



IBM Software Group

Common Problems using the z/OS CommServer IP CICS Sockets Interface

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Problems Caused by Incorrectly Linked or Written Applications

Overview

CICS Socket Components

- The stub program **EZACICAL** is link-edited into each application program that uses the EZASOKET API calls supplied by the z/OS CommServer IP CICS sockets Interface. It processes socket function requests issued by the calling application program and causes CICS to pass control to the TRUE (EZACIC01), via CICS DFHERM. The **EZACICAL** stub is required to insure that user applications are not issuing socket function calls while running under the CICS QR TCB (dispatcher). EZACIC07 is the stub for the CICS C sockets API, EZACIC17 is the CICS C Socket Reentrant version.
- Task Related User Exits (TRUE) are provided by CICS to enable transactions to have access to resources not supported by CICS, such as DB2 and TCPIP sockets. The TCP/IP CICS Socket's TRUE enables programs to pass calls to the subtask (EZACIC03) which then passes the call to USS (Unix System Services). EZACIC01 is the module name for the TCPIP CICS SOCKET TRUE.
- The subtask (EZACIC03) passes calls from the TRUE to USS via a socket transform layer and back to the TRUE. EZACIC03 is the MVS CICS sockets subtask module. The NTASKS parm in the ezaconfig file represents the number of reusable MVS subtasks that will be used to interface with the TRUE & USS.

Overview

Module EZACIC01

TRUE - Task Related User Exit

- When the CICS Resource Manager Interface (DFHERM) invokes the TRUE, the TRUE determines whether it was invoked for an application socket call, CICS syncpoint or task termination and takes the appropriate action.
- When a CICS application task issues its first Sockets call, the TRUE either picks an available subtask from a pool of unused reusable subtasks or creates a new subtask via an ATTACH call. At task termination, the TRUE either marks the subtask as available to be reused or deletes it via a DETACH call. The TRUE and the subtask communicate with each other via the Task Interface Element (TIE). They signal each other by posting ECBs in the TIE.

