been completed. This is what the DFSUOLC0 procedure JCL will look like:

```
//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
```

Each PROC parameter must be specified when the utility is invoked except for the SOUT parameter, which will default to SOUT=A if it is not explicitly specified. It can be invoked with the following DFSUOLC0 EXEC statement to initialize the OLCSTAT data set:

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

The EXEC parameters specified will determine the data that is stored in the OLCSTAT data set when the utility is run. For an explanation of each parameter on the utility's EXEC, please see *Table E* in the Reference Section. To initialize the OLCSTAT data set, specify FUNC=INI in the DFSUOLC0 EXEC. There are other functions of the Global Online Change Utility available, such FUNC=ADD, FUNC=DEL and FUNC=UNL for add, delete and unlock. These other functions are discussed in more detail in the "Post-Migration Considerations" section of this white paper and are summarized in *Table F* in the Reference Section.

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

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

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.

The OLCSTAT data set is now ready for the GOLC process. If you were to browse the data set with TSO after running the Global Online Change Utility using the parameters specified in the given example, this is how it would appear (in this example, the data set was initialized for use with IMS Version 9):

```
0910                          0 MODBLKSA N IMSACBA N FORMATA N
```

Since no IMS systems have been coldstarted yet, we only see the contents of the OLCSTAT header segment.

You can use GOLC in an environment containing different versions of IMS, but the OLCSTAT data set needs to be initialized for use with the highest version of IMS present in the IMSplex for GOLC to function properly.

Each time a GOLC-enabled IMS is coldstarted, an entry for it will be added as an IMS segment to the OLCSTAT data set. For example: IMSA and IMSB are both Version 9 IMS systems and are enabled for GOLC. Once they are coldstarted, the OLCSTAT data set would appear as follows when browsed with TSO[†]:

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

[†] ***The OLCSTAT data set contains one record. When using TSO to view all of the data within this record, you must scroll to the right. The examples in this document are in wrapped format to show the data in their entirety.***

The two entries that were added after each IMS system coldstarted are the IMS segments. There are no timestamps contained in these IMS segments since no online changes have been completed yet.

Jumping ahead, let's say we completed nine global online changes with the last being a FMTLIB online change. Here are the contents of the OLCSTAT now:

```
0910 IMSB             9 MODBLKSB N IMSACBB N FORMATA Y
0910 IMSA 2007073 1334121 -07:00 2007073 1334132 -07:00
0910 IMSB 2007073 1334125 -07:00 2007073 1334131 -07:00
```

We can see in the header segment that IMSB was the command master of the last global online change. The modify ID has been incremented with each online change a total of nine times. Also, the "Y" indicator can be seen after the FMTLIB literal signifying that the Format Library was changed in the last online change. Lastly, IMSA and IMSB now have timestamps indicating when the last online change prepare and commit were completed.

Step 3: Add Global Online Change Parameters to DFSCGxxx PROCLIB Member

To enable GOLC, the following parameters must be specified in the IMS system's DFSCGxxx PROCLIB member:

OLC=GLOBAL
OLCSTAT= <data set name>
NORSCCC= <selected OLC libraries>

Use OLC=GLOBAL to enable GOLC, which will override the default of LOLC. Designate the data set to be used for your OLCSTAT with the OLCSTAT= parameter.

Lastly, use NORSCCC= to specify "no resource consistency checking" for the online change libraries you do not want consistency checking performed for. Resource consistency checking verifies that all IMS systems are defined with the same data set names for their active and inactive online change libraries. All of the IMS systems' data set concatenations are validated but again, only the library data set names are checked for consistency. Please note that resource consistency checking requires the use of a resource structure. The data set concatenations must be defined in the same order across the systems in the IMSplex. Resource consistency checking does not ensure whether the contents of these data sets are consistent. The NORSCCC= parameter must be used if you do not have cloned IMS systems and your data sets differ across them. Please note that support for this parameter is being removed in IMS Version 10. For versions prior to this release, resource consistency checking defaults to checking all of the online change libraries: ACBLIB, FMTLIB and MODBLKS.

