EDITRAN/IP 5.2

TCP/IP. Technical documentation
CICS
Installation and User Manual

julio de 2019
1. REQUIREMENTS.

The definitions corresponding to the TCPIP version V3R2 and EDITRAN 4.1 have been followed for the installation. The minimum requirements are:

OS/390 R3 or OS/390 V2R4
TCP/IP Version 3 Release 2 requires CICS/ESA Version 3.3 or later (preferable 4.1).
TCP/IP for MVS Version 3 Release 2 or higher.
MVS/ESA Version 4.3 or higher.
In TCP/IP 3.2 (for OS/390 2.3 and 2.4), make sure you have the “Release 32C”, TCP/IP 3.2 for MVS with the “Enhancements Kit”, FMID JTCP32C.

EDITRAN has used in the programming the Sockets Extended API form (COBOL, PL/I, Assembler Language).

Note: Some of the security features require CICS/ESA 4.1 or higher.

CICS (started task name) and the default group to which it belongs, the OMVS segment, must be defined.

DEFINE USER CICSSITD OMVS(UID(0) HOME('/'))
DEFINE GROUP STCUSR OMVS(GID(4))

Documentation on ERRNO, RETCODE and error messages in the TCPCICS, provided by the macros used for EXTENDED SOCKET is available in Appendix C of the IBM TCP/IP for MVS manual. CICS TCP/IP Socket Interface Guide and Reference. Document Number SC31-7131-03. Program number 5655 HAL. File Number S370/4300/30xx-50. See also Document Number: SC31-8518-00. If the corresponding errno does not appear, the error may be OS390 V2R5 OPEN EDITION, so that it comes in F1AF9000 IP Planning and Migration Guide.

EDITRAN can work simultaneously with several connection types (EDITRAN/PR and TCP/IP). If a transmission session is defined with tcp connection type, the node must have its tcp session. IP connections on the host go through the OSA defined in the TCP stack.

Before installing EDITRAN, the sockets for CICS must be installed.

1.1. Knowledge of the ip connectivity.

Contracting EDITRAN TCP/IP (like any other communications product), does not ensure the EDITRAN's connectivity between nodes. To connect with EDITRAN TCP/IP it is necessary:

The node must have EDITRAN TCP/IP.

The ip connectivity (not to be confused with EDITRAN TCP/IP, which does not have any problem) is possible in the line used; that is, the partners of both nodes must “know” and agree on the type of line to use: the Internet, frame relay lines, private lines, within a network, etc.
1.2. Problems detected.

Some problems have been detected with Packet Shaper equipment from Packteer. This product is capable of recognizing traffic, prioritizing it by protocols, classifying it, qualifying ports that it can consider as dangerous, discarding packets in certain situations. The problems detected are that even sometimes the connection and transmission is achieved in one direction, but in the opposite direction, normally when the call is made by the node that this equipment has in its network, the connection reaches the node, the latter accepts it, but this acceptance does not reach the calling node (discarding that packet). To solve the problem, some entity has told us that an exception class was configured on this machine. This is a rule set before classifying the protocol. In short, certain ip addresses will be allowed.
2. OS390 V2R4. PROCEDURES AND FILES.

2.1. TCP OS390 V2R4 STARTUP PROCEDURE.

COMMAND INPUT ===> SCROLL ===> CSR
NP JOBNAME STEPNAME PROCS Mjobid owner C POS DP PGN REAL PAGING S
TCPIPROC TCPIPROC TCPIP STC00110 USERTCP NS 9B 0 5621 0.00 0.
BMCIDATR BMCIDATR BMCIDATR STC00127 BMCIDATR NS 8B 32 3579 0.00 0.

1 //TCPIPROC JOB MSGLEVEL=1
2 //STARTING EXEC TCPIPROC
3 XXTCPIP PROC MODULE='TCPIP',PARMS='NOSPFILE/CTRACE(CTIEZA00)' XX*
XX* TCP/IP for MVS
XX* 5655-HAL (C) Copyright IBM Corp. 1989, 1996.
XX* All rights reserved.
XX* US Government Users Restricted Rights -
XX* Use, duplication or disclosure restricted
XX* by GSA ADP Schedule Contract with IBM Corp.
XX* See IBM Copyright Instructions
XX*
XX* NOSPIE must be specified in the PARMS above so TCPIP can run
XX* authorized - APAR PN65950.
XX* Added new CTRACE() keyword to specify default Component
XX* Trace SYS1.PARMLIB member. See &PARMS definition above
XX* for CTRACE(CTIEZA00) specification.
XX*
4 XXTCPIP EXEC PGM=EZAINMAN,
XX* PARM='&MODULE,ERRFILE(SYSERR),HEAP(512),&PARMS',
XX* REGION=17M,TIME=1440
IEFC653I SUBSTITUTION JCL - PGM=EZAINMAN,PARM='TCPIP,ERRFILE(SYSERR),H
REGION=17M,TIME=1440
5 XXSTEPLIB DD DSN=TCPIP.DESA.SEZATCP,DISP=SHR
6 XXSYSMDUMP DD SYSOUT=*
7 XXSYSPRT DD SYSOUT=*,DCB=(RECFM=VB,LRECL=137,BLKSIZE=0)
8 XXSYSERR DD SYSOUT=*,DCB=(RECFM=VB,LRECL=137,BLKSIZE=0)
9 XXSYSERROR DD SYSOUT=*,DCB=(RECFM=VB,LRECL=137,BLKSIZE=0)
10 XXSYSDEBUG DD SYSOUT=*,DCB=(RECFM=VB,LRECL=137,BLKSIZ=0)
XX* SYSPRINT contains runtime diagnostics from TCPIP.
XX*
XX* The SYSPRINT, SYSERR, SYSERROR, and SYSDEBUG DDs can specify
XX* a dataset name or SYSOUT. All of these DDs support the use
XX* of alternate data sets, which are specified by replacing the
XX* DD name prefix SYS with SY1, SY2, or SY3.
XX* Output will cycle from the primary to the alternate data sets
XX* and around again as each data set fills.
XX*
XX* SYSDEBUG receives output that is generated when the TRACE
XX* parameter is specified in the PROFILE data set.
XX*
XX*  TNDBCSXL contains binary DBCS translation table codefiles
XX*  used by TELNET DBCS Transform mode.
XX*  
XX*  TNDBCSXL DD DSN=TCP/IP.SEZAXLD2,DISP=SHR
XX*  
XX*  TNDBCER receives debug output from TELNET DBCS Transform
XX*  mode, when TRACE TELNET is specified in the PROFILE data set
XX*  
XX*  TNDBCER DD SYSOUT=* 
XX*  
XX*  The data set containing the configuration parameters for
XX*  TCPIP can be explicitly allocated using the PROFILE DD
XX*  statement. If the PROFILE DD statement is not present, a
XX*  hierarchical name search and dynamic allocation will be
XX*  performed. Please see "Understanding TCP/IP Data Set Names
XX*  in the Customization and Administration Guide for more
XX*  information. The data set name on the PROFILE DD statement
XX*  can be any sequential data set or a member of
XX*  partitioned data set (PDS).
XX*  
11  PROFILE  DD DSN=TCP/IP.DESA.TCPPARMS(PROFILE),DISP=SHR
XX*  
XX*  SYSTCPD explicitly identifies which data set is to be
XX*  used to obtain the parameters defined by TCPIP.DATA.
XX*  The SYSTCPD DD statement should be placed in the TSO logon
XX*  procedure or in the JCL of any client or server executed
XX*  as a background task. The data set can be any sequential
XX*  data set or a member of a partitioned data set (PDS).
XX*  
XX*  For more information please see "Understanding TCP/IP Data
XX*  Set Names" in the Customization and Administration Guide.
XX*  
12  SYSTCPD  DD DSN=TCP/IP.DESA.TCPPARMS(TCPDATA),DISP=SHR
2.2. FILE PROFILE OS390-V2R4 TCPIP.DESA.TCPPARMS(PROFILE)

; PROFILE.TCPIP
ACBPOOLSIZE 1000
ADDRESSTRANSLATIONPOOLSIZE 1500
CCBPOOLSIZE 150

DATABASEPOOLSIZE 160 65536

ENVELOPEPOOLSIZE 750
IPROUTEPOOLSIZE 300
LARGEENVELOPEPOOLSIZE 200 32768

RCBPOOLSIZE 50
SCBPOOLSIZE 256
SKCBPOOLSIZE 256

SMBUFFERPPOOLSIZE 1200
TCBPPOOLSIZE 256
TINYTEMBUFFERPPOOLSIZE 500

INFORM
PDTSCO2 PDTSCO5
ENDINFORM

KEEPALIVEOPTIONS
INTERVAL 2
ENDKEEPALIVEOPTIONS

OBEY
SISTEMA NMD
PDTSCO2 PDTSCO5
ENDOBEY

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SYSCONTACT
DEPARTAMENTO COMUNICACIONES
ENDSYSCONTACT

SYSLOCATION
ENTIDAD PILOTO
ENDSYSLOCATION

DATASETPREFIX TCPIP.DESA

INTERNALCLIENTPARMS
PORT 23
INACTIVE 3600 ; 1 hora timeout
TIMEMARK 600
SCANINTERVAL 120
SMFINIT 200 ; SMF Logging del Telnet Server
SMFTERM 201 ; SMF Logging del Telnet Server
SMFEXIT ; llama a la exit TCPTNNSMF (pasa a SOLVE y graba en SMF)

ENDINTERNALCLIENTPARMS

SMFPARMS 003 004 005 LOADEXIT ; llama a TCPCNSMF exit (pasa y graba)

AUTOLOG
ENDAUTOLOG

PORT
23 TCP INTCLIENT ; TELNET SERVER

7777 TCP BCMIDATR ; CICS SOCKET (EDITRAN PORT) NON-MANDATORY

DEVICE OSA10 LCS 7000
LINK ETH10 ETHERNET 0 OSA10
DEVICE OSA11 LCS 7002
LINK ETH11 ETHERNET 1 OSA11
DEVICE OSA20 LCS 7500
LINK ETH20 ETHERNET 0 OSA20
DEVICE OSA21 LCS 7502
LINK ETH21 ETHERNET 1 OSA21

HOME
10.0.0.188 ETH10
10.1.1.188 ETH11
10.0.0.186 ETH20
10.1.1.186 ETH21
GATEWAY
; Network First Hop Link Name Packet Size Subnet Mask Subnet Value
10 = ETH10 1492 0.255.0.0 0.0.0.0
10 10.0.0.10 ETH10 1492 0.255.0.0 0.12.0.0
200 10.0.0.10 ETH10 1492 0
DEFAULTNET 10.1.1.1 ETH11 1492 0

TRANSLATE
NOTRACE
SCREEN
ASSORTEDPARMS
NOFWD ; No IP forwarding
MESSAGECASE MIXED ; Mensajes de TCP/IP en mayusculas y minusculas
TCPIPSTATISTICS ; Manda a OUTPUT ciertas estadisticas
ENDASSORTEDPARMS
BEGINVTAM
ABENDRETRY
MSG07
3278-2 D4B32782
3279-2 D4B32782
3278-3 D4B32783
3279-3 D4B32783
3278-4 D4B32784
3279-4 D4B32784
3278-5 D4B32785
3279-5 D4B32785
3278-2-E NSX32702
3279-2-E NSX32702
3278-3-E NSX32703
3279-3-E NSX32703
3278-4-E NSX32704
3279-4-E NSX32704
3278-5-E NSX32705
3279-5-E NSX32705
LUGROUP INTERNAS
NUIH7001..NUIH7016
ENDLUGROUP
IPGROUP RECTORA
ENTIDAD
255.255.0.0:10.0.0.0
ENDIPGROUP
LUMAP INTERNAS RECTORA
ALLOWAPPL *
USSTCP USTCPINO RECTORA
USSTCP USTINDRA REDINDRA
USSTCP USTCPIN1
ENDVTAM

START OSA10
START OSA11
START OSA20
START OSA21
************************************************************** Bottom of Data **
2.3. FILE TCPDATA OS390-V2R4 TCPIP.DESA.TCPPARMS(TCPDATA)

In the hlq.TCPIP.DATA file no special input must be made, although the TCPIPJOBNAME parameter that has been entered in the TCP startup must be checked. This parameter is the name of the startup procedure of the TCP/IP MVS address space. The default value is TCPIP. This parameter is entered in the local environment menu of EDITRAN/P (TCPNAME parameter).

| TCPIPJOBNAME  | TCPIP |

The TCPIPJOBNAME parameter is the name of the startup procedure used to start up the TCP/IP MVS address space.

**************************************** Top of Data ****
; TCPIP.DATA
DATASETPREFIX TCPIP.DESA
HOSTNAME HOST03
MESSAGECASE MIXED
NSINTERADDR 10.0.0.7
NSPORTADDR 53
RESOLVEVIA UDP
RESOLVERTIMEOUT 10
RESOLVERUDPRETRIES 2
TCPIPJOBNAME TCPIPROC
**************************************** Bottom of Data
2.4. CICS OS390-V2R4 STARTUP.