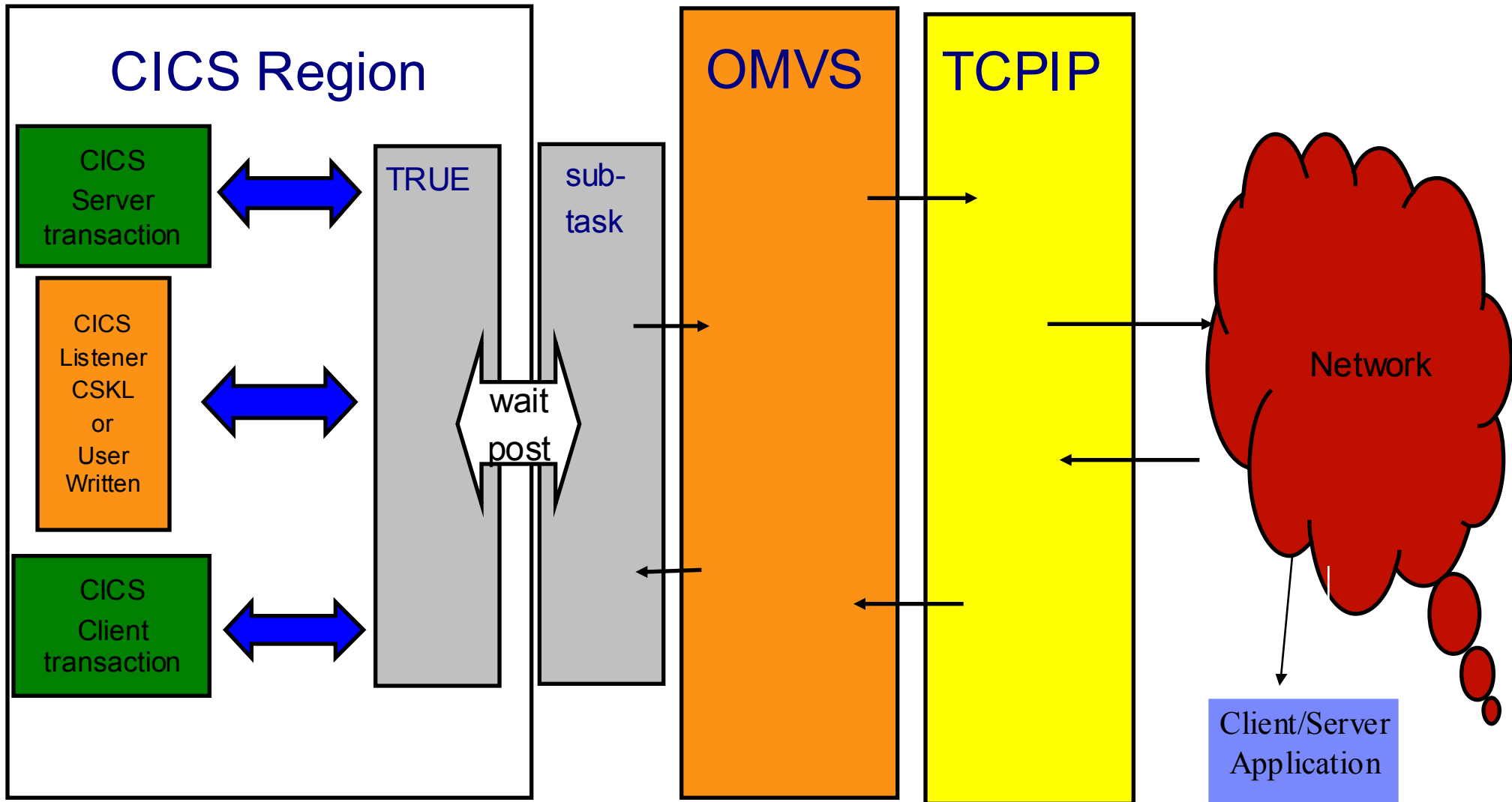
Overview

Module EZACIC03

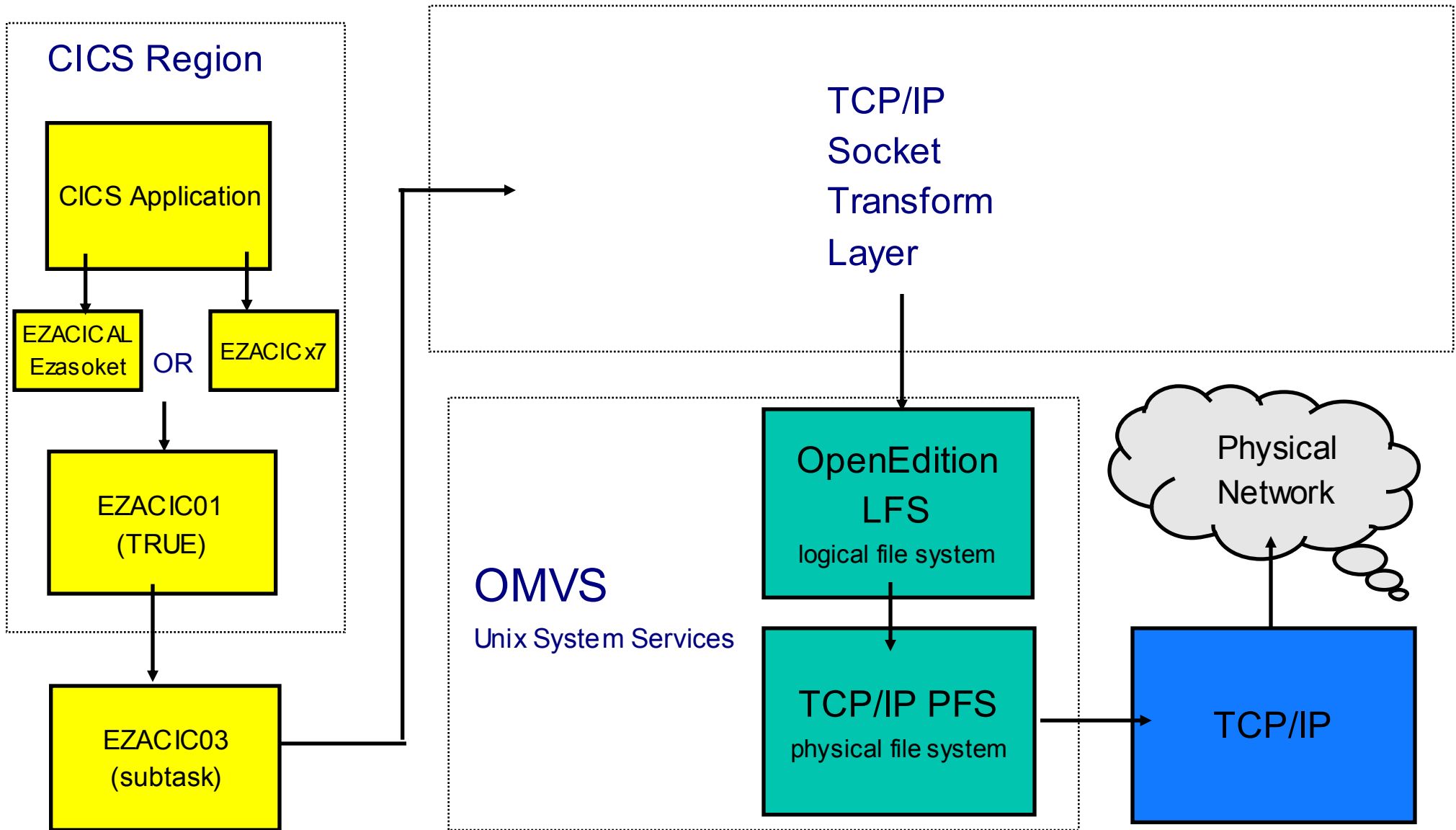
CICS Socket Interface SubTask

- Calls to the TCP/IP socket interface interface were not intended to be issued directly from the main CICS TCB(QR Task). This has the potential of placing the main CICS TCB in an external wait. This would basically Hang the entire CICS region from doing other work. Therefore, all applications using the TCP/IP supplied CICS Sockets Interface must run under the EZACIC03 subtasks. There is one re-entrant subtask for each CICS task that is using the sockets interface. The TRUE and subtask communicate with each other via the Task Interface Element (TIE). They signal each other by posting ECBs in the TIE.

Overview *CICS Servers*



Socket Call flows



Module Flows

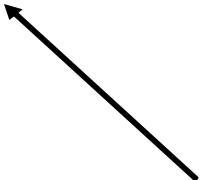
CICS Sockets Call Flow

- The application program calls EZACICAL stub via either a 'CALL EZACICAL' API call or a CALL 'EZASOKET' API call.
- EZACICAL or EZACICx7 invokes the TRUE (EZACIC01) indirectly via a DFHRMCAL macro call to DFHERM (CICS' external resource manager).
- EZACIC01 validates the call, transforms the application program's parameter list, posts the subtask's ECB, and waits for the subtask to post the call complete.
- The subtask, EZACIC03, wakes up and passes the call to the appropriate TCP/IP socket interface to invoke USS.
- Upon return from USS, EZACIC03 posts the TRUE's ECB. The TRUE wakes up and returns back to DFHERM which returns back to EZACICAL/EZACICx7 which returns back to the application program.

Application linked to NOT include EZACICAL

Using the output from DFHPD630 'pg=3'

```
==PG: PTA SUMMARY FOR TRAN NUM : 00047, PTA ADDRESS : 20AEF2B8
LOG-LVL : 1          SYS-LVL : 0          TASK-LLE : 215AA120  PLCB : 21539C58
=PG: TASK LLE SUMMARY
LLE-ADDR  PROGRAM  PPTE-ADD
215AA120  PROG1A      218E81E8
=PG: TASK PLCB SUMMARY
PLCB-ADD PROGRAM  LOG-LVL LOAD  ENTRY  LENGTH CA-CURR  CLEN INVK-PRG STG EXIT-NME ENV  PPTE-ADD
21539C58 PROG1A  1 22623A10 A26278A0 008E80 00000000 0000 CICS  EXEC 218E5298
```

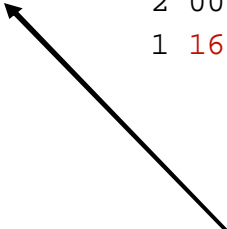


Note* The fact that you **DO NOT** see EZACIC01 in the calling sequence is an indication that EZACICAL has not been included in the Linkedit of the module!

