E64
THE NUTS AND BOLTS OF
IMS CONNECT

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IMS CONNECT DISCUSSION ITEMS

* WHAT'S NEW WITH IMS CONNECT
* IMS CONNECT CHANGES THAT MAY EFFECT THE CUSTOMER
* IMS CONNECT CONNECTION DIAGRAM TO IMS 5.1, 6.1 and 7.1
* IMS CONNECT BASE FUNCTIONS SUPPORTED
* IMS CONNECT ADDITIONAL FUNCTIONS SUPPORTED
* ASYNCHRONOUS OUTPUT
* SOCKET TYPES
* IMS CONNECT EXITS
* STRUCTURES
* FORMATTED DUMP
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* SAMPLE MESSAGE FLOW
* CONFIGURING IMS CONNECT
* IMS CONNECT CONFIGURATION DIAGRAM
* CLIENT/HOST APPL APPEARS TO HANG
* TRACE RECORD and STORAGE (USER WRITTEN CLIENT)
* TRACE RECORD and STORAGE (IMS CONNECTOR FOR JAVA CLIENT)
* TCP/IP TIPS
* TRACE RECORDS AND TCPNODELAY=ENABLE
* IMS CONNECT CLIENT ERROR MESSAGE PROTOCOL: Persistent Socket
* IMS CONNECT CLIENT ERROR MESSAGE PROTOCOL: Transaction Socket
* Notes for: IMS CONNECT CLIENT ERROR MESSAGE PROTOCOL
* IMS CONNECT REQUIREMENTS LIST
* IMS CONNECT PERFORMANCE

★ WHAT'S NEW WITH IMS CONNECT

- SMP/E INSTALLABLE
- SMP/E MAINTENANCE
- PROGRAM PRODUCT
- SUPPORTS IMS 5.1, 6.1, OR 7.1
- HOLD ASYNCHRONOUS OUTPUT
- PERSISTENT SOCKETS
- INITIALIZATION EXIT
- DATA STORE TABLE
- FORMATTED DUMP
- ENHANCED TRACE
- CLOSEHWS FORCE/QUIESCE
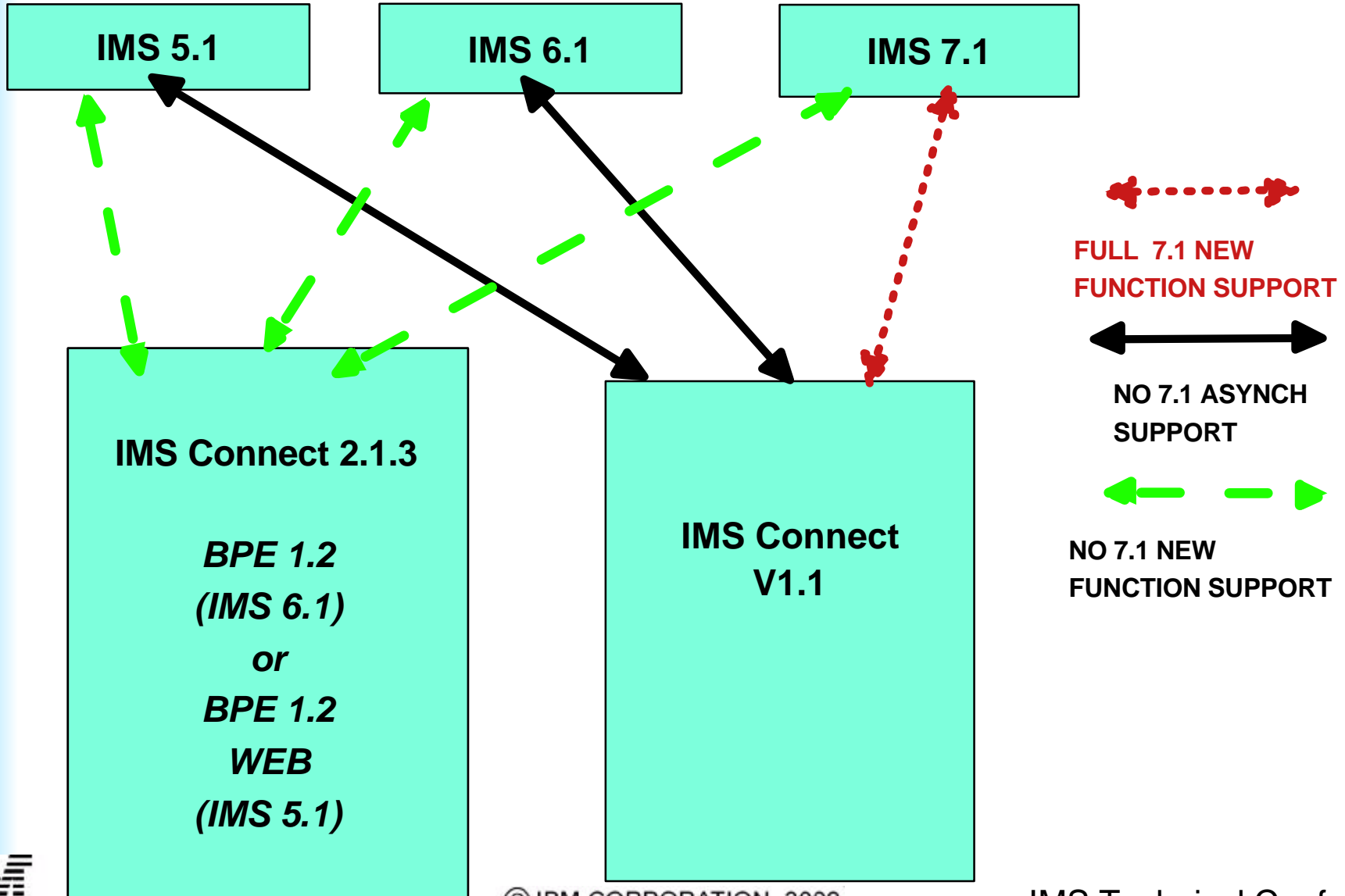- UNI CODE SUPPORT (VIA SERVICE)

