COPE DBCTL and IMS/TM CICS Multi Lsys Feature

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The COPE CICS Multi Lsys feature

Description of the problem that this feature of COPE addresses

The IBM CICS subsystem has always enabled application programs to address DL/1 databases.

The DL/1 maintained data used to be accessed by database management routines that executed in the same address space as CICS. When Release 4 of CICS was announced, the architecture of the DL/1 interface changed and DL/1 data had to be accessed by communicating with a separate region containing a IMS/TM or IMS/DBCTL subsystem. This architecture had several advantages including easier central management and greater efficiency of CPU resource usage.

The new architecture did not provide an effective solution to the requirements of developers. Developers required separate CICS regions and separate sets of DL/1 managed data (as well as DB2 managed data) for every development project in order to test and integrate changes made to existing and new applications. The "old" architecture allowed many copies of databases to be accessed concurrently, but the "new" architecture only allowed a single version of a database or program to be shared between all subsystems.

Two solutions could be implemented to provide multiple versions of data.

* 1) Replicate DBCTL subsystems and

* 2) Rename the databases and programs so that different versions could access a single DBCTL subsystem.

Both solutions have problems. Replication requires greater machine resources and adds work to systems people and database administrators to administer. Renaming is complex, error prone and also requires increased work by administration staff.

The COPE product provides an automated way of solving the problem. COPE allows multiple 'Logical Systems' to be defined in a single DBCTL or IMS/TM environment. A 'Logical System' is the equivalent of a stand-alone, unmodified DBCTL or IMS/TM system. COPE allows all DBDs and PSBs (definition members required by DL/1) to be 'imported' into a ISPF based subsystem and regenerated into specific Logical Systems.

The result is that COPE can take any number of separate systems and combine them into a single system. The problem of providing test data can thus be solved without the many problems associated with the alternate solutions.

The COPE product provides two separate features to address the issue of CICS connecting to the DL/1 subsystem

* CICS/DBCTL Single Lsys feature

* CICS/DBCTL Multi Lsys feature

The Single Lsys feature allows an individual CICS subsystem to access a single version of databas-
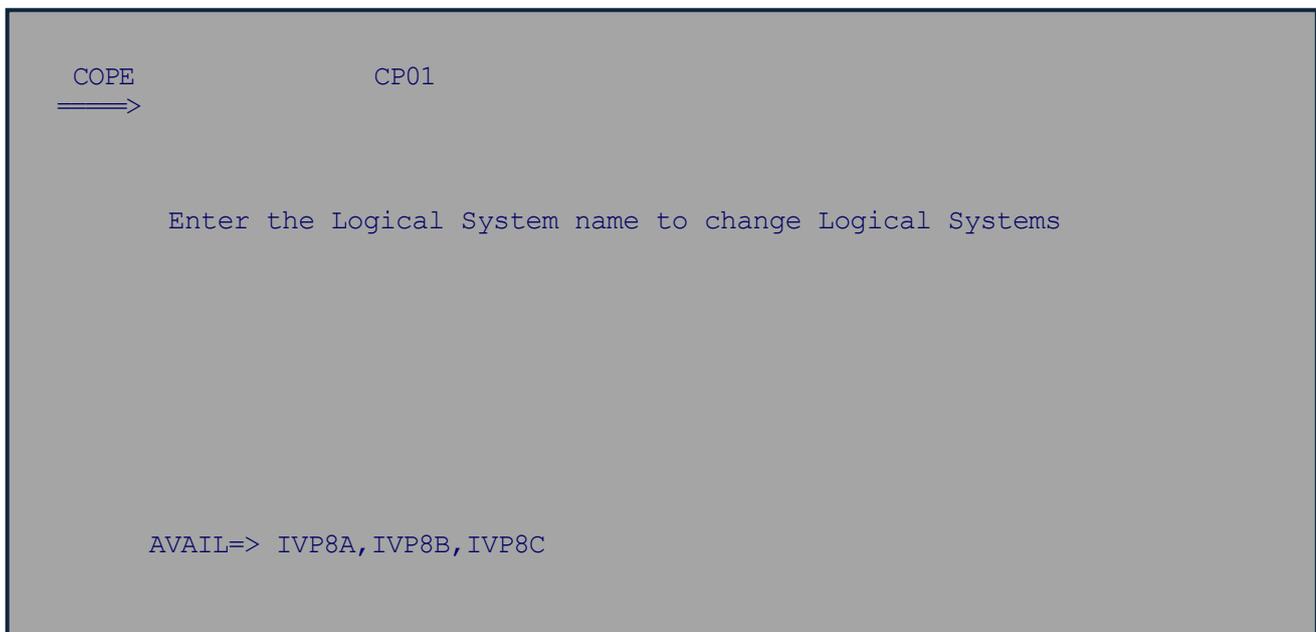
es specified in a single, COPE controlled, Lsys. There may be multiple CICS subsystems accessing different Lsys systems within a specific subsystem, but each subsystem has authority to access only a specific set of data

The Multi Lsys feature allows a user of a CICS application to choose an Lsys dynamically. The Lsys that is accessed is specified by the use of a COPE supplied CICS transaction. After a user has specified an Lsys, all applications initiated by the user are connected to the data in the previously chosen Lsys. Other users in the same CICS subsystem can specify different Lsys systems and have the same applications access different versions of the data.