So, how will the DFSCGxxx PROCLIB member look when GOLC is enabled versus LOLC? Below is a side-by-side comparison of two example definitions:

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

Notice for GOLC, the OLC= parameter has been changed to GLOBAL, the OLCSTAT data set is defined and the parameter for "No Resource Consistency Checking" is included, specifying that no checking is to be done for FMTLIB.

Step 4: Shutdown IMS

Now that the OLCSTAT data set has been initialized and the DFSCGxxx PROCLIB member has been defined according to the GOLC requirements, the next step is to shut down your IMS system, or the first system in the IMSplex that you are migrating.

Step 5: Remove MODSTAT References, then Coldstart IMS

After successful shutdown, we recommend that the MODSTAT DD statement is removed from the IMS control region startup JCL. If using XRF, remove the MODSTAT2 DD statement as well. In the example below, a dashed box surrounds the MODSTAT and MODSTAT2 DD statements that should be removed:

```
//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
```

Please note that if the DD statements remain in the JCL, you must ensure that the MODSTAT and MODSTAT2 data sets still exist. Next, coldstart this IMS. You are now ready to begin executing global online changes on this IMS.

Step 6: Repeat Migration Procedure for Each IMS

If you have multiple cloned IMS systems, now you can repeat this migration process for each system in your IMSplex, one at a time. GOLC can be used in a mixed IMS version environment while you are completing the migration process. In this interim state, use Global Online Change on the successfully migrated IMS systems, but those that have not yet been migrated should be individually online changed (using LOLC) to keep them synchronized with the others.

How Do I Use Global Online Change?

The good news about using about GOLC is that it has commands equivalent to the familiar LOLC commands, with the only difference being the syntax. There is one new command associated with GOLC that is specific to the OLCSTAT data set. Here is a comparison of the commands used with each type:

Local Online Change Command	Global Online Change Command	Function
/MODIFY PREPARE	INITIATE OLC PHASE (PREPARE)	Initiate prepare phase of online change
/MODIFY COMMIT	INITIATE OLC PHASE (COMMIT)	Initiate commit phase of online change
/MODIFY ABORT	TERMINATE OLC	Abort 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
	QUERY OLC LIBRARY (OLCSTAT)	Display OLCSTAT data set contents

For detailed information on how to use GOLC, please see following documentation:

IMS Version 8 & 9	*Operations Guide, Chapter 10. Making online changes* *Command Reference (see above GOLC commands)*
IMS Version 10	*IMSplex Administration Guide, Chapter 3. Introduction to Common Service Layer, Global online change* *System Administration Guide, Chapter 17. Making online changes* *Command Reference, Volume 1 (see above GOLC commands)*

Post-Migration Considerations

When using GOLC in place of LOLC, there are a few additional considerations to account for.

Recovery Procedures Using the Global Online Change Utility

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 online change processing. If an IMS tries to come up while this lock field is present in the OLCSTAT, it will abend U2800-0010.

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.

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.

All Global Online Change Utility functions are detailed in *Table F* in the Reference Section.

Using GOLC When IMS Systems Are Down

If your shop has multiple cloned IMS systems and there are some that are down because they were shut down normally or abended, you will 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.

GOLC and IMS Restart

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:

Global Online Change Type While IMS was Down	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

3, 2, 1...Fallback!

Once you have migrated to GOLC, but find a need to revert back to using LOLC, the fallback procedure is simple. Please perform these fallback steps one IMS system at a time:

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

Global Online Change Is All Setup! But How Am I Positioned for IMS V10 Now?

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.

Member Online Change Migration? We Think Not!

Uh-oh, another migration process to follow, right? Not so fast! By migrating your IMS systems to GOLC, you have already set them up to use MOLC. MOLC was built on top of existing GOLC logic and refined its capability to a higher level of granularity. Please see *Diagram D* in the Reference Section for a visual illustration of how MOLC operates. You will find that it is very similar to the GOLC diagram (*Diagram B*) due to the common logic used. MOLC can co-exist with GOLC, so you are able to use one or the other at any given time without a need for setup modification.