- **Six fullwords have been added to OTMA User Data Hdr following OMUSR_USTAT field**
  - **If you've modified HWSSMPL0**
  - **If you've written your own User Message Exit**
  - **If you've modified HWSOMPFX macro**
- **CSM_ZZ and RSM_ZZ have been redefined, byte one provides a flag byte to communicate whether or not asynchronous output is available in IMS**
  - **If you've modified the CSM or RSM in HWSIMSCB macro**
  - **If you want to provide support for ASYNCHRONOUS output**
- **IRM_RSV has been redefined, byte now provides a flag byte to communicate Socket type**
  - **If you've modified the IRM in HWSIMSCB macro**

★ IMS CONNECT CONNECTIONS
TO IMS 5.1, 6.1 and 7.1 B

IMS 5.1

IMS 6.1

IMS 7.1

IMS Connect 2.1.3

BPE 1.2
(IMS 6.1)
or
BPE 1.2
WEB
(IMS 5.1)

IMS Connect V1.1

FULL 7.1 NEW FUNCTION SUPPORT

NO 7.1 ASYNCH SUPPORT

NO 7.1 NEW FUNCTION SUPPORT

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★ IMS CONNECT BASE FUNCTIONS

- **CONNECT**
- **SEND**
  - **DATA**
  - **RESUME TPIPE COMMAND FUNCTION**
  - **SENDONLY COMMAND FUNCTION**
  - **ACK**
  - **NAK**
  - **DEALLOCATE COMMAND FUNCTION**
- **READ**
  - **DATA**
  - **RESPONSE (DATA/RSM)**
- **DISCONNECT**

★ IMS CONNECT ADDITIONAL FUNCTIONS SUPPORTED

- **COMMIT MODE 0 (COMMIT SEND)**

- **COMMIT MODE 1 (SEND COMMIT)**

- **SYNCH LEVEL NONE**

- **SYNCH LEVEL CONFIRM**

- **ASYNCHRONOUS/UNSOLICIATED OUTPUT**

- **EXIT OPTIONS**
  - NO OPTION
  - AUTO
  - NOAUTO
  - SINGLE

★ ASYNCHRONOUS OUTPUT

- ISRT's to Alternate TP PCB

- Output that is NAK'ed for COMMIT MODE 0

- Retrieval mechanism is "RESUME TPIPE" followed by READ request

- CSM Flag to notify Client of output, "CSM_FLG1" if set to "CSM_ASY" then ASYNCH output exists for the client.