1 //BMCIDATR JOB MSGLEVEL=1
2 //STARTING EXEC BMCIDATR
3 XXBMCIDATR PROC
4 XX*---------------------------------------------------------------
5 XX** RECOVER DB2 INDOUBT
6 XX*---------------------------------------------------------------
7 XXIEBEDIT EXEC PGM=IEBEDIT,COND=EVEN
8 XXSYSPRINT DD SYSDUMP*
9 XXSYSUT1 DD DISP=SHR, DSN=SYSB.PROCLIB(BMCIDRT0)
10 XXSYSUT2 DD SYSDUMP=(A,INTRDR), DCB=BLKSIZE=80
11 XXSYSIN DD DUMMY
12 XXBMCIDATR EXEC PGM=DFHSIP, REGION=110M, TIME=1440,
13 XX PARM='Si, END'
14 XXSYSIN DD DSN=BMCI.DAT4.JCL(DAT4D), DISP=SHR
15 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
16 XX DD DSN=SYSB.DSN310.SDSNLOAD, DISP=SHR
17 XX DD DSN=CEE.SCEERUN, DISP=SHR
18 XX DD DSN=PERSER.V3R0.TCELOAD, DISP=SHR
19 XX DD DSN=PERSER.V3R0.LMKLOAD, DISP=SHR
20 XX DD DSN=TCPPIP.DESA.SEZALINK, DISP=SHR
21 XXDFHRPL DD DSN=CICS410.DESA.DFHLOAD, DISP=SHR
22 XX DD DSN=CICS410.DESA.SDSNLOAD, DISP=SHR
23 XX DD DSN=SYSB.DSN310.SDSNLOAD, DISP=SHR
24 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
25 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
26 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
27 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
28 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
29 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
30 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
31 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
32 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
33 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
34 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
35 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
36 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
37 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
38 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
39 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
40 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
41 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
42 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
43 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
44 XX DD DSN=BMCI.DAT4.LOAD, DISP=SHR
45 XXIEFDRER DD DUMMY
46 XXDFHSNAP DD SYSDUMP=X, OUTLIM=0
47 XXDFHTEMP DD DSN=BMCI.DAT4.DFHTEMP, DISP=SHR
48 XXDFHINTRA DD DSN=BMCI.DAT4.DFHINTRA, DISP=SHR
49 XXDFHAUXT DD DSN=BMCI.DAT4.DFHAAUXT, DISP=SHR
50 XXDFHBUXT DD DSN=BMCI.DAT4.DFHBUUXT, DISP=SHR
51 XXDFJ01AD DD DSN=BMCI.DAT4.DFHI01AD, DISP=SHR
52 XXDFJ02AD DD DSN=BMCI.DAT4.DFHI02AD, DISP=SHR
53 XXDFJ01BD DD DSN=BMCI.DAT4.DFHI01BD, DISP=SHR
54 XXDFJ02BD DD DSN=BMCI.DAT4.DFHI02BD, DISP=SHR
55 XXDFJ01X DD DSN=BMCI.DAT4.DFHI01X, DISP=SHR
56 XXDFHRSD DD DSN=BMCI.DAT4.DFHRSD, DISP=SHR
57 XXDFHLCDD DD DSN=BMCI.DAT4.DFHLCDD, DISP=SHR
58 XXDFHGCD DD DSN=BMCI.DAT4.DFHGCDD, DISP=SHR
59 XXDFHDPMA DD DSN=BMCI.DAT4.DFHDPMA, DISP=SHR
60 XXDFHPMB DD DSN=BMCI.DAT4.DFHMPB, DISP=SHR
61 XXBATCHRDR DD SYSDUMP=(X, INTRDR)
62 XXDFHJOUT DD SYSDUMP=(X, INTRDR)
63 XXMMMSG DD SYSDUMP=X
64 XX*---------------------------------------------------------------
65 XXEDVINTR DD SYSDUMP=(A, INTRDR)
66 XXZTBLINTR DD SYSDUMP=(A, INTRDR)
The TCP messages are displayed in the TCPCICS:

EZY1261I 03/08/99 09:02:29 EZACIC03 ATTACH SUCCESSFUL, TCB ADDRESS=008A26F8 TERM= TRAN=ZTBA TASK=0000449
EZY1291I 03/08/99 09:02:29 LISTENER TRANSACTION= ZTBA TASKID= 0000449L ACCEPTING REQUESTS VIA PORT 7777

The SYSTCPD card points to the TCPDATA and it is essential if we want to make connections via DNS.
The LE370 libraries must be ahead of the TCP libraries.
3. **OS390 V2R5-V2R6. PROCEDURES AND FILES.**

3.1. **TCP OS390-V2R6.6 STARTUP PROCEDURE.**

000001 //TCPIP
PROC PARM='CTRACE(CTIEZB00)'

000003 // Communication Server/390
000004 // SMP/E Distribution Name: EZAAEB01G
000007 // * US Government Users Restricted Rights -
000009 // * Use, duplication or disclosure restricted
000010 // * by GSA ADP Schedule Contract with IBM Corp.
000011 // * See IBM Copyright Instructions
000014 //TCPIP EXEC PGM=EZBTCPIP,
PARN='*PARMS',
000015 // REGION=32M,TIME=1440
000019 // Communication Server/390
000020 // SMP/E Distribution Name: EZAEB01G
000022 //STEPLIB DD DSN=TCPIP.SEZALINK,DISP=SHR
000023 // DD DSN=TCPIP.SEZALNK2,DISP=SHR
000025 // SYSPRINT contains run-time diagnostics from TCPIP. It may be
000026 // a data set or SYSOUT.
000027 // ALGPRINT contains run-time diagnostics from TCPIP's Autolog
000028 // task. It should be SYSOUT.
000029 // SYSEXERROR contains error messages from TCPIP that occurred
000030 // while processing the PROFILE.
000032 //
000033 // SYSPRINT DD SYSOUT=*,DCB=(RECFM=FB,LRECL=137,BLKSIZE=137)
000034 // ALGPRINT DD SYSOUT=*,DCB=(RECFM=FB,LRECL=137,BLKSIZE=137)
000035 // SYSPRINT DD SYSOUT=*,DCB=(RECFM=FB,LRECL=137,BLKSIZE=137)
000036 // CEEWDMP DD SYSOUT=*,DCB=(RECFM=FB,LRECL=137,BLKSIZE=137)
000037 //
000038 // TNDBCSCN is the configuration data set for TELNET DBCS
000039 // transform mode.
000040 //
000041 //TNDBCSCN DD DSN=SW.TCPIP.SEZAPARM(TNDBCSCN),DISP=SHR
000043 // TNDBCSCXL contains binary DBCS translation table codefiles
000044 // used by TELNET DBCS Transform mode.
000045 //
000046 //TNDBCXS1 DD DSN=TCPIP.SEZAXLD2,DISP=SHR
000047 // TNDBCXS1 contains binary DBCS translation table codefiles
000048 // used by TELNET DBCS Transform mode, when TRACETELNET is specified in the PROFILE data set.
000050 //
000051 //TNDBCSCER DD SYSOUT=*
000052 // TCPIP reads the parameters from a data set with name
000053 // TCPIP.nodename.TCP or with name TCPIP.PROFILE.TCP.
000054 // See the chapter on "Configuring the TCPIP Address Space" in
000055 // the Configuration Guide for more information. A sample of
000056 // such a profile is included in member SAMOPROF of the
000057 // SEZAINST data set.
000058 //
000060 //PROFILE DD DISP=SHR,DSN=SW.TCPIP.SEZAPARM(CPUBPROF)
000062 // SYSTCPD explicitly identifies which data set is to be
000063 // used to obtain the parameters defined by TCPIP.DATA.
000064 // The SYSTCPD DD statement should be placed in the TSO logon
000065 // procedure or in the JCL of any client or server executed
000066 // as a background task. The data set can be any sequential
000067 // data set or a member of a partitioned data set (PDS).
000068 // For more information please see "Understanding TCP/IP Data
000069 // Set Names" in the Configuration Guide.
000070 //
000072 //SYSTCPD DD DSN=SW.TCPIP.SEZAPARM(TCPDATA),DISP=SHR

******** *************************** Bottom of Data ***************************
3.2. OS390 V2R5-6 PROFILE FILE.

BROWSE SW.TCPIP.SEZAPARM(CPUBPROF) - 01.12

Command ===> Scroll ===> CSR

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

; TCP/IP.PROFILE.TCPIP
; ===================
; COPYRIGHT = NONE.
;
; This is a sample configuration file for the TCPIP address space.
;
; NOTES:
;
; The device configuration statements MUST be changed to match your hardware and software configuration.
;
; The BEGINVTAM section must be changed to match your VTAM configuration.
;
; For more information about this file, see "Configuring the TCPIP Address Space" and "Configuring the Telnet Server" in the Configuration Guide.
;
; **************************************************************************

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;
; You can specify DATASETPREFIX in the PROFILE.TCPIP but it no longer has any affect on the TCP/IP stack.
;
; **************************************************************************

; Set Telnet time-out to 10 minutes.
;
TELENTPARMS
PORT 23
INACTIVE 600
TIMEMARK 600
SCANINTERVAL 120
SMFINIT STD
SMFTERM STD
WLMCLUSTERNAME TN3270E ENDWLMCLUSTERNAME
ENDETLENTPARMS
;
; **************************************************************************

; AUTOLOG the following servers.
;
AUTOLOG 5
; FTPD JOBNAME FTPD1 ; FTP Server
; FTPDB ; FTP Server de la CPU-B
; LP Sever ; LPD Server
; NAMERV ; Domain Name Server
; NCRROUTE ; NCFROUTE Server
; PORTMAP ; Portmap Server
; ROUTED ; RouteD Server
; RXSERVE ; Remote Execution Server
; SMTP ; SMTP Server
; OSNMPD ; SNMP Agent Server
; SNMPQ ; SNMP Client
; TCPIPXX25 ; X25 Server
; SAMSPROC ; SAMS VANTAGE server
ENDETLENTPARMS
- Reserve ports for the following servers.

**NOTES:**

- A port that is not reserved in this list can be used by any user.
- If you have TCP/IP hosts in your network that reserve ports in the range 1-1023 for privileged applications, you should reserve them here to prevent users from using them.
- The port values below are from RFC 1060, "Assigned Numbers."

<table>
<thead>
<tr>
<th>PORT</th>
<th>Protocol</th>
<th>SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>UDP</td>
<td>MISCERV</td>
</tr>
<tr>
<td>7</td>
<td>TCP</td>
<td>MISCERV</td>
</tr>
<tr>
<td>9</td>
<td>UDP</td>
<td>MISCERV</td>
</tr>
<tr>
<td>9</td>
<td>TCP</td>
<td>MISCERV</td>
</tr>
<tr>
<td>19</td>
<td>UDP</td>
<td>MISCERV</td>
</tr>
<tr>
<td>19</td>
<td>TCP</td>
<td>MISCERV</td>
</tr>
<tr>
<td>20</td>
<td>TCP</td>
<td>FTPDB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOAUTOLOG</td>
</tr>
<tr>
<td>21</td>
<td>TCP</td>
<td>FTPD1</td>
</tr>
<tr>
<td>23</td>
<td>TCP</td>
<td>INTCLIEN</td>
</tr>
<tr>
<td>25</td>
<td>TCP</td>
<td>SMTPB</td>
</tr>
<tr>
<td>53</td>
<td>TCP</td>
<td>NAMESRV</td>
</tr>
<tr>
<td>53</td>
<td>UDP</td>
<td>NAMESRV</td>
</tr>
<tr>
<td>111</td>
<td>TCP</td>
<td>PORTMAP</td>
</tr>
<tr>
<td>111</td>
<td>UDP</td>
<td>PORTMAP</td>
</tr>
<tr>
<td>135</td>
<td>UDP</td>
<td>LLBD</td>
</tr>
<tr>
<td>161</td>
<td>UDP</td>
<td>OSNMPD</td>
</tr>
<tr>
<td>162</td>
<td>UDP</td>
<td>SNMPQE</td>
</tr>
<tr>
<td>512</td>
<td>TCP</td>
<td>RXSERVER</td>
</tr>
<tr>
<td>514</td>
<td>TCP</td>
<td>RXSERVER</td>
</tr>
<tr>
<td>515</td>
<td>TCP</td>
<td>LPSERVE</td>
</tr>
<tr>
<td>520</td>
<td>UDP</td>
<td>ROUTED</td>
</tr>
<tr>
<td>580</td>
<td>UDP</td>
<td>NCFROUTE</td>
</tr>
<tr>
<td>750</td>
<td>TCP</td>
<td>MYSKERB</td>
</tr>
<tr>
<td>750</td>
<td>UDP</td>
<td>MYSKERB</td>
</tr>
<tr>
<td>751</td>
<td>TCP</td>
<td>ADM@SRV</td>
</tr>
<tr>
<td>751</td>
<td>UDP</td>
<td>ADM@SRV</td>
</tr>
<tr>
<td>777</td>
<td>UDP</td>
<td>SAMSFPROC</td>
</tr>
<tr>
<td>7777</td>
<td>TCP</td>
<td>CICSSITD</td>
</tr>
</tbody>
</table>

**KEEPALIVEOPTIONS**

**INTERVAL 2**

**ENDKEEPALIVEOPTIONS**

- Hardware definitions:

   - **NOTE:** To use these device and link statements, update the statements to reflect your installation configuration and remove the semicolon.

   - **DEVICE LOSAB4 osa2 with a Token-Ring and Ethernet adapter.**

   - **DEVICE LOSAB4 LCS 1002**

   - **LINK OSAB4TCP IBMTR 0 LOSAB4**

   - **LINK ETH1 ETHERNET 1 LCS1**

   - **DEVICE LCS2 is a 3172 Model 2 with a FDDI adapter.**

   - **DEVICE LCS2 LCS BEG**

   - **LINK FDDI1 FDDI 0 LCS2**

   - **SNALU0 is an SNA Link.**
;DEVICE SNALU0 SNAIUCV SNALINK LU000000 SNALINK
;LINK SNAI IUCV  1 SNALU0

; ----------------------------------------------------------------------
; HOME Internet (IP) addresses of each link in the host.
; NOTE: To use this home statement, update the ipaddress and linknames
; to reflect your installation configuration and remove the semicolon
;
HOME 192.168.172.088 OSAB4TCP

; ----------------------------------------------------------------------
; PRIMARYINTERFACE statement is used to specify which interface
; is the primary interface.
; If PRIMARYINTERFACE is not specified, then the first link in the HOME
; statement is the primary interface, as usual.
; NOTE: To use this primary statement, update the and linkname
; to reflect your installation configuration and remove the semicolon
;
PRIMARYINTERFACE OSAB4TCP

; ----------------------------------------------------------------------
; IP routing information for the host. All static IP routes should
; be added here.
; NOTE: To use this GATEWAY statement, update the addresses and links
; to reflect your installation configuration and remove the semicolon
;
GATEWAY
; Direct Routes - Routes that are directly connected to my interfaces.
; Network  First Hop  Link Name   Packet Size  Subnet Mask  Subnet Value
192.168.172 = OSAB4TCP 1500 0

; Indirect Routes - Routes that are reachable through routers on my
; network.
; Network  First Hop  Link Name   Packet Size  Subnet Mask  Subnet Value
; 193.12.2 130.50.10.1 TR1 2000 0
; 10.5.6.4 193.5.2.10 ETH1 1500 HOST

; Default Route - All packets to an unknown destination are routed
; through this route.
; Network  First Hop  Link Name   Packet Size  Subnet Mask  Subnet Value
DEFAULTNET 192.168.172.254 OSAB4TCP DEFAULTSIZE 0

; ----------------------------------------------------------------------
orouted Routing Information
; if you are using orouted, comment out the GATEWAY statement and
; update the BSDROUTINGFARMS statement to reflect your installation
; configuration and remove the semicolon
;
; Link    Maxmtu  Metric  Subnet Mask  Dest Addr
EDITRAN/IP 5.2

OS390 V2R5 - V2R6. PROCEDURES AND FILES.