This is great you say, and you immediately migrate to IMS Version 10 to exploit this new capability. But after adding some PSBs and DBDs with MOLC you realize that you cannot actually use them until the corresponding MODBLKS resources are online. There are two options in this case. First, you can bring the required MODBLKS PDIRs or DDIRs online with GOLC, or you can exploit yet another new capability in IMS Version 10 by creating them dynamically.

MOLC actually complements another new function available in IMS Version 10 that allows for a dynamic creation, change and deletion of MODBLKS resources without an IMS outage. This new capability is known as Dynamic Resource Definition (DRD) and it allows for the dynamic definition of MODBLKS resources (application programs, transactions, databases and Fast Path routing codes) which improves IMS availability. Using DRD you can dynamically create, update or delete MODBLKS resources while IMS is running. DRD and MOLC work together: PSB/DBD resources you bring online with MOLC will require a corresponding PDIR/DDIR in MODBLKS before they can be used. For a more dynamic environment resulting in higher IMS availability, use DRD to dynamically define these required MODBLKS resources.

GOLC as the Foundation of IMS Version 10 Key Capabilities

The new capabilities in IMS Version 10 support today's On Demand business environments, and the first key step to exploiting them is migrating to the Global Online Change foundation. We have just briefly discussed two new capabilities available in IMS Version 10 that will significantly improve IMS availability. By migrating to GOLC now, you will facilitate the transition

to IMS Version 10 in that you will be positioned to immediately use MOLC to add and change individual ACBLIB resources online. You will be ready to use DRD to create the PDIRs/DDIRs for the PSBs/DBDs individually added with MOLC. Clearly, migrating to GOLC now will put your shop in an advantageous position for IMS Version 10.

Reference Section

Diagram A.

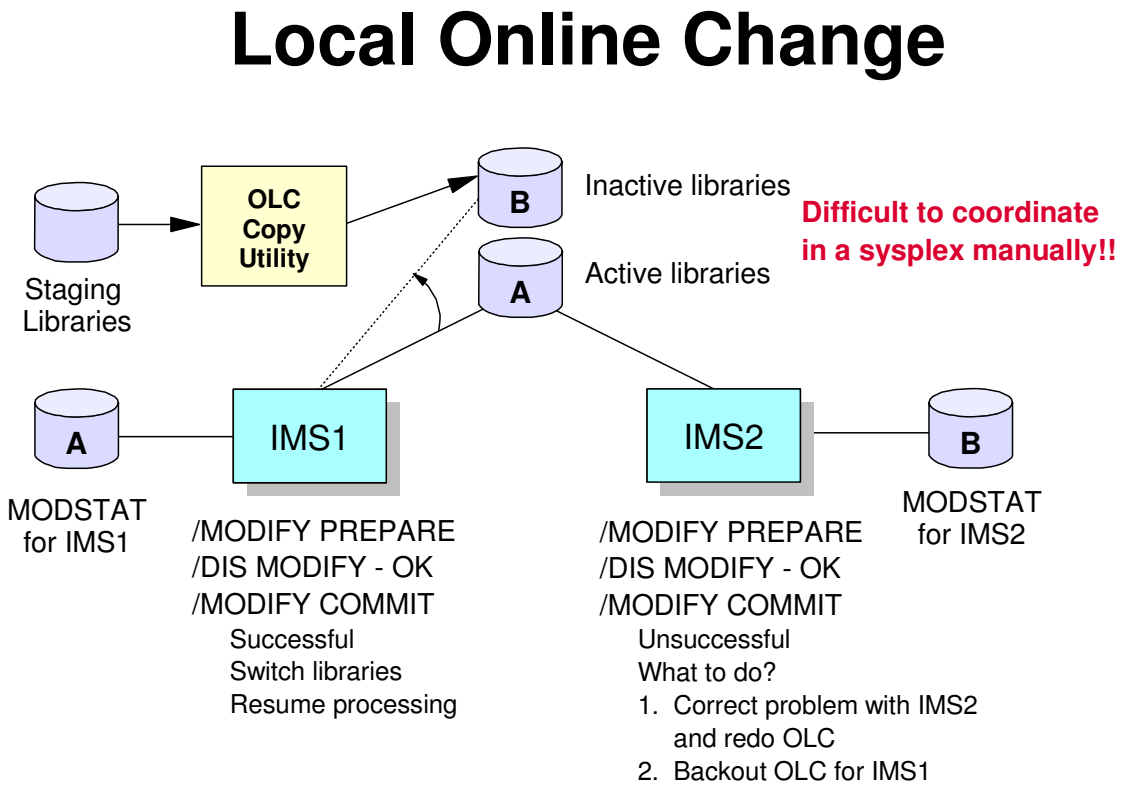
Local Online Change
OLC
Copy
Utility
B
Inactive libraries
Difficult to coordinate
in a sysplex manually!!
Staging
Libraries
A
Active libraries
A
IMS1
IMS2
B
MODSTAT
for IMS1
/MODIFY PREPARE
/DIS MODIFY - OK
/MODIFY COMMIT
Successful
Switch libraries
Resume processing
/MODIFY PREPARE
/DIS MODIFY - OK
/MODIFY COMMIT
Unsuccessful
What to do?
1. Correct problem with IMS2
and redo OLC
2. Backout OLC for IMS1
MODSTAT
for IMS2