- RESUME TPIPE will request retrieval of any data queued in IMS.

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AUTO (RESUME TPIPE)

SET IRM_F5 TO IRM_F5_AUTO

1. Client issues CONNECT function

2. Client issues RESUME TPIPE function

3. Client issues RECEIVE function

4. Client issues ACK to IMS Connect

5. Client repeats events 3 and 4

SET IRM_F5 TO IRM_F5_NOAUTO

1. **Client issues CONNECT function**

2. **Client issues RESUME TPIPE function**

3. **Client issues RECEIVE function**

4. **Client issues ACK to IMS Connect**

5. **Client repeats events 3 and 4 until event six (below) occurs.**

6. **IMS Connect disconnects the Socket from the host end**

7. **Client issues DISCONNECT function.**

► NO OPTION (RESUME TPIPE)

SET IRM_F5 TO IRM_F5_NOOPT

1. Client issues CONNECT function
2. Client issues RESUME TPIPE function
3. Client issues RECEIVE function
4. Client issues ACK to IMS Connect
5. Client repeats events 3 and 4 until event six (below) occurs.
6. IMS Connect disconnects the Socket from the host end
7. Client issues DISCONNECT function.

► SINGLE (RESUME TPIPE)

SET IRM_F5 TO IRM_F5_ONE

1. Client issues CONNECT function
2. Client issues RESUME TPIPE function
3. Client issues RECEIVE function
4. Client issues ACK to IMS Connect
5. IMS Connect disconnects the Socket from the Host end
6. Client issues DISCONNECT function

★ SOCKET TYPES

- **PERSISTENT SOCKET**

- **TRANSACTION SOCKET**

- **NON PERSISTENT SOCKET**

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PERSISTENT SOCKET

- CONNECTION LASTS ACROSS MULTIPLE TRANSACTIONS

- SUPPORTS COMMIT MODE 1 ONLY

- SYNCH LEVEL CONFIRM/NONE

- USED BY IMS CONNECTOR FOR JAVA

● TRANSACTION SOCKET

- CONNECTION LASTS FOR A SINGLE TRANSACTIONS ONLY

- SUPPORTED FOR COMMIT MODE 1

- SUPPORTED FOR COMMIT MODE 0

- SYNCH LEVEL CONFIRM/NONE

NON-PERSISTENT SOCKET

– **INTENDED** FOR **IMS WEB ONLY**

– **"SHOULD NOT"** BE USED BY USER WRITTEN CLIENTS.

– CONNECTION LASTS ACROSS A SINGLE EXCHANGE, ONE INPUT AND ONE OUTPUT

– **IS NOT** TRANSACTION BASED

– SUPPORTED FOR COMMIT MODE 1

– SUPPORTED FOR COMMIT MODE 0

★ IMS CONNECT EXITS

- USER INITIALIZATION EXIT

- USER MESSAGE EXITS

- OTMA DRU EXIT

USER INITIALIZATION EXIT

- **PERFORM CUSTOMIZED INITIALIZATION AND TERMINATION**
- **DRIVEN DURING ITOC INITIALIZATION AND TERMINATION**
- **SAMPLE EXIT _SOURCE (ONLY)_ SUPPLIED WITH IMS CONNECT**
  - **XIB TABLE**
    - **6 FULLWORDS FOR IMS CONNECT**
    - **DEFAULT OF 20 FULLWORDS**
    - **MAX OF 500 FULLWORDS**
  - **FUNCTIONS**
    - **DATA STORE TABLE (Addr stored in XIB)**
    - **LOAD TABLES**
    - **OBTAIN STORAGE**

MESSAGE EXIT

- IMS CONNECT PROVIDES "HWSJAVA0, HWSIMSO0 and HWSSMPL0"
- SAMPLE EXITS SOURCE (ONLY) SUPPLIED WITH IMS CONNECT
  - FULLY FUNCTIONAL
- User Ability to Manage Message input/output
  - IRM (variable length)
  - Commit Mode
    - Send Commit
    - Commit Send
  - Synch Level
    - CONFIRM
    - NONE
  - Translation done by Client or Exit
    - ASCII=>EBCDIC
    - EBCDIC=>ASCII
  - Calling User Security Exit
  - RACF Parms - Userid, Groupid & Password
  - Build input OTMA Headers (variable length)
  - Remove output OTMA Headers
  - Override Data Store name
  - Override Client name
  - Override LTERM name
  - ACK/NACK/DEALOCATE OTMA Build
  - RESUME TPIPE
  - SEND ONLY
  - CSM, RSM and RMM response build
  - TIMEOUT for READ following ACK/RESUME TPIPE