BSDROUTINGPARMS false
; TR1 2000 0 255.255.255.0 0
; ETH1 1500 0 255.255.255.0 0
; FDDI1 DEFAULTSIZE 0 255.255.255.0 0
ENDBSDROUTINGPARMS

; Use TRANSLATE to specify the hardware address of a specific IP
; address. See the Customization and Administration Guide for more
; information.

TRANSLATE
; A null translate statement issues the warning message EZZ0323I

; Turn off all tracing. If tracing is to be used, change the following
; line. To trace the configuration component, for example, change
; the line to ITRACE ON CONFIG

ITRACE OFF

; The ASSORTEDPARMS NOFWD will prevent the forwarding of IP packets
; between different networks. If NOFWD is not specified, IP packets
; will be forwarded between networks when this host is a gateway.

ASSORTEDPARMS
NOFWD
ENDASSORTEDPARMS

ASSORTEDPARMS
NOFWD
ENDASSORTEDPARMS

; NOFWD issues the informational message EZZ0334I

BEGINVTAM
; Define logon mode tables to be the defaults shipped with the
; latest level of VTAM
TELNETDEVICE 3278-2-E T3270PC ; 24 line screen - default of NSX32702
TELNETDEVICE 3279-2-E NSX32702 ; 24 line screen - default of NSX32702
TELNETDEVICE 3278-3-E NSX32703 ; 32 line screen - default of NSX32702
TELNETDEVICE 3279-3-E NSX32704 ; 32 line screen - default of NSX32702
TELNETDEVICE 3278-4-E NSX32704 ; 48 line screen - default of NSX32702
TELNETDEVICE 3279-4-E NSX32704 ; 48 line screen - default of NSX32702
TELNETDEVICE 3278-5-E NSX32705 ; 132 column screen - default of NSX327
TELNETDEVICE 3279-5-E NSX32705 ; 132 column screen - default of NSX327
; Define the LUs to be used for general users.
DEFAULTLUS
TCP00001 TCP00002 TCP00003 TCP00004 TCP00005
TCP00006 TCP00007 TCP00008 TCP00009 TCP00010
ENDDEFAULTLUS
LUSESSIONPEND ; On termination of a Telnet server connection,
; the user will revert to the DEFAULTAPPL
DEFAULTAPPL TUBESB ; Set the default application for all Telnet
; sessions to allow CLSDST Pass
LINEMODEAPPL TSB ; Send all line-mode terminals directly to TSO.
ALLOWAPPL SAMON QSESSION ; SAMON appl does CLSDST Pass to next appl
ALLOWAPPL TSO* DISCONNECTABLE ; Allow all users access to TSO
; applications.
; TSO is multiple applications all beginning with TSO,
; so use the * to get them all. If a session is closed,
; disconnect the user rather than log off the user.
RESTRICTAPPL IMS ; Only 3 users can use IMS.
USER USER1 ; Allow user1 access.
; LU TCPIMS01 ; Assign USER1 LU TCPIMS01.
USER USER2 ; Allow user2 access from the default LU pool.
USER USER3 ; Allow user3 access from 3 Telnet sessions,
; each with a different reserved LU.
LU TCPIMS31 LU TCPIMS32 LU TCPIMS33
ALLOWAPPL * ; Allow all applications that have not been ; previously specified to be accessed.

; Map Telnet sessions from this node to display USSAPC screen.
; USSTAB USSAPC 130.50.10.1
; Map Telnet sessions from this link to display USSCBA screen.
; USSTCP USSNPAS2 OSAB4TCP

ENDVTAM

; ;----------------------------------------------------------------------
; ; Start all the defined devices.
; ; NOTE: To use these START statements, update the device name
; to reflect your installation configuration and remove the semicolon
;
; START LOSAB4
; START LCS2
; START SNALU0

The differences between OS390 V2R5 and V2R6 are in the subparameters of TCPCONFIG and UDPCONFIG:

<table>
<thead>
<tr>
<th>PARAMÉTRO OS390 V2R5</th>
<th>MINIMUM</th>
<th>MAXIMUM</th>
<th>DEFAULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tcp_send_buffer_size</td>
<td>256</td>
<td>256K</td>
<td>16384 (16K)</td>
</tr>
<tr>
<td>Tcp_receive_buffer_size</td>
<td>256</td>
<td>256K</td>
<td>16384 (16K)</td>
</tr>
<tr>
<td>Udp_send_buffer_size</td>
<td>1</td>
<td>65535</td>
<td>65535</td>
</tr>
<tr>
<td>Udp_receive_buffer_size</td>
<td>1</td>
<td>65535</td>
<td>65535</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PARAMÉTRO OS390 V2R6</th>
<th>MINIMUM</th>
<th>MAXIMUM</th>
<th>DEFAULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tcp_receive_buffer_size</td>
<td>256</td>
<td>tcp_max_receive_buffer_size</td>
<td>16384 (16K)</td>
</tr>
<tr>
<td>Tcp_max_receive_buffer_size</td>
<td>tcp_receive_buffer_size</td>
<td>512K</td>
<td>256K</td>
</tr>
<tr>
<td>Udp_send_buffer_size</td>
<td>1</td>
<td>65507</td>
<td>65507</td>
</tr>
<tr>
<td>Udp_receive_buffer_size</td>
<td>1</td>
<td>65507</td>
<td>65507</td>
</tr>
</tbody>
</table>

Starting with EDITRAN 5.1, it is possible to configure the sending and receiving buffers in the product panels.
### 3.3. TCPDATA OS390 V2R5-6 FILE.

**BROWSE SW.TCPIP.SEZAPARM(TCPDATAB) - 01.12**

*Command ===> Scroll ===>*

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

```pl
; ; Name of Data Set: TCPIP.DATA
; ; COPYRIGHT = NONE.
; ; This data, TCPIP.DATA, is used to specify configuration
; ; information required by TCP/IP client programs.
; ;
; ; Syntax Rules for the TCPIP.DATA configuration data set:
; ; (a) All characters to the right of and including a ; will be
; ; treated as a comment.
; ; (b) Blanks and <end-of-line> are used to delimit tokens.
; ; (c) The format for each configuration statement is:
; ;   <SystemName||':'> keyword value
; ; where <SystemName||':'> is an optional label that can be
; ; specified before a keyword; if present, then the keyword-
; ; value pair will only be recognized if the SystemName matches
; ; the node name of the system, as defined in the IEFSSNxx
; ; PARMLIB member. This optional label permits configuration
; ; information for multiple systems to be specified in a single
; ; TCPIP.DATA data set.
; ; NOTE: You should define the SystemName in the IEFSSNxx
; ; PARMLIB member to be the same as your JES2 or JES3
; ; node name. This is required for correct delivery of
; ; SMTP mail.
; ;
; ; TCPIPJOBNAME specifies the name of the started procedure that was
; ; used to start the TCPIP address space. TCPIP is the default.
; ;
; TCPIPUSERID TCPIPB
; TCPIPJOBNAME TCPIPB
; HOSTNAME specifies the TCP host name of this system. If not
; specified, the default HOSTNAME will be the node name specified
; in the IEFSSNxx PARMLIB member.
; For example, if this TCPIP.DATA data set is shared between 2
; systems, OURMVSNAME and YOURMVSNAME, then the following 2 lines
; will define the HOSTNAME correctly on each system.
; ;OURMVSNAME: HOSTNAME OURTCPNAME
;YOURMVSNAME: HOSTNAME YOURTCPNAME
; HOSTNAME OS390B
; DOMAINORIGIN specifies the domain origin that will be appended
; to host names passed to the resolver. If a host name contains
; any dots, then the DOMAINORIGIN will not be appended to the
; host name.
; DOMAINORIGIN TEL.INDRA.ES
; NSINTERADDR specifies the IP address of the name server.
; LOOPBACK (127.0.0.1) specifies your local name server. If a name
; server will not be used, then do not code an NSINTERADDR statement.
; (Comment out the NSINTERADDR line below). This will cause all names
; to be resolved via site table lookup.
```

NSINTERADDR  127.0.0.1
NSINTERADDR  172.29.2.41  (DNS SERVER)
NSINTERADDR  192.168.1.30  (DNS SERVER)

; NSINTERADDR specifies the foreign port of the name server.
; 53 is the default value.
;
NSPORTADDR 53
;
; RESOLVEVIA specifies how the resolver is to communicate with the
; name server. TCP indicates use of TCP virtual circuits. UDP
; indicates use of UDP datagrams. The default is UDP.
;
RESOLVEVIA TCP
;
; RESOLVERTIMEOUT specifies the time in seconds that the resolver
; will wait to complete an open to the name server (either UDP or TCP).
; The default is 30 seconds.
;
RESOLVERTIMEOUT 30
;
; RESOLVERUDPRETRIES specifies the number of times the resolver
; should try to connect to the name server when using UDP datagrams.
; The default is 1.
;
RESOLVERUDPRETRIES 1
;
; TRACE RESOLVER will cause a complete trace of all queries to and
; responses from the name server or site tables to be written to
; the user's console. This command is for debugging purposes only.
;
; TRACE RESOLVER
;
; You can specify DATASETPREFIX in the PROFILE.TCPIP and TCPIP.DATA
; data sets. The character string specified as a parameter on
; DATASETPREFIX takes precedence over both the distributed or modified
; data set prefix name as changed by the EZAPPRFX installation job.
; If this statement is used in a profile or configuration
; data set that is allocated to a client or a server, then
; that client or server dynamically allocates additional required data
; sets using the value specified for DATASETPREFIX as the data set name
; prefix. The DATASETPREFIX parameter can be up to 26 characters long
; and the parameter must NOT end with a period.
;
; For more information please see "Understanding TCP/IP Data Set
; Names" in the Customization and Administration Guide.
;
DATASETPREFIX TCPIP
;
; MESSAGECASE MIXED indicates to the FTP server, FTP client, TELNET
; client, and PING client that all messages should be displayed in
; mixed case. MESSAGECASE UPPER indicates to the FTP server, FTP
; client, TELNET client, and PING client that all messages should
; be displayed in uppercase. Mixed case inserts in messages will
; will not be uppercased.
; If MESSAGECASE is not specified, mixed case messages will be used.
;
; MESSAGECASE MIXED
; MESSAGECASE UPPER
;
; LOADDBCSTABLES indicates to the FTP server and FTP client which DBCS
; translation tables should be loaded at initialization time. Remove
; from the list any tables that are not required. If LOADDBCSTABLES is
; not specified, no DBCS tables will be loaded.
;
; LOADDBCSTABLES JIS78KJ JIS83KJ SJISKANJI EUCKANJI HANGEUL KSC5601
; LOADDBCSTABLES TCHINESE BIG5 SCHINESE
;***************************************************************************
;
End of file.

************* Bottom of Data *************
3.4. CICS OS390-V2R5-6 START-UP.

******************************************************************************
************** TOP OF DATA ***********************************************
1 //CICSSITD JOB (EXPL,EXA,1439,200),SISTEMAS,CLASS=G,TIME=1439,
 // MSGLEVEL=(1,1),USER=SITD,
 // MSGCLASS=H

//******************************************************************************
// C. I. C. S. D E PRUEBAS DEL SITO

//******************************************************************************
// SNCE - COBOL II AMODE(31)

//******************************************************************************
// EDIREAL - COBOL II AMODE(31)

//******************************************************************************
// EDITRAN - COBOL II AMODE(31)

//******************************************************************************
**************/

2 //CICSD EXEC PGM=DFHSIP,TIME=1439,REGION=32M,
 // PARM='SIT=SP,START=COLD'

//******************************************************************************
// STEPLIB  DD  DSN=CEE.SCEERUN,DISP=SHR

//******************************************************************************
// STEPLIB  DD  DSN=DB2.V3R1M0.SDSNLOAD,DISP=SHR

//******************************************************************************
XX       DD DSN=TCPIP.DESA.SEZALINK,DISP=SHR

//******************************************************************************
// LIBRERIAS DE MODULOS CARGABLES

//******************************************************************************
5 //DFHRPL DD  DSN=CEE.SCEECICS,DISP=SHR

//******************************************************************************
6 // DD  DSN=CEE.SCEERUN,DISP=SHR

//******************************************************************************
7 // DD  DSN=CICS410.SDFHLOAD.SITO,DISP=SHR

//******************************************************************************
8 // DD  DSN=CICS410.SDFHLOADX.SITO,DISP=SHR

//******************************************************************************
9 // DD  DSN=KI.SGDC.SSAASST.LOAD7003,DISP=SHR

//******************************************************************************
10 // DD  DSN=KI.SGDC.SSAASST.LOAD8000,DISP=SHR 3

//******************************************************************************
11 // DD  DSN=KI.SGDC.DNS.LOADV1R0,DISP=SHR 1

//******************************************************************************
12 // DD  DSN=KI.EDC.LOADINCI,DISP=SHR 1