Application User Instructions for the Multi Lsys Feature

Before a user enters any CICS transaction, they should enter COPE on a blank CICS terminal. The following menu is displayed.

Figure 1: The COPE Lsys User Menu

```
  COPE                    CP01
  =====>



      Enter the Logical System name to change Logical Systems







        AVAIL=> IVP8A,IVP8B,IVP8C
```

The central part of the panel displays the available Logical subsystems. The top part of the panel displays the word "COPE" followed by the Logical system the user is currently connected to, followed by the USERID or terminal name.

The user can enter any of the displayed Logical systems and have their applications access the data in that logical system from then on.

The COPE transaction may be entered at any time to validate the Lsys being accessed. In addition, the Logical system may be changed to a different one without any limitations.

The Multi Lsys feature has a memory that remembers the system the user accessed from a previous session. If the COPE transaction is not entered, the Lsys the user last specified in a previous session is used.

The choice of User Id or Terminal Id displayed depends on whether security is used or not. If security is used, the User Id is displayed. If security is not used, the Terminal Id is displayed. If security is not utilized, users should make it a practice to always enter the COPE transaction at the start of a CICS session, since the default Lsys that is automatically selected will be associated with the terminal and not the user and many users may use a specific terminal.

Data Base Administrator Instructions for the Multi Lsys Feature

The only time a Data Base Administrator needs to access the CICS system is when they add a new DBD (database) or PSB (program) specification. If an existing specification is modified, there is no requirement to access the system.

If a new specification is added, a new copy of the translation table must be put into the CICS system and the translate table used by the IMS exit that translates commands must be refreshed.

To update the CICS version of the translate table, the Administrator is required to enter REFR (for REFResh) on a blank terminal screen to cause the tables to be updated. An alternative to this would be to take the CICS system down and start it up again.
An example of the REFR transaction execution follows

Figure 2: REFR transaction response

```
   refr




















   COPE002 Table refresh successful
```

Whenever a CICS system is brought up, the latest copy of the translation tables are automatically used.

To refresh the translate table used by IMS, the outstanding 'write-to-operator-with-reply' number issued by the control region must be found and a command of the form

```
R nn,/LOG REFRESH
```

should be entered using it. If a IMS/TM system is being used, a '/FOR REFRESH' command may be issued from any IMS connected terminal.

Issuing IMS commands from a batch program

The COPE product provides a simple job that may be used to issue commands to a DBCTL or IMS system. An example of the job is provided in the COPEBSYS member in the JCL distribution library. The job accepts commands with the 'real' (non-COPE) DBD and PSB names. The Logical system is identified in the JOB card or in the IMSID parameter of the DFSRRC00 program.

Issuing commands from the outstanding IMS reply

IMS always provides an outstanding reply on the OS console through which commands may be entered.

If commands that involve databases or PSBs are required to be entered through this mechanism a special format of commands is required.

All commands must begin with a /LOG and should also contain the LSYS name following the word LSYS.

For example if a command

```
/DIS DB IVPDB1
```

is required for logical system named IVP8A, the COPE interface requires a command of the following form

```
/LOG /DIS DB IVPDB1 LSYS IVP8A
```

The LSYS token may be omitted if desired thus the command may be entered as

```
/LOG /DIS DB IVPDB1 IVP8A
```

Installation Instructions for the Multi Lsys Feature

Installing the feature consists of the following steps

- Defining the offset of a 16 byte area in the TCTUA
- Recompiling the Multi Lsys application programs, the BMS modules and the XDLIPRE and XDLIPOST exits.
- Allocating and initializing a VSAM file
- Defining the applications in the CICS CSD
- Define or modify the PLT definitions.
- Modifying the CICS region JCL

Defining the offset of a 16 byte area in the TCTUA

Edit the member CICSVARS in the COPE distribution COPYLIB dataset. The contents of the dataset follow:-

```
&DBCTL     SETC   'NO'                        *SET TO YES IF DBCTL IS
*                                             *ACCESSED AND NOT IMS/TM
&TCTUAOF   SETC   '60'                        *OFFSET OF 16 BYTE AREA IN
*                                             *TCTUA
&DEFNAME   SETC 'CICSUSER'                    DEFAULT TERMINAL NAME FOR *
           *SYSTEMS WITH NO SECURITY
&VARLSYS   SETC   'YES'                       *SET TO YES FOR USER VARIABLE
*                                             *ACCESS (DO NOT CHANGE)
```