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OTMA DRU EXIT

- **USER ABILITY TO MANAGE**
  - SELECTION OF OUTPUT DEVICE
  - ACCEPT SELECTED OUTPUT DEVICE
  - REJECTION OF SELECTED OUTPUT DEVICE

- **SAMPLE EXIT _SOURCE (ONLY)_ SUPPLIED WITH IMS CONNECT**

- **SAMPLE EXIT ESTABLISHES ADDRESSABILITY, NO FUNCTION**

★ STRUCTURES

- **IRM**
- **CSM**
- **RSM**
- **RMM**

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IRM

- **Variable Length of IRM (default X'50')**
- **Reserved 2 bytes**
- **Msg ID *SAMPL0***
- **Reserved word**
- **Flag5**
  - **OTMA Hrds built**
  - **Translation**
  - **Resume TPIPE Read Options**
- **Timer for Read after ACK/RESUME TPIPE**
- **Socket type**
- **Reserved byte**
- **Client Id**

IRM Continued

- **Flag1**
  - MOD Name
- **Flag4**
  - ACK/NAK/DEALLOCATE/SEND ONLY/RESUME TPIPE
- **TRAN Code**
- **Data Store ID (IMS destination)**
- **LTERM override**
- **RACF Data**
  - USERID
  - GROUP NAME
  - PASSWORD
- **USER DATA THAT IS USED BY THE MESSAGE EXIT**

CSM

- **Length of CSM X'0C'**
- **ASYNCH output flag**
- **Reserved byte**
- **Msg ID *CSMOKY***

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RSM

- **Length of RSM X'14'**
- **ASYNCH output flag**
- **Reserved byte**
- **Msg ID *REQSTS***
- **Return Code**
- **Reason Code**

RMM

- **Length of RMM X'14'**
- **Reserved 2 bytes**
- **Msg ID *REQMOD***
- **IMS MFS MOD name**

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★ FORMATTED DUMP

- FORMATTING OF INTERNAL IMS CONNECT BLOCKS
- PROBLEM RESOLUTION

★ TIMEOUT USAGE

- **TIMEOUT IN CONFIG FILE**
  - **FOR RECEIVE FROM IMS**
  - **FOR RECEIVE FROM CLIENT**

- **TIMEOUT IN IRM**
  - **FOR RECEIVE FOLLOWING ACK**
  - **FOR RECEIVE FOLLOWING RESUME**

★ SAMPLE MESSAGE FLOW

I. Persistent socket/Commit Mode 1

   a. Conversation

   b. Non-Conversation

II. Transaction socket/Commit Mode 1

   a. Conversation

   b   Non-Conversation

III. Transaction socket/Commit Mode 0

   a. Non-Conversation

I a. Persistent Socket/CM1/Conversation

| | IMS | USER MSG | |
| CLIENT | CONNECT | EXIT | OTMA/IMS |

1. connect--------->proc connect

2. send tc/data--->proc msg----------->rebuild msg

> build OTMA hdrs

proc msg<-----------------

send msg--------------------------------->proc tran

receive msg<------------------------------send output

proc msg----------->rebuild msg

> remove OTMA hdrs

proc msg<-----------------

3. read msg<--------send msg

4. *send ack--------->read ack

5. *Repeat steps 2 (no tran code) through 4 to conversation completion

6. Read resp<-------send RSM (deallocate commit/abort

7.Repeat steps 2 through 6 above for next transaction or until you wish to terminate the persistent socket or wish to terminate the connection

8. disconnect------>proc disconnect   * = required only if

<--------issue disconnect

synch level=confirm

I b. Persistent Socket/CM1/Non-Conversation

	IMS	USER MSG	
CLIENT	CONNECT	EXIT	OTMA/IMS

1. connect--------->proc connect

2. send tc/data--->proc msg----------->rebuild msg

                                           build OTMA hdrs

                   proc msg<-----------------

                   send msg--------------------------------------->proc tran

                receive msg<----------------------------------send output

                  proc msg----------->rebuild msg

                                  remove OTMA hdrs

                   proc msg<-----------------

3. read msg<------send msg

4. *send ack--------->read ack

5. *Read resp<------send RSM (deallocate commit/abort

6. Repeat steps 2 through 5 above for next transaction or until you

wish to terminate the persistent socket or wish to terminate the connection.

