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Xephon
27-35 London Road
Newbury
Berkshire RG14 1JL
England
Telephone: 01635 38342
From USA: 01144 1635 38342
E-mail: trevore@xephon.com

North American office

Xephon
PO Box 350100
Westminster, CO 80035-0100
USA
Telephone: 303 410 9344

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Editor

Trevor Eddolls

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Resource definition for Enterprise JavaBean-related resources in CICS TS 2.1

The information given in this article relates to CICS internals and applies only to CICS Transaction Server Version 2.1. These details may change in later releases of CICS.

INTRODUCTION

The standard method for installing resource definitions into a running CICS system is for the Resource Definition Online (RDO) infrastructure code to read the required definition record from the CICS System Definition (CSD) file and invoke the appropriate CICS domain gate for each resource. The domain code then adds the new resource to its state and passes it to the Catalog Domain to record for warm restart recovery. In some cases, Directory Manager is also used to record the new resource.

However, in the CICS implementation of Enterprise JavaBeans (EJB) support there are cases where it is necessary to invoke a Java Virtual Machine (JVM) as part of the resource installation process. These are:

- A CorbaServer install where a directory on HFS (Hierarchical File System, the MVS implementation of the Unix file system) needs to be created (or emptied).
- A DJAR install where the deployed **jar** file has to be copied to the CorbaServer directory, the deployment descriptor parsed, and the metadata information for each bean in the **jar** stored.

In the latter case, it is also required that the installation is atomic, ie either all the beans are installed or none (in the case of a failure).

These cases cause a particular problem in the situation where resources are to be installed automatically during CICS initialization (so-called grouplist install). This is because invoking a JVM is CPU-intensive, so CICS initialization can be significantly delayed if a number of resources are to be installed. There are also other problems associated

with the install processing during initialization. Some of these are:

- VM failure tolerance – if the JVM processing a resource installation during initialization fails, then the CICS region can fail to initialize although the error affected only one resource.
- Unavailability of required facilities – some installed resources (eg program definition for DFJIIRP) are required before a JVM can be invoked. This creates a possible race between this resource installation and the EJB resource installation that requires it.

A performance issue arises because of the use of core CICS to store definitions and other information that is required by Java code running within a JVM at runtime. It is relatively expensive to make a call across the JNI interface to obtain, for example, the bean metadata.

Another problem which arises as a result of using JVMs for part of CICS processing is that, for efficiency, information about CICS installed resources is sometimes cached within a JVM – for example the bean metadata representing the deployment data for a bean. With the persistent reusable JVM, even though JVM instances are still transient, they can survive several requests; hence the cached information may become invalid, and there is no mechanism for notifying this to the JVM.

RESOURCE INSTALLATION DEFERRAL

The solution to the first problem above involves deferring the JVM processing phase of resource installation in these cases and attaching a transaction to complete the install processing asynchronously. This means that CICS initialization can complete without waiting for all the EJB resources installed during a grouplist install to complete the JVM part of their install processing. These ‘resolution’ transactions can then run as normal CICS tasks in parallel with other workloads. This also avoids the other difficulties associated with resource installation using a JVM because, if the JVM abends as part of a separate transaction, only that transaction is affected – and because the resolution is deferred until after grouplist install has ended, the required facilities to complete the processing are sure to be available.

The stages through which one of these resources passes during install processing are as follows. The resource is initially installed in the PENDINIT state. At this point the resource is regarded as successfully installed from the point of view of RDO processing, but it is not fully available for use. Figure 1 illustrates the subsequent stages of processing for a resource (CorbaServer or DJAR) performed by a resolution transaction (CEJR).

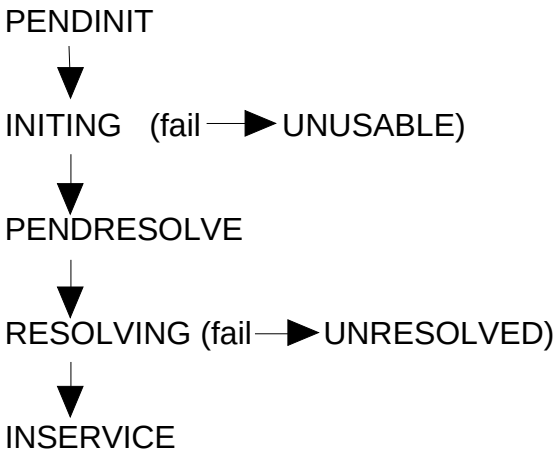

Figure 1: Resource processing

Not until the resource reaches the final, INSERVICE, state is it fully ready for use. Until that point, incoming requests that depend on the

Unusable	*Unresolved*
CorbaServer could not create 'shelf' directory on HFS.	Problem initializing object store for the CorbaServer.
DJAR could not copy JAR file to shelf eg file does not exist.	Error parsing the deployment descriptor in the JAR file.

Figure 2: Types of error

resource may be suspended, or they may fail. Figure 2 gives a broad indication of the types of error that could result in each of the two resource types failing to reach the INSERVICE state.

One final point to note is that, once installed, these resources cannot be modified or reprocessed. They can only be discarded and reinstalled. Hence if the asynchronous install processing fails in any way such that the resource ends up in an UNUSABLE or UNRESOLVED state, it cannot be reset, but must be discarded and reinstalled after correcting the cause of the error.

CACHEING EJB-RELATED INFORMATION WITHIN A JVM

Some of the information retrieved by the JVM from core CICS at runtime is cached within the JVM so that it does not need to be retrieved again if it is used more than once within the lifetime of the JVM. One example of this is the bean metadata representing deployment information for a bean, which is required for every method call. Cacheing this within the JVM avoids a call to core CICS if the same information is used a second time within a JVM lifetime. However, this information can become out of date if a change to the installed resources is made during the lifetime of a JVM instance.

This cache invalidation problem is solved by noting that the information cached within a JVM can become invalid only when a CICS installed resource is discarded. This is because there is no way of changing any of the information which may be cached by a JVM other than by discarding and potentially reinstalling the resource. Therefore, if we force all JVMs to terminate and restart each time a resource is discarded, the cached information will be refreshed and will be invalid only for a relatively short time. This is done by using the SET JVMPOOL TERMINATE(PHASEOUT) call to the CICS internal SJ (JVM) domain. Although this is in itself expensive because all the JVMs need to be completely reinitialized, it is expected that this will be an infrequent occurrence in a running system so it is outweighed by the smaller but more frequent advantage of avoiding some Java-to-CICS cross-language calls.

ATOMICITY OF DJAR INSTALLATION

Installing all beans from a DJAR atomically is achieved by creating the beans one by one in a 'provisional' state as the metadata for each bean is passed to CICS from the JVM as the deployment descriptor is parsed. Then, once all the beans in a DJAR have been processed, they are all made visible and catalogued at the same time so that the operation appears to be atomic as far as the user is concerned. If any failure occurs during the process, then all the beans are deleted and the DJAR is marked as UNRESOLVED.

Note that beans (EJBs) themselves, although they appear as CICS resources for most purposes, are not separately defined or installed resources. Instead, their definitions are contained within the CICS Deployed Jar file and are installed or discarded implicitly as part of DJAR install or discard. The unit of installation for EJBs is the DJAR.

SUMMARY

This article has outlined certain aspects of install processing for the new CICS resource types CorbaServer and DJAR that differ from the standard install processing for CICS RDO resources. The main differences are:

- Deferring the JVM processing part of resource installation for asynchronous processing.
- Attaching new transaction(s) to complete the JVM processing asynchronously to the original install request.
- JVM cache invalidation by termination of all JVMs in the pool.
- Atomically installing either all, or no, beans from a DJAR.

Jonathan Lawrence
Consultant
IBM (UK)

Temporary storage trace setting

BACKGROUND

On migration from CICS/ESA 4.1.0 to CICS Transaction Server, some customers have reported an increase in CPU cost when referencing temporary storage queues. This can often be explained by the use of a particular level of tracing for the temporary storage domain.

TEMPORARY STORAGE RESTRUCTURING

CICS Transaction Server for OS/390 1.1 included a restructuring of the support for temporary storage within CICS. The code was rewritten into a new object-oriented domain (the TS domain), with the associated support for domain interfaces, trace, and message components, and the other benefits this approach brings. One of the restructuring intentions was to reduce the CPU cost involved in accessing temporary storage data.

Temporary storage now has support for its own domain-specific levels of tracing. This component tracing is controlled by the CETR transaction (or by specific SIT parameters for each trace component). Using CETR, the 'TS' option is used to specify what levels of tracing should be performed by CICS for temporary storage processing.

CICS TRACE COMPONENTS

In the majority of trace components within CICS, the choices for standard tracing within a given domain are controlled by specifying 0, 1, 2, or 1-2 (ALL) under CETR. 0 indicates that no trace entries should be recorded from the domain management code. 1 indicates that basic entry/exit tracing should be performed. 2 indicates that further levels of control flow within the code should be recorded. Specifying 1-2 (or ALL) means that all level 1 and 2 trace entries are to be issued. ALL therefore sets on all the trace levels for a particular component of CICS.

Note that when using SIT parameters to specify standard trace component settings, options such as STNTRTS or STNTRSM are used, eg for temporary storage and storage management tracing, respectively. The last two letters denote the trace component. Such a trace selection using SIT parameters is helpful when using CICS trace to study activity occurring during CICS initialization, before the CETR transaction is available for use.

The typical use of trace component settings would be as follows. During the customer implementation phase of a new CICS release, or when a new application or suite is being validated, the higher levels of trace components could be expected to be used for diagnostic purposes. These would indicate the flow of events throughout CICS and application code, and isolate areas that may require further investigation. Once the test phase is complete, the various trace components could be set to 1, so that only basic entry and exit trace calls are recorded by CICS. By ensuring that at least this basic level of tracing is recorded within the CICS internal trace table, useful diagnostic information is retained should a problem occur and a transaction or system dump be recorded. If trace components are set off completely (by specifying 0 under CETR), subsequent problem diagnosis can be impeded. To help ensure first failure data capture, each trace component should be left set to at least 1 when running CICS in production.

TS LEVEL 3 TRACE

The TS trace component provides an additional level of trace setting to the normal 0, 1, and 2 values. If TS level 3 is specified, CICS will perform internal consistency checking and cross-referencing of various temporary storage control blocks and items of state data. This is intended to detect corruption to temporary storage, for example as the result of an overlay by a rogue application or program package. Such corruption could eventually result in a DFHTS1310 abend of CICS, and subsequent CICS outage. By detecting such corruption when it occurs, rather than at some later point when the corrupted data is referenced by CICS, the cause of the problem can be isolated more rapidly. For example, CICS trace would reveal which task was in control when the corruption occurred, and a review of the preceding

trace entries should help reveal where in the program logic the problem took place. Detection of temporary storage corruption using the TS level 3 trace component results in one of a number of possible exception trace entries being issued, each for a particular flavour of corrupted state information. The range of trace numbers for these conditions are TS 0906 through to TS 0910.

DFHTS1310 abends are almost always the result of corruption by application code; they are very rarely caused by CICS itself. Diagnosis of the cause of the corruption by analysis of the DFHTS1310 system dump is made more difficult by the fact that the abend itself can happen a considerable period of time after the corruption took place. This means that a diagnostic technique which detects the corruption at the time it occurs, rather than when a problem later manifests itself as a result of it, is worth reviewing and considering. TS level 3 tracing provides such a detection mechanism.

Use of TS level 3 tracing is not expected on a system that is not experiencing problems with temporary storage corruption. It is only intended for activation at the recommendation of IBM support staff if such a problem were to occur.

Several customers have migrated to CICS Transaction Server from CICS/ESA 4.1.0, and subsequently reported problems with temporary storage performance. For example, the CPU cost for programs that write to temporary storage has been found to increase linearly as the programs write additional records to auxiliary temporary storage queues. No changes to the applications have occurred since the migration from CICS/ESA, and the set-up and definition of their auxiliary temporary storage and DFHTEMP dataset have remained unaltered.

Analysis of the problem reveals that the additional CPU cost is accounted for by CICS performing the consistency checking of the temporary storage state data, because TS trace level 3 is set on. Typically, this is as a result of all trace components having been set active during the test phase of a migration to CICS Transaction Server. Specifying ALL for the TS trace component sets levels 1, 2, and 3 active. When CICS has then been put into production, the TS level 3 trace component setting has been left on, as TS tracing is left

set to ALL. The linear increase in CPU cost that results from this is an effect of the similarly linear increase in control block chaining and validation that has to occur as temporary storage queues grow in size.

Checking the trace component settings under the CETR transaction (from the 'components' panel / PF4) will reveal the level of trace settings for the TS component. Another way of confirming that TS level 3 tracing is in effect is by seeing TS 0901 and TS 0902 TSAM ENTRY and EXIT trace points for CHECK processing, driven as part of the CICS handling of a temporary storage API request.

Note: in addition to TS, the SM trace component provides similar levels of trace settings for diagnostic purposes. SM level 3 trace deactivates the CICS storage management quickcell mechanism, making every CICS subpool issue domain calls for GETMAIN and FREEMAIN operations; these are traced and so can help in problem diagnosis. SM level 4 trace activates subpool element chaining for every CICS storage subpool. As with TS level 3 trace, these SM trace component settings are intended for IBM support staff, and would not be set on when using trace for normal recording of chronological events within a production CICS environment.

Customers may be advised by IBM CICS support staff to run with these higher levels of TS and SM tracing options in place if particular problems are reported on their systems. Further background to the usage of CICS trace components is given in the *CICS Problem Determination Guide*.

I hope that this article has helped explain the background to CICS temporary storage trace settings within CICS Transaction Server. Readers wishing to discuss the material in this article further are welcome to contact me, via e-mail, at andy_wright@uk.ibm.com.