Application linked to include EZACICAL

Using the output from DFHPD630 'pg=3'

```
==PG: PTA SUMMARY FOR TRAN NUM : 09627, PTA ADDRESS : 147F2858
LOG-LVL : 2          SYS-LVL : 0          TASK-LLE : 00000000  PLCB : 150A5878
=PG: TASK PLCB SUMMARY
PLCB-ADD PROGRAM  LOG-LVL LOAD      ENTRY      LENGTH CA-CURR  CLEN  INVK-PRG  STG  EXIT-NME  ENV  PPTE-ADD
150A5878 EZACIC01      2 00000000 00000000 000000 00000000 0000  PROGABCD          TRUE 1593DC90
150A4BA0 PROGABCD      1 160C21F0 960C2260 02EF08 00000000 0000  CICS              EXEC 1594D1E8
```



Note* The fact that you see EZACIC01 in the calling sequence is indication enough that EZACICAL is correctly linked!

Application linked to include EZACICAL

If the eyecatcher is not seen at the beginning of
the module

```
ASID(X'00DE') ADDRESS(160C21F0.) STORAGE -----
Command ==> l x+2ef08
160C21F0    C4C6C8E8    C9F6F2F0    58F0021C    58F0F0D0    | DFHYI620.0...00} |
160C2200    58F0F014    58F0F00C    58FF000C    07FF5CC6    | .00..00.....*F |
160C2210    C9D3D3C9    D55C0000    0000000C    00000000    | ILLIN*..... |
160C2220    160C55F0    00000000    250A0000    10FF0000    | ...0..... |
160C2230    375B0000    00000000    00000000    00080008    | .$. |
160C2240    23120000    0348000C    2B030000    00000000    | ..... |
160C2250    00000000    00000000    00000000    00030018    | ..... |
160C2260    47000000    47000002    90ECD00C    053047F0    | .....}....0 |
160C2270    30180014    CE030103    160C228C    C3C5C5E2    | .....CEES |
160C2280    E3C1D9E3    000058F0    306A050F    160E6E20    | TART...0.....>. |
160C2290.:160C229F. LENGTH(X'10')--All bytes contain X'00'
160C22A0    FFFF004C    00000000    00000000    00000000    | ...<..... |
160C22B0.:160C22BF. LENGTH(X'10')--All bytes contain X'00'
```

Application linked to include EZACICAL

back up from the end of the module until the EZACICAL
eyecatcher is seen

```
ASID(X'00DE') ADDRESS(160F0160.) STORAGE -----
Command ==>
160F0160 00000080 0000000A 00000100 0000000A | ..... |
160F0170 00000400 0000000A 00000800 0000000A | ..... |
160F0180.:160F01AF. LENGTH(X'30')--All bytes contain X'00'
160F01B0 47F0F01C C5E9C1C3 C9C3C1D3 F1F261F0 | .00.EZACICAL12/0 |
160F01C0 F161F9F9 C8E3C3D7 F5F0C140 47F0F042 | 1/99HTCP50A .00. |
160F01D0 F5F6F4F7 60C1F0F1 404DC35D 40C39697 | 5647-A01 (C) Cop |
160F01E0 994B40C9 C2D440C3 9699974B 40F1F9F9 | r. IBM Corp. 199 |
160F01F0 F40018F1 5810021C 581010D0 58101014 | 4..1.....}.... |
160F0200 5810100C 58101008 07000511 960F0210 | .....o... |
160F0210 00820000 00000101 C5E9C1C3 C9C3F0F1 | .b.....EZACIC01 |
160F0220 47F0F01C C5E9C1C3 C9C3F0F4 F0F361F1 | .00.EZACIC0403/1 |
160F0230 F261F0F2 E4D8F6F3 F9F8F840 47F0F046 | 2/02UQ63988 .00. |
160F0240 F5F6F4F7 60C1F0F1 404DC35D 40C39697 | 5647-A01 (C) Cop |
160F0250 994B40C9 C2D440C3 9699974B 40F1F9F9 | r. IBM Corp. 199 |
160F0260 F36BF1F9 F9F490EC D00C183F 58201000 | 3,1994..}..... |
160F0270 D50F2000 31B04780 305E4B10 31C09180 | N.....;...{j. |
```

Application linked to include EZACICAL

Looking for EZACICAL in LINKED LMOD

Command ==> **f ezacical**

Scroll ==> CSR

```
***** Top of Data *****
.Ø....µEZACIC02.....ñéEZASOKET..ñØ...EZACIC05...{...FDFHEAI0 ..(h...DFHEI1
Ø³.....
Ø..5695PMB01 ....±.º..
Ø+.Ø..569623400 ...."..Ø..569623400 ....±..Ø..569623400 .....Ø..569623400 ....|
Øjh.....9/23/04 10:55:26 MANUAL DFHAEI....±.UK13629....|.3/15/05 5:54:38 IVS559
.....(µ.....ñì...Ï...H...H....
DFHYA620ì0..ì00}ì00.ì00.ì.....*FILLIN*..å00..EZACIC02(U) 04/17/06 17.33 UK13629
.....Y.....d...æ...}...æ...ð...ö...È...¯.....&..â@..äà..ä8..àÐ..á.
.....&.....4.....ñ\
***** Bottom of Data *****
```

results in

Application linked to include EZACICAL

***** Top of Data *****

..^....ö.....å00.EZACICAL03/15/05HIP6170 å00ã5694-A01 (C) Copr. IBM Corp. 199

***** Bottom of Data *****

Problem #1

After Migrating to CICS TS 2.3 or CICS TS 3.1 from CICS TS 2.2 or earlier

```
EZY1352E SUBTASK ENDED UNEXPECTEDLY TRANSACTION= CSKL, TASKID= 28  
EZY1299E SELECT CALL FAILURE TRANSACTION= CSKL TASKID= 0000028L ERRNO= 10999  
EZY1282E 10999 ABEND - CICS TRUE ECB POSTED
```

```
BPXP010I THREAD 1606E40000000000, IN PROCESS 50331741, WAS TERMINATED BY  
SIGNAL SIGKILL, SENT FROM THREAD 160AB30000000000, IN PROCESS 50331848, UID 0.  
BPXP010I THREAD 1606960000000000, IN PROCESS 50331806, WAS TERMINATED BY  
SIGNAL SIGKILL, SENT FROM THREAD 160AB30000000000, IN PROCESS 50331848, UID 0.
```

additional symptom: CICS SL & SO tasks terminate with abendEC6

Problem #1 (Continued)