7. disconnect----->proc disconnect   * = required only if

            <-------issue disconnect   synch level=confirm

II a. Transaction Socket/CM1/Conversation

	IMS	USER MSG	
CLIENT	CONNECT	EXIT	OTMA/IMS

1. connect--------->proc connect

2. send tc/data--->proc msg----------->rebuild msg

                                    build OTMA hdrs

                  proc msg<-----------------

                  send msg--------------------------------------->proc tran

                  receive msg<---------------------------------send output

                  proc msg----------->rebuild msg

                                remove OTMA hdrs

                  proc msg<-----------------

3. read msg<--------send msg

4. *send ack-------->read ack

5. *Repeat steps 2 (no tran code) through 4 to conversation compeleltion

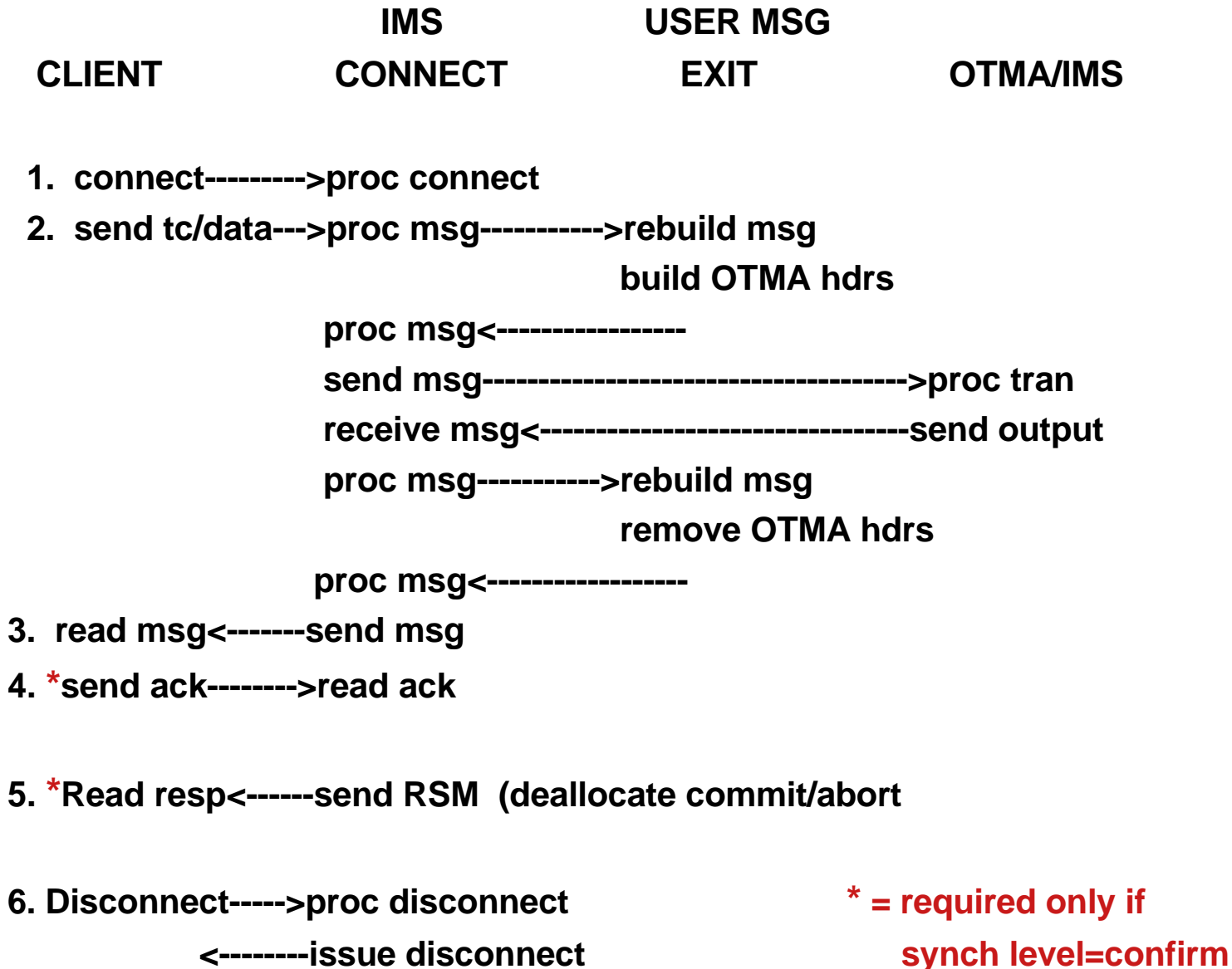6. Read resp<-------send RSM (deallocate commit/abort