Diagram B.

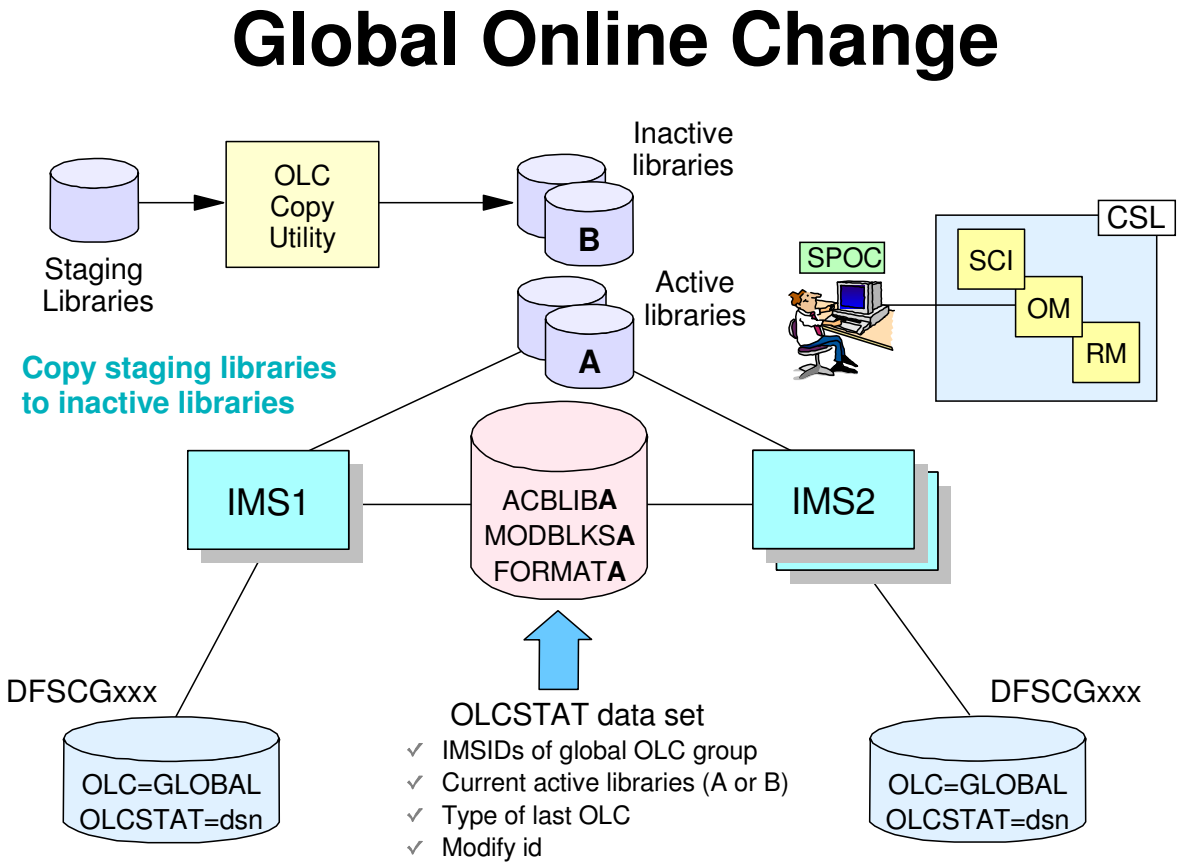

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