//******************************************************************************
13 // DD  DSN=KI.EDGDC.ZTBP.LOAD,DISP=SHR 16

//******************************************************************************
14 // DD  DSN=KI.SGDC.SSAASST.LOADV1R0,DISP=SHR 16

//******************************************************************************
15 // DD  DSN=KI.EDGDC.ELOAD31,DISP=SHR 16

//******************************************************************************
16 // DD  DSN=KI.EDGDC.INT.LOAD,DISP=SHR 16

//******************************************************************************
17 // DD  DSN=CICS410.SIST.MODULOS,DISP=SHR 16

//******************************************************************************
18 // DD  DSN=KI.GCDA.CIFRADO.LOAD,DISP=SHR 16

//******************************************************************************
19 // DD  DSN=KI.EDGDC.APL.LOAD31,DISP=SHR 16

//******************************************************************************
20 // DD  DSN=KI.EDGDC.ZTBP.LOAD31,DISP=SHR 10

//******************************************************************************
21 // DD  DSN=KI.SGDC.SNPACH.LOADV1R0,DISP=SHR 7

//******************************************************************************
22 // DD  DSN=SY51.SYSVIEW.V72.LOADLIB,DISP=SHR 1

//******************************************************************************
23 // DD  DSN=KI.EIDC.ZTBP.LOAD/VSE,DISP=SHR 1

//******************************************************************************
24 // DD  DSN=CN.LOAD,DISP=SHR

//******************************************************************************
25 // DD  DSN=TCPIP.DESA.SEZATCP,DISP=SHR

//******************************************************************************
// FICHEROS DE REARRANQUE

//******************************************************************************
// FICHEROS DE DUMP

//******************************************************************************
30 //DFHMDPA DD  DSN=CICS410.DFHMDBA.SITD,DISP=SHR

//******************************************************************************
31 //DD  DSN=CICS410.DFMDBA.SITD,DISP=SHR

//******************************************************************************
32 //OUT SYSDUMP=*,DCB=(RECFM=V,LRECL=132,BLKSIZE=136)

//******************************************************************************
33 //OUT SYSDUMP=*,DCB=(RECFM=V,LRECL=128,BLKSIZE=128)

//******************************************************************************
34 //OUT SYSDUMP=*,DCB=(RECFM=V,LRECL=128,BLKSIZE=128)

//******************************************************************************
35 //OUT SYSDUMP=*,DCB=(RECFM=V,LRECL=161,BLKSIZE=165)

//******************************************************************************
36 //OUT SYSDUMP=*,DCB=(RECFM=V,LRECL=133,BLKSIZE=137)

//******************************************************************************
// FICHEROS DEL C.I.C.S.

//******************************************************************************
37 //DMPTABLA DD  DSN=CICS410.DMPTABLA.SITD,DISP=SHR

//******************************************************************************
38 //DD  DSN=CICS410.DFHMTRDA.SITD,DISP=SHR

//******************************************************************************
39 //DD  DSN=CICS410.DFHMTRDB.SITD,DISP=SHR
The **SYSTCPD** card points to the TCPIP DATA and it is essential if we want to make connect via DNS.

The LE370 libraries must be ahead of the TCP libraries.
4. CONFIGURATION FILE (CICS AND LISTENER).

The configuration file (EZACONFG) stores information about CICS Sockets requirements. To do this, a jcl is passed that creates it, initializes it, passes the EZACICD macro and finally, it can be modified from the EZAC transid. The configuration macro enters a CICS statement for each teleprocessing monitor, and a LISTENER statement for each transid that we associate to each port.

```plaintext
//**********************************************************//
//** THE FOLLOWING JOB DEFINES AND THEN LOADS THE VSAM **//
//** FILE USED FOR CICS/TCP CONFIGURATION. THE JOBSTREAM **//
//** CONSISTS OF THE FOLLOWING STEPS. **//
//** 1). DELETE A CONFIGURATION FILE IF ONE EXISTS **//
//** 2). DEFINE THE CONFIGURATION FILE TO VSAM **//
//** 3). ASSEMBLE THE INITIALIZATION PROGRAM **//
//** 4). LINK THE INITIALIZATION PROGRAM **//
//** 5). EXECUTE THE INITIALIZATION PROGRAM TO LOAD THE **//
// FILE **//
//**********************************************************//

//CONFIG JOB MSGLEVEL=(1,1)
//*
//* THIS STEP DELETES AN OLD COPY OF THE FILE
//* IF ONE IS THERE.
//*
//DEL EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=* 
//SYSIN DD *
|   | DELETE |
|   | CICS.TCP.CONFIG |
|   | PURGE |
|   | ERASE |
//*
//* THIS STEP DEFINES THE NEW FILE
//*
//DEFILE EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=* 
//SYSIN DD *
|   | DEFINE CLUSTER (NAME(CICS.TCP.CONFIG) VOLUMES(CICSVOL) |
|   | CYL(1 1) |
|   | IMBED |
|   | RECORDSIZE(150 150) FREESPACE(0 15) |
|   | INDEXED ) |
|   | DATA ( |
|   | NAME(CICS.TCP.CONFIG.DATA) |
|   | KEYS (16 0 ) |
|   | INDEX ( |
|   | NAME(CICS.TCP.CONFIG.INDEX) ) |
//*
//* THIS STEP ASSEMBLES THE INITIALIZATION PROGRAM
//PRGDEF EXEC PGM=IEV90,PARM='OBJECT,TERM',REGION=1024K
//SYSLIB DD DISP=SHR,DSNAME=SYS1.MACLIB
//            DD DISP=SHR,DSNAME=TCPV32.SEZACMAC
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(5,1))
//SYSUT2 DD UNIT=SYSDA,SPACE=(CYL,(2,1))
//SYSUT3 DD UNIT=SYSDA,SPACE=(CYL,(2,1))
//SYSPUNCH DD DISP=SHR,DSTYPE=NULLFILE
//SYSLIN DD DSTYPE=&OBJECTSET,DISP=(MOD,PASS),UNIT=SYSDA,
|   | SPACE=(400,(500,50)), |
|   | DCB=(RECFM=FB,BLKSIZE=400,LRECL=80) |
//SYSTEM DD SYSOUT=* 
//SYSPRINT DD SYSOUT=* 
//SYSIN DD *
|   | DEFEFILE EXEC PGM=IDCAMS
|   | EZACICD TYPE=INITIAL, Initialize generation environment X |
|   | PRGNAME=EZACICDF, Name of the generated program X |
|   | FILENAME=EZACONFG DD name of the configuration file |
|   | EZACICD TYPE=CICS, Generate configuration record X |
|   | APPLID=BMCIDATR, APPLID of CICS X |
|   | TCPADDR=TCPPIP0RC, Address space name for TCP/IP X |
|   | NTASKS=25, Number of reusable MVS subtasks X |
|   | DPRY=00, Priority difference (CICS-Subtask) X |
|   | CACHMIN=10, Minimum refresh time for CACHE X |
```
4. CONFIGURATION FILE (CICS AND LISTENER).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CACHMAX</td>
<td>20</td>
<td>Maximum refresh time for CACHE</td>
</tr>
<tr>
<td>CACHRES</td>
<td>5</td>
<td>Maximum number of active resolvers</td>
</tr>
<tr>
<td>ERRORTD</td>
<td>TCPI</td>
<td>Name of TD queue for error messages</td>
</tr>
<tr>
<td>EZACICD TYPE=LISTENER,</td>
<td>Create Listener Record</td>
<td></td>
</tr>
<tr>
<td>APPLID=BMCIDATR,</td>
<td>APPLID of CICS</td>
<td></td>
</tr>
<tr>
<td>TRANID=ZTBA,</td>
<td>Use standard transaction ID</td>
<td></td>
</tr>
<tr>
<td>PORT=7777,</td>
<td>Use port number 7777</td>
<td></td>
</tr>
<tr>
<td>BACKLOG=20,</td>
<td>Set backlog value to 20</td>
<td></td>
</tr>
<tr>
<td>TIMEOUT=30,</td>
<td>Set timeout value to 30 seconds</td>
<td></td>
</tr>
<tr>
<td>GTIMEOT=10,</td>
<td>Set givesocket timeout to 10 seconds</td>
<td></td>
</tr>
<tr>
<td>TRANTRAN=NO,</td>
<td>Translate TRNID Yes</td>
<td>No</td>
</tr>
<tr>
<td>ACCTIME=60,</td>
<td>Timeout Value for ACCEPT</td>
<td></td>
</tr>
<tr>
<td>NUMSOCK=100,</td>
<td>Support 99 concurrent connections</td>
<td></td>
</tr>
<tr>
<td>MINMSGL=4,</td>
<td>Minimum input message is 4 bytes</td>
<td></td>
</tr>
</tbody>
</table>

Attention to the jcl. In the one provided by IBM (PGM1) it does not appear in SYSLMOD.
4.1. **EZACONFG FILE DEFINITION (CICS PARAMETER)**

To view and modify the file from CICS, the EZAC transid is invoked (for example, if we have selected EZAC ALTER, it shows the following menu):

```
EZAC,ALTER
ENTER ONE OF THE FOLLOWING

CICS    ===>  Enter Yes|No
LISTENER ===>  Enter Yes|No
```

If we enter YES to the CICS value, it shows us a new menu to know what CICS is. There, we select this value, although by default it shows the CICS value:

```
EZAC,ALTER,CICS
ENTER ALL FIELDS

APPLID    ===>  BMCIDATR  APPLID of CICS System
```

Then, it shows again a screen with parameters that can be modified. The recommended ones for EDITRAN are:

```
EZAC,ALTER,CICS
OVERTYPE TO ENTER

APPLID    ===>  BMCIDATR  APPLID of CICS System
TCPADDR    ===>  TCPIPROC  Name of TCP Address Space
NTASKS     ===>  025      Number of Reusable Tasks
DPRTY      ===>  000      DPRTY value for ATTACH
CACHMIN    ===>  010      Minimum Refresh Time for Cache
CACHMAX    ===>  020      Maximum Refresh Time for Cache
CACHRES    ===>  005      Maximum number of Resolvers
ERRORTD    ===>  TCPI     TD Queue for Error Messages
SMGS_SUP   ===>  NO       (IN CICS TS 2.2=)
```
4.2. EZACONFG FILE DEFINITION (LISTENER PARAMETER)

For the transid that acts as LISTENER we will follow the same steps as before, selecting by LISTENER ZTBA or others associated to the ZTBPO1C program and we will reach a menu with the values recommended by EDITRAN. The change from phase 0 is that it must be coded for native TCP connections SECEXIT = EDITRAN. If you code LISTENER for PROXY you must code SECEXIT=EDITR-PR.

**EZAC, ALTER, LISTENER**

OVERRIDE TO ENTER

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLID</td>
<td>==&gt; BMCIDATR</td>
<td>APPLID of CICS System</td>
</tr>
<tr>
<td>TRANID</td>
<td>==&gt; ZTBA</td>
<td>Transaction Name of Listener</td>
</tr>
<tr>
<td>PORT</td>
<td>==&gt; 07777</td>
<td>Port Number of Listener</td>
</tr>
<tr>
<td>IMMEDIATE</td>
<td>==&gt; NO</td>
<td>Immediate Startup (Yes</td>
</tr>
<tr>
<td>BACKLOG</td>
<td>==&gt; 020</td>
<td>Backlog Value for Listener</td>
</tr>
<tr>
<td>NUMSOCK</td>
<td>==&gt; 100</td>
<td>Number of Sockets in Listener</td>
</tr>
<tr>
<td>MINMSGNL</td>
<td>==&gt; 004</td>
<td>Minimum Message Length</td>
</tr>
<tr>
<td>ACCTIME</td>
<td>==&gt; 060</td>
<td>Timeout Value for ACCEPT</td>
</tr>
<tr>
<td>GIVTIME</td>
<td>==&gt; 010</td>
<td>Timeout Value for GIVESOCKET</td>
</tr>
<tr>
<td>REATIME</td>
<td>==&gt; 000</td>
<td>Timeout Value for READ</td>
</tr>
<tr>
<td>FASTRD (*)</td>
<td>==&gt; YES</td>
<td>Read Immediately (Yes</td>
</tr>
<tr>
<td>TRANTRN</td>
<td>==&gt; NO</td>
<td>Translate TRNID (Yes</td>
</tr>
<tr>
<td>TRANUSR</td>
<td>==&gt; NO</td>
<td>Translate User Data (Yes</td>
</tr>
<tr>
<td>SECEXIT</td>
<td>==&gt; EDITRAN</td>
<td>Name of Security Exit</td>
</tr>
</tbody>
</table>

(*) FASTRD DISAPPEARS IN HIGH ZOS VERSIONS

**Listener types:**

- **EDITRAN/TCP**  SECEXIT ==> EDITRAN
- **EDITRAN/Proxy** SECEXIT ==> EDITR-PR
5. TRANSIENT DATA DEFINITION.

The listener writes in the TCPI while the TCP is ENABLED. The CICS startup jcl must include a DD for this extrapartition transient data queue. The inputs for the DCT are the following.

```
DFHDCT TYPE=SDSCI, X
   BLKSIZE=136,
   DSCNAME=TCPCICS,
   RECFORM=VARUNB,
   RECSIZE=132,
   TYPEFILE=OUTPUT
...
```

```
DFHDCT TYPE=EXTRA, X
   DESTID=TCPI,
   DSCNAME=TCPCICS
```

(The destination TCPM may be changed. If so, it must match the name specified in the EROORTD parameter of the EZAC DEFINE CICS and/or the EZACICD TYPE=CICS)

```
DFHDCT TYPE=INTRA, X
   DESTID=TRAA,
   DESTFAC=FILE,
   TRIGLEVEL=1,
   TRANSID=TRAA
```

NOTE: THE DESTINATION NAME (TCPI) MUST CORRESPOND TO THE EZACONFG DEFINITION FOR CICS (ERRORTD PARAMETER), SINCE OTHERWISE THE TCP MESSAGES DO NOT APPEAR. DSCNAME APPEARS IN CICS STARTUP.
6. SOCKETS AUTOMATIC SHUTDOWN-STARTUP FOR CICS TCP/IP (THROUGH PLT).