The message below from the CICS log can be used to identify the Child Server application (transaction ID) that was started right before the BPXP010I messages or AbendEC6.

```
EZY1325I 04/27/06 06:58:39 START SUCCESSFUL TRANID= xxxx PARTNER INET  
ADDR=xx.xx.xx.xx PORT= 2704
```


Solution to Problem #1

Re-link the application associated with the TranID to include EZACICAL

```
//LKED EXEC PGM=IEWL,REGION=&REG,
//          PARM=' &LNKPARM',COND=(5,LT,COB)
//SYSLIB DD DSN=&INDEX2..SDFHLOAD,DISP=SHR
//          DD DSN=SYS1.COBOL.V1R3M2.COB2CICS,DISP=SHR
//          DD DSN=COBOL.V1R3M2.COB2LIB,DISP=SHR
//          DD DSN=h1q.SEZATCP,DISP=SHR
//SYSLMOD DD DSN=CICRSR2.CICS410.PGMLIB,DISP=SHR
//SYSUT1 DD UNIT=&WORK,DCB=BLKSIZE=1024,
//          SPACE=(1024,(200,20))
//SYSPRINT DD SYSOUT=&OUTC
//*
//SYSLIN DD DSN=&&LOADSET,DISP=(OLD,DELETE)
//          DD DDNAME=SYSIN
// PEND
//APPLPROG EXEC DFHEITVL
//TRN.SYSIN DD DISP=SHR,DSN=CICRSR2.JCL.DATA(SISSRR1C)
//LKED.SYSIN DD *
//          INCLUDE SYSLIB(EZACICAL)
//          NAME xxxxxxxx(R)
/*
```

For additional Info refer to **Appendix A** in the z/OS Comm Svr: IP CICS Sockets Guide

Solution 2 to Problem #1

Apply the following fixes for z/OS V1R5 & above:

UNIX System Services APAR **OA12246**

This adds a new option to the BPX1MPC call that tells USS processing not to undub the child processes (attached subtask) .

z/OS CommServer IP APAR **PK08885**

Which updates EZBRESRV (resolver) to use this new option on the BPX1MPC call.

The underlying issue is that the socket application was linked incorrectly. These two fixes will correct the sigkil and the resulting abendEC6 that results. But an incorrectly Linked application will still cause CICS dispatcher issues if issuing EZASOKET calls under the QR task.

For instance blocking calls like RECV/READ/RECVFROM/READV and also select with timer will "Hang" a CICS region until the call is completed. Please note that a blocking READ socket call will wait externally indefinitely if the remote partner does not send data to satisfy this call. This will put the QR task in a wait and force other CICS work to HANG!

Problem #2

Application coded incorrectly

COBOL Applications that have the EZASOKET call coded without the ' ' around EZASOKET also will not link correctly even if EZACICAL is included. Situations like this will also require that module EZASOKET be placed in the CICS PPT as calls coded like this will cause EZASOKET to be resolved dynamically instead of statically.

```
CALL EZASOKET USING SOKET-TAKESOCKET SOCKID CLIENTID-LSTN ERRNO  
RETCODE.
```

****Notice the missing ' ' around EZASOKET**

Solution to Problem #2

Application coded incorrectly

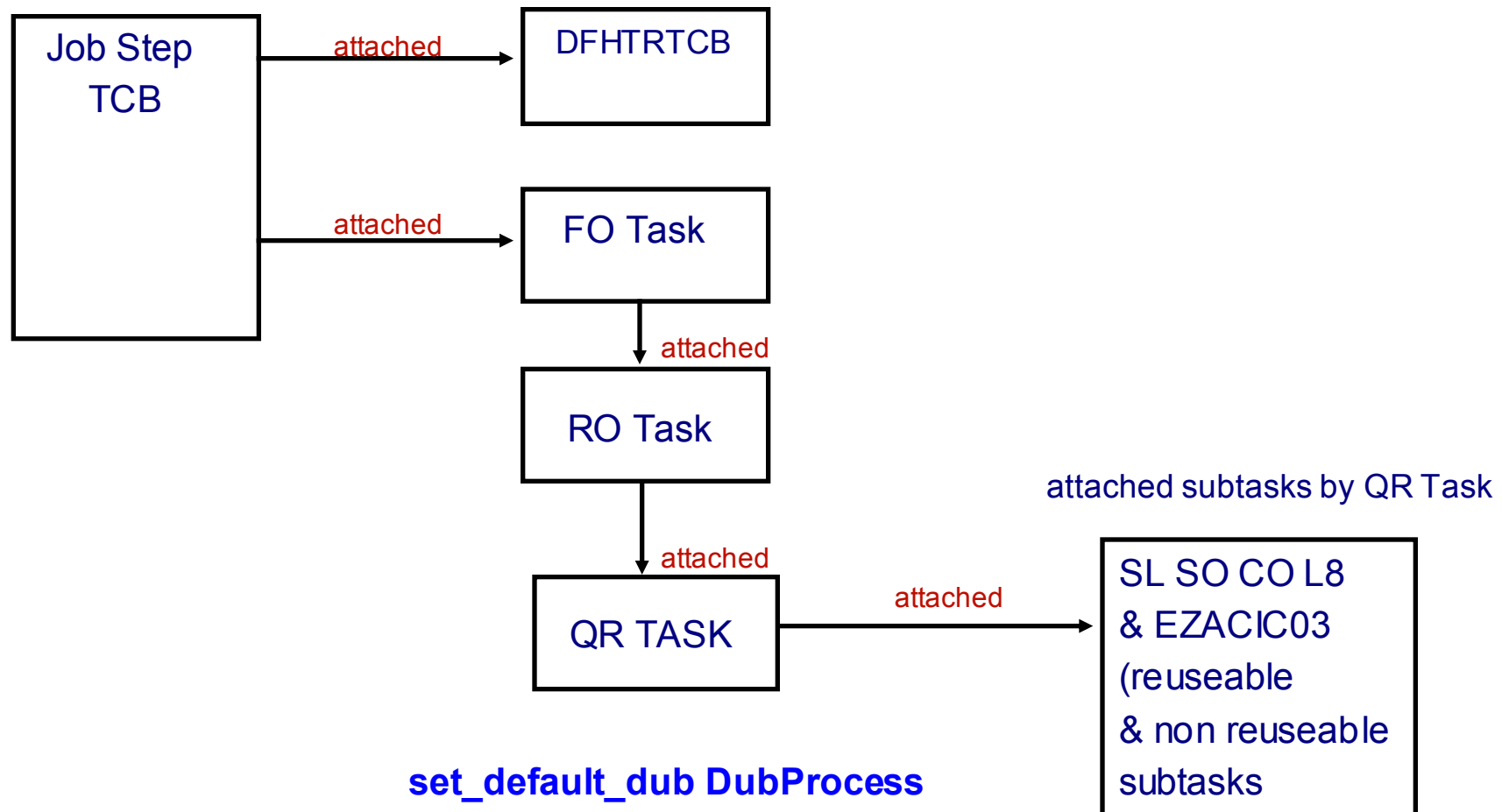
Correct all the EZASOKET calls in the application to look like :