7. Disconnect------>proc disconnect   * = required only if

          <---------issue disconnect   synch level=confirm

Repeat steps 1 through 7 above for next transaction

II b. Transaction Socket/CM1/Non-Conversation

	IMS	USER MSG	
CLIENT	CONNECT	EXIT	OTMA/IMS

1. connect--------->proc connect
2. send tc/data--->proc msg----------->rebuild msg

                                     build OTMA hdrs

              proc msg<----------------

              send msg--------------------------------------->proc tran

              receive msg<---------------------------------send output

              proc msg----------->rebuild msg

                              remove OTMA hdrs

              proc msg<----------------

3. read msg<-------send msg
4. *send ack--------->read ack

5. *Read resp<------send RSM (deallocate commit/abort

6. Disconnect----->proc disconnect   * = required only if

          <--------issue disconnect   synch level=confirm

III a. Transaction Socket/CM0/Non-Conversation

	IMS	USER MSG	
CLIENT	CONNECT	EXIT	OTMA/IMS

1. connect--------->proc connect

2. send tc/data--->proc msg----------->rebuild msg

                                          transl/bld OTMA hdrs

            proc msg<----------------

            send msg------------------------------------->proc tran

            receive msg<-------------------------------send output

            proc msg----------->rebuild msg

                                            trans/remove OTMA hdrs

            proc msg<------------------

3. read msg<------send msg

4. send ack-------->read ack

5. Repeat steps 2 (no tran code) through 4 to conversation compleltion

6. disconnect----->proc disconnect

            <-----issue disconnect

Repeat steps 1 through 6 above for next transaction

★ Configuration Statements

```
HWS (ID=HWS01,RACF=Y,XIBAREA=20)
TCPIP(HOSTNAME=MVSTCPIP,RACFID=RACFID,PORTID=(9999),ECB=N,EXIT=(EZAEXIT),
DRU=HWSYDRU0,MAXSOC=50,TIMEOUT=45
DATASTORE ID=IMS1,GROUP=IMSGRPIP,MEMBER=HWSMEM,TMEMBER=IMS1MEM)
```

- the **HWS configuration statement** defines:
    - the **ID** as **HWS01 (becomes the OTMA TPIPE NAME, it's just a name)**
    - the **RACF** as **y defines that IMS CONNECT is to issue RACF calls.**
    - the **XIBAREA** as **20 defines 20 fullwords for the User Init Exit XIB blodk**
- the **TCP/IP configuration statement** defines
    - the **HOSTNAME** as **MVSTCPIP (TCP/IP JOB name)**
    - the **RACF ID** as **RACFID (user defined default RACFID value)**
    - the **PORTID** as **9999 (TCP/IP Port number)**
    - the **ECB=NO (do not use the ECB perfromance option)**
    - the **EXIT** as **EZAEXIT (names of user exits to be used)**
    - the **DRU** as **HWSYDRU0 (name of the OTMA DRU exit)**
    - the **MAXSOC** as **50 (allow up to 50 sockets to connect per port to ITOC)**
    - the **TIMEOUT** as **45 (allow 45 hundredths of a sec before disconnect)**
- the **DATASTORE configuration statement** defines:
    - the **ID** as **IMS1 (just a name used as anchor name of IMS for ITOC)**
    - the **GROUP** as **IMSGROUP (XCF group name that both ITOC and IMS join)**
    - the **MEMBER** as **HWSMEM (the ITOC membername IMS communicates with)**