Andy Wright
CICS Change Team
IBM (UK)

Utilizing the power of the CICSPlex SM Web User Interface

It is possible to determine the RPL concatenation list and identify which library a given program has been loaded from by using the base functions provided by the CICSPlex SM TSO EUI. In this article I will show how to provide the same information, but by utilizing the power of the CICSPlex SM Web User Interface (WUI).

Of course one could use the starter set as it is delivered, but those views provide an object-based presentation of the data. Here we want to provide a simple uncluttered interface for an operator, Help Desk person, etc.

In CICS TS 1.3, a new Web User Interface (WUI) was provided for operational use (a future release will support administration also). This provides the end user with a familiar Web browser-based management interface. The visual presentation is basically a three-frame frameset. A banner frame is provided at the top of the screen. To the right, a navigation bar providing shortcuts to menus and views is provided in a familiar expanding tree structure format. In the main frame, the menus and views are presented.

Hyperlinks between menus and views are supported, and views can provide tabular or detailed presentation of data. Navigation can be from tabular to detailed views of the same object or across object types. Everything you see is fully customizable via an online Web browser-based view editor. By utilizing the view editor, menus and views can be created that present data in an object-based form or provide the ability to build task-based menus and views to support systems management scenarios. The interface is of course National Language-enabled and fully accessible.

BUILDING THE VIEWS

After installing the WUI and importing the starter set views and menus, start a browser session to your WUI server region and sign on. You will be presented with the screen shown in Figure 1.

Figure 1: Initial screen

I have added a new selection group 'Paul's Group' to the navigation frame, where we will place selections to identify the RPL library for a given program, and the RPL concatenation list for a given CICS system.

Start the view editor and *copy* the EYUSTARTPROGRAM and EYUSTARTRPLLIST viewsets (I've called the copies PJPROGRAM and PJRPLIST).

For the task of identifying the RPL library for a given program, we won't need all the information that the starter set provides in PROGRAM. We'll therefore delete some of the irrelevant fields. Also, we'll need the RPL library concatenation number added to our tabular view.

To do this, start the viewset editor and go into viewset *edit* for PJPROGRAM view TABULAR, then *select table contents*. You will be presented with a sample layout of the tabular screen. Use the *delete*

Figure 2: View links

function to remove unwanted fields and then use the *append* or *insert* button to add RPLID to the tabular view (select RPLID from the picklist that is presented when you select append). You also want to make it a hyperlinkable field so that you can view the RPL dataset name corresponding to the concatenation number displayed. To do this, choose *view links* (shown above). Select *append view* and make this link *always true* on the value of RPLID, and set *filter attributes and parameters* to pass the RPLID. The target is the PJRPLLIST viewset in a DETAILED view.

You should now have something like Figure 2 and Figure 3.

Clicking OK will get you back to the tabular view layout that you have created – see Figure 4.

You should now save the viewset and get back to the initial view editor screen.

Figure 3: View link filters

Figure 4: Table contents

ADDING THE VIEW TO THE MENU

We will now add the new view to the menu bar. Select menu and then edit PJSTARTMENU (a copy of EYUSTARTMENU). Choose *menu contents*. It will get you to Figure 5 below. As you can see, I've already used append to add two menu selections for *Find RPL* and *Find RPLLIST* along with annotations to guide the user.

Figure 5: Adding a menu selection

I specified PJPROGRAM as the target for FIND RPL. In the same way, I specified PJRPLLIST TABULAR as the target for Find Library. When you've finished editing, close the view editor session. Your changes will be saved to the view repository and are now ready to use.

USING THE VIEWS

If we now go back to the home menu and click on the '+' next to *Paul's group*, we get the updated menu selections shown in Figure 6.

Figure 6: Updated menu selector

Figure 7: Customized program view

Selecting *Find RPL for a given program* takes us to our customized PROGRAM view with the RPL numbers displayed – see Figure 7.

By specifying a given program name in the Program name field and/or a specific CICS name in the SCOPE field we could reduce our scope of interest. Note that we could sort by RPL number to see which programs came from which library, or sort by program name to see if all occurrences of the program came from the same RPL number.

In Figure 8, you can see the result of choosing EYU9XLOP as the program name. It exists in three CICS regions and is loaded from RPL number 8.

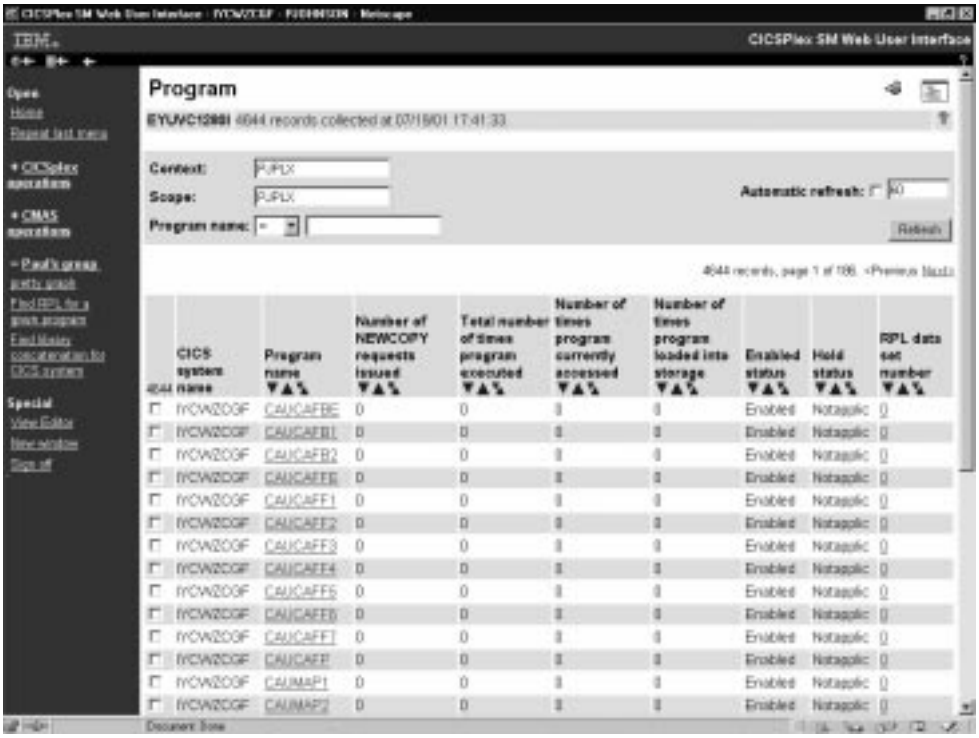

Figure 8: Example selection

By placing my cursor on the RPL number and clicking I get the screen displayed in Figure 9.

As we can see, the RPL library is BLDBSF.PLUXA.SEYULOAD.

In a similar fashion, hyperlinking on *Find Library concatenation* produces Figure 10.