**CALL 'EZASOKET' USING SOKET-TAKESOCKET SOCKID CLIENTID-LSTN ERRNO
RETCODE.**

and also remove EZASOKET from the CICS PPT, also insure that EZACICAL is included in the linkedit.

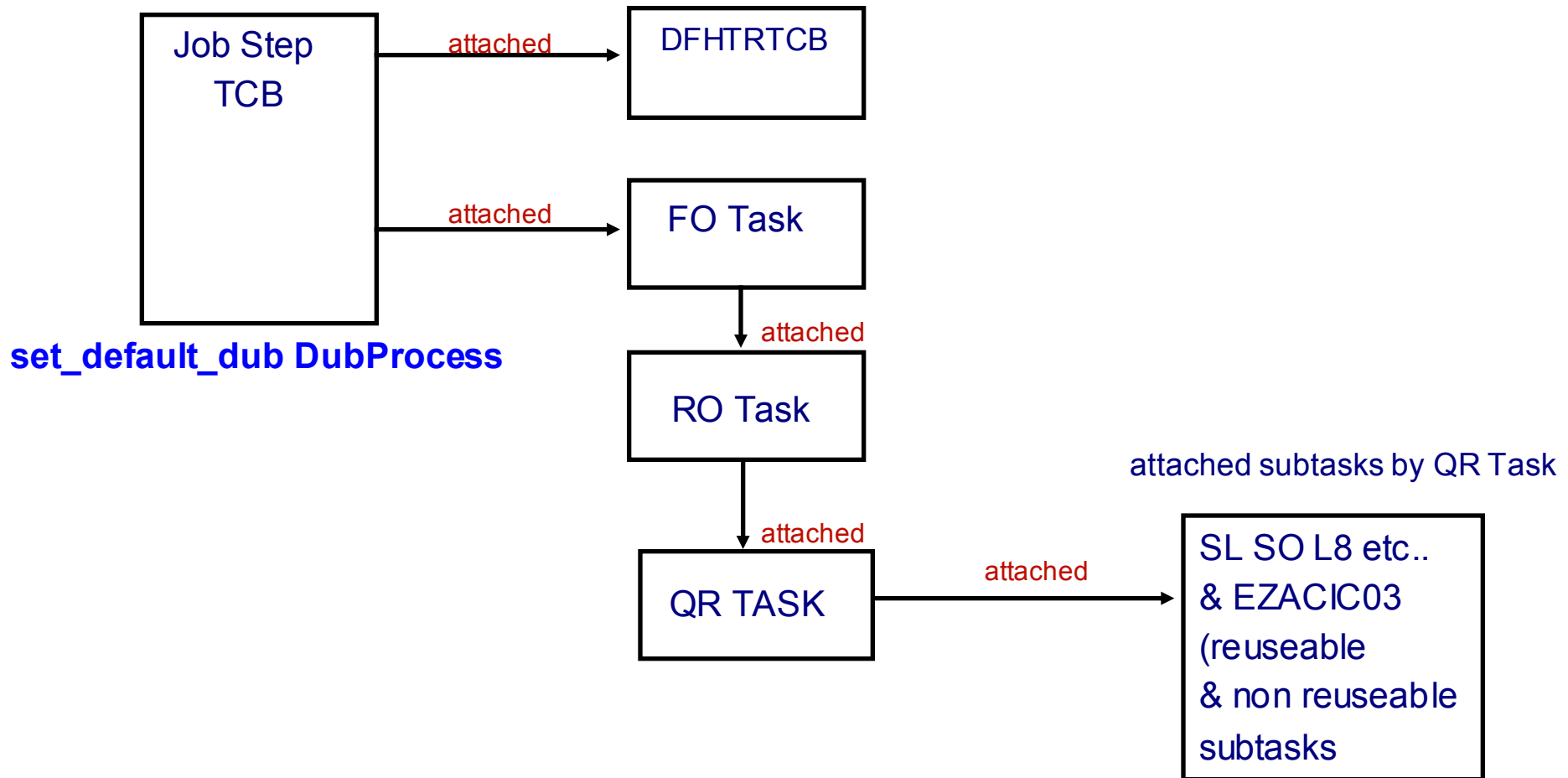
What Changed to expose this issue?