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● HWS STATEMENT

- **HWS: specify only one IMS CONNECT**
- **The HWS statement parameter is as follows:**

  - **HWS (ID=hwsname,RACF=char,XIBAREA=value)**
  - **hwsname: The IMS CONNECT name, which:**
    - ◆ **Consists of alphanumeric character data**
    - ◆ **Begins with an alphabetic character**
    - ◆ **Has a length between 1 and 8 bytes**
  - **char: RACF call option**
    - ◆ **Y=Yes IMS Connect to issue RACF call**
    - ◆ **N=No   IMS Connect is not to issue RACF call**
  - **value: Number of fullwords to be allocated for the XIB**

TCP/IP STATEMENT

- **TCP/IP: Specifies only one TCP/IP**
- **The TCP/IP statement parameters are as follows.**

  - TCP/IP (HOSTNAME=hostname,RACFID=racfid,PORTID=(portid,...), ECB=NO,MAXSOC=socvalue,TIMEOUT=tovalue,EXIT=(exitname,...)
  - **hostname: An 8-byte character field set to the TCP/IP JOB name.**
  - **racfid: An 8-byte character field set to the default RACF ID for user exits to pass to OTMA for security checking.**
  - **portid: An 8-byte character fields set to the port number that will bind to the socket.**
  - **NO: TCP/IP performance option not requested.**
  - **socvalue: The number of Sockets that will be allowed to be connected to IMS Connect.**
  - **tovalue: The timeout value to wait for IMS to responde to a read from IMS Connect and the valueto wait for the Client to respond to a read from IMS Connect.**
  - **exitname: The exits that received control for messages received and sent to TCP/IP clients. Exits are 8-byte character names of exits.**

DATASTORE STATEMENT

- **DATASTORE: Specify each DATASTORE with which IMS Connect communicates**
- **The parameters for the DATASTORE statement are as follows:**
  - **DATASTORE (ID=dsname,GROUP=groupname,MEMBER=memname, TMEMBER=tmembername,DRU=druname)**
  - **dsname: The DATASTORE name, which:**
    - ◆ **Consists of alphanumeric character data**
    - ◆ **Begins with an alphabetic character**
    - ◆ **Has a length between 1 and 8 bytes**
  - **groupname: The group name for the IMS OTMA. IMS CONNECT uses this value to join the appropriate XCF group. The group name must match the name you define to IMS.**
  - **membername: the member name that identifies IMS CONNECT in the XCF group.**
  - **tmembername: The target member name of the IMS with which IMS CONNECT communicates.**
  - **druname: The name of the OTMA DRU exit to be used by OTMA**

EXAMPLES OF IMS CONNECT CONFIGURATION

- **EXAMPLE 1**
  HWS (ID=HWS1,RACF=N,XIBAREA=20)
  TCPIP HOSTNAME=TCPIP,RACFID=SAM,PORTID=9999,MAXSOC=50,TIMEOUT=40,...)
  DATASTORE (ID=IMSA,GROUP=GROUPA,MEMBER=HWSMEM1,TMEMBER=IMSMEMA,...)