1- Automatic START-UP (PLTP1) To start automatically, do the following entry in the PLTP1 after the DFHDELIM:

   DFHPLT TYPE=ENTRY,PROGRAM=EZACIC20
   DFHPLT TYPE=ENTRY,PROGRAM=ZTBPOTCI

2- AUTOMATIC Shutdown (PLTSD). Before DFHDELIM, make the following entry:

   DFHPLT TYPE=ENTRY,PROGRAM=ZTBPOTCF
   DFHPLT TYPE=ENTRY,PROGRAM=EZACIC20

In the start PLT, the sockets for CICS will be started. After this, the ZTBPOTCI program will be called, and it will start a transid (ZTBZ). This transid, starting from the EZACONFG, will start all the existing LISTENERs (all those associated with the teleprocessing monitor where the ZTBZ is executed) that contain the SECEXIT = EDITRAN parameter, so that no manual action is required to activate them. It is mandatory to call the ZTBZ like that. It has not been included in EDITRAN/P profiles, since if the file accesses are made in the startup plt (to remove the transid name to start), it is very likely that some errors will occur in accessing and reading files (probably because the CICS does not yet have them).

If you want the ZTBZ transid to have another name in your entity, pass the ZTBPJTCP jcl over the ZTBPOTCI program, indicating the new name of the transid (it must be previously defined in CICS). Next, define the transid (PLTINI TCP:) in the profiles (local environment). In the jcl to be passed, the ZTBZ offset is set (if the jcl fails, query INDRA about it), the source transid (ZTBZ) and the destination transid (in the following example, NXZR):

```plaintext
// * PRIMERO VER (COMPRUEBA QUE COINCIDA)
// * SEGUNDO REP (CAMBIA)
// *
// * ZTBZ -> "E9E3C2E9" DESPLAZAMIENTO 01EA-TRANSID ZTBZ
// * NXZR -> "D5E7E9D9"
// *
//******************************************************************************************
// CAMBIO DE NOMBRES DE TRANSACCION DE EDITRAN
//******************************************************************************************
//P1 EXEC PGM=AMASPZAP
//SYSLIB DD DSN=PUNTERO.INDRA.LOAD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
NAME ZTBPOTCI ZTBPOTCI
VER 01EA E9E3C2E9
REP 01EA D5E7E9D9
/*
```
7. **MANUAL SHUTDOWN-STARTUP OF THE LISTENER- CICS TCP/IP.**

Note: Failure to start the LISTENER does not prevent outgoing calls and traffic to nodes from being made via such calls. To start the listener or clients the sockets for CICS must be started.

1 - **To start**, the EZAO transid is invoked by means of the EZAO start sequence (it will show the following menu):

```
EZAO,START
Enter one of the following
CICS ===> Enter Yes|No
LISTENER ===> Enter Yes|No
```

Enter YES in LISTENER. A new menu appears.

```
EZAO,START,LISTENER
APPLID= ===> BMCIDATR APPLID of CICS
LISTENER ===> Enter Name of Listener
```

Enter in LISTENER the transid name that is going to act as such. In this case, the one provided by IBM and defined in the configuration file to attend the port 7777 (ZTBA) and press ENTER, so that from that moment it will be already started (the following menu will appear):

```
EZAO,START,LISTENER(ZTBA)
APPLID= ===> BMCIDATR APPLID of CICS
LISTENER ===> ZTBA Enter Name of Listener
```

Note: If the CICS has not been started or if we remove it with EZAO stop, the LISTENER will shut down or they will not be allowed to start.

2 - **To stop (only the ISSC can be stopped)**, the EZAO transid is invoked using the sequence EZAO stop. This statement can also stop listener, not EDITRAN. We’ll enter the same data we entered previously.

It is also possible to start all the listener by invoking the ZTBZ (see startup PLT chapter if it was called otherwise), directly or through the EZAO.

It is also possible to start the listener by setting immed = yes, and on the plt just start the sockets to cics.

The EDITRAN/P operator’s network restart option also allows the activation of one or all of the listener and the stop of a specific listener.
8. CICS. RESOURCE DEFINITION FOR TCP/IP.

8.1. EDITRAN TRANSACTION DEFINITION

The transid ZTBA (or other listener) and ZTBB must have the highest priority, as well as the already existing ZTB0 (EDITRAN core), in order to speed up the transmission.

Check the ZTBA, ZTBB, ZTBZ transid in the PCTCEDA member of the jcl lib.

8.2. EDITRAN PROGRAM DEFINITION.

Review the PPTCEDA member of the jcl lib, ZTBPOT** progs.