Figure 9: Dataset information

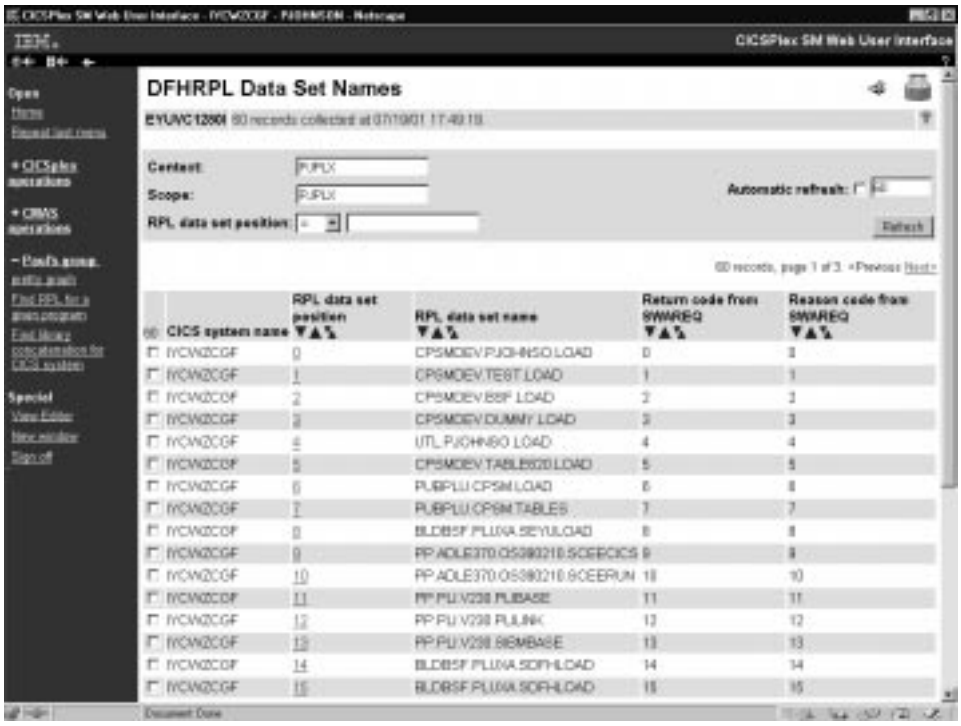

Figure 10: Linked datasets

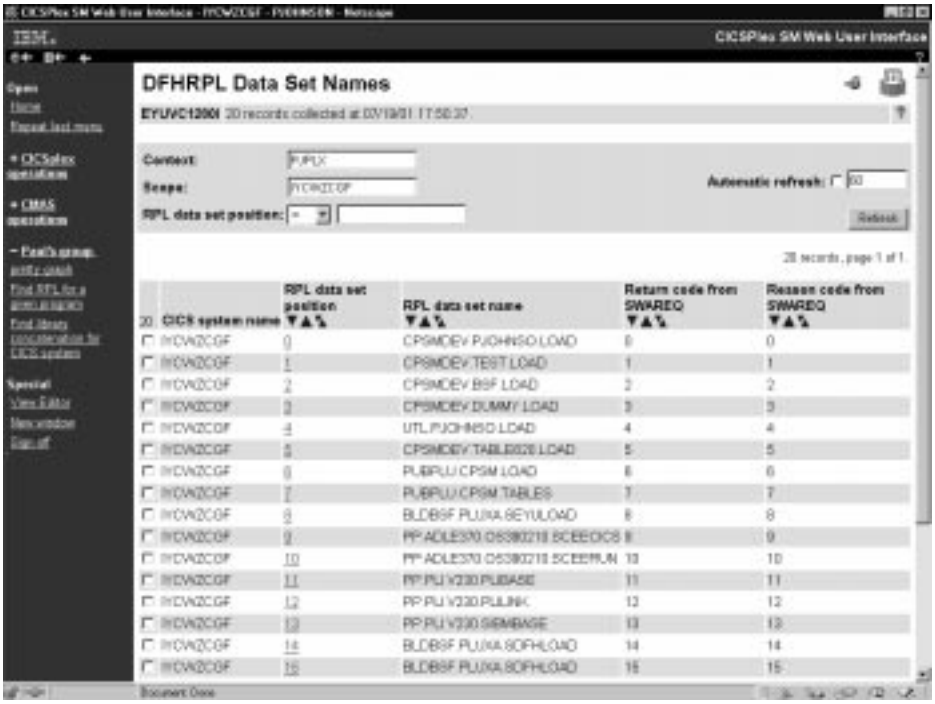

Figure 11: Concatenation order

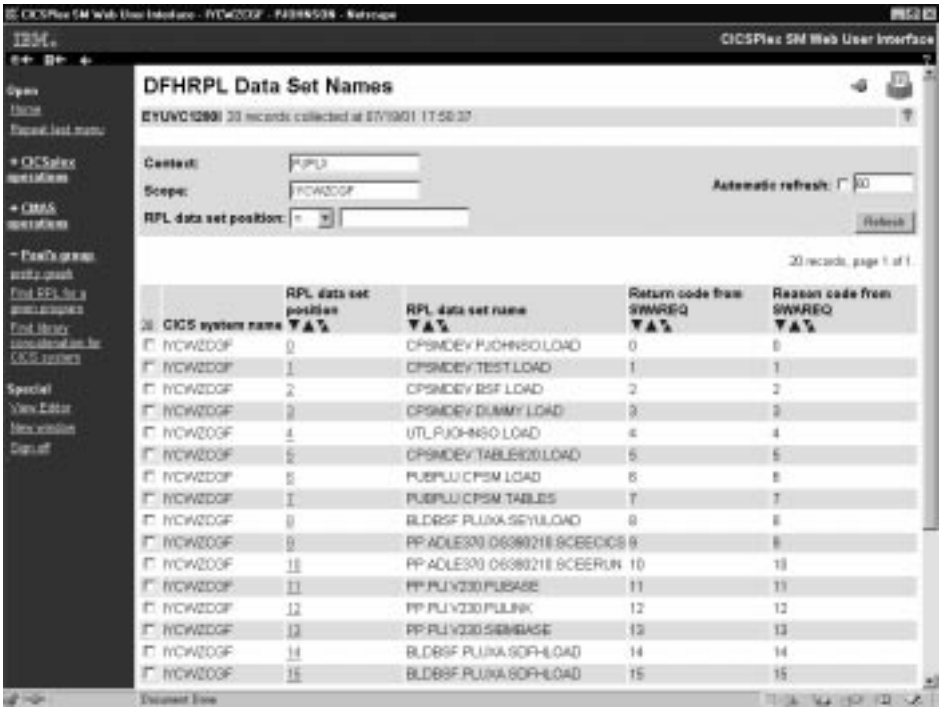

Figure 12: RPL number

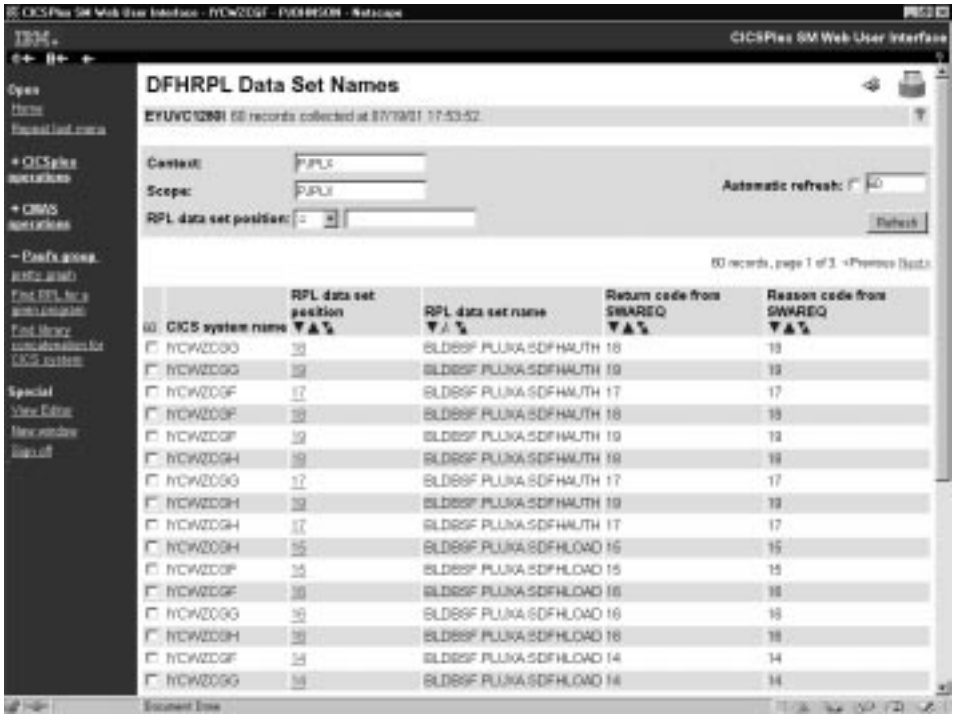

Figure 13: Library position

I could do several things from here. I can restrict the scope to a given system to see the concatenation order for that system – see Figure 11.

I can check that the libraries occur in the same position in the concatenation list by sorting by *RPL No* (click on the down arrow in the title field) – see Figure 12.

I can check which position the libraries appear in in each concatenation list by sorting on dataset name – see Figure 13.

As you can see, this WUI is much more powerful than the TSO EUI.

This has been just a simple example of what can be done with the WUI customization facilities. It is possible to build complex task wizards which guide the end user through the process of detecting or resolving a whole set of systems management tasks.

Dr Paul Johnson
CICS Transaction Server Systems Management Planning/Development
IBM (UK)

Monitoring system logger activity online – part 2

This month we conclude the article giving an alternative to IXGRPT1 for CICS TS users.

COPYBOOK SMF88STR

You will find a detailed description of system logger data record type 88 (X'58') mapping in *MVS System Management Facilities* (GC28-1783-09) on pages 13-477 – 13-482.

```
   DECLARE
      RECORD      AREA (32756);
   DECLARE
   1 SMFREC BASED(ADDR(RECORD)),
     2 RESERVED    CHAR (4),
     2 REAL_RECORD CHAR (32752);
 DCL 1 SMFRCD88 BASED(ADDR(RECORD)),
       2 RSVD1    CHAR(4),
       2 SMF88FLG BIT (8),
       2 SMF88RTY BIT (8),
       2 SMF88TME CHAR(4),
       2 SMF88DTE FIXED DECIMAL (7),
       2 SMF88SID CHAR(4),
       2 SMF88WID CHAR(4),
       2 SMF88STP FIXED BINARY (15),
       2 SMF88SDS,
         3 SMF88SDL FIXED BINARY (31),
         3 SMF88POF OFFSET (RECORD),
         3 SMF88PLN FIXED BINARY (15),
         3 SMF88PON FIXED BINARY (15),
         3 SMF88LOF OFFSET (RECORD),
         3 SMF88LLN FIXED BINARY (15),
         3 SMF88LON FIXED BINARY (15),
         3 SMF88EOF OFFSET (RECORD),
         3 SMF88ELN FIXED BINARY (15),
         3 SMF88EON FIXED BINARY (15),
         3 SMF88SOF OFFSET (RECORD),
         3 SMF88SLN FIXED BINARY (15),
         3 SMF88SON FIXED BINARY (15);
   DCL 1 SMF88PSD BASED(SMF88POF),
         3 SMF88TYP FIXED BINARY (15),
         3 SMF88RVN CHAR(2),
         3 SMF88PNM CHAR(8),
         3 SMF88OSL CHAR(8),
```

```
      3 SMF88SYN CHAR(8);
DCL 1 SMF88LSD BASED(SMF88LOF),
      3 SMF88LIT CHAR(8),
      3 SMF88LSN CHAR(26),
      3 SMF88LFL,
        5 RSVD2    BIT(1),
        5 SMF88LFT BIT(1),
        5 RSVD3    BIT(14),
      3 SMF88LTD CHAR(8),
      3 SMF88LWI CHAR(4),
      3 SMF88LIB CHAR(4),
      3 SMF88LAB CHAR(4),
      3 SMF88LWB CHAR(8),
      3 SMF88LDB CHAR(8);
DCL 1 SMF88ESD BASED(SMF88EOF),
     3 SMF88EDS CHAR(4),
     3 SMF88ERI CHAR(4),
     3 SMF88ERC CHAR(4),
     3 SMF88ESF CHAR(4),
     3 SMF88ETT CHAR(4),
     3 SMF88ETF CHAR(4),
     3 SMF88EO  CHAR(4),
     3 SMF88EFS CHAR(4),
     3 SMF88EDO CHAR(4);
DCL 1 SMF88SSD BASED(SMF88SOF),
     3 SMF88STN CHAR(16),
     3 SMF88SWB CHAR(8),
     3 SMF88SIB CHAR(8),
     3 SMF88SAB CHAR(8),
     3 RSVD4,
     3 SMF88SII BIT(32),
     3 SMF88SAI BIT(32),
     3 SMF88SC1 BIT(32),
     3 SMF88SC2 BIT(32),
     3 SMF88SC3 BIT(32),
     3 RSVD5    CHAR(4);
```