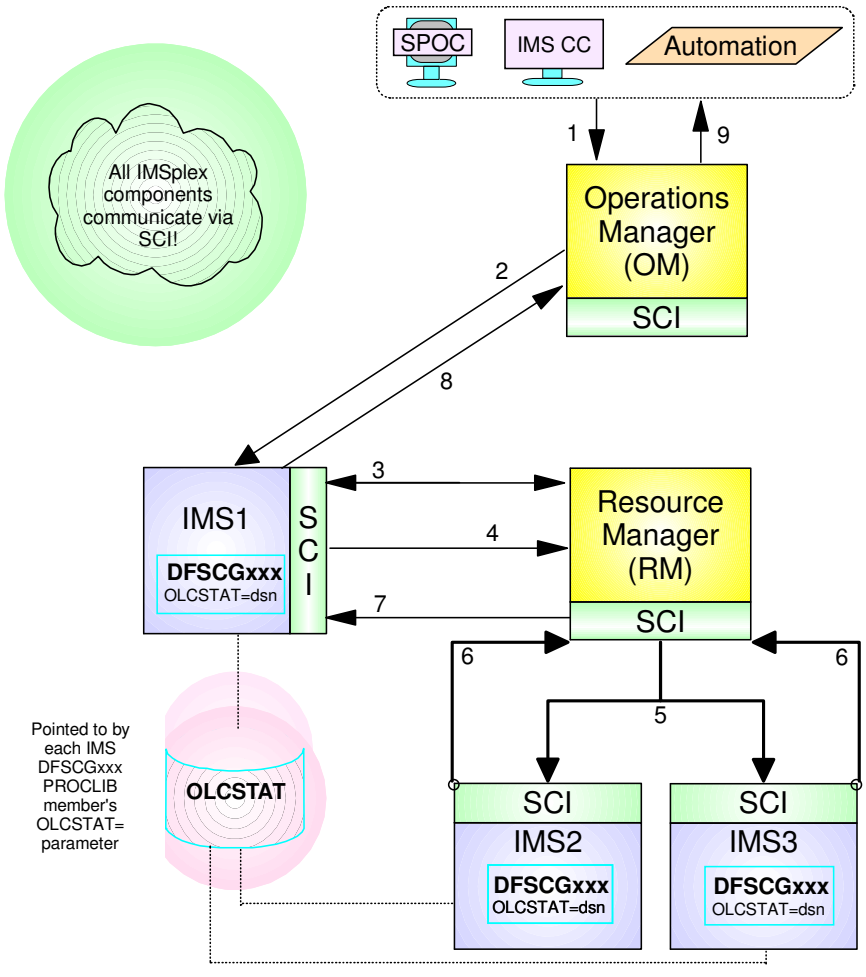
Diagram C.

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

Diagram D.