CICS TS 2.2 tasking structure & process dubbing overview:



What Changed to expose this issue?

CICS TS 2.3 tasking structure & process dubbing overview:



Child Server Performance Issues

Child Server slow to start communications with remote client

Delays will be seen between the EXEC CICS START/givesocket issued by the Listener and the Takesocket (first socket call) issued by the Server transaction.

Subtask Dispatching Priority

EZACICD Type=CICS definitions are for CICS and Subtask configuration options.

Setting the **DPRTY** to a non-zero value causes the MVS dispatching priority of the EZACIC03 subtasks to be that much lower than that of the CICS address space.

DPRTY should be set to **ZERO**

Use the EZAC transaction to display/modify definitions:

EZAC,DISplay,CICS

EZAC,ALTer,CICS

Client Server Takesocket failure

Problem

CICS Socket application TAKESOCKET request receives
Return code = -1 and Errno = 113 (EBADF)

Additional symptoms:

- EZY1303I mm/dd/yy hh:mm:ss EZACIC02
GIVESOCKET TIMEOUT
TRANS transactionid PARTNER INET
ADDR=inetaddress PORT=portnumber
- Occurs after maintenance or upgrade

Solution

The transaction that fails on the **TAKESOCKET** request (or mentioned in the **EZY1303I** message) is not correctly passing the full 8 bytes of the giver task name on the **TAKESOCKET** call.

When using the CICS Listener provided with the CICS Sockets Interface:

- A new connection request causes the listener to issue **EXEC CICS START** to start a child task using the received transaction id. It passes data that includes an 8 byte listener task name.
- The listener then issues a **GIVESOCKET** to transfer the socket to the child task
- The child task will retrieve the data passed by the listener via an **EXEC CICS RETRIEVE** and then issue a **TAKESOCKET** that includes the exact task name passed from the listener.
- If the listener task name does not match then the takesocket call will fail with **EBADF**

PQ95048 amended the listener to send a unique task name to each child task and to enforce the requirement that the task name on the takesocket match the giver's task name.

This problem could be caused by a C program using (Copy String) **STRCPY ()** or **STRNCPY()** to copy the task name. Using **MEMCPY** with length of 8 should be used instead.

SOCKAPI Trace Option

SOCKAPI Option

- SOCKAPI option was added to the COMP=SYSTCPIP CTRACE with [OS/390 2.10](#)
- Was created to provide traces for use by application developers.
- Creates a call Entry record containing input parameters and call Exit record containing output parameters

Example: the Takesocket problem

CICS Listener continually issues a SELECTEX waiting for a connection request or received data:

trace entry includes **TIE address**, **timeout value**, **masks** and selected **socket numbers (represented in bits)**

```

=====000F471D
A81G      SOCKAPI  60050052  11:16:05.770082  SELECTEX Entry
HASID....00C5    PASID....00C5    SASID..00C5    JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLEST..0015B2F4  DVCB.....00000056  KEY..8
ADSNAME...      SUBTASK..0044107L      TOKEN....7F3894C8  3EE09FB0
MAXSOC...:  1                               Addr..3995CC48
TIMEOUT...:  SECOND..30      MICRO SECOND..0   Addr..3995C680
RSNDMSK...:                               Addr..39953008
SOCKET NO.  READ SOCKET MASK (INPUT)
(Decimal)   (Binary)
  31      0   00000000 00000000 00000000 00000001
SELECTED SOCKETS:
  0
WSNDMSK...:                               Addr..39953018
SOCKET NO.  WRITE SOCKET MASK (INPUT)
(Decimal)   (Binary)
  31      0   00000000 00000000 00000000 00000000
ESNDMSK...:                               Addr..39953028
SOCKET NO.  EXCEPTION SOCKET MASK (INPUT)
(Decimal)   (Binary)
  31      0   00000000 00000000 00000000 00000000
SELECB...:  00000000x                       Addr..00068434
=====000F4ED8
    
```



Selectex Completes

SELECTEX completes when a connection is received:

trace entry includes the **retcode** and the bit mask representing the **socket number in the mask**,

```

=====000F4ED8
A81G      SOCKAPI    60050054  11:16:06.123475  SELECTEX Exit
HASID....00C5      PASID... .00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....00000056  KEY..8
ADSNAME..          SUBTASK...0044107L          TOKEN....7F3894C8  3EE09FB0
MAXSOC...: 1                               Addr..3995CC48
TIMEOUT...: SECOND..30      MICRO SECOND..0    Addr..3995C680
RRETMSK...:                               Addr..39953038
SOCKET NO.      READ SOCKET MASK (OUTPUT)
(Decimal)      (Binary)
  31      0      00000000 00000000 00000000 00000001
SELECTED SOCKETS:
  0
WRETMSK...:                               Addr..39953048
SOCKET NO.      WRITE SOCKET MASK (OUTPUT)
(Decimal)      (Binary)
  31      0      00000000 00000000 00000000 00000000
ERETMSK...:                               Addr..39953058
SOCKET NO.      EXCEPTION SOCKET MASK (OUTPUT)
(Decimal)      (Binary)
  31      0      00000000 00000000 00000000 00000000
SELECB...: 0087E258x                               Addr..00068434
RETCODE...: 1 (NUMBER OF SOCKETS READY)           Addr..3995C644
=====000F5A4A

```


Listener Accepts new Connection

Listener issues ACCEPT for the new connection:

trace entries include the **remote port and ip address** and the **new socket number**

```

=====000F5A4A
A81G      SOCKAPI  60050009  11:16:06.123595  ACCEPT Entry
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....00000056  KEY..8
ADSNAME..          SUBTASK..0044107L          TOKEN....7F3894C8  3EE09FB0
LOCAL  PORT..13016      IPADDR.. 0.0.0.0
REMOTE PORT..0          IPADDR.. 0.0.0.0
SOCKET...: 0
                                           Addr..3995C688
=====000F5A4B
A81G      SOCKAPI  6005000A  11:16:06.123665  ACCEPT Exit
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....00000056  KEY..8
ADSNAME..          SUBTASK..0044107L          TOKEN....7F3894C8  3EE09FB0
LOCAL  PORT..13016      IPADDR.. 0.0.0.0
REMOTE PORT..2877      IPADDR..9.9.9.9
SOCKET...: 0
                                           Addr..3995C688
NAME.....:
                                           Addr..3995C648
PORT.... 2877          IPADDR.... 9.9.9.9
FAMILY.. 2 (AF_INET)   RESERVED.. 00000000000000000x
RETCODE...: 1 (NEW SOCKET DESCRIPTOR)
                                           Addr..3995C644
=====000F5A52