MAPSET IXGMAPS

```
IXGMAPS  DFHMSD TYPE=DSECT,MODE=OUT,CTRL=FREEKB,LANG=PLI,              *
               MAPATTS=(COLOR,HILIGHT),                                *
               DSATTS=(COLOR,HILIGHT),STORAGE=AUTO
*****************************************************************
*                  LOCAL LOG STREAMS ON CRT                      *
*****************************************************************
IXGMAP1  DFHMDI SIZE=(24,80)
         DFHMDF POS=(02,18),LENGTH=40,COLOR=BLUE,                    *
               INITIAL='SYSTEM LOGGER ACTIVITY REPORT (IXGRPTC)'
         DFHMDF POS=(05,10),LENGTH=65,COLOR=BLUE,                    *
```

```
               INITIAL='JOURNALNAME STREAMNAME                  TYPE   *
                STATUS '
         DFHMDF POS=(Ø6,1Ø),LENGTH=65,COLOR=BLUE,                      *
               INITIAL='-----------------------------------------------*
               ---------'
LSN      DFHMDF POS=(Ø7,Ø1),LENGTH=79,OCCURS=12,COLOR=GREEN
         DFHMDF POS=(2Ø,Ø1),LENGTH=79,COLOR=NEUTRAL,INITIAL='NOTE: PUT *
               THE CURSOR ON A STREAMNAME AND PRESS ENTER KEY'
SYSID    DFHMDF POS=(22,54),LENGTH=26,COLOR=TURQUOISE
*
         DFHMDF POS=(24,Ø1),LENGTH=2,COLOR=GREEN,INITIAL='PF'
         DFHMDF POS=(24,Ø4),LENGTH=1,COLOR=TURQUOISE,INITIAL='3'
         DFHMDF POS=(24,Ø6),LENGTH=4,COLOR=GREEN,INITIAL='END '
*****************************************************************
*                  ERROR MESSAGES                               *
*****************************************************************
INVCURS  DFHMDI SIZE=(24,8Ø)
         DFHMDF POS=(21,Ø1),LENGTH=4Ø,COLOR=RED,                       *
               INITIAL='*** CURSOR NOT ON A VALID STREAMNAME ***'
INVKEY   DFHMDI SIZE=(24,8Ø)
         DFHMDF POS=(21,Ø1),LENGTH=42,COLOR=RED,                       *
               INITIAL='*** INVALID PF KEY. PRESS PF3 OR ENTER ***'
INVSCRN  DFHMDI SIZE=(24,8Ø)
         DFHMDF POS=(21,Ø1),LENGTH=5Ø,COLOR=RED,                       *
               INITIAL='*** INVALID SCREEN SIZE. 27X132 MANDATORY ***'
*****************************************************************
*                  SMF88 RECORD ON CRT                          *
*****************************************************************
IXGMAP8  DFHMDI SIZE=(27,132)
* --------------------- LINE 1 -------------------------------*
         DFHMDF POS=(Ø1,4Ø),LENGTH=4Ø,COLOR=BLUE,                      *
               INITIAL='SYSTEM LOGGER ACTIVITY REPORT (IXGRPTC)'
* --------------------- LINE 2 -------------------------------*
* --------------------- LINE 3 -------------------------------*
         DFHMDF POS=(Ø3,1ØØ),LENGTH=13,COLOR=BLUE,                     *
               INITIAL='SMF INTERVAL:'
MCURINTV DFHMDF POS=(Ø3,115),LENGTH=Ø5,COLOR=GREEN,PICOUT='ZZZZ9'
         DFHMDF POS=(Ø3,121),LENGTH=Ø1,COLOR=GREEN,INITIAL='/'
MMAXINTV DFHMDF POS=(Ø3,123),LENGTH=Ø5,COLOR=GREEN,PICOUT='ZZZZ9'
* --------------------- LINE 4 -------------------------------*
         DFHMDF POS=(Ø4,Ø1),LENGTH=13Ø,COLOR=TURQUOISE,                *
               INITIAL='-------------- PRODUCT SECTION ----------------*
               ------------------------------------------------------*
               --------------------------'
* --------------------- LINE 5 -------------------------------*
         DFHMDF POS=(Ø5,Ø1),LENGTH=26,COLOR=BLUE,                      *
               INITIAL='MVS OPERATION SYSTEM NAME:'
SMF88SYN DFHMDF POS=(Ø5,3Ø),LENGTH=Ø8,COLOR=GREEN
         DFHMDF POS=(Ø5,5Ø),LENGTH=Ø9,COLOR=BLUE,                      *
               INITIAL='RELEASE:'
```

```
SMF88OSL DFHMDF POS=(Ø5,63),LENGTH=8,COLOR=GREEN
* --------------------- LINE 6 -------------------------------*
         DFHMDF POS=(Ø6,Ø1),LENGTH=13Ø,COLOR=TURQUOISE,                *
               INITIAL='-------------- LOG STREAM SECTION -------------*
               ----------------------------------------------------*
               --------------------------'
* --------------------- LINE 7 -------------------------------*
         DFHMDF POS=(Ø7,Ø1),LENGTH=17,COLOR=BLUE,                      *
               INITIAL='LOG STREAM NAME: '
SMF88LSN DFHMDF POS=(Ø7,2Ø),LENGTH=26,COLOR=GREEN
         DFHMDF POS=(Ø7,5Ø),LENGTH=Ø9,COLOR=BLUE,                      *
               INITIAL='TOD-TIME:'
SMF88LTD DFHMDF POS=(Ø7,6Ø),LENGTH=19,COLOR=GREEN
* --------------------- LINE 8 -------------------------------*
         DFHMDF POS=(Ø8,Ø1),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='# WRITES INVOKED              : '
SMF88LWI DFHMDF POS=(Ø8,34),COLOR=GREEN,LENGTH=19,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
* --------------------- LINE 9 -------------------------------*
         DFHMDF POS=(Ø9,Ø1),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='BYT WRITTN BY USERS IXGWRITES : '
SMF88LWB DFHMDF POS=(Ø9,34),COLOR=GREEN,LENGTH=19,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
* --------------------- LINE 1Ø ------------------------------*
         DFHMDF POS=(1Ø,Ø1),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='MIN. BLOCKLEN IN SMF INTERVAL : '
SMF88LIB DFHMDF POS=(1Ø,34),COLOR=GREEN,LENGTH=19,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
         DFHMDF POS=(1Ø,54),LENGTH=78,COLOR=NEUTRAL,                   *
               INITIAL='(INITIALIZED TO X"7FFFFFFF" IF NO SMF ACTIVITY *
               OCCURS WITHIN AN SMF INTERVAL.)'
* --------------------- LINE 11 ------------------------------*
         DFHMDF POS=(11,Ø1),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='MAX. BLOCKLEN IN SMF INTERVAL : '
SMF88LAB DFHMDF POS=(11,34),COLOR=GREEN,LENGTH=19,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
* --------------------- LINE 12 ------------------------------*
         DFHMDF POS=(12,Ø1),LENGTH=13Ø,COLOR=TURQUOISE,                *
               INITIAL='-------------- STRUCTURE (INTERIM STORAGE) SECT*
               ION ----------------------------------------- (DASD) --*
               --------------------------'
* --------------------- LINE 13 ------------------------------*
         DFHMDF POS=(13,Ø1),LENGTH=15,COLOR=BLUE,                      *
               INITIAL='STRUCTURE NAME:'
SMF88STN DFHMDF POS=(13,17),LENGTH=16,COLOR=GREEN
* --------------------- LINE 14 ------------------------------*
         DFHMDF POS=(14,Ø1),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='BYT WRITTN TO INTERIM STORAGE  :'
SMF88SWB DFHMDF POS=(14,34),LENGTH=19,COLOR=GREEN,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
```

```
         DFHMDF POS=(14,60),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='BYT WRITTN TO DASD            :'
SMF88LDB DFHMDF POS=(14,93),LENGTH=19,COLOR=RED,                       *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
* -------------------- LINE 15 -------------------------------*
         DFHMDF POS=(15,01),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='BYT DELETD INTERIM ST W/O DASD :'
SMF88SIB DFHMDF POS=(15,34),LENGTH=19,COLOR=GREEN,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
         DFHMDF POS=(15,60),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='BYT DELETD INTERIM ST W/DASD   :'
SMF88SAB DFHMDF POS=(15,93),LENGTH=19,COLOR=RED,                       *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
* -------------------- LINE 16 -------------------------------*
         DFHMDF POS=(16,01),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='# DELETES W/O DASD WRITE       :'
SMF88SII DFHMDF POS=(16,34),LENGTH=19,COLOR=GREEN,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
         DFHMDF POS=(16,60),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='# DELETS W/WRITE               :'
SMF88SAI DFHMDF POS=(16,93),LENGTH=19,COLOR=RED,                       *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZZ.ZZ9'
* -------------------- LINE 17 -------------------------------*
         DFHMDF POS=(17,01),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='# WRITES COMPLETED - TYPE 1    :'
SMF88SC1 DFHMDF POS=(17,34),LENGTH=15,COLOR=GREEN,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZ9'
         DFHMDF POS=(17,50),LENGTH=80,COLOR=NEUTRAL,                   *
               INITIAL='(TYPE1 = LOG STREAM CONTENTS CAN REMAIN IN STRU*
               CTURE. NO NEED TO MOVE DATA.)'
* -------------------- LINE 18 -------------------------------*
         DFHMDF POS=(18,01),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='# WRITES COMPLETED - TYPE 2    :'
SMF88SC2 DFHMDF POS=(18,34),LENGTH=15,COLOR=GREEN,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZ9'
         DFHMDF POS=(18,50),LENGTH=80,COLOR=NEUTRAL,                   *
               INITIAL='(TYPE2 = LOG STREAM IS FILLING THE STRUCTURE. L*
               OGGER STARTS OFFL. ASYNC.)'
* -------------------- LINE 19 -------------------------------*
         DFHMDF POS=(19,01),LENGTH=32,COLOR=BLUE,                      *
               INITIAL='# WRITES COMPLETED - TYPE 3    :'
SMF88SC3 DFHMDF POS=(19,34),LENGTH=15,COLOR=GREEN,                     *
               PICOUT='ZZZ.ZZZ.ZZZ.ZZ9'
         DFHMDF POS=(19,50),LENGTH=80,COLOR=NEUTRAL,                   *
               INITIAL='(TYPE3 = SPACE USED IN THE STRUCTURE IS CRITICA*
               L BUT DOES NOT EXCEED 100%.)'
* -------------------- LINE 20 -------------------------------*
         DFHMDF POS=(20,01),LENGTH=130,COLOR=TURQUOISE,                *
               INITIAL='-------------- EVENTS SECTION -----------------*
               ------------------------------------------------------*
```

```
                ---------------------------'
* -------------------- LINE 21 -------------------------------*
         DFHMDF POS=(21,Ø1),LENGTH=11,COLOR=BLUE,INITIAL='DASD SHFT :'
SMF88EDS DFHMDF POS=(21,13),LENGTH=7,COLOR=RED,PICOUT='ZZZ.ZZ9'
         DFHMDF POS=(21,25),LENGTH=11,COLOR=BLUE,INITIAL='STRC FULL :'
SMF88ESF DFHMDF POS=(21,37),LENGTH=7,COLOR=RED,PICOUT='ZZZ.ZZ9'
         DFHMDF POS=(21,5Ø),LENGTH=11,COLOR=BLUE,INITIAL='OFFLOADS  :'
SMF88EOA DFHMDF POS=(21,62),LENGTH=7,COLOR=RED,PICOUT='ZZZ.ZZ9'
         DFHMDF POS=(21,7Ø),LENGTH=6Ø,COLOR=NEUTRAL,INITIAL=' (NUMBER O*
               F SUCCESSFUL OFFLOADS)'
* -------------------- LINE 22 -------------------------------*
         DFHMDF POS=(22,Ø1),LENGTH=11,COLOR=BLUE,INITIAL='REBLD INI :'
SMF88ERI DFHMDF POS=(22,13),LENGTH=7,COLOR=RED,PICOUT='ZZZ.ZZ9'
         DFHMDF POS=(22,25),LENGTH=11,COLOR=BLUE,INITIAL='STG THLD  :'
SMF88ETT DFHMDF POS=(22,37),LENGTH=7,COLOR=RED,PICOUT='ZZZ.ZZ9'
         DFHMDF POS=(22,5Ø),LENGTH=11,COLOR=BLUE,INITIAL='OFFL.9Ø%  :'
SMF88EFS DFHMDF POS=(22,62),LENGTH=7,COLOR=RED,PICOUT='ZZZ.ZZ9'
         DFHMDF POS=(22,7Ø),LENGTH=6Ø,COLOR=NEUTRAL,INITIAL=' (NO.OF SU*
               SUCCESSFUL OFFLOADS DUE TO STRUC.REACHING 9Ø% FULL)'
* -------------------- LINE 23 -------------------------------*
         DFHMDF POS=(23,Ø1),LENGTH=11,COLOR=BLUE,INITIAL='REBLD CMP :'
SMF88ERC DFHMDF POS=(23,13),LENGTH=7,COLOR=RED,PICOUT='ZZZ.ZZ9'
         DFHMDF POS=(23,25),LENGTH=11,COLOR=BLUE,INITIAL='STG FULL  :'
SMF88ETF DFHMDF POS=(23,37),LENGTH=7,COLOR=RED,PICOUT='ZZZ.ZZ9'
         DFHMDF POS=(23,5Ø),LENGTH=11,COLOR=BLUE,INITIAL='IXGOFFLD  :'
SMF88EDO DFHMDF POS=(23,62),LENGTH=7,COLOR=RED,PICOUT='ZZZ.ZZ9'
         DFHMDF POS=(23,7Ø),LENGTH=6Ø,COLOR=NEUTRAL,INITIAL=' (NUMBER O*
               F TIMES AN OFFLOAD WAS REQUESTED VIA IXGOFFLD SERVICE)'
* -------------------- LINE 24 -------------------------------*
         DFHMDF POS=(24,Ø1),LENGTH=13Ø,COLOR=TURQUOISE,               *
               INITIAL='-----------------------------------------------*
               ---------------------------------------------------------*
               ---------------------------'
* -------------------- LINE 25 -------------------------------*
MSG      DFHMDF POS=(25,Ø1),LENGTH=13Ø,COLOR=RED
* -------------------- LINE 26 -------------------------------*
         DFHMDF POS=(26,Ø1),LENGTH=2,COLOR=YELLOW,INITIAL='PF'
         DFHMDF POS=(26,Ø4),LENGTH=2,COLOR=TURQUOISE,INITIAL=' 3'
PF3      DFHMDF POS=(26,Ø7),LENGTH=9,COLOR=YELLOW,INITIAL='RETURN   '
         DFHMDF POS=(26,17),LENGTH=2,COLOR=TURQUOISE,INITIAL=' 7'
PF7      DFHMDF POS=(26,2Ø),LENGTH=9,COLOR=YELLOW,INITIAL='UP       '
         DFHMDF POS=(26,3Ø),LENGTH=2,COLOR=TURQUOISE,INITIAL=' 8'
PF8      DFHMDF POS=(26,33),LENGTH=9,COLOR=YELLOW,INITIAL='DOWN     '
         DFHMDF POS=(26,43),LENGTH=2,COLOR=TURQUOISE,INITIAL=' 9'
PF9      DFHMDF POS=(26,46),LENGTH=9,COLOR=YELLOW,INITIAL='FIRST I. '
         DFHMDF POS=(26,56),LENGTH=2,COLOR=TURQUOISE,INITIAL='1Ø'
PF1Ø     DFHMDF POS=(26,59),LENGTH=9,COLOR=YELLOW,INITIAL='MIDLE I. '
         DFHMDF POS=(26,69),LENGTH=2,COLOR=TURQUOISE,INITIAL='11'
PF11     DFHMDF POS=(26,72),LENGTH=9,COLOR=YELLOW,INITIAL='LAST I.  '
         DFHMDF POS=(26,82),LENGTH=2,COLOR=TURQUOISE,INITIAL='  '
```

```
         DFHMDF POS=(26,85),LENGTH=3Ø,COLOR=NEUTRAL,                    *
               INITIAL=' (I. = SMF INTERVAL)'
* -------------------- LINE 27 -----------------------------*
         DFHMDF POS=(27,Ø1),LENGTH=2,COLOR=YELLOW,INITIAL='PF'
         DFHMDF POS=(27,Ø4),LENGTH=2,COLOR=TURQUOISE,INITIAL='13'
PF13     DFHMDF POS=(27,Ø7),LENGTH=9,COLOR=YELLOW,INITIAL='DASD SHFT'
         DFHMDF POS=(27,17),LENGTH=2,COLOR=TURQUOISE,INITIAL='14'
PF14     DFHMDF POS=(27,2Ø),LENGTH=9,COLOR=YELLOW,INITIAL='OFFLOAD  '
         DFHMDF POS=(27,3Ø),LENGTH=2,COLOR=TURQUOISE,INITIAL='15'
PF15     DFHMDF POS=(27,33),LENGTH=9,COLOR=YELLOW,INITIAL='STG FULL '
         DFHMDF POS=(27,43),LENGTH=2,COLOR=TURQUOISE,INITIAL='16'
PF16     DFHMDF POS=(27,46),LENGTH=9,COLOR=YELLOW,INITIAL='STG THLD '
         DFHMDF POS=(27,56),LENGTH=2,COLOR=TURQUOISE,INITIAL='17'
PF17     DFHMDF POS=(27,59),LENGTH=9,COLOR=YELLOW,INITIAL='STR FULL '
         DFHMDF POS=(27,69),LENGTH=2,COLOR=TURQUOISE,INITIAL='18'
PF18     DFHMDF POS=(27,72),LENGTH=9,COLOR=YELLOW,INITIAL='OFFL.9Ø% '
         DFHMDF POS=(27,82),LENGTH=2,COLOR=TURQUOISE,INITIAL='  '
         DFHMDF POS=(27,85),LENGTH=9,COLOR=YELLOW,INITIAL='         '
         DFHMDF POS=(27,95),LENGTH=2,COLOR=TURQUOISE,INITIAL='23'
PF23     DFHMDF POS=(27,98),LENGTH=9,COLOR=YELLOW,INITIAL='AVERAGE  '
         DFHMDF POS=(27,1Ø8),LENGTH=2,COLOR=TURQUOISE,INITIAL='24'
PF24     DFHMDF POS=(27,111),LENGTH=9,COLOR=YELLOW,INITIAL='TOTALS   '
         DFHMDF POS=(27,121),LENGTH=2,COLOR=TURQUOISE,INITIAL='  '
         DFHMSD TYPE=FINAL
END
```

Erhard Woerner
CICS Support Group
IBM (Germany)

Collecting DB2ENTRY statistics and tuning the CICS attachment facility

THE PROBLEM

In our installation, the production CICS Transaction Server experienced contention and the TCBLIMIT parameter reached its maximum value. The CICS TS experienced poor response times in spite of there being only a few transactions active. The only way to overcome the problem was to de-activate and then re-activate the CICS Transaction Server.

THE SOLUTION

We solved the problem by modifying the values of TCBLIMIT, THREADLIMIT, and MAXOPENTCBS, and reassigning the dedicated threads in the order in which they were to be used again (REUSED) for several transactions. In this way, the CICS Transaction Server region assigns fewer TCBs, consumes less CPU, and improves the response time.

The transaction IDBE helped greatly in determining the appropriate values for the CICS parameters.

The transaction IDBE executes the COBOL II program STPEP006, which looks at DB2ENTRYs and shows the statistics CICS DB2 has collected.

IDBE OPTION

Syntax:

```
OPTION = CONN | DB2E | DISP | PLAN
```

where:

- IDBE CONN – for displaying DB2CONN statistics.
- IDBE DB2E – for displaying DB2ENTRY name statistics.
- IDBE DISP – for browsing DB2ENTRY names GE #Calls
- IDBE PLAN – for browsing DB2ENTRYs names EQUAL PlanName.

For example, to know the statistics of DB2CONN type:

```
IDBE CONN
```

This transaction will be useful to find suitable values for TCBLIMIT and THREADLIMIT. Look at the values of the TCB statistics. If the value of #PEAK or #CURRENT has reached the value of #MAXIMO and if CICS TS is slow, it's because the value of TCBLIMIT is not a suitable one. In a host (9672-R56 with 545 MIPS) the value is 66 per CICS transaction server. Otherwise, if the value of FREE TCBs is approximated to #MAXIMO, the statistics must be reviewed to re-assign the threads.

To find the statistics for a DB2ENTRY name, type:

```
IDBE DB2E db2entryname
```

This transaction will be useful to show all the data of a DB2ENTRY. Look at the data and determine whether the transaction needs to be Modified PRIority, PROtectnum, THREADLimit, or THREADWait.