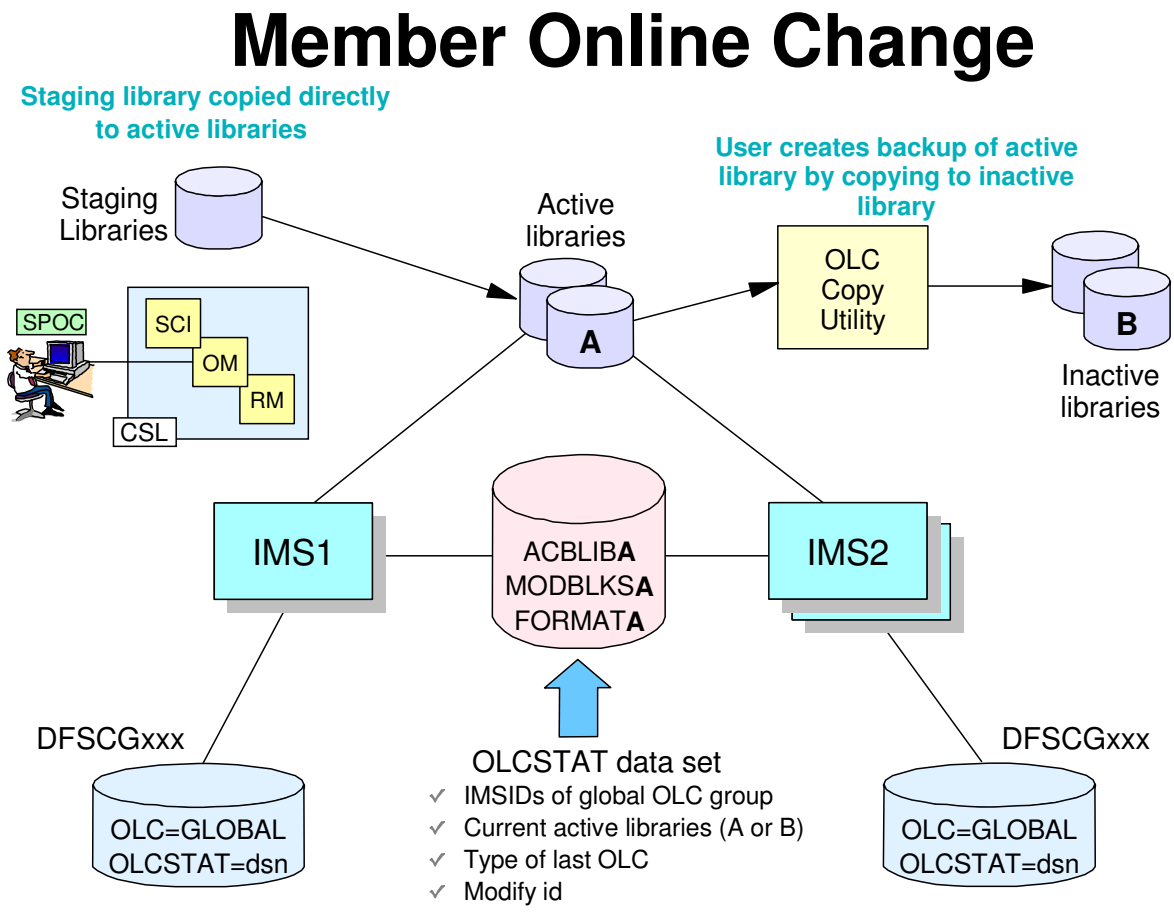

Member Online Change
Staging library copied directly to active libraries
User creates backup of active library by copying to inactive library
Staging Libraries
Active libraries
OLC Copy Utility
B
Inactive libraries
A
SPOC
SCI
OM
RM
CSL
IMS1
ACBLIBA
MODBLKSA
FORMATA
IMS2
DFSCGxxx
OLC=GLOBAL
OLCSTAT=dsn
OLCSTAT data set
IMSIDs of global OLC group
Current active libraries (A or B)
Type of last OLC
Modify id
DFSCGxxx
OLC=GLOBAL
OLCSTAT=dsn

Table E.

The following table summarizes each parameter's description for the Global Online Change Utility (DFSUOLC0)[‡]:

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.

[‡]**This data can be found in the *IMS V8/V9 System Utilities: Reference* and in the *IMS V10 System Utilities Reference*.**

Table F.

The following table summarizes the FUNC= parameters of the Global Online Change Utility (DFSUOLC0)[§]:

FUNC= PARAMETER	Description
INI	Function to initialize the OLCSTAT data set. ACBS, MDBS, FMTS, 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	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	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 `INITIATE OLC` 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	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.

[§] **This data can be found in the *IMS V8/V9 System Utilities: Reference* and in the *IMS V10 System Utilities Reference*.**

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