8.3. RELINKING.

The ZTBPOTCC and ZTBPOTCD programs are already linked to the TCP libraries of INDRA. However, if they do not work properly, they must be relinked in the installation.

```
EDIT       KI.EGDC.ZTBP.JCLS(JLTCPI) - 01.03     Columns 00001 00072
Command ===>                                                  Scroll ===> CSR
****** ********** Top of Data "***********"                     
000001 ///KIDF6AEA JOB (EGDC,KIT,,199), 'RELINK TCP/IP', MSGCLASS=R, CLASS=A,
000002 // NOTIFY=SYSUID
000003 //"""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""''
The error described appears in the following sequence:

**LOG DE SISTEMA:**

STC01465 00000090 +DFHSR0001 BMCIDATR An abend (code 0C4/AKEA) has occurred at offset X'00001B76' in program ZTBPOTCD.

STC01465 00000090 +DFHME0116 BMCIDATR 345

345 00000090 (Module:DFHME01) CICS symptom string for message DFHSR0001 i

345 00000090 RIDS/SE01800 LVLS/410 MS/DFHSR0001 RIDS/DFHSPP P Pis/UN9491

345 00000090 AB/S00C4 AB/UAKEA RIDS/STBPOTCD ADRS/00001B76

STC01465 00000090 +DFHDU0205 BMCIDATR A SYSTEM DUMP FOR DUMPCODE: SR0001 , WA

SUPPRESSED BY THE DUMP TABLE OPTION FOR THIS DUMPCODE

STC01465 00000090 +CEE1000S LE/370 INTERNAL ABEND. ABCODE = 4087 REASON = 0000008

******************************************************************************

**LOG DE CICS:**

DFHDU0207I 20/05/99 16:38:10 BMCIDATR Transaction and system dumps for dumpcode: 4039 were suppressed by the DUMP TABLE OPTION FOR THIS DUMPCODE.

DFHDU0207I 20/05/99 16:38:10 BMCIDATR Transaction and system dumps for dumpcode: 4087 were suppressed by the DUMP TABLE OPTION FOR THIS DUMPCODE.

DFHAC2236 20/05/99 16:38:10 BMCIDATR Transaction ZTBB abend 4087 in program ZTBPOTCD term ZTB3 backout successful.

9.1. FLOW CHARTS.
9.2. TRACE QUERY.

A network message protocol has been implemented that is easily interpretable due to its similarity to X25 (already in disuse), with XOB call request, XOF acceptance and X13 release. The cvc is the CICS task number and the lu is the local or remote port (depending on whether it is an incoming or outgoing call). An x20 message is included to display errors (refer to the log with cause-diagnostic). Documentation on ERRNO, RETCODE and error messages in the TCPCICS, provided by the macros used for EXTENDED SOCKET is available in Appendix C of the IBM TCP/IP for MVS manual. CICS TCP/IP Socket Interface Guide and Reference. Document Number SC31-7131-03. Program number 5655 HAL. File Number S370/4300/30xx-50. See also Document Number: SC31-8518-00. If the corresponding errno does not appear, the error may be OS390 V2R5 OPEN EDITION, so that it comes in F1AF9000 IP Planning and Migration Guide.

The meaning of the previous trace is as follows, for example for the second message:

An incoming message (E) appears in the S and Comment columns. It is an x’0B’ (call indication) message.

The remote port (in this case 1055 or x’41F’) appears in the NSM/LU column.

The Comment column shows a cvc, x’0F85’ or 3973 in decimal, which is actually the CICS (transid ZTBBB) task number that the connection indication deals with. It is important to note that if in a very short time this number is making very big jumps, we will find that the CICS is very loaded (it is running many tasks simultaneously). If problems are detected in the CICS, check the setting of the CICS to VTAM definition. In particular, the EAS parameter (number of active communications simultaneously) and the relationship of the Tclass parameters of the transactions with the CMXT parameter of the SIT (the transid can be entered in a class. In the SIT, the number of transid of each one of the classes is limited. In the SIT is the MXT parameter to indicate the number of CICS transid.

In some cases, some digits appear, which correspond to the CNID (application identifier, in case of call request, to return the same in accepted call).

Other types of messages are x’0F’ (call accepted), x’13’ (release) and x’20’ (error), in addition to x’0B’ which if it shows S it means call request.
If we select the second message (expanded trace), we see the complete content of the incoming call (among other things, the above described fields x'0B', x'041F' and x'0F85' appear). The user data of the EDITRAN session (x'C0...0A') and the remote IP-Address (192.168.172.088) also appear. Their dns is ampurdan.indra.es. All of them are preceded in this case by the 'TCP' header or x'E3C3D740', which appears in the MSJE column.

PF2: SWITCH HEXADECIMAL - CARACTER

Then, a trace with errors is specified:

Press PF2 to see in character:
In this case, a call request packet (x‘0B’ in comment column and S in S column) has been sent to the node, and the client process has answered with 2 incoming messages (x‘13’ and x‘20’ in comment column and E in S column). The first one (x‘13’) is a release indication and the second one an error indication.

Selecting the first one (x‘0B’ outgoing call):

The packet that has been sent is as follows:
Line 1, columns 9 (x‘0B’), call request message type.
Line 1, columns 11-14 (x‘0002’) identifier assigned by EDITRAN
Line 1, columns 15-18 (x‘1E61’) remote port 7777.
Line 1, columns 37 onwards, timer specified in session 030 seconds.
Line 1, columns 66 onwards, length of user data and user data
Line 4, column 37 dns to call (O4390B).

If we press PF2, we see the representable characters:

The following message is an error indication (x‘20’). If we select it:

If we press PF2, we see the representable characters:
The meaning of the new fields is:
Line 1, columns 9 (x'20'), error indication message type.
Line 1, columns 19-22 (x'027C') task identifier
Line 1, columns 27-30 (x'0700') Cause 07, diagnostic 00 (see errors x20 in this manual, specifically it means error in gethostbyname error).
Line 1, columns 45-60, errno and retcode of the macro, specifically 000000001 and 0000000000, indicating that the dns has not been resolved.

The following message is an indication of release (x'13'). If we select it:

16/06/2004 CONSULTA DE FICHEROS EDITRAN 5.2
13:03:22 CONSULTA DE TRAZA

SESION TRAZA...: S01D S02DI TCP001
FECHA SSAAMMDD.: 20004616 HORA HHMMS...: 095615 ENTRADA/SALIDA.: E

The meaning of the new fields is:
Line 1, columns 9 (x'13'), message type release indication.
Line 1, columns 27-30 (x'FF0C') Cause FF, diagnostic 0C (see errors x13 in this manual, specifically it means "an error occurs in the client process, before sending the user data (up to and including the macro connect). This release comes with a previous x20 message, which indicates the error occurred (initial tcp macros prior to sending/receiving user data)").

In short, the error situation mentioned above corresponds to the fact that the profile dns did not exist in the name server, so it was impossible to make the connect because the remote ip was not known.

For more detailed traces of INDRA, code operating-system = EDIP, operating-system-version = spaces or MULT, and Maximum-cvcs-number = 999. In this case, TS ZTPPEDIP (operating-system-version = spaces) or TS ZTBH+(MMSS, minute and second) queues (operating-system-version = MULT) are created, with data on writes and readings from the network, to be analyzed by INDRA. In the case of ZTPPEDIP, it is a single ts whose content is all IP sessions. In the case of ZTBH**, ALL MACROS are also recorded.

9.3. ERROR MESSAGES (X20 TYPE).

The x20 messages indicate errors in the process.

As an example, in the trace they are shown as follows (in TCP they have a TCP key and in PROXY they have an ETT key), indicating cause x'0F', diagnostic x'05':

00009994000099980AE9994 170338 E TCP 08888 203497 OF 05

By selecting them, in some cases information can be found about errno - TCP/IP retcode, for example:
The previous case shows \texttt{errno} (x'0000003D' = 61) and \texttt{retcode} (x'FFFFFFFF' = -1).

The meaning is: cause x'05' (Macro read error), diagnostic x'0F' (Error in ZTBB or client-child server, when trying to receive the user data), read 61 \texttt{errno} (ECONNREFUSED, the connection request has been rejected)

The meanings of these x20 messages are shown below:

<table>
<thead>
<tr>
<th>\texttt{X'01'}</th>
<th>\texttt{X'xx'}</th>
<th>INITAPI macro error</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>X'00'</td>
<td>Error in ZTBB or client</td>
</tr>
<tr>
<td>X'05'</td>
<td>X'00'</td>
<td>Error in ZTBB or client</td>
</tr>
<tr>
<td>X'02'</td>
<td>X'xx'</td>
<td>GETCLIENTIID macro error</td>
</tr>
<tr>
<td>X'05'</td>
<td>X'xx'</td>
<td>Error in ZTBA or parent server</td>
</tr>
<tr>
<td>X'03'</td>
<td>X'xx'</td>
<td>SOCKET macro error</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'00'</td>
<td>Error in ZTBB or client</td>
</tr>
<tr>
<td>X'05'</td>
<td>X'00'</td>
<td>Error in ZTBB or client</td>
</tr>
<tr>
<td>X'04'</td>
<td>X'xx'</td>
<td>SETSOCKOPT macro error</td>
</tr>
<tr>
<td>X'01'</td>
<td>X'01'</td>
<td>Error in ZTBB or client. Error in SO-REUSEADDR option</td>
</tr>
<tr>
<td>X'02'</td>
<td>X'02'</td>
<td>Error in ZTBB or client. Error in SO-KEEPALIVE option</td>
</tr>
<tr>
<td>X'05'</td>
<td>X'05'</td>
<td>Error in ZTBB or server-child. Error in SO-REUSEADDR option</td>
</tr>
<tr>
<td>X'06'</td>
<td>X'06'</td>
<td>Error in ZTBB or server-child. Error in SO-KEEPALIVE option</td>
</tr>
<tr>
<td>X'05'</td>
<td>X'xx'</td>
<td>BIND macro error</td>
</tr>
<tr>
<td>X'05'</td>
<td>X'05'</td>
<td>Error in ZTBA or parent server</td>
</tr>
<tr>
<td>X'06'</td>
<td>X'xx'</td>
<td>LISTEN macro error</td>
</tr>
<tr>
<td>X'05'</td>
<td>X'05'</td>
<td>Error in ZTBA or parent server</td>
</tr>
<tr>
<td>X'07'</td>
<td>X'xx'</td>
<td>GETHOSTBYNAME macro error</td>
</tr>
<tr>
<td>X'00' \ and X'01'</td>
<td>X'00' and X'01'</td>
<td>Error in ZTBB or client. Error when resolving the connection ip. X00. Error when resolving the connection ip. X01. EDITRAN/Proxy. Error when resolving the ip destination.</td>
</tr>
<tr>
<td>X'08'</td>
<td>X'xx'</td>
<td>GETHOSTNAME macro error</td>
</tr>
<tr>
<td>X'05'</td>
<td>X'05'</td>
<td>Error in ZTBA or parent server</td>
</tr>
<tr>
<td>X'09'</td>
<td>X'xx'</td>
<td>CONNECT macro error</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>X'00'</td>
<td>Error in ZTBB or client</td>
<td></td>
</tr>
<tr>
<td>X'0A'</td>
<td>ACCEPT macro error</td>
<td></td>
</tr>
<tr>
<td>X'0B'</td>
<td>GIVESOCKET macro error</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>TAKESOCKET macro error</td>
<td></td>
</tr>
<tr>
<td>X'0D'</td>
<td>FCNTL macro error</td>
<td></td>
</tr>
<tr>
<td>X'0E'</td>
<td>SELECTEX macro error</td>
<td></td>
</tr>
<tr>
<td>X'0F'</td>
<td>READ macro error</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>WRITE macro error</td>
<td></td>
</tr>
<tr>
<td>X'00'</td>
<td>Error in ZTBB or client. Attempts were made to send user data</td>
<td></td>
</tr>
<tr>
<td>X'01'</td>
<td>Error in ZTBB or client. User data were sent and expected to be received</td>
<td></td>
</tr>
<tr>
<td>X'02'</td>
<td>Error in ZTBB or client. Select by write error in data traffic</td>
<td></td>
</tr>
<tr>
<td>X'03'</td>
<td>Error in ZTBB or client. Select by read error in data traffic</td>
<td></td>
</tr>
<tr>
<td>X'04'</td>
<td>Error in ZTBB or server-child. User data were received and attempts are made to resend them</td>
<td></td>
</tr>
<tr>
<td>X'05'</td>
<td>Error in ZTBB or server-child. User data were received, they were not resent, and they were in select by read</td>
<td></td>
</tr>
<tr>
<td>X'06'</td>
<td>Error in ZTBB or server-child. Select by write error in data traffic</td>
<td></td>
</tr>
<tr>
<td>X'07'</td>
<td>Error in ZTBB or server-child. Select by read error in data traffic</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>Error in ZTBB or server-child. User data were entered and attempts were made to resend them</td>
<td></td>
</tr>
<tr>
<td>X'09'</td>
<td>Error in ZTBA or parent server, while waiting for connections</td>
<td></td>
</tr>
<tr>
<td>X'0A'</td>
<td>Error in ZTBA or parent server, during socket passing wait</td>
<td></td>
</tr>
<tr>
<td>X'0B'</td>
<td>EZACIC06 ERROR CALL (SELECTEX MASKS)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>Error in ZTBB or client. Attempts were made to send user data</td>
<td></td>
</tr>
<tr>
<td>X'0D'</td>
<td>Error in ZTBB or client. User data were sent and expected to be received</td>
<td></td>
</tr>
<tr>
<td>X'0E'</td>
<td>Error in ZTBB or client. Select by write error in data traffic</td>
<td></td>
</tr>
<tr>
<td>X'0F'</td>
<td>Error in ZTBB or client. Select by read error in data traffic</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>X'05'</td>
<td>Error in ZTBB or server-child. User data were received and attempts are made to resend them</td>
<td></td>
</tr>
<tr>
<td>X'06'</td>
<td>Error in ZTBB or server-child. User data were received, they were not resent and they were in select by read</td>
<td></td>
</tr>
<tr>
<td>X'07'</td>
<td>Error in ZTBB or server-child. Select by write error in data traffic</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>Error in ZTBB or server-child. Select by read error in data traffic</td>
<td></td>
</tr>
<tr>
<td>X'09'</td>
<td>Error in ZTBA or parent server, while waiting for connections</td>
<td></td>
</tr>
<tr>
<td>X'0A'</td>
<td>Error in ZTBA or parent server, during socket passing wait</td>
<td></td>
</tr>
<tr>
<td>X'12'</td>
<td>X'xx' EZACICO8 CALL ERROR (CACHE FILE)</td>
<td></td>
</tr>
<tr>
<td>X'00'</td>
<td>Error in ZTBB or client.</td>
<td></td>
</tr>
<tr>
<td>X'13'</td>
<td>X'xx' RETRIEVE ERROR</td>
<td></td>
</tr>
<tr>
<td>X'00'</td>
<td>Error in ZTBB or client, error when receiving data from EDITRAN</td>
<td></td>
</tr>
<tr>
<td>X'0B'</td>
<td>Error in ZTBB or client-child server, error when receiving data</td>
<td></td>
</tr>
<tr>
<td>X'14'</td>
<td>X'xx' START TRANSID - LINK ERROR</td>
<td></td>
</tr>
<tr>
<td>X'01'</td>
<td>Error in ZTBB or child server. As a customer, an attempt is made to link to the EDITRAN/PR control program and an error occurs.</td>
<td></td>
</tr>
<tr>
<td>X'02'</td>
<td>Error in ZTBB or child server. As a child server, it tries to link to the EDITRAN/PR control program and it gives an error.</td>
<td></td>
</tr>
<tr>
<td>X'05'</td>
<td>Error in ZTBA or parent server, when trying to boot child server (ZTBB)</td>
<td></td>
</tr>
<tr>
<td>X'15'</td>
<td>Other Errors in ZTBZ or server distributor</td>
<td></td>
</tr>
<tr>
<td>X'01'</td>
<td>Error in ZTBZ or server distributor. File opening error EZACONFG</td>
<td></td>
</tr>
<tr>
<td>X'02'</td>
<td>Error in ZTBZ or server distributor. EZACONFG file reading error</td>
<td></td>
</tr>
<tr>
<td>X'03'</td>
<td>Error in ZTBZ or server distributor. Error in start transid to server parent</td>
<td></td>
</tr>
<tr>
<td>X'04'</td>
<td>Error in ZTBZ or server distributor. There is no parent server in EZACONFG or no SECEXIT=EDITRAN</td>
<td></td>
</tr>
<tr>
<td>X'16'</td>
<td>Other Errors in ZTBA or parent server</td>
<td></td>
</tr>
<tr>
<td>X'01'</td>
<td>Bombing in ZTBA or parent server. The maximum number of simultaneous incoming connections to a tcp port has been reached. Check local environment parameter NRO.CONEX.SIMULT.LISTENER.</td>
<td></td>
</tr>
<tr>
<td>X'02'</td>
<td>Error in ZTBA or parent server. Error when writing (write) ts queue (ZTBPQTC).</td>
<td></td>
</tr>
<tr>
<td>X'03'</td>
<td>Error in ZTBA or parent server. Error when rewriting (rewrite) ts queue (ZTBPQTC).</td>
<td></td>
</tr>
<tr>
<td>X'04'</td>
<td>Error in ZTBA or server-parent. File opening error EZACONFG</td>
<td></td>
</tr>
<tr>
<td>X'05'</td>
<td>Error in ZTBA or parent server. EZACONFG file reading error</td>
<td></td>
</tr>
<tr>
<td>X'06'</td>
<td>Error in ZTBA or parent server. An active parent server already exists for the specified port (enqbusy)</td>
<td></td>
</tr>
<tr>
<td>X'07'</td>
<td>Error in ZTBA or parent server. No record in EZACONFG or no SECEXIT = EDITRAN</td>
<td></td>
</tr>
<tr>
<td>X'15'</td>
<td>Abend in ZTBA</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>X'01'</td>
<td>Error in ZTBB acting as child server. User data have not arrived within the time specified in the local environment, TIME-OUT USER DATA MAX(MSS)) parameter.</td>
<td></td>
</tr>
</tbody>
</table>
| X'03' | Error in ZTBB acting as a client. No user data have been sent to the network when it is to be read:  
- A message arrives from the network (it does not make sense, as the remote EDI does not take initiatives)  
- It gives a reading error (in the latter case it comes with another message with the reading error errno, which may be zeroes if the connection is down). |