To make a listing of DB2ENTRYs that have been done, type:

```
IDBE DISP
```

If you want to, you can select the name of the starting DB2ENTRY and/or the number of calls that you want to view. You should modify the first line and press *Enter*:

```
IDBE DISP db2entry>=0000000    (Default)
```

This transaction is useful to find the transactions that deserve to have threads dedicated by the number of #CALLS, #REUSES, and W/O.

To find the DB2ENTRYs that have the same PLANNAME, type:

```
IDBE PLAN planname
```

This transaction is useful to put together the transactions that have a planname in common, to minimize the number of DB2ENTRYs. Use wildcarding and dynamic plan selection where it's relevant to combine appropriate transactions in an entry. Allow low use transactions to default to the pool.

However, it should be noted that defining transaction IDs using wildcard characters removes the ability to collect CICS DB2 statistics on a per transaction basis because statistics are collected for each DB2ENTRY, which will now represent a group of transactions.

This program works on Transaction Server Release 1.3 under OS/390 Version 2.9.

STPEP006 SOURCE CODE

```
IDENTIFICATION DIVISION.
PROGRAM-ID.    STPEP006.
AUTHOR.        JEFS.
DATE-WRITTEN.  ABR - 01.
DATE-COMPILED. ABR - 01.
ENVIRONMENT DIVISION.
```

```
DATA DIVISION.
WORKING-STORAGE SECTION.
77  UTIME                   PIC S9(15)  COMP-3 VALUE +Ø.
77  RESP1                   PIC S9(Ø8)  COMP.
77  I                       PIC  9(Ø2)  VALUE 1.
77  W2R-CALLS               PIC  9(Ø7)  VALUE Ø.
Ø1  MSG-ERROR.
    Ø2  MSG1                PIC X(8Ø)   VALUE SPACES.
    Ø2  MSG2                PIC X(8Ø)   VALUE SPACES.
    Ø2  MSG3                PIC X(8Ø)   VALUE SPACES.
    Ø2  MSG4                PIC X(8Ø)   VALUE SPACES.
    Ø2  MSG5                PIC X(8Ø)   VALUE SPACES.
    Ø2  MSG6                PIC X(8Ø)   VALUE SPACES.
    Ø2  MSG7                PIC X(8Ø)   VALUE SPACES.
    Ø2  MSG8                PIC X(8Ø)   VALUE SPACES.
    Ø2  MSG9                PIC X(8Ø)   VALUE SPACES.
Ø1  MSG-PANTALLA-DB2ENTRY.
    Ø2 MS-TITU1.
       Ø4 FILLER             PIC  X(1Ø) VALUE 'IDBE DB2E '.
       Ø4 MSG-DB2ENTRY-NAME PIC  X(Ø8) VALUE SPACES.
       Ø4 FILLER             PIC  X(62) VALUE SPACES.
    Ø2 MS-TITU2.
       Ø4 FILLER           PIC   X(Ø9) VALUE 'Applid : '.
       Ø4 APPLID           PIC   X(Ø8)BBBBBB VALUE SPACES.
       Ø4 FILLER           PIC   X(34) VALUE
          'Display DB2Entry Statistics Online'.
       Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
       Ø4 FILLER           PIC   X(Ø7) VALUE 'Date : '.
       Ø4 PRINT-DATE       PIC   X(Ø8)BB VALUE SPACES.
    Ø2 MS-TITU3.
       Ø4 FILLER           PIC   X(Ø9) VALUE 'Sysid  : '.
       Ø4 SYSID            PIC   X(Ø4) VALUE SPACES.
       Ø4 FILLER           PIC   X(5Ø) VALUE SPACES.
       Ø4 FILLER           PIC   X(Ø7) VALUE 'Time : '.
       Ø4 PRINT-TIME       PIC   X(Ø8)BB VALUE SPACES.
    Ø2 MS-TITU4.
       Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
       Ø4 FILLER           PIC   X(78) VALUE ALL '='.
       Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
    Ø2 MS-TITU5.
       Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
       Ø4 FILLER           PIC   X(16) VALUE 'DB2 Entry Name: '.
       Ø4 M2R-DB2ENTRY-NAME PIC  X(8)B VALUE SPACES.
       Ø4 FILLER           PIC   X(12) VALUE 'Plan Name : '.
       Ø4 M2R-PLAN-NAME    PIC   X(8).
       Ø4 FILLER           PIC   X(Ø8) VALUE SPACES.
       Ø4 FILLER           PIC   X(12) VALUE 'ThreadWait: '.
       Ø4 M2R-THREADWAIT   PIC   X(4).
       Ø4 FILLER           PIC   X(Ø9) VALUE SPACES.
       Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
    Ø2 MS-TITU6.
       Ø4 FILLER           PIC   X(Ø1) VALUE '+'.
```

```
   Ø4 FILLER           PIC   X(78) VALUE ALL '='.
   Ø4 FILLER           PIC   X(Ø1) VALUE '+'.
Ø2 MS-TITU7.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(12) VALUE 'Priority  : '.
   Ø4 M2R-PRIORITY    PIC    X(Ø5).
   Ø4 FILLER           PIC   X(Ø8) VALUE SPACES.
   Ø4 FILLER           PIC   X(12) VALUE '# Calls   : '.
   Ø4 M2R-CALLS       PIC    Z,ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø7) VALUE SPACES.
   Ø4 FILLER           PIC   X(12) VALUE 'Signons   : '.
   Ø4 M2R-SIGNONS     PIC    ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MS-TITU8.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(12) VALUE 'Aborts    : '.
   Ø4 M2R-ABORTS      PIC    ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
   Ø4 FILLER           PIC   X(12) VALUE 'Single Pha: '.
   Ø4 M2R-SINGLE-PHASE PIC   Z,ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø7) VALUE SPACES.
   Ø4 FILLER           PIC   X(12) VALUE '# Reuses  : '.
   Ø4 M2R-THREAD-REUSE PIC   ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MS-TITU9.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(12) VALUE 'Terminates: '.
   Ø4 M2R-THREAD-TERM PIC    ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
   Ø4 FILLER           PIC   X(12) VALUE '# W/O     : '.
   Ø4 M2R-THREAD-WAIT-OR-OVERF PIC   Z,ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø7) VALUE SPACES.
   Ø4 FILLER           PIC   X(19) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MS-TITU1Ø.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(12) VALUE '# Current : '.
   Ø4 M2R-THREAD-CURRENT PIC ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
   Ø4 FILLER           PIC   X(12) VALUE '# Peak    : '.
   Ø4 M2R-THREAD-HWM   PIC   Z,ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø7) VALUE SPACES.
   Ø4 FILLER           PIC   X(12) VALUE '# Limit   : '.
   Ø4 M2R-THREAD-LIMIT PIC   ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MS-TITU11.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(12) VALUE 'Prot.Curr : '.
```

```
      Ø4 M2R-PTHREAD-CURRENT PIC    ZZZ,ZZ9.
      Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
      Ø4 FILLER           PIC   X(12) VALUE 'Prot.Peak : '.
      Ø4 M2R-PTHREAD-HWM   PIC  Z,ZZZ,ZZ9.
      Ø4 FILLER           PIC   X(Ø7) VALUE SPACES.
      Ø4 FILLER           PIC   X(12) VALUE 'Prot.Limit: '.
      Ø4 M2R-PTHREAD-LIMIT PIC  ZZZ,ZZ9.
      Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
      Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø2 MS-TITU12.
      Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
      Ø4 FILLER           PIC   X(12) VALUE 'Curr.Task : '.
      Ø4 M2R-TASK-CURRENT PIC   ZZZ,ZZ9.
      Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
      Ø4 FILLER           PIC   X(12) VALUE 'Peak Task : '.
      Ø4 M2R-TASK-HWM     PIC   Z,ZZZ,ZZ9.
      Ø4 FILLER           PIC   X(Ø7) VALUE SPACES.
      Ø4 FILLER           PIC   X(12) VALUE 'Total Task: '.
      Ø4 M2R-TASK-TOTAL   PIC   ZZZ,ZZ9.
      Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
      Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø2 MS-TITU13.
      Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
      Ø4 FILLER           PIC   X(78) VALUE ALL '='.
      Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
   Ø2 MS-TITU14.
      Ø4 FILLER           PIC   X(8Ø) VALUE SPACES.
   Ø2 MS-TITU15.
      Ø4 FILLER           PIC   X(8Ø) VALUE SPACES.
   Ø2 MS-TITU16.
      Ø4 FILLER           PIC   X(2Ø) VALUE SPACES.
      Ø4 FILLER           PIC   X(36) VALUE
         'CLEAR = EXIT         ENTER = REFRESH'.
      Ø4 FILLER           PIC   X(24) VALUE SPACES.
Ø1 MSG-PANTALLA-CONNECT.
   Ø2 MC-TITU1            PIC   X(8Ø) VALUE 'IDBE CONN'.
   Ø2 MC-TITU2.
      Ø4 FILLER           PIC   X(Ø9) VALUE 'Applid : '.
      Ø4 C-APPLID         PIC   X(Ø8)BBBBBB VALUE SPACES.
      Ø4 FILLER           PIC   X(35) VALUE
         'Display of DB2CONN Statistic Online'.
      Ø4 FILLER           PIC   X(Ø5) VALUE SPACES.
      Ø4 FILLER           PIC   X(Ø7) VALUE 'Date : '.
      Ø4 PRINC-DATE       PIC   X(Ø8)BB VALUE SPACES.
   Ø2 MC-TITU3.
      Ø4 FILLER           PIC   X(Ø9) VALUE 'Sysid  : '.
      Ø4 C-SYSID          PIC   X(Ø4) VALUE SPACES.
      Ø4 FILLER           PIC   X(5Ø) VALUE SPACES.
      Ø4 FILLER           PIC   X(Ø7) VALUE 'Time : '.
      Ø4 PRINC-TIME       PIC   X(Ø8)BB VALUE SPACES.
   Ø2 MC-TITU4.
      Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
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   Ø4 FILLER           PIC   X(78) VALUE ALL '='.
   Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
Ø2 MC-TITU5.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(22) VALUE 'DB2 Connection name : '.
   Ø4 M2G-DB2CONN-NAME PIC   X(8).
   Ø4 FILLER           PIC   X(Ø9) VALUE SPACES.
   Ø4 FILLER           PIC   X(12) VALUE 'DB2 Sysid : '.
   Ø4 M2G-DB2-ID       PIC   X(4).
   Ø4 FILLER           PIC   X(23) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MC-TITU6.
   Ø4 FILLER           PIC   X(Ø1) VALUE '+'.
   Ø4 FILLER           PIC   X(78) VALUE ALL '='.
   Ø4 FILLER           PIC   X(Ø1) VALUE '+'.
Ø2 MC-TITU7.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(78) VALUE 'TCBS STATISTICS '.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MC-TITU8.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(16) VALUE '# Maximo      : '.
   Ø4 M2G-TCB-LIMIT    PIC   ZZZ,ZZ9BBB.
   Ø4 FILLER           PIC   X(16) VALUE '# Current     : '.
   Ø4 M2G-TCB-CURRENT  PIC   ZZZ,ZZ9BBB.
   Ø4 FILLER           PIC   X(16) VALUE '# Peak        : '.
   Ø4 M2G-TCB-HWM      PIC   ZZZ,ZZ9BBB.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MC-TITU9.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(16) VALUE '# Free        : '.
   Ø4 M2G-TCB-FREE     PIC   ZZZ,ZZ9.
   Ø4 FILLER           PIC   X(55) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MC-TITU1Ø.
   Ø4 FILLER           PIC   X(Ø1) VALUE '+'.
   Ø4 FILLER           PIC   X(78) VALUE ALL '='.
   Ø4 FILLER           PIC   X(Ø1) VALUE '+'.
Ø2 MC-TITU11.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(78) VALUE
            'DB2 CONNECTION POOL STATISTICS '.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MC-TITU12.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(16) VALUE 'Plan name     : '.
   Ø4 M2G-POOL-PLAN-NAME     PIC X(8)BB VALUE SPACES.
   Ø4 FILLER           PIC   X(16) VALUE '# of CALLS    : '.
   Ø4 M2G-POOL-CALLS   PIC   ZZZ,ZZ9BBB.
   Ø4 FILLER           PIC   X(16) VALUE '# of Signons  : '.
   Ø4 M2G-POOL-SIGNONS PIC   ZZZ,ZZ9BBB.
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        Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
    Ø2 MC-TITU13.
        Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
        Ø4 FILLER           PIC   X(16) VALUE '# of Commits  : '.
        Ø4 M2G-POOL-COMMITS PIC   ZZZ,ZZ9BBB.
        Ø4 FILLER           PIC   X(16) VALUE '# of Reuses   : '.
        Ø4 M2G-POOL-THREAD-REUSE PIC   ZZZ,ZZ9BBB.
        Ø4 FILLER           PIC   X(16) VALUE '# Terminates  : '.
        Ø4 M2G-POOL-THREAD-TERM  PIC   ZZZ,ZZ9BBB.
        Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
    Ø2 MC-TITU14.
        Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
        Ø4 FILLER           PIC   X(16) VALUE '# of Waits    : '.
        Ø4 M2G-POOL-THREAD-WAITS PIC   ZZZ,ZZ9BBB.
        Ø4 FILLER           PIC   X(16) VALUE '# Pool Limit  : '.
        Ø4 M2G-POOL-THREAD-LIMIT PIC   ZZZ,ZZ9BBB.
        Ø4 FILLER           PIC   X(16) VALUE '# Current     : '.
        Ø4 M2G-POOL-THREAD-CURRENT PIC   ZZZ,ZZ9BBB.
        Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
    Ø2 MC-TITU15.
        Ø4 FILLER           PIC   X(Ø1) VALUE '+'.
        Ø4 FILLER           PIC   X(78) VALUE ALL '='.
        Ø4 FILLER           PIC   X(Ø1) VALUE '+'.
    Ø2 MC-TITU16.
        Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
        Ø4 FILLER           PIC   X(78) VALUE
           'DB2 CONNECTION DSNC COMMAND STATISTICS '.
        Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
    Ø2 MC-TITU17.
        Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
        Ø4 FILLER           PIC   X(16) VALUE '# Calls       : '.
        Ø4 M2G-DSNC-COMMAND-CALLS PIC   ZZZ,ZZ9BBB.