If IMS/TM is being connected to, the &DBCTL variable should be set yo NO IF DBCTL is being connected to, the &DBCTL variable should be set to YES An installation may, or may not, use a TCTUA. If no TCTUA area is being used by any application, a TCTUAOF of 0 may be specified, else some offset of a unique area of 16 bytes in the TCTUA must be defined. If security is being used, the &DEFNAME parameter is not required and should be left as specified. If security is not being used specify the default username defined in the CSD for all terminals..

Recompiling the Multi Lsys application programs, BMS modules, XDLIPRE, and XDLIPOST exits.

Every version of CICS has different offsets of some of the internal control blocks. Because of this, all exits must be recompiled from the provided source. A member CICSASM is provided in the COPE installation JCL library that re-compiles all modules.

The following variables are specified in the JCL member and must be changed.

```
//*****************************************************************
//COMPCOPY PROC XCOPE1=TFTPROD.COPE1, '<XCOPE1-PARAMETER-VALUE>',
// XCOPE2=TFTPROD.COPE,'<XCOPE2-PARAMETER-VALUE>',
// COPEAUT=TFTPROD.RELEASE8.SDFSRESL, '<XCOPEAUT-PARAMETER-VALUE>'
// DASD=SYSALLDA,'<DASD UNIT TYPE>'
// CICSMAC=CICSTS21.CICS.SDFHMAC,'<CICS MACRO LIB>'
// CICSLOAD=CICSTS21.CICS.SDFHLOAD,'<CICS RES LIB>'
// XCOPEMAC=TFTPROD.RELEASE8.SDFSMAC, '<IMS MACRO LIB>'
// SOUT=A'<SYSOUT CLASS>'
```

```
//******************************************************************
```

The XCOPE1, XCOPE2, and XCOPEMAC parameters must match the COPE specifications for the datasets. You can find out what is specified for COPE by entering the ISPF portion of the COPE application and typing EVARS on the prime panel. Copy the specifications for XCOPE1, XCOPE2 and XCOPEMAC parameters. The values for the CICSMAC and CICSLOAD parameters may be obtained from the CICS Systems Programmer.

Modify the JOBCARD to match the installations standards and run the job.

Allocating and initializing a VSAM file (COPEUSER)

The CICS Multi Lsys feature requires a VSAM file to save the information about which Lsys a user is connected to. The file is named COPEUSER in the CSD definitions.

To define and initialize the file, access the member COPEUSER in the COPE installations JCL library and modify the JOBCARD to match the installations standards and change the VOLUME and NAME parameters to site-specific values. Make sure the SYS02 DD references the new dataset name. Execute the job.

Defining the applications in the CICS CSD

A member named DUMPCSD is provided in the COPE installations JCL library. Access the member and modify the CSD dataset name and the GROUP names and LIST names to implement the definitions. In addition provide definitions for increasing or defining a new TCTUA. Execute the job when the definitions have been completed.

Define or modify the PLT definitions

A member named DFHPLT1 is provided as an example of how to define a new PLT control block. Most installations will have an existing PLT defined.. A new specification for the COPEREFR program should be added to execute in the 3rd phase of the PLT initialization.

Modifying the CICS region JCL

The CICS region JCL should have added to it :-

* A COPEBSYS DD card
* The COPE Installation load library dataset must be added to the DFHRPL concatenation
* The dataset specified in the XCOPEPGM COPE variable must be added to the DFHRPL concatenation
* A COPEUSER DD added to reference a VSAM file.

The COPEBSYS DD addition is the allocation of a small temporary dataset An example follows:-

```
//COPEBSYS DD DSN=&&IVP8A,DISP=(,DELETE),SPACE=(TRK,(1)),UNIT=SYSALLDA
```

The last part of the temporary dataset name is the default Lsys that users of the CICS system are

connected to if they do not use the COPE transaction to specify a specific Lsys.

An alternate form of specification can be used if multiple CICS regions are used.

```
//COPEBSYS DD DSN=ABC.DFHPSB06.IVP8A,DISP=(,DELETE),SPACE=(TRK,(1)),UNIT=SYSALLDA
```

In this case the dataset name specifies the default Logical system as the last part of the name. The second to last part specifies the name of the PDIR table used in the local CICS system. The last two characters following DFHPSB represent the suffix of the PDIR implemented in the system. This information is required by the XDLIPRE exit that COPE supplies to determine if translation is required when function shipping is being used.

A COPEUSER DD card should be added referencing the VSAM file defined in a previous step.

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