| X'04' | Error in ZTBB acting as child server in TCP/IP protocol (not in PR). User data have been received, they have passed to the core and they will be read from the network:  
- A message arrives from the network (it does not make sense, as the remote EDI does not take initiatives)  
- It gives a reading error (in the latter case it comes with another message with the reading error errno, which may be zeroes if the connection is down). |
| X'05' | Error in ZTBB acting as client or child server. In the case of the client, user data have been sent to the network and an answer is awaited. In the case of the child server, a connection has arrived and user data is awaited.  
A message arrives > 36 bytes (maximum user data allowed) (only with TCP/IP protocol). Internal error. |
| X'06' | Error in ZTBB acting as a client. User data have been sent to the network and an answer is awaited. A user data response message arrives with byte 2 x'A4'. From source a user data format was sent with length (only with TCP/IP protocol). Internal error. |
| X'07' | Error in ZTBB acting as client or child server. In the case of the client, user data have been sent to the network and an answer is awaited. In the case of the child server, a connection has arrived and user data is awaited.  
A message arrives > length indicated at the beginning of the user data. Internal error. |
| X'08' | Error in ZTBB acting as a client. User data have been sent to the network and an answer is awaited.  
A message has arrived that does not correspond to the original user data that were sent (only with TCP/IP-Proxy protocol). Internal error. |
| X'09' | Error in ZTBB acting as a client. User data have been sent to the network and an answer is awaited. |
| X'0A' | Error in ZTBB acting as client or child server. In the case of the client, User data have been sent to the network and an answer is awaited. In the case of the child server, a connection has arrived and user data is awaited.  
A message different from ind-lla, ind-accept, ind-lib arrives (only with PR protocol). Internal error. |
| X'0B' | Error in ZTBB acting as client or child server. In the case of the client, user data have been sent to the network and an answer is awaited. In the case of the child server, a connection has arrived and user data is awaited.  
An XOB message arrives, without proxy byte (xff). |
| X'10' | Error in ZTBB or CLIENT. Unknown error |
| X'11' | Error in ZTBB or child server. Unknown error |
9.4. RELEASE MESSAGES (TYPE X13).

They are started from TCP-PR to the EDITRAN core or vice versa.

In the case of PR releases, they are collected in some cases, indicating the errno and retcode of the proxy.

In the case of TCP releases, if they are as a result of a normal termination of transmission, enter cause x00, diagnostic x0F is set.

In all other cases, if it is the program that “simulates a release”, cause x’FF’ and diagnostic is given as described below.

As an example, the trace shows the message with cause (FF), diagnostic (01):

<table>
<thead>
<tr>
<th>DIAGNOSTIC</th>
<th>REASON FOR THE ERROR WITH CAUSE X'00'</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'0F'</td>
<td>Orderly Release (SAB) of EDITRAN TCP/IP.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIAGNOSTIC</th>
<th>REASON FOR THE ERROR WITH CAUSE X'FF'</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Error generic (socket failure and others).</td>
</tr>
<tr>
<td>X'01'</td>
<td>An error occurs in the client process. User data have not been sent to the network within the time specified in the local environment, TIME-OUT USER DATA MAX(MSS) parameter</td>
</tr>
<tr>
<td>X'02'</td>
<td>An error occurs in the client process. The user data have been sent to the network, but no answer has been received from the node within the time specified in the local environment (TIME-OUT USER DATA MAX(MSS) parameter).</td>
</tr>
<tr>
<td>X'03'</td>
<td>An error occurs in the child server process. User data have been received, passed to the core and no reply has been received from the core (response to user data) within the time specified in the local environment, TIME-OUT USER DATA MAX(MSS) parameter.</td>
</tr>
<tr>
<td>X'04'</td>
<td>An error has occurred in the SELECT macro, listening to network events. The session was already known by the core. This release comes with a previous x20 message, which indicates the error (SELECT).</td>
</tr>
<tr>
<td>X'05'</td>
<td>A message is received from the local EDITRAN, which breaks protocol. It always occurs when the call is incoming and user data have been passed to the core, which does not answer with a message different from call accepted or release (internal error).</td>
</tr>
<tr>
<td>X'06'</td>
<td>Error when reading network data, in any status. It comes with an error message, (READ).</td>
</tr>
<tr>
<td>X'07'</td>
<td>Attempts are made to send data to the network. The SELECT process of attempting to view the sending buffer fails. This release comes with a previous x20 message, which indicates the error that occurred.</td>
</tr>
<tr>
<td>X'08'</td>
<td>Attempts are made to send data to the network. The WRITE process of trying to view the sending buffer fails. This release comes with a previous x20 message, which indicates the error that occurred.</td>
</tr>
<tr>
<td>X'09'</td>
<td>Attempts are made to send data to the network (data traffic), but since the first attempt until the time of release, the buffer has been busy. The maximum time has been specified in local environment, TIME-OUT USER DATA MAX(MSS) parameter.</td>
</tr>
<tr>
<td>X'0A'</td>
<td>Control messages are being received from the network (as client response to user data, as original child server user data). This release comes with a previous x20 message, which</td>
</tr>
</tbody>
</table>
indicates the error that occurred. The errors can be:

- 17-05 The length of user data received exceeds 35 bytes (tcp). Internal error.
- 17-06 User data were sent in version 4.1-5.x and when receiving response to them it is detected that byte 2 is not x'A4' (tcp). Internal error.
- 17-07 More user data received than expected. Internal error.
- 17-08 User data (tcp) was sent and other data is sent in the reply. Internal error.
- 17-09 User data (pr) was sent and other data is sent in the reply. Internal error.
- 17-0A User data (pr) is received with wrong format. Internal error.
- SELECT error
- READ error

<table>
<thead>
<tr>
<th>X'0B'</th>
<th>Abend</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'0C'</td>
<td>An error occurs in the client process, before sending user data (up to and including the macro connect). This release comes with a previous x20 message, which indicates the error occurred (initial tcp macros before sending/receiving user data).</td>
</tr>
<tr>
<td>X'10'</td>
<td>Error when receiving a data event from the network, but while we are in the client process and we have not yet sent the user data. It comes with an error message, cause 17, diagnostic 03. If there was also a network data read error (READ), it also comes with this error message.</td>
</tr>
<tr>
<td>X'11'</td>
<td>Error when receiving a data event from the network, but while we are in the child server process and we have passed user data to the core (only tcp/ip). It comes with an error message, cause 17, diagnostic 04. If there was also a network data read error (READ), it also comes with this error message.</td>
</tr>
<tr>
<td>X'FF'</td>
<td>This release only comes to the one with x25 (already in disuse)</td>
</tr>
</tbody>
</table>
9. EDITRAN/IP 5.2

9.5. EDITRAN/P FIELDS (PROFILES).

For the definitions, refer to the ED52USUC manual (chapter 1.3.1, 1.3.2, 1.3.3). See the local environment screens, session and lines.

Environment:

CAMPOS TCP/IP: TCPNAME...: TCPIPB
TIME-OUT USER DATA MAX(MSS)....: 020 NRO.CONEX.SIMULT.LISTENER....: 004
USRAR SERVER DNS EN LLAM.ENT.: S TO.MILISEG ENVIOS (001-999)....: 999
BUF ENVIO TCP-PX (LISTENER)..: nnnnnn
BUF.RECEP.TCP-PX (LISTENER)....: nnnnnn

PF7 - RETROCEDER

Session

TIPO CONEXION (I=TCP/IP, Y=PROXY)..: I
BUF ENVIO: nnnnnn
BUF RECP: nnnnnn

REMOTE IP Lines:

| 5. - LINEAS REMOTAS TCP/IP (PARA IR CON O SIN PROXY): | SEL.GENERICA S/N: N |
| REF01: 005 | REF02: | REF03: | REF04: | REF05: | REF06: |

| PROPIETARIO: R | TIPO LINEA.: I | NIF........: * ******** * |
| S PROPIET. TIP NUM | CARACTERISTICAS DE LA LINEA |
| - ------------- | ------------------------------ |
| A00099940 IP 001 172.022.071.129 | -077777 |
| A00099940 IP 002 ASANJOSEXP.INDRA.ES | -07777 |

The remote IP lines consist of IP + REMOTE PORT.

In the session log, the connection type (I = IP) is indicated. The remote port may have that connection type or it may also have a proxy. Remote ip lines are also displayed.
10. SUMMARY: OPERATION, DEFINITIONS, EXPLANATIONS.

10.1. RELATIONSHIP BETWEEN THE REQUIRED SETTINGS:

TCP START-UUP PROCEDURE

*/TCPIPROC JOB MSGLEVEL=1
*/STARTING EXEC TCPIPROC
XXPROFILE DD DSN=SW.TCPIP.SEZAPARM(CPUBPROF),DISP=SHR
XXSYSTCPD DD DSN=SW.TCPIP.SEZAPARM(TCPDATAB),DISP=SHR

PROFILE FILE (SW.TCPIP.SEZAPARM(CPUBPROF))

PORT
7777 TCP CICSSITD ; CICS Socket
KEEPALIVEOPTIONS
INTERVAL 2
ENDKEEPALIVEOPTIONS
DEVICE LOSAB4 LCS 1002
LINK OSAB4TCP IBMTR 0 LOSAB4

HOME
192.168.172.088 OSAB4TCP

GATEWAY
192.168.172 = OSAB4TCP 1500 0

PARAMETROS DE BUFFER. (DATABUFFERPOOLSIZE EN 2.4 Y TCPSENDBUFFERSIZE-TCPRECEIVEBUFFERSIZE EN POSTERIORES)

TCPDATAFILE (SW.TCPIP.SEZAPARM(TCPDATAB))

TCPIPB
NSINTERADDR 172.29.2.41
NSINTERADDR 192.168.1.30
NSPORTADDR 53

CICS START-UP

//DFHRPL
/DD DSN=TCPIP.SEZATCP,DISP=SHR

//ZTB1INTR DD SYSOUT=(A,INTRDR)

//********************************************************************

DCT TABLE

DFHDCX TYPE=SDSCI,
\DsNAME=TCPDCS,

DFHDCX TYPE=EXTRA,
\DsNAME=TCPDCS
PLT TABLE

Entradas en la PLTPI después de la DFHDELIM:
DFHPLT TYPE=ENTRY,PROGRAM=EZACIC20
DFHPLT TYPE=ENTRY,PROGRAM=ZTBPOTCI

Entradas en la PLTSO antes de la DFHDELIM:
DFHPLT TYPE=ENTRY,PROGRAM=EZACIC20
DFHPLT TYPE=ENTRY,PROGRAM=ZTBPOTCF

CONFIGURATION FILE (EZACONFG).

EZAC,DEFINE CICS
APPLID ==> CICSSITD
TCPADDR ==> TCPIPB
ERRORTD ==> TPPI

EZAC,DEFINE,LISTENER
APPLID ==> CICSSITD
TRANID ==> ZTBA
PORT ==> 7777
SECEXIT ==> EDITRAN

EDITRAN (LOCAL ENVIRONMENT)

API TCP ..: ZTBB
PLTINI TCP: ZTBZ

| CAMPOS TCP/IP:         | TCNAME....: TCPIPB        |
| TIME-OUT USER DATA MAX(MSS)...: 020 | NRO.CONEX.SIMULT.LISTENER....: 010 |
| USAR SERVER DNS EN LLAM.ENT..: N | TO.MILISEG ENVIOS (001-999)...: 100 |
| BUF.ENVIO TCP-PX (LISTENER): 000000 |
| BUF.RECEP.TCP-PX (LISTENER): 000000 |

EDITRAN (TRANSMISSION SESSION)

TIPOS CONEXION ADMITIDOS: I

| BUFFER TCP ENVIO: 000000 |
| BUFFER TCP RECEP: 000000 |
10.2. DESCRIPTION OF REQUIRED SETTINGS.

1. The tcp startup procedure starts a TCP stack and has 2 files:

   1.1. PROFILE File. The following is assigned:

       1.1.1. Ports. It is not mandatory to do this. If it is encrypted, we will be permanently assigning this port to a CICS, for all the IP addresses of the stack. That is, all the incoming calls that arrive through this stack and through this port, will be passed to the CICS that is encrypted in this macro. In CICS, there must be a record in the EZACONFG file containing a transid EDITRAN (ZTBA) assigned to that port. If it is not encrypted, the described record will exist in CICS, but it cannot be assigned to a port that we reserve for something else, i.e., if we reserve port 23 for TELNET for example, in CICS this port cannot be assigned to the transid ZTBA. If we want to link 2 teleprocessing monitors to the same stack, and code the PORT macro, we will not be able to receive calls through that port through the monitor that has not been assigned to the macro.

       1.1.2. KEEPALIVE parameter. It should be low (2-3 minutes) so that it informs EDITRAN in case of connection failures that are not reported by TCP. As for EDITRAN, it incorporates a function, SETSOCKOPT, related to this parameter.

       1.1.3. Stack local addresses. In the example, an OSA card has been entered. To do this, a LINK macro is coded with the name of the macro. The OSA in the HOME macro is then associated with the local IP address of the HOME macro. Finally, a GATEWAY macro is included to specify the routes followed for outgoing calls. If we have 2 IP addresses, we would therefore have 2 OSAs and 2 macro LINKs. The outgoing calls in this case could be limited to a single call. It is the job of the system administrator himself to define access routes according to his needs, especially in security matters.

       1.1.4. Stack buffer size. The sending and receiving sizes are specified together. It is the administrator's obligation to ensure the correct distribution for the proper functioning of EDITRAN.

   1.2. TCPDATA file. The following is assigned:

       1.2.1. Addresses of the name servers (NSINTERADDR parameter). If a connection request is generated from CICS for an EDITRAN/P session, whose IP address is DNS, it must be resolved as real IP addresses. To do this, calls are generated to the different name servers that we encrypt. The address of these servers is what is coded here. If there is the correspondence of the requested DNS, they will therefore return the IP address to which the connect must be made.

       1.2.2. Their port (NSPORTADDR parameter)

       1.2.3. The name of the tcp address space in the stack (TCPIPJOBNAME). This name must match the BPXPRMXX member (XX is the suffix) of the SYS1.PARMLIB and the TCPNAME parameter of the second EDITRAN/P environment screen.

2. CICS Start-up. The following elements are defined:

   2.1. TCP libraries that solve socket calls and that contain IBM programs.

   2.2. DCSNAME from the extrapartition destination table. A TCD with that name will therefore be included. It is used to generate TCP output messages.

   2.3. A SYSTCPD that points to a TCPDATA FILE (in principle it should be the same as the TCP stack procedure). It is used to point to the addresses of the name servers
(NSINTERADDR parameter). This TCPDATA does not have to be the one of the stack to which the CICS is associated. Calls to this SYSTCPD are for client processes only. EDITRAN, therefore, will resolve the DNS of the sessions, depending on the servers contained in the TCPDATA of the SYSTCPD and not depending on the TCPDATA of the TCP startup procedure, although it could really be the same.

3. **DCT Table.** The DCSNAME described in the CICS startup is defined, and also the destination for removing the messages from the socket interface. This destination must also be coded in the CICS record of the EZACONFG file, specifically in the ERRORTD parameter.

4. **PLT.** It is divided into two parts:
   4.1. **Startup PLT.** The programs that enable-disable sockets and listener are called. Specifically, the former are activated by the IBM EZACIC20 program and the latter by the EDITRAN ZTBPOTCI program, which starts the transid ZTBZ (ZTBPOTCZ). This one will start all the listener records that are with the parameter SECEXIT = EDITRAN, from the reading of the EZACONFG. The start transits are the TRANID parameter of this record. If we have several listener (each one listening on a different port), all the transid will be defined in the PCT and all of them will be associated to the ZTBPOTCC program. These listener transactions will remain active, listening for connection indications, each one through its port, until the CICS is removed again, or until the sockets for cics are stopped. If any listener has not been activated at this point, the transid ZTBZ can be invoked to activate it.
   4.2. **Termination PLT.** At the time of the CICS failure, the termination PLT will come into operation. Specifically, the IBM EZACIC20 program that deactivates the sockets for CICS and then the EDITRAN ZTBPOTCF program, which will communicate with the active LISTENER EDITRAN, so that the latter will end in an orderly manner.

5. **EZACONFG file.** The following is defined (in the example through the transid EZAC):
   5.1. **CICS records.** Here, the name of the teleprocessing monitor is associated to the stack to which it is attached (TCP address space), that is, to the name that appears in the TCPIPJOBNAME of the stack to which the CICS is connected (TCPDATA parameter). The DCT destination (ERRORTD parameter) is also defined. If CICS records are defined that do not correspond to the teleprocessing monitor we are on, the EZACONFG must be the same in the defined CICS.