        Ø4 FILLER           PIC   X(16) VALUE '# Maximo      : '.
        Ø4 M2G-COMMAND-THREAD-LIMIT PIC   ZZZ,ZZ9BBB.
        Ø4 FILLER           PIC   X(16) VALUE '# Peak        : '.
        Ø4 M2G-COMMAND-THREAD-HWM  PIC   ZZZ,ZZ9BBB.
        Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
    Ø2 MC-TITU18.
        Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
        Ø4 FILLER           PIC   X(78) VALUE ALL '='.
        Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
    Ø2 MC-TITU19.
        Ø4 FILLER           PIC   X(8Ø) VALUE SPACES.
    Ø2 MC-TITU2Ø.
        Ø4 FILLER           PIC   X(8Ø) VALUE SPACES.
    Ø2 MC-TITU21.
        Ø4 FILLER           PIC   X(2Ø) VALUE SPACES.
        Ø4 FILLER           PIC   X(36) VALUE
           'CLEAR = EXIT         ENTER = REFRESH'.
            Ø4 FILLER           PIC   X(24) VALUE SPACES.
Ø1  MSG-PANTALLA-DISPLAY.
    Ø2 MD-TITU1.
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   Ø4 FILLER           PIC  X(1Ø) VALUE 'IDBE DISP '.
   Ø4 DIS-DB2ENTRY-SF  PIC  X(Ø8) VALUE SPACES.
   Ø4 FILLER           PIC  X(Ø2) VALUE '>='.
   Ø4 DIS-N-CALLS      PIC  9(Ø7) VALUE ZEROES.
   Ø4 FILLER           PIC  X(53) VALUE SPACES.
Ø2 MD-TITU2.
   Ø4 FILLER           PIC   X(Ø9) VALUE 'Applid : '.
   Ø4 DIS-APPLID       PIC   X(Ø8)BBBBBB VALUE SPACES.
   Ø4 FILLER           PIC   X(34) VALUE
      'Browse DB2Entrys Statistics Online'.
   Ø4 FILLER           PIC   X(Ø6) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø7) VALUE 'Date : '.
   Ø4 DIS-DATE         PIC   X(Ø8) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø2) VALUE SPACES.
Ø2 MD-TITU3.
   Ø4 FILLER           PIC   X(Ø9) VALUE 'Sysid  : '.
   Ø4 DIS-SYSID        PIC   X(Ø4) VALUE SPACES.
   Ø4 FILLER           PIC   X(5Ø) VALUE SPACES.
   Ø4 FILLER           PIC   X(Ø7) VALUE 'Time : '.
   Ø4 DIS-TIME         PIC   X(Ø8)BB VALUE SPACES.
Ø2 MD-TITU4.
   Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
   Ø4 FILLER           PIC   X(78) VALUE ALL '='.
   Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
Ø2 MD-TITU5.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
   Ø4 FILLER           PIC   X(48) VALUE
      'DB2Entry  PlanName    # Calls  # Reuses  # Term.'.
   Ø4 FILLER           PIC   X(3Ø) VALUE
      '     W/O  #Lim.  #Peak  #Curr.'.
   Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
Ø2 MD-TITU6.
   Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
   Ø4 FILLER           PIC   X(78) VALUE ALL '='.
   Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
Ø2 MD-TITU7   OCCURS 16 TIMES.
   Ø4 MD-TITUS.
      Ø6 FILLER             PIC     X(Ø1) VALUE '|'.
      Ø6 DIS-DB2ENTRY-NAME  PIC   X(8)BB VALUE SPACES.
      Ø6 DIS-PLAN-NAME      PIC   X(8)BB VALUE SPACES.
      Ø6 DIS-CALLS          PIC   Z,ZZZ,ZZ9BBB.
      Ø6 DIS-THREAD-REUSE   PIC   ZZZ,ZZ9BB.
      Ø6 DIS-THREAD-TERM    PIC   ZZZ,ZZ9BB.
      Ø6 DIS-THREAD-WAIT    PIC   ZZ,ZZ9BB.
      Ø6 DIS-THREAD-LIMIT   PIC   Z,ZZ9BB.
      Ø6 DIS-THREAD-HWM     PIC   Z,ZZ9BBB.
      Ø6 DIS-THREAD-CURRENT PIC   Z,ZZ9.
      Ø6 FILLER             PIC   X(Ø1) VALUE '|'.
   Ø4 MD-TITUR REDEFINES MD-TITUS.
      Ø6 DIS-TITUR          PIC   X(8Ø).
Ø2 MD-TITU23.
   Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
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       Ø4 FILLER           PIC   X(78) VALUE ALL '='.
       Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
    Ø2 MD-TITU24.
       Ø4 FILLER           PIC   X(2Ø) VALUE SPACES.
       Ø4 FILLER           PIC   X(36) VALUE
          'CLEAR = Exit         ENTER = Foward '.
       Ø4 FILLER           PIC   X(24) VALUE SPACES.
Ø1  MSG-PANTALLA-PLAN.
    Ø2 MP-TITU1.
       Ø4 FILLER           PIC  X(1Ø)  VALUE 'IDBE PLAN='.
       Ø4 PLA-PLAN-NAME    PIC  X(Ø8)B VALUE SPACES.
       Ø4 PLA-DB2ENTRY-SF  PIC  X(Ø8)  VALUE SPACES.
       Ø4 FILLER           PIC  X(53)  VALUE SPACES.
    Ø2 MP-TITU2.
       Ø4 FILLER           PIC   X(Ø9) VALUE 'Applid : '.
       Ø4 PLA-APPLID       PIC   X(Ø8)BBBBBB VALUE SPACES.
       Ø4 FILLER           PIC   X(35) VALUE
          'Browse DB2Entrys with same PlanName'.
       Ø4 FILLER           PIC   X(Ø5) VALUE SPACES.
       Ø4 FILLER           PIC   X(Ø7) VALUE 'Date : '.
       Ø4 PLA-DATE         PIC   X(Ø8)BB VALUE SPACES.
    Ø2 MP-TITU3.
       Ø4 FILLER           PIC   X(Ø9) VALUE 'Sysid  : '.
       Ø4 PLA-SYSID        PIC   X(Ø4) VALUE SPACES.
       Ø4 FILLER           PIC   X(5Ø) VALUE SPACES.
       Ø4 FILLER           PIC   X(Ø7) VALUE 'Time : '.
       Ø4 PLA-TIME         PIC   X(Ø8)BB VALUE SPACES.
    Ø2 MP-TITU4.
       Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
       Ø4 FILLER           PIC   X(78) VALUE ALL '='.
       Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
    Ø2 MP-TITU5.
       Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
       Ø4 FILLER           PIC   X(48) VALUE
          'DB2Entry  ThrWait  Priority    # Calls  # Reuses'.
       Ø4 FILLER           PIC   X(3Ø) VALUE
          '   # Term     W/O   Total-Task'.
       Ø4 FILLER           PIC   X(Ø1) VALUE '|'.
    Ø2 MP-TITU6.
       Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
       Ø4 FILLER           PIC   X(78) VALUE ALL '='.
       Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
    Ø2 MP-TITU7   OCCURS 16 TIMES.
       Ø4 MP-TITUS.
          Ø6 FILLER             PIC   X(Ø1) VALUE '|'.
          Ø6 PLA-DB2ENTRY-NAME  PIC   X(8)BBBB  VALUE SPACES.
          Ø6 PLA-THREADWAIT     PIC   X(4)BBBBB VALUE SPACES.
          Ø6 PLA-PRIORITY       PIC   X(5)BBB   VALUE SPACES.
          Ø6 PLA-CALLS          PIC   Z,ZZZ,ZZ9BBB.
          Ø6 PLA-THREAD-REUSE   PIC   ZZZ,ZZ9BB.
          Ø6 PLA-THREAD-TERM    PIC   ZZZ,ZZ9BB.
          Ø6 PLA-THREAD-WAIT    PIC   ZZ,ZZ9BBBB.
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           Ø6 PLA-TASK-TOTAL     PIC   Z,ZZZ,ZZ9.
           Ø6 FILLER             PIC   X(Ø1) VALUE '|'.
        Ø4 MP-TITUR REDEFINES MP-TITUS.
           Ø6 PLA-TITUR          PIC   X(8Ø).
     Ø2 MP-TITU23.
        Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
        Ø4 FILLER           PIC   X(78) VALUE ALL '='.
        Ø4 FILLER           PIC   X(Ø1) VALUE '*'.
     Ø2 MP-TITU24.
        Ø4 FILLER           PIC   X(2Ø) VALUE SPACES.
        Ø4 FILLER           PIC   X(36) VALUE
           'CLEAR = Exit         ENTER = Foward '.
        Ø4 FILLER           PIC   X(24) VALUE SPACES.
Ø1   DATOS-INPUT.
     Ø2  FILLER             PIC  X(Ø5).
     Ø2  DAT-DB2ENTRY-FUNC  PIC  X(Ø4).
     Ø2  FILLER             PIC  X(Ø1).
     Ø2  DAT-DB2ENTRY-NAME  PIC  X(Ø8) VALUE SPACES.
     Ø2  DAT-DISPLAY.
         Ø4  FILLER             PIC  X(Ø2).
         Ø4  DAT-N-CALLS        PIC  9(Ø7).
     Ø2  DAT-PLAN REDEFINES DAT-DISPLAY.
         Ø4  FILLER             PIC  X.
         Ø4  DAT-DB2ENTRY-SF    PIC  X(Ø8).
 LINKAGE SECTION.
*---------------*
*COPY DFHD2GDS.
*CICS/DB2CONN STATISTICS (GLOBAL)
Ø1   DFHD2GDS SYNCHRONIZED.
     Ø3  D2GLEN                          PIC S9(4)   COMP.
     Ø3  D2GID                           PIC XX.
         88  D2GIDE   VALUE ' #'.
     Ø3  D2GDVERS                        PIC X.
         88  D2GVERS  VALUE '?'.
     Ø3  FILLER                          PIC XXX.
     Ø3  D2G-GLOBAL.
         Ø5  D2G-DB2CONN-NAME            PIC X(8).
         Ø5  D2G-DB2-ID                  PIC X(4).
         Ø5  D2G-DB2-RELEASE             PIC X(4).
         Ø5  D2G-CONNECT-TIME-GMT        PIC X(8).
         Ø5  D2G-CONNECT-TIME-LOCAL      PIC X(8).
         Ø5  D2G-DISCONNECT-TIME-GMT     PIC X(8).
         Ø5  D2G-DISCONNECT-TIME-LOCAL   PIC X(8).
         Ø5  D2G-TCB-LIMIT               PIC S9(8)   COMP.
         Ø5  D2G-TCB-CURRENT             PIC S9(8)   COMP.
         Ø5  D2G-TCB-HWM                 PIC S9(8)   COMP.
         Ø5  D2G-TCB-FREE                PIC S9(8)   COMP.
         Ø5  D2G-TCB-READYQ-CURRENT      PIC S9(8)   COMP.
         Ø5  D2G-TCB-READYQ-HWM          PIC S9(8)   COMP.
         Ø5  FILLER                      PIC X(4Ø).
     Ø3  D2G-POOL.
         Ø5  D2G-POOL-PLAN-NAME          PIC X(8).
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    Ø5  D2G-POOL-PLANEXIT-NAME      PIC X(8).
    Ø5  D2G-POOL-AUTHID             PIC X(8).
    Ø5  D2G-POOL-AUTHTYPE           PIC X.
        88  D2G-POOL-AUTHTYPE-NA       VALUE ' '.
        88  D2G-POOL-AUTHTYPE-USERID   VALUE '?'.
        88  D2G-POOL-AUTHTYPE-OPID     VALUE '?'.
        88  D2G-POOL-AUTHTYPE-GROUP    VALUE '?'.
        88  D2G-POOL-AUTHTYPE-SIGNID   VALUE '?'.
        88  D2G-POOL-AUTHTYPE-TERM     VALUE '?'.
        88  D2G-POOL-AUTHTYPE-TXID     VALUE '?'.
    Ø5  D2G-POOL-ACCOUNTREC          PIC X.
        88  D2G-POOL-ACCOUNTREC-NONE   VALUE '?'.
        88  D2G-POOL-ACCOUNTREC-TXID   VALUE '?'.
        88  D2G-POOL-ACCOUNTREC-TASK   VALUE '?'.
        88  D2G-POOL-ACCOUNTREC-UOW    VALUE '?'.
    Ø5  D2G-POOL-THREADWAIT          PIC X.
        88  D2G-THREADWAIT-YES         VALUE '?'.
        88  D2G-THREADWAIT-NO          VALUE '?'.
    Ø5  D2G-POOL-PRIORITY           PIC X.
        88  D2G-POOL-PRIORITY-HIGH     VALUE '?'.
        88  D2G-POOL-PRIORITY-EQUAL    VALUE '?'.
        88  D2G-POOL-PRIORITY-LOW      VALUE '?'.
    Ø5  D2G-POOL-CALLS              PIC S9(8)   COMP.
    Ø5  D2G-POOL-SIGNONS            PIC S9(8)   COMP.
    Ø5  D2G-POOL-COMMITS            PIC S9(8)   COMP.
    Ø5  D2G-POOL-ABORTS             PIC S9(8)   COMP.
    Ø5  D2G-POOL-SINGLE-PHASE       PIC S9(8)   COMP.
    Ø5  D2G-POOL-THREAD-REUSE       PIC S9(8)   COMP.
    Ø5  D2G-POOL-THREAD-TERM        PIC S9(8)   COMP.
    Ø5  D2G-POOL-THREAD-WAITS       PIC S9(8)   COMP.
    Ø5  D2G-POOL-THREAD-LIMIT       PIC S9(8)   COMP.
    Ø5  D2G-POOL-THREAD-CURRENT     PIC S9(8)   COMP.
    Ø5  D2G-POOL-THREAD-HWM         PIC S9(8)   COMP.
    Ø5  D2G-POOL-TASK-CURRENT       PIC S9(8)   COMP.
    Ø5  D2G-POOL-TASK-HWM           PIC S9(8)   COMP.
    Ø5  D2G-POOL-TASK-TOTAL         PIC S9(8)   COMP.
    Ø5  D2G-POOL-READYQ-CURRENT     PIC S9(8)   COMP.
    Ø5  D2G-POOL-READYQ-HWM         PIC S9(8)   COMP.
    Ø5  FILLER                      PIC X(28).
Ø3  D2G-COMMAND.
    Ø5  D2G-COMD-AUTHID             PIC X(8).
    Ø5  D2G-COMD-AUTHTYPE           PIC X.
        88  D2G-COMD-AUTHTYPE-NA       VALUE ' '.
        88  D2G-COMD-AUTHTYPE-USERID   VALUE '?'.
        88  D2G-COMD-AUTHTYPE-OPID     VALUE '?'.
        88  D2G-COMD-AUTHTYPE-GROUP    VALUE '?'.
        88  D2G-COMD-AUTHTYPE-SIGNID   VALUE '?'.
        88  D2G-COMD-AUTHTYPE-TERM     VALUE '?'.
        88  D2G-COMD-AUTHTYPE-TXID     VALUE '?'.
    Ø5  FILLER                      PIC XXX.
    Ø5  D2G-DSNC-COMMAND-CALLS      PIC S9(8)   COMP.
    Ø5  D2G-COMMAND-SIGNONS         PIC S9(8)   COMP.
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        Ø5  D2G-COMMAND-THREAD-TERM     PIC S9(8)   COMP.
        Ø5  D2G-COMMAND-THREAD-OVERFLOW PIC S9(8)   COMP.
        Ø5  D2G-COMMAND-THREAD-LIMIT    PIC S9(8)   COMP.
        Ø5  D2G-COMMAND-THREAD-CURRENT  PIC S9(8)   COMP.
        Ø5  D2G-COMMAND-THREAD-HWM      PIC S9(8)   COMP.
        Ø5  FILLER                      PIC X(36).
*COPY DFHD2RDS.
*CICS/DB2ENTRY STATISTICS (RESOURCE)
Ø1  DFHD2RDS SYNCHRONIZED.
    Ø3  D2RLEN                  PIC S9(4)   COMP.
    Ø3  D2RID                   PIC XX.
        88  D2RIDE   VALUE ' #'.
    Ø3  D2RDVERS                PIC X.
        88  D2RVERS  VALUE '?'.
    Ø3  FILLER                  PIC XXX.
    Ø3  D2R-DB2ENTRY-NAME       PIC X(8).
    Ø3  D2R-PLAN-NAME           PIC X(8).
    Ø3  D2R-PLANEXIT-NAME       PIC X(8).
    Ø3  D2R-AUTHID              PIC X(8).
    Ø3  D2R-AUTHTYPE            PIC X.
        88  D2R-AUTHTYPE-NA         VALUE ' '.
        88  D2R-AUTHTYPE-USERID     VALUE '?'.
        88  D2R-AUTHTYPE-OPID       VALUE '?'.
        88  D2R-AUTHTYPE-GROUP      VALUE '?'.
        88  D2R-AUTHTYPE-SIGNID     VALUE '?'.
        88  D2R-AUTHTYPE-TERM       VALUE '?'.
        88  D2R-AUTHTYPE-TXID       VALUE '?'.
    Ø3  D2R-ACCOUNTREC          PIC X.
        88  D2R-ACCOUNTREC-NONE     VALUE '?'.
        88  D2R-ACCOUNTREC-TXID     VALUE '?'.