```

Listener Issues Selectex on read, waiting for data or new connection

Selects on both sockets 0 and 1

```

A81G      SOCKAPI  60050052  11:16:06.123753  SELECTEX Entry
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....00000056  KEY..8
ADSNAME..          SUBTASK..0044107L          TOKEN....7F3894C8  3EE09FB0
MAXSOC...:  2                      Addr..3995CC48
TIMEOUT...:  SECOND..30      MICRO SECOND..0    Addr..3995C680
RSNDMSK...:                      Addr..39953008
SOCKET NO.      READ SOCKET MASK (INPUT)
(Decimal)      (Binary)
  31      0      00000000 00000000 00000000 00000011
SELECTED SOCKETS:
  0,      1
WSNDMSK...:                      Addr..39953018
SOCKET NO.      WRITE SOCKET MASK (INPUT)
(Decimal)      (Binary)
  31      0      00000000 00000000 00000000 00000000
ESNDMSK...:                      Addr..39953028
SOCKET NO.      EXCEPTION SOCKET MASK (INPUT)
(Decimal)      (Binary)
  31      0      00000000 00000000 00000000 00000000
SELECB...:  00000000x                      Addr..00068434

```

Listener Issues Selectex on read, waiting for data or new connection

Selectex completes for socket 1

```

=====000F5A53
A81G      SOCKAPI   60050054  11:16:06.123938  SELECTEX Exit
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....00000056  KEY..8
ADSNAME..          SUBTASK..0044107L          TOKEN....7F3894C8  3EE09FB0
MAXSOC...:  2                               Addr..3995CC48
TIMEOUT...:  SECOND..30      MICRO SECOND..0      Addr..3995C680
RRETMSK...:                               Addr..39953038
SOCKET NO.      READ SOCKET MASK (OUTPUT)
(Decimal)      (Binary)
  31      0      00000000 00000000 00000000  00000010
SELECTED SOCKETS:
  1
WRETMSK...:                               Addr..39953048
SOCKET NO.      WRITE SOCKET MASK (OUTPUT)
(Decimal)      (Binary)
  31      0      00000000 00000000 00000000 00000000
ERETMSK...:                               Addr..39953058
SOCKET NO.      EXCEPTION SOCKET MASK (OUTPUT)
(Decimal)      (Binary)
  31      0      00000000 00000000 00000000 00000000
SELECB...:  0087E258x                               Addr..00068434
RETCODE...:  1 (NUMBER OF SOCKETS READY)                               Addr..3995C644

```

Listener receives data on new connection

trace entries includes the **number of bytes requested** and **bytes received** and **copy of data(transaction id)**

```

=====000F5A7B
A81G      SOCKAPI    60050048  11:16:06.124021  RECV Entry
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....00000056  KEY..8
ADSNAME..          SUBTASK..0044107L          TOKEN....7F3894C8  3EE09FB0
LOCAL  PORT..13016  IPADDR.. 10.10.10.10
REMOTE PORT..2877  IPADDR.. 9.9.9.9
SOCKET...: 1
NBYTE.....: 50
BUF.....: (NO DATA)
FLAGS....: 0 (NONE)
=====000F5A7E
A81G      SOCKAPI    60050049  11:16:06.124066  RECV Exit
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....00000056  KEY..8
ADSNAME..          SUBTASK..0044107L          TOKEN....7F3894C8  3EE09FB0
LOCAL  PORT..13016  IPADDR.. 10.10.10.10
REMOTE PORT..2877  IPADDR.. 9.9.9.9
SOCKET...: 1
NBYTE....: 50
BUF.....:
+0000  50494950  20000000  00000000  00000000  | &.&..... | PIIP in ASCII
+0010  00000000  00000000  00000000  00000000  | ..... |
+0020  00000000  00000000  00000000  00000000  | ..... |
+0030  00000000  00000000  00000000  00000000  | .. |
RETCODE...: 5 BYTES TRANSFERRED
Addr..399530F8
Addr..3995CC48
Addr..39953114
Addr..3995C4DC
Addr..399530F8
Addr..3995CC48
Addr..39953114
Addr..3995C644

```



Listener issues Givesocket for new child task

Listener issues EXEC CICS START to start a child task using the received transaction id. It passes information that includes the Listener task id on the EXEC START command. It then issues GIVESOCKET to pass the connection's socket to the child task.

trace entries include the **listener task id** that is passed on the EXEC CICS START to the child task and the **socket number**

```

=====000F5A8C
A81G      SOCKAPI      60050021  11:16:06.124450  GIVESOCKET Entry
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....00000056  KEY..8
ADSNAME..          SUBTASK..0044107L          TOKEN....7F3894C8  3EE09FB0
LOCAL  PORT..13016      IPADDR.. 10.10.10.10
REMOTE PORT..2877      IPADDR.. 9.9.9.9
SOCKET...: 1                      Addr..399530F8
CLIENT...: DOMAIN..2 (AF_INET)    Addr..3995C68C
NAME....          TASK...05A1F4F4 F1F0F7D3 (~44107L)
RESERVED..00000000 00000000 00000000 00000000 00000000x
=====000F5A8D
A81G      SOCKAPI      60050022  11:16:06.124489  GIVESOCKET Exit
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....00000056  KEY..8
ADSNAME..          SUBTASK..0044107L          TOKEN....7F3894C8  3EE09FB0
LOCAL  PORT..13016      IPADDR.. 10.10.10.10
REMOTE PORT..2877      IPADDR.. 9.9.9.9
SOCKET...: 1                      Addr..399530F8
RETCODE...: 0                      Addr..3995C644