   5.2. **LISTENER records.** They are always associated with a given CICS, i.e., we could have two identical records associated with different CICS. These include the transid EDITRAN and the port through which we will listen. It is therefore possible to define several transid EDITRAN (with different names), but associated with the same program, and listening on different ports to the same CICS record. The EZACONFG file is defined by jcl and modified via EZAC transid.

6. **PPT.** The programs ZTBPOTCC (Listener or parent server program) ZTBPOTCD (Client or child server program) ZTBPOTCZ (program that will start the different copies of ZTBPOTCC according to the transid defined with them), ZTBPO201 (EDITRAN core for TCP connections), ZTBPOTCI (start PLT) ZTBPOTCF (end PLT) and IBM programs are defined.
7. PCT. The programs ZTBBB (ZTBPOTCD program) (coded in EDITRAN environment as TRANSID API TCP), ZTBZ (ZTBPOTCZ program), ZTBA or XXXX (ZTBPOTCC program) and IBM transactions (EZAC, EZAO and those required).

10.3. PRACTICAL EXAMPLE AND CONCLUSIONS.

A very complex example has been searched to find the necessary relationships and verify the malfunctioning points, so it is recommended not to implement them.
1. There are 2 TCP STACKS (PILA001 AND PILA002) with the following characteristics:
   1.1. PILA001 has a startup procedure that uses a PROFILE001 AND A TCPIPDATA001.
       1.1.1. The PROFILE001 has PORT 7777 against CICS002 and a home with the addresses 111.111.111.111 associated with OSA11 and 111.111.111.112, associated with OSA12.
       1.1.2. The TCPIPDATA001 has a TCPIPJOBNAME TCPIP001 and it doesn’t have NSINTERADDR.
   1.2. PILA002 has a startup procedure that uses PROFILE002 and TCPIPDATA002.
       1.2.1. The PROFILE002 has no PORT and it has a home with the address 222.222.222.222 associated with OSA21.
       1.2.2. The TCPIPDATA002 has a TCPIPJOBNAME TCPIP002, a NSINTERADDR 002.002.002.002 and another NSINERADDR 002.002.002.001.

2. There are 2 CICS (CICS001 AND CICS002) with the following characteristics:
   2.1. CICS001. When starting, it points to TCPIPDATA002.
   2.2. CICS002. When starting, it points to TCPIPDATA002.

3. There are 1 or 2 configuration files (EZACONFG). In the example two are defined: CONFIG001 for CICS001 and CONFIG002 for CICS002) with the following characteristics (all the transid are associated with the ZTBPOTCC programme):
   3.1. CONFIG001: A record CICS APPLID= CICS001, TCPADDR=TCPIP001.
   3.2. CONFIG001: A record CICS APPLID= CICS001, TRANID=ZTBQ, PORT =7777.
   3.3. CONFIG001: A record CICS APPLID= CICS001, TRANID=ZTBR, PORT =7778.
   3.4. CONFIG001: A record CICS APPLID= CICS001, TRANID=ZTBS, PORT =7779.
   3.5. CONFIG001: A record CICS APPLID= CICS001, TRANID=ZTBY, PORT =7779.
   3.6. CONFIG002: A record CICS APPLID= CICS002, TCPADDR=TCPIP002.
   3.7. CONFIG002: A record CICS APPLID= CICS002, TRANID=ZTBQ, PORT =7777.
   3.8. CONFIG002: A record CICS APPLID= CICS002, TRANID=ZTBR, PORT =7778.
   3.9. CONFIG002: A record CICS APPLID= CICS002, TRANID=ZTBT, PORT =7779.

4. There are 2 EDITRAN:
   4.1. EDICICS001. In the TCPINAME environment it points to TCPIP002 and in API TCP to ZTBB.
   4.2. EDICICS002. In the TCPINAME environment it points to TCPIP001 and in API TCP to ZTBB.

If the listeners are started in both CICS (PLT, transid ZTBZ or transid EZAO start LISTENER), as long as the sockets for CICS have been started, the following processes will be linked:

1. The transid ZTBQ of CICS001 would have to stay listening to incoming calls through the port 7777 of the address 111.111.111.111 and 111.111.111.112, since in the CICS record of EZACONFG, TCPIP001 was specified, and therefore it uses the PILA001, which has said TCPIPJOBNAME = TCPIP001, in its TCPIPDATA001, removing the local address of the HOME macro from PROFILE001. However, as in that PILA001, the PORT 7777 assigned to CICS002 is specified in PROFILE001, it will not be possible to activate the described LISTENER, since it is assigned to another CICS (ERRNO 13 or permission denied).
   If a node calls this address and port it will give you a connect 61 error (there is no active LISTENER).
2. The transid ZTBR of CICS001 is correctly linked to the port 7778 of the address 111.111.111.111 and 111.111.111.112.
3. The transid ZTBS of CICS001 is correctly linked to the port 7779 of the address 111.111.111.111 and 111.111.111.112.
4. The transid ZTBY of CICS001 NO is correctly linked to the port 7779 of the previous addresses, since the ZTBS of CICS001 has got it already. It gives an errno 48 (another process has got it already).
5. The transid ZTBQ of CICS002 is correctly linked to the port 7777 of the address 222.222.222.222.
6. The transid ZTBR of CICS002 is correctly linked to the port 7778 of the address 222.222.222.222. (the CICS001 is linked through ITS ZTBR to the same port of the addresses 111.111.111.111 and 111.111.111.112).
7. The transid ZTBT of CICS002 is correctly linked to the port 7779 of the address 222.222.222.222. (the CICS001 is linked through ITS ZTBS to the same port of the addresses 111.111.111.111 and 111.111.111.112).
8. The listener of both CICS. Although at the EZACONFG level they have a TCPADDR that does not match the TCPNAME of the EDITRAN environment, they will work correctly, even though EDITRAN uses the ENVIRONMENT TCPNAME parameter in the INITAPI macro. However, the TCPIP interface ignores it for the time being. This does not occur in the IMS teleprocessing monitor, in which case the interface follows closely the EDITRAN instructions. There is no EZACONFG file in this monitor, so the relationship takes place between TCPIPJOBNAME and the EDITRAN environment parameter.

In this point we have:

1. CICS001. It has 2 EDITRAN listener, which listen to the incoming calls coming in from the addresses 111.111.111.111.111 and 111.111.111.111.112. These listener are:
   1.1. ZTBR. It only replies to incoming calls from these addresses and port 7778.
   1.2. ZTBS. It only replies to incoming calls from these addresses and port 7779.
2. CICS002. It has 3 EDITRAN listener, which listen to the incoming calls coming in from the address 222.222.222.222.222.222.222. These listener are:
   2.1. ZTBQ. It only replies to incoming calls from that address and port 7777.
   2.2. ZTBR. It only replies to incoming calls from that address and port 7778.
   2.3. ZTBT. It only replies to incoming calls from that address and port 7779.

These listener will remain started up until the CICS failure, or until the socket’s failure for CICS. When a call comes in through one of the addresses and ports described, the transid associated with them will accept the call and will give control to the ZTBB (TRANSACTION CHILD SERVER), so that it is the one in contact with the EDITRAN core and with the nodes. In such a way that the transid listener are only waiting for new connection indications. Thus, for example, if six calls come in in CICS001, two of them by the address 111.111.111.111, port 7778, other two by the address 111.111.111.112, port 7778, and two by the address 111.111.111.111, port 7779, at least eight tasks (ZTBR, ZTBS and 6 ZTBB) will be running. The ZTBBs end when the connection between both nodes is released. In turn, the transid ZTBB is also the EDITRAN CUSTOMER transid, so that if ten outgoing calls had been made from CICS at this point, eighteen tasks would be in execution (the previous ones plus another 10 ZTBBB). The client process will also use the EDITRAN environment TCPNAME for the
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INITAPI macro, but as explained above, it ignores that value and attaches itself to what has been coded in the TCPADDR of the EZACONFG's CICS record.

Other actions that could happen:

1- If in EDITRAN of CICS001 a node is defined with a DNS and not with an ip-address, and an attempt is made to generate a call request from CICS. This one is resolved correctly, because although this CICS is associated with the PILA001 (which does not have NSINTERADDR in TCPDATA001), when starting this CICS it was instructed to go to the TCPDATA002 for this type of situation. If TCPDATA001 has been selected in this startup, the DNS resolution would not have been possible due to the lack of a name server. If the server that solves the DNS is 002.002.002.001, two calls will have been made to two name servers (first to the one associated to the address 002.002.002.002 and then to the one that solves 002.002.002.001).

2- A teleprocessing monitor cannot be attached to two tcp stacks at the same time.

3- Two teleprocessing monitors can coexist with the same TCP stack but cannot simultaneously start two listener on the same port. This is the same as starting two different transid in a teleprocessing monitor in the same port. It is also the same as trying to start the same listener twice, in which case the EDITRAN programming itself will not allow it, although the socket interface will not allow it either, as there is already another asset on the same port. It is also not possible for a CICS to be a server in a STACK and a client in another.

4- In the actions as a server, in the BIND macro, the local IP address is not used, so that a listener would be listening through a port to all the IP addresses of a startup stack (ADDRESS 00000000 of PORT XXXXX). VIPAS (Virtual ip address) can also be included in the stack. However, it is not very useful for a VIPA or an OSA to be listened by one port and another VIPA-OSA, to be listened by another other than the previous one. The implemented solution happens because both listen through both ports. In the router that has access to the host, the VIPA should be coded with a static address.

5- The EZACONFG file CAN be unique, and can be updated (transid EZAC) from a SINGLE CICS, since the key includes the NAME of the teleprocessing monitor. In this case, it requires to be viewed with the same DSN by the other CICS. However, the sockets for CICS or LISTENER from other CICS other than our own cannot be started-stopped. That is, we can define in EZACONFG of CICS001, the CICS002 (CICS key) and the LISTENER of CICS002 (in the latter CICS the same EZACONFG as in CICS001 would be defined), but we cannot activate from CICS001 the sockets for CICS or the LISTENER of CICS002. These are activated from CICS002 with the transid EZA0.

6- If we want to assign another STACK, without stopping the CICS, we would stop the LISTENER, with EZA0 STOP CICS (the listener give an errno 10300 in the EDITRAN log), so that with this command the sockets for cics are also stopped. Next, we modify the corresponding CICS record with EZAC ALTER CICS, entering in the TCPADDR parameter the name of the TCP address space in the new stack. After this, we will activate the sockets for cics (EZA0 START CICS) and FINALLY, we will activate the listener (EZA0 START LISTENER or running the ZTBZ). If an errno 121 occurs in MACRO takesocket, it may mean that a call has come in and the main listener (ZTBA or others) has started the child listener (ZTBB) and it has not answered the previous one with this macro within the time specified in EZACONFG, parameter GIVTIME. If so, check the CICS settings, transid priorities, EAS
parameter in the CICS to VTAM definition and the relationship between the TCLASS parameter of PCT and CMXT of SIT (in the SIT there is the MXT parameter to indicate the number of CICS transid), since it may happen that you have not had time to start the task and this may be caused by CICS stress, as well as by settings that limit the number of tasks being executed.

7- The EAS parameter, in the definition of the CICS to VTAM, is the number of communication tasks in execution. In the PCT the task can point to a class (from 01 to 10), with the parameter TCLASS, and in the SIT with the parameter CMXT the transid number in execution of each of the classes and the CMXT to indicate the total number are specified. For TCP, there is at least one listener in permanent execution (up to the CICS or SOCKETS for CICS failure), n ZTBB (1 for each connection established, which die when the transmission ends) and n ZTBO (EDITRAN cores), which start and die by each message burst (parameter NUM.REG.SINCRONISMO, from the profiles of the EDITRAN session) sent-received over each connection. Thus, for example, if we have 4 connections, we will have 1 + 4 + x tasks running simultaneously. If the parameters are not adequate, the CICS slows down.
10.4. CONSIDERATIONS ABOUT THE BUFFER SPACE.

It is possible to control the size of the sending and reception buffer, (for the definitions, refer to the ED52USUC manual (chapter 1.3.1, 1.3.2)).

As for the speed of the process, the entity must be the one that limits or makes a correct adaptation of the settings. All of this is related to the sending burst of each transmission session (number of records sent between each confirmation), the local line speed, the remote line speed, the number of simultaneous processes, the size of the MTU, the transmission length, etc.

Thus, for example, if we connect against a node to which we are going to send bursts of 100 messages (4050), it implies that we will record about 400 K in the transmission buffer. If we define that session with the sending buffer tcp 0, it will take the value that is in the stack. If there is nothing, it will take the defect 16 K and probably the transmission will slow down. If, on the other hand, we have coded 200000 bytes (200K) in the session sending buffer (while recording in the buffer, it is taking out and leaving new space available), there would probably be no slowdown.

In SIT and the startup definition from CICS to VTAM the maximum number of simultaneous tasks is defined. In the previous example there were 18 SIMULTANEOUS and it would be necessary to add simultaneous cores, EDITRAN/G processes, time-out processes, etc.
10.5. BUFFER TCP/IP TRACES.

In some entities, a buffer trace has been obtained, in which the sending and reception window can be seen and a buffer use calculation can be made.

The steps that this entity has taken to obtain this trace (it seems necessary to have IPCS) are shown below, only for information purposes (without any support from EDITRAN):

The OS/390 V2R6.0 eNetwork CS IP Diagnosis manual contains the "IP Packet Trace" procedure. (There is another type of trace called 'Component Trace' whose procedure is very similar to this one).

The steps to be developed are:

1.- To start up the TCP/IP trace: 
V TCPIP,proc_arranque_TCPIP,CMD=O,DSN=data_set_name

   data_set_name: File or library member that must include the following instructions:
   PKTTRACE ON
   PKTTRACE FULL IP=Dirección_IP_remota

2.- To start up the external writer. 
TRACE CT,WTRSTART=TRTCP1,WRAP
  SYS1.PROCLIB(TRTCP1): This member must contain:
  //TRTCP1  PROC
  //IEFPROC EXEC PGM=ITTTRCWR
  //TRCOUT01 DD DSN=CUALIF1...CUALIFn.TRACETC1,DISP=OLD
  The trace will remain unformatted on the DHS represented by TRCOUT01.

3.- To connect the external writer to the TCP/IP stack:
   TRACE CT,ON,COMP=SYSTCPDA,SUB=(proc_arranque_TCPIP)
   Reply: R nnn,WTR=TRTCP1,END

4.- To reproduce the problem.

5.- To disconnect the external writer.
   TRACE CT,OFF,COMP=SYSTCPDA,SUB=(proc_arranque_TCPIP)
   Reply: R nnn,WTR=DISCONNECT,END
   It doesn't usually ask for this reply.

6.- To stop the external writer.
   TRACE CT,WTRSTOP=TRTCP1

7.- To stop the TCP/IP trace.
   V TCPIP,proc_arranque_TCPIP,CMD=O,DSN=data_set_name
   data_set_name: File or library member that must include the following instructions:
   PKTTRACE OFF

8.- To process the existing trace data in the previous data set and obtain it in another data set, that is:
To create the DATA SET and associate it to the DDNAME IPCSPRNT. This is from the option P.6 of ISPF, to run the following commands as they are:

8.1.- FREE FI(IPCSPRNT)
8.2.- ALLOCATE DDNAME(IPCSPRNT) DATASET('CUALIF1...CUALIFn.PRINT') NEW
     KEEP SPACE(10,5) TRACKS DSORG(PS) RECFM(V B A) LRECL(125)
     BLKSIZE(1254)   (The name of the DATA SET can be any, the important thing is that it is associated with the DDNAME IPCSPRINT)

From TSO, access IPCS.
   Menu 0: Source: DSNAME('CUALIF1...CUALIFn.TRACETC1')
       Message Routing: PRINT TERMINAL
   Menu 2.7.1.D: Component: SYSTCPDA
       GMT/Local: L
       Report Type: FULL
       Options: PACKETTRACE
   Menu 2.7.1.S.
Exit IPCS. In the DATA SET IPCSPRNT we get the formatted trace.