        88  D2R-ACCOUNTREC-TASK     VALUE '?'.
        88  D2R-ACCOUNTREC-UOW      VALUE '?'.
    Ø3  D2R-THREADWAIT          PIC X.
        88  D2R-THREADWAIT-YES      VALUE '?'.
        88  D2R-THREADWAIT-NO       VALUE '?'.
        88  D2R-THREADWAIT-POOL     VALUE '?'.
    Ø3  D2R-PRIORITY            PIC X.
        88  D2R-PRIORITY-HIGH       VALUE '?'.
        88  D2R-PRIORITY-EQUAL      VALUE '?'.
        88  D2R-PRIORITY-LOW        VALUE '?'.
    Ø3  D2R-CALLS               PIC S9(8)   COMP.
    Ø3  D2R-SIGNONS             PIC S9(8)   COMP.
    Ø3  D2R-COMMITS             PIC S9(8)   COMP.
    Ø3  D2R-ABORTS              PIC S9(8)   COMP.
    Ø3  D2R-SINGLE-PHASE        PIC S9(8)   COMP.
    Ø3  D2R-THREAD-REUSE        PIC S9(8)   COMP.
    Ø3  D2R-THREAD-TERM         PIC S9(8)   COMP.
    Ø3  D2R-THREAD-WAIT-OR-OVERF PIC S9(8)  COMP.
    Ø3  D2R-THREAD-LIMIT        PIC S9(8)   COMP.
    Ø3  D2R-THREAD-CURRENT      PIC S9(8)   COMP.
    Ø3  D2R-THREAD-HWM          PIC S9(8)   COMP.
    Ø3  D2R-PTHREAD-LIMIT       PIC S9(8)   COMP.
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Ø3  D2R-PTHREAD-CURRENT     PIC S9(8)   COMP.
Ø3  D2R-PTHREAD-HWM         PIC S9(8)   COMP.
Ø3  D2R-TASK-CURRENT        PIC S9(8)   COMP.
Ø3  D2R-TASK-HWM            PIC S9(8)   COMP.
Ø3  D2R-TASK-TOTAL          PIC S9(8)   COMP.
Ø3  D2R-READYQ-CURRENT      PIC S9(8)   COMP.
Ø3  D2R-READYQ-HWM          PIC S9(8)   COMP.
Ø3  FILLER                  PIC X(36).
 PROCEDURE DIVISION.
*-----------------*
 RTN-PRINCIPAL.
*-------------*
    EXEC CICS HANDLE  CONDITION ERROR  (REG-ERROR)
                               NOTFND (REG-NOTFND)
                               END-EXEC.
    EXEC CICS IGNORE  CONDITION LENGERR  END-EXEC.
    EXEC CICS ASKTIME  ABSTIME(UTIME)    END-EXEC.
    EXEC CICS RECEIVE INTO (DATOS-INPUT)
                      LENGTH (LENGTH OF DATOS-INPUT)
                      END-EXEC.
    EVALUATE DAT-DB2ENTRY-FUNC
    WHEN 'DB2E'
         PERFORM RTN-DB2ENTRY
    WHEN 'CONN'
         PERFORM RTN-CONNECT
    WHEN 'DISP'
         PERFORM RTN-DISPLAY THRU RTN-SEND-DISPLAY
    WHEN 'PLAN'
         PERFORM RTN-PLAN THRU RTN-SEND-PLAN
    WHEN OTHER
         MOVE 'IDBE CONN                       '            TO MSG1
         MOVE 'SYNTAX :                                   '  TO MSG2
         MOVE 'IDBE CONN|DB2E|DISP|PLAN                   '  TO MSG3
         MOVE 'IDBE CONN: For display DB2CONN statistics'  TO MSG4
         MOVE 'IDBE DB2E: For display DB2ENTRY name statistics'
                                                           TO MSG5
         MOVE 'IDBE DISP: For Browse DB2ENTRYs name GE #Calls '
                                                           TO MSG6
         MOVE
             'IDBE PLAN: For Browse DB2ENTRYs name EQUAL PlanName'
                                                           TO MSG7
    PERFORM REG-SEND-TEXTE
    END-EVALUATE.
    EXEC CICS RETURN   END-EXEC.
    GOBACK.
 RTN-DB2ENTRY.
*------------*
    MOVE DAT-DB2ENTRY-NAME TO  MSG-DB2ENTRY-NAME.
    IF MSG-DB2ENTRY-NAME = SPACES PERFORM REG-NOTFND.
    EXEC CICS ASSIGN  APPLID(APPLID)
                      SYSID(SYSID)
    END-EXEC.
```

```
   EXEC CICS FORMATTIME           ABSTIME(UTIME)
             DDMMYY(PRINT-DATE)   DATESEP('/')
             TIME(PRINT-TIME)     TIMESEP
   END-EXEC.
   EXEC CICS COLLECT STATISTICS
        SET(ADDRESS OF DFHD2RDS)
        DB2ENTRY(MSG-DB2ENTRY-NAME)
   END-EXEC.
   MOVE D2R-DB2ENTRY-NAME         TO M2R-DB2ENTRY-NAME.
   MOVE D2R-PLAN-NAME             TO M2R-PLAN-NAME.
   IF D2R-THREADWAIT-YES
      MOVE 'YES'                  TO M2R-THREADWAIT.
   IF D2R-THREADWAIT-NO
      MOVE 'NO'                   TO M2R-THREADWAIT.
   IF D2R-THREADWAIT-POOL
      MOVE 'POOL'                 TO M2R-THREADWAIT.
   IF D2R-PRIORITY-HIGH
      MOVE 'HIGH'                 TO M2R-PRIORITY.
   IF D2R-PRIORITY-EQUAL
      MOVE 'EQUAL'                TO M2R-PRIORITY.
   IF D2R-PRIORITY-LOW
      MOVE 'LOW  '                TO M2R-PRIORITY.
      MOVE D2R-CALLS                 TO M2R-CALLS.
      MOVE D2R-SIGNONS               TO M2R-SIGNONS.
      MOVE D2R-ABORTS                TO M2R-ABORTS.
      MOVE D2R-SINGLE-PHASE          TO M2R-SINGLE-PHASE.
      MOVE D2R-THREAD-REUSE          TO M2R-THREAD-REUSE.
      MOVE D2R-THREAD-TERM           TO M2R-THREAD-TERM.
      MOVE D2R-THREAD-WAIT-OR-OVERF  TO M2R-THREAD-WAIT-OR-OVERF.
      MOVE D2R-THREAD-LIMIT          TO M2R-THREAD-LIMIT.
      MOVE D2R-THREAD-CURRENT        TO M2R-THREAD-CURRENT.
      MOVE D2R-THREAD-HWM            TO M2R-THREAD-HWM.
      MOVE D2R-PTHREAD-LIMIT         TO M2R-PTHREAD-LIMIT.
      MOVE D2R-PTHREAD-CURRENT       TO M2R-PTHREAD-CURRENT.
      MOVE D2R-PTHREAD-HWM           TO M2R-PTHREAD-HWM.
      MOVE D2R-TASK-CURRENT          TO M2R-TASK-CURRENT.
      MOVE D2R-TASK-HWM              TO M2R-TASK-HWM.
      MOVE D2R-TASK-TOTAL            TO M2R-TASK-TOTAL.
      EXEC CICS SEND FROM(MSG-PANTALLA-DB2ENTRY)
                     LENGTH (LENGTH OF MSG-PANTALLA-DB2ENTRY)
                     ERASE WAIT
                     END-EXEC.
 RTN-CONNECT.
*-----------*
      EXEC CICS ASSIGN  APPLID(C-APPLID)
                        SYSID(C-SYSID)
      END-EXEC.
      EXEC CICS FORMATTIME          ABSTIME(UTIME)
                DDMMYY(PRINC-DATE)  DATESEP('/')
                TIME(PRINC-TIME)    TIMESEP
      END-EXEC.
      EXEC CICS COLLECT STATISTICS
```

```
           SET(ADDRESS OF DFHD2GDS)
           DB2CONN
      END-EXEC.
      MOVE D2G-DB2CONN-NAME            TO M2G-DB2CONN-NAME.
      MOVE D2G-DB2-ID                  TO M2G-DB2-ID.
      MOVE D2G-TCB-LIMIT               TO M2G-TCB-LIMIT.
      MOVE D2G-TCB-CURRENT             TO M2G-TCB-CURRENT.
      MOVE D2G-TCB-HWM                 TO M2G-TCB-HWM.
      MOVE D2G-TCB-FREE               TO M2G-TCB-FREE.
      MOVE D2G-POOL-PLAN-NAME         TO M2G-POOL-PLAN-NAME.
      MOVE D2G-POOL-CALLS             TO M2G-POOL-CALLS.
      MOVE D2G-POOL-SIGNONS           TO M2G-POOL-SIGNONS.
      MOVE D2G-POOL-COMMITS           TO M2G-POOL-COMMITS.
      MOVE D2G-POOL-THREAD-REUSE      TO M2G-POOL-THREAD-REUSE.
      MOVE D2G-POOL-THREAD-TERM      TO M2G-POOL-THREAD-TERM.
      MOVE D2G-POOL-THREAD-WAITS     TO M2G-POOL-THREAD-WAITS.
      MOVE D2G-POOL-THREAD-LIMIT     TO M2G-POOL-THREAD-LIMIT.
      MOVE D2G-POOL-THREAD-CURRENT   TO M2G-POOL-THREAD-CURRENT.
      MOVE D2G-DSNC-COMMAND-CALLS    TO M2G-DSNC-COMMAND-CALLS.
      MOVE D2G-COMMAND-THREAD-LIMIT  TO M2G-COMMAND-THREAD-LIMIT.
      MOVE D2G-COMMAND-THREAD-HWM    TO M2G-COMMAND-THREAD-HWM.
      EXEC CICS SEND FROM(MSG-PANTALLA-CONNECT)
                     LENGTH (LENGTH OF MSG-PANTALLA-CONNECT)
                     ERASE WAIT
                     END-EXEC.
 RTN-DISPLAY.
*-----------*
      MOVE DAT-N-CALLS    TO DIS-N-CALLS.
      EXEC CICS ASSIGN  APPLID(DIS-APPLID)
                        SYSID(DIS-SYSID)
      END-EXEC.
      EXEC CICS FORMATTIME        ABSTIME(UTIME)
                DDMMYY(DIS-DATE)  DATESEP('/')
                TIME(DIS-TIME)    TIMESEP
      END-EXEC.
      EXEC CICS INQUIRE DB2ENTRY
           START AT(DAT-DB2ENTRY-NAME)
      END-EXEC.
      PERFORM UNTIL I > 16
        EXEC CICS INQUIRE
             DB2ENTRY(DAT-DB2ENTRY-NAME)
             NEXT   NOHANDLE  RESP(RESP1)
        END-EXEC
        IF RESP1 = DFHRESP(END)
           MOVE '| *** END OF DB2ENTRYS ***' TO DIS-TITUR(I)
           MOVE 17 TO I
           GO TO RTN-SEND-DISPLAY
        END-IF
        EXEC CICS COLLECT STATISTICS
            SET(ADDRESS OF DFHD2RDS)
            DB2ENTRY(DAT-DB2ENTRY-NAME)
        END-EXEC
```

```
       MOVE D2R-CALLS                   TO W2R-CALLS
       IF W2R-CALLS >= DAT-N-CALLS
          MOVE D2R-DB2ENTRY-NAME        TO DIS-DB2ENTRY-NAME(I)
                                           DIS-DB2ENTRY-SF
          MOVE D2R-PLAN-NAME            TO DIS-PLAN-NAME(I)
          MOVE D2R-CALLS                TO DIS-CALLS(I)
          MOVE D2R-THREAD-REUSE         TO DIS-THREAD-REUSE(I)
          MOVE D2R-THREAD-TERM          TO DIS-THREAD-TERM(I)
          MOVE D2R-THREAD-WAIT-OR-OVERF TO DIS-THREAD-WAIT(I)
          MOVE D2R-THREAD-LIMIT         TO DIS-THREAD-LIMIT(I)
          MOVE D2R-THREAD-HWM           TO DIS-THREAD-HWM(I)
          MOVE D2R-THREAD-CURRENT       TO DIS-THREAD-CURRENT(I)
          ADD 1 TO I
       END-IF
     END-PERFORM.
 RTN-SEND-DISPLAY.
*----------------*
     EXEC CICS INQUIRE DB2ENTRY END
     END-EXEC.
     EXEC CICS SEND FROM(MSG-PANTALLA-DISPLAY)
                    LENGTH (LENGTH OF MSG-PANTALLA-DISPLAY)
                    ERASE WAIT
                    END-EXEC.
 RTN-PLAN.
*---------*
     MOVE DAT-DB2ENTRY-NAME   TO PLA-PLAN-NAME.
     EXEC CICS ASSIGN  APPLID(PLA-APPLID)
                       SYSID(PLA-SYSID)
     END-EXEC.
     EXEC CICS FORMATTIME         ABSTIME(UTIME)
               DDMMYY(PLA-DATE)   DATESEP('/')
               TIME(PLA-TIME)     TIMESEP
     END-EXEC.
     EXEC CICS INQUIRE DB2ENTRY
          START AT(DAT-DB2ENTRY-SF)
     END-EXEC.
     PERFORM UNTIL I > 16
       EXEC CICS INQUIRE
            DB2ENTRY(DAT-DB2ENTRY-SF)
            NEXT   NOHANDLE   RESP(RESP1)
       END-EXEC
       IF RESP1 = DFHRESP(END)
          MOVE '| *** END OF DB2ENTRYS ***' TO PLA-TITUR(I)
          MOVE 17 TO I
          GO TO RTN-SEND-PLAN
       END-IF
       EXEC CICS COLLECT STATISTICS
           SET(ADDRESS OF DFHD2RDS)
           DB2ENTRY(DAT-DB2ENTRY-SF)
       END-EXEC
       IF D2R-PLAN-NAME = DAT-DB2ENTRY-NAME
          MOVE D2R-DB2ENTRY-NAME        TO PLA-DB2ENTRY-NAME(I)
```

```
                                          PLA-DB2ENTRY-SF
           IF D2R-THREADWAIT-YES
              MOVE 'YES'                  TO PLA-THREADWAIT(I)
           END-IF
           IF D2R-THREADWAIT-NO
              MOVE 'NO'                   TO PLA-THREADWAIT(I)
           END-IF
           IF D2R-THREADWAIT-POOL
              MOVE 'POOL'                 TO PLA-THREADWAIT(I)
           END-IF
           IF D2R-PRIORITY-HIGH
              MOVE 'HIGH'                 TO PLA-PRIORITY(I)
           END-IF
           IF D2R-PRIORITY-EQUAL
              MOVE 'EQUAL'                TO PLA-PRIORITY(I)
           END-IF
           IF D2R-PRIORITY-LOW
              MOVE 'LOW  '                TO PLA-PRIORITY(I)
           END-IF
           MOVE D2R-CALLS                 TO PLA-CALLS(I)
           MOVE D2R-THREAD-REUSE          TO PLA-THREAD-REUSE(I)
           MOVE D2R-THREAD-TERM           TO PLA-THREAD-TERM(I)
           MOVE D2R-THREAD-WAIT-OR-OVERF TO PLA-THREAD-WAIT(I)
           MOVE D2R-TASK-TOTAL            TO PLA-TASK-TOTAL(I)
           ADD 1 TO I
         END-IF
       END-PERFORM.
 RTN-SEND-PLAN.
*-------------*
       EXEC CICS INQUIRE DB2ENTRY END
       END-EXEC.
       EXEC CICS SEND FROM(MSG-PANTALLA-PLAN)
                      LENGTH (LENGTH OF MSG-PANTALLA-PLAN)
                      ERASE WAIT
                      END-EXEC.
 REG-ERROR.
*----------*
       MOVE 'ERRORØ2 ... USE CEDF TRANSACTION   ' TO MSG2.
       PERFORM REG-SEND-TEXTE.
 REG-NOTFND.
*----------*
       MOVE 'IDBE DISP         >=0000000    '            TO MSG1.
       MOVE 'ERRORØ1 ... DB2ENTRY  NOT FOUND'            TO MSG2.
       MOVE 'SYNTAX:                                '    TO MSG3.
       MOVE 'IDBE DB2E db2entry :  for db2entry name statistics'
                                                         TO MSG4.
       MOVE '                                        '   TO MSG5.
       MOVE 'IDBE DISP db2entry>=#calls         '        TO MSG6.
       MOVE 'DB2ENTRY  : DB2ENTRY NAME initial foward Browse'
                                                         TO MSG7.
       MOVE '#CALLS    : For List only DB2ENTRYs GE #CALLS '
```

```
                                                              TO MSG8.
     MOVE '            (Default 0000000)'                    TO MSG9.
     PERFORM REG-SEND-TEXTE.
 REG-SEND-TEXTE.
*-------------*
     EXEC CICS SEND FROM(MSG-ERROR)
                    LENGTH (LENGTH OF MSG-ERROR)
                    ERASE WAIT LAST
     END-EXEC.
     EXEC CICS RETURN
     END-EXEC.
```