```

Listener returns to SELECTEX loop

CICS Listener again issues a SELECTEX waiting for a connection request or received data:

```

=====000F5A93
A81G      SOCKAPI   60050052  11:16:06.125149  SELECTEX Entry
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....0089BE88  TIE.....0015B2DF  PLIST..0015B2F4  DUCB.....0000005C  KEY..8
ADSNAME..          SUBTASK..0044107L          TOKEN....7F3894C8 3EE09FB0
MAXSOC...: 2                               Addr..3995CC48
TIMEOUT...: SECOND..10      MICRO SECOND..0      Addr..3995C680
RSNDMSK...:                               Addr..39953008
SOCKET NO.  READ SOCKET MASK (INPUT)
(Decimal)   (Binary)
  31      0   00000000 00000000 00000000 00000001
SELECTED SOCKETS:
  0
WSNDMSK...:                               Addr..39953018
SOCKET NO.  WRITE SOCKET MASK (INPUT)
(Decimal)   (Binary)
  31      0   00000000 00000000 00000000 00000000
ESNDMSK...:                               Addr..39953028
SOCKET NO.  EXCEPTION SOCKET MASK (INPUT)
(Decimal)   (Binary)
  31      0   00000000 00000000 00000000 00000010
SELECTED SOCKETS:
  1
SELECB...: 00000000x                               Addr..00068434
=====000F5AA8

```

Child task starts

Child task retrieves the data passed on the EXEC START and issues a TAKESOCKET function which results in a default INITAPI.

trace entries include the **TIE address** and the **maximum # sockets** and the **child subtask id** of the client server that was just started

```

=====000F5AA8
A81G      SOCKAPI    60050023  11:16:06.125355  INITAPI Entry
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....00895D40  TIE.....0015BA0F  PLIST..0015BA24  DUCB.....00000056  KEY..8
ADSNAM...CICPGA21  SUBTASK..0052800S      TOKEN....00000000  36C109B0
MAXSOC...: 50                      Addr..0016E138
APITYPE...: 2                      Addr..0016E13A
IDENT....:  TCPNAME..TCPIP      ADSNAME....d..k4.      Addr..0006816C
SUBTASK...:  F0F0F5F2 F8F0F0E2 (0052800S)  Addr..37C3CB6A
=====000F5ABA
A81G      SOCKAPI    60050024  11:16:06.125409  INITAPI Exit
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....00895D40  TIE.....0015BA0F  PLIST..0015BA24  DUCB.....00000056  KEY..8
ADSNAM...CICS  SUBTASK..0052800S      TOKEN....7F763210  36C109B0
MAXSNO...:  49                      Addr..37C3CB3C
RETCODE...:  0                      Addr..0015B994
=====000F5ABE

```

Child task issues Takesocket

Child task issues a Takesocket passing the listener task id:

trace entries include the **Listener task id passed by child task** and the **Errno** and the **return code**

```

=====000F5ABE
A81G      SOCKAPI    6005002F  11:16:06.125467  TAKESOCKET Entry
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....00895D40  TIE.....0015BA0F  PLIST..0015BA24  DUCB.....00000056  KEY..8
ADSNAME..CICPGA21  SUBTASK..0052800S      TOKEN....7F763210  36C109B0
CLIENT...:  DOMAIN..2 (AF_INET)                      Addr..37C34708
          NAME....CICS      TASK...0540F4F4 F1F0F7D3 (. 44107L)
          RESERVED..40404040 40404040 40404040 40404040 40404040x
SOCRECV...: 1                      Addr..0015BAA0
=====000F5ABF
A81G      SOCKAPI    60050030  11:16:06.125487  TAKESOCKET Exit
HASID....00C5      PASID....00C5      SASID..00C5      JOBNAME..CICS
TCB.....00895D40  TIE.....0015BA0F  PLIST..0015BA24  DUCB.....00000056  KEY..8
ADSNAME..CICS      SUBTASK..0052800S      TOKEN....7F763210  36C109B0
ERRNO.....: 113 (EBADF)                      Addr..37C347A0
RETCODE...: -1                                Addr..37C347A4
=====000F5AC6

```

Notice that the task id passed on Takesocket does not exactly match the task id used by the listener on the Givesocket which was **05A1F4F4 F1F0F7D3**. This mismatch caused the Takesocket to return with the -1 Return code and errno 113 (EBADF)

For more information on SOCKAPI

- z/OS Communications Server IP Diagnosis Guide
 - some examples of trace records
 - how to obtain the SOCKAPI trace
 - how to format the SOCKAPI trace

If you think the problem is a defect

For defect analysis of most problems with the CICS Sockets Interface the following documentation should be collected:

- CTRACE for COMP=SYSTCPIP and OPTIONS=(SOCKET,PFS,SOCKAPI,ENGINE,TCP) filtered
- on the CICS region jobname
- Dump of CICS region and TCPIP address space

Other documentation that may be needed:

- CICS AUX trace
- Packet trace (Ctrace for COMP=SYSTCPDA)
- OMVS CTRACE OPTIONS=ALL and dump that includes OMVS and it's dataspace

See Informational apar II12014 for instructions on taking a packet trace or TCPIP ctrace and II12030 for sending in the documentation to IBM z/OS Communications Server Support

Additional WebSphere Product Resources

- Discover the latest trends in WebSphere Technology and implementation, participate in technically-focused briefings, webcasts and podcasts at:
www.ibm.com/developerworks/websphere/community/
- Learn about other upcoming webcasts, conferences and events:
www.ibm.com/software/websphere/events_1.html
- Join the Global WebSphere User Group Community: www.websphere.org
- Access key product show-me demos and tutorials by visiting IBM Education Assistant: www.ibm.com/software/info/education/assistant
- Learn about the Electronic Service Request (ESR) tool for submitting problems electronically:
www.ibm.com/software/support/viewlet/ESR_Overview_viewlet_swf.html
- Sign up to receive weekly technical My support emails:
www.ibm.com/software/support/einfo.html