IDBE CONN

```
Applid : CICPBB1A      Display of DB2CONN Statistic Online     Date : 11/06/01
Sysid  : PT90                                                  Time : 10:18:35
*=============================================================================*
|DB2 Connection name : RCT1A            DB2 Sysid : DSNP                      |
+=============================================================================+
|TCBS STATISTICS                                                              |
|# Maximo      :      66   # Current     :      63   # Peak        :      63   |
|# Free        :      27                                                      |
+=============================================================================+
|DB2 CONNECTION POOL STATISTICS                                               |
|Plan name     : DEFAULT   # of CALLS    :       0   # of Signons  :       0   |
|# of Commits  :       0   # of Reuses   :       1   # Terminates  :  37,675   |
|# of Waits    :       6   # Pool Limit  :      27   # Current     :       4   |
+=============================================================================+
|DB2 CONNECTION DSNC COMMAND STATISTICS                                       |
|# Calls       :       0   # Maximo      :       1   # Peak        :       0   |
*=============================================================================*

                  CLEAR = EXIT         ENTER = REFRESH
```

IDBE DB2E PAF3

```
Applid : CICPBB1A      Display DB2Entry Statistics Online      Date : 11/06/01
Sysid  : PT90                                                  Time : 10:22:47
*=============================================================================*
|DB2 Entry Name: PAF3     Plan Name : BPPBAPE         ThreadWait: POOL        |
+=============================================================================+
|Priority  : EQUAL        # Calls   :   318,029       Signons   :       6     |
|Aborts    :     165      Single Pha:     5,408       # Reuses  :   5,281     |
|Terminates:      90      # W/O     :         1                               |
|# Current :       0      # Peak    :         6       # Limit   :       6     |
|Prot.Curr :       2      Prot.Peak :         2       Prot.Limit:       2     |
|Curr.Task :       0      Peak Task :         7       Total Task:   5,408     |
*=============================================================================*

                  CLEAR = EXIT         ENTER = REFRESH
```

IDBE DISP B24 >= 1000

```
Applid : CICPBB1A      Browse DB2Entrys Statistics Online      Date : 11/Ø6/Ø1
Sysid  : PT9Ø                                                  Time : 1Ø:31:Ø3
*=============================================================================*
|DB2Entry  PlanName    # Calls  # Reuses  # Term.     W/O  #Lim.  #Peak  #Curr.|
*=============================================================================*
|B24       BPPBIPE     4Ø9,835     5,548       48       Ø     1Ø      5       Ø|
|COUNT     BPPASPE       4,241       623       45       Ø      4      2       Ø|
|ENTRY     BPPGPPE     29Ø,384     7,635       49       Ø     1Ø      5       Ø|
|WARRANT   BPPCRPE      14,839     1,Ø13       24       Ø      6      3       Ø|
| *** END OF DB2ENTRYS ***                                                    |
|                                                                             |
|                                                                             |
*=============================================================================*
                   CLEAR = Exit         ENTER = Foward
```

IDBE PLAN=BPPBIPE MZ05

```
Applid : CICPBB1A      Browse DB2Entrys with same PlanName     Date : 11/Ø6/Ø1
Sysid  : PT9Ø                                                  Time : 1Ø:47:35
*=============================================================================*
|DB2Entry  ThrWait  Priority    # Calls  # Reuses   # Term     W/O   Total-Task|
*=============================================================================*
|B24         POOL     EQUAL     4Ø9,835     5,548       48       Ø        5,62Ø|
|HZØ2        POOL     EQUAL       1,32Ø       138       12       Ø         239Ø|
|JZ99        POOL     EQUAL           Ø         Ø        Ø       Ø           Ø|
|IZ33        POOL     EQUAL         456        32        3      35          35|
|MZØ5        POOL     EQUAL           Ø         Ø        Ø       Ø           Ø|
*=============================================================================*
                   CLEAR = Exit         ENTER = Foward
```

After tuning and reusing the threads, the following were noted:

- The daily average of CICS TS transactions was increased by 10%.
- The response time daily average was lowered by 25%.
- The consumption of CPU by CICS TS and DB2 was reduced by 9%.

The most important change was that contention is not present any more in CICS TS when the maximum TCBLIMIT value is reached.

Juan Eduardo FLORES Sotelo
Systems Programmer
Banco Continental (Peru)

H&W Computer Systems has announced availability of its WebTek Tools for CICS, described as a complete suite of tools for developing, deploying, maintaining, and securing CICS Web applications.

Geared to extending CICS applications to the Web, it addresses application security, user access, file management, the limitations with 32KB COMMAREA, and restricted concurrent connections.

It provides flexibility in application development and maintenance, including separating corporate presentation Web elements from CICS application logic, merging of data from other sources within a single Web page, deploying CICS as a single server solution, and more efficient access to CICS from an application server environment.

For further information contact:
H&W Computer Systems, 6154 N Meeker Place, Suite 100, Boise, ID 83713-1533, USA.
Tel: (208) 377 0336.
URL: http://www.hwcs.com.

* * *

IBM has launched its MQSeries Integrator Agent for CICS Transaction Server, providing application integration on the mainframe with CICS and IMS applications. The software enables functional migration from the existing Message Driven processor (Mdp) product originally available from Early, Cloud & Company.

It consists of two components: a build-time component runs on Windows NT and uses tools that look and feel similar to those of MQSeries Integrator, and a run-time component that runs under CICS TS for OS/390 V1R3 as a CICS application on an OS/390 server.

The run-time bit uses CICS Business Transaction Services to manage the interrelationship, commit scope, recovery, and restart of the actions that make up a business transaction.

Together, they enable the construction and execution of adapters to process requests from controlling applications for business transactions running on CICS and IMS host systems.

Target IMS and CICS applications can be driven via 3270 data streams. CICS applications can also be driven through a Distributed Program Link, while MQSeries-enabled applications are accessed through MQSeries. There are server adapter programs that handle all three classes of application.

Separately, IBM is offering a 16% discount on the one-time charge for CICS Performance Analyzer for OS/390 if it is ordered before 14 December. This offer is available only in the Americas.

For further information contact your local IBM representative.
URL: http://www.ibm.com/software.

* * *