- **EXAMPLE 2**
  HWS (ID=HWS2,RACF=N,XIBAREA=25)
  TCPIP HOSTNAME=TCPIP,RACFID=SAM,PORTID=9998,MAXSOC=50,TIMEOUT=40,...)
  DATASTORE (ID=IMSA,GROUP=GROUPA,MEMBER=HWSMEM2,TMEMBER=IMSMEMA,...)
  DATASTORE (ID=IMSB,GROUP=GROUPB,MEMBER=HWSMEM2,TMEMBER=IMSMEMB,...)
  DATASTORE (ID=IMSC,GROUP=GROUPB,MEMBER=HWSMEM2C ,TMEMBER=IMSMEMC,...)
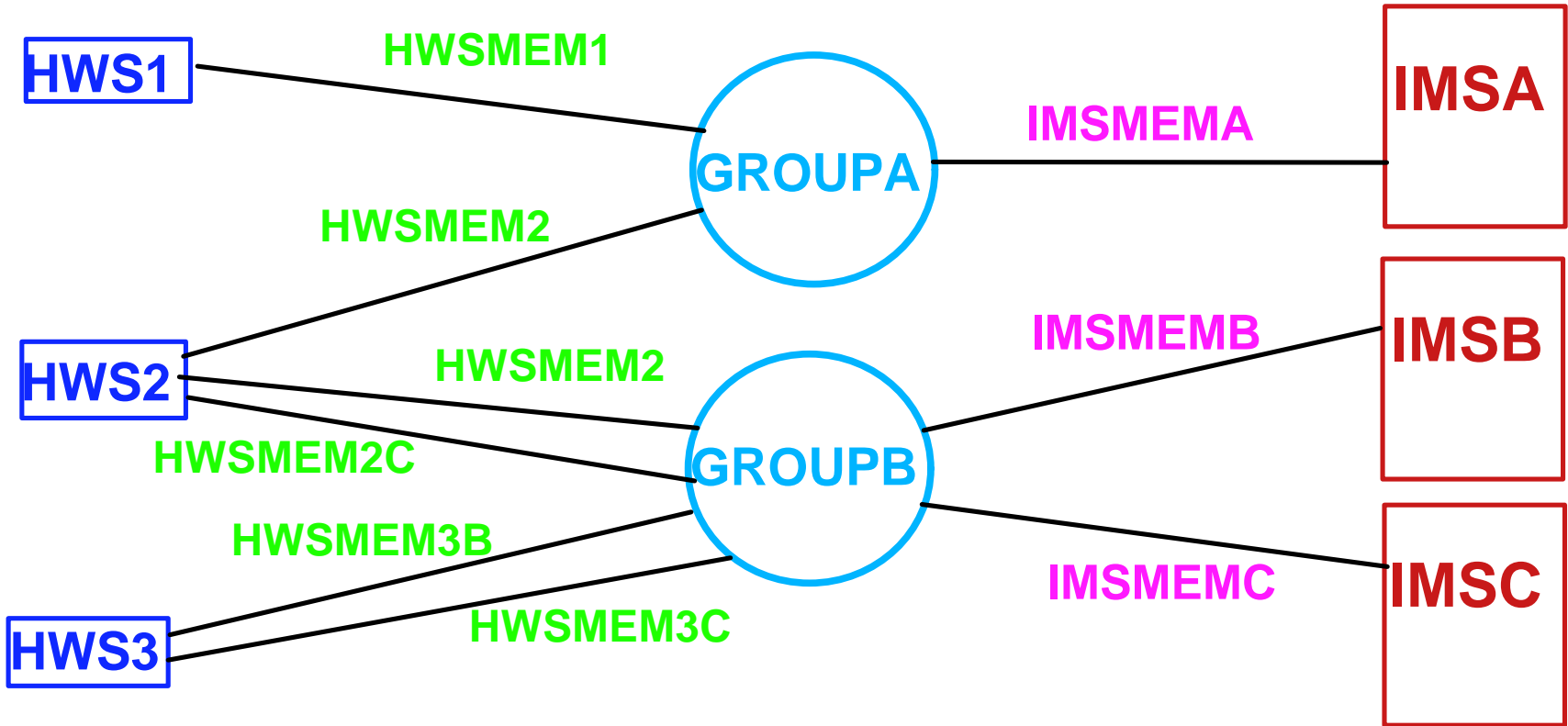
- **EXAMPLE3**
  HWS (ID=HWS3,RACF=N,XIBAREA=30)
  TCPIP HOSTNAME=TCPIP,RACFID=SAM,PORTID=9998,MAXSOC=50,TIMEOUT=40,...)
  DATASTORE (ID=IMSB,GROUP=GROUPB,MEMBER=HWSMEM3B,TMEMBER=IMSMEMB,...)
  DATASTORE (ID=IMSC,GROUP=GROUPB,MEMBER=HWSMEM3C,TMEMBER=IMSMEMC,...)

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★ **IMS CONNECT CONFIGURATION**

★ CLIENT/HOST APPL APPEARS TO HANG?

```
                    VIEWHWS
                RECV  |  CONN
        ---------------------------------------------
            |                           |
Waiting data from Client     Waiting data from IMS
   (Data/ACK/NAK)                       |
            |                      /DISP PROGRAM
Data/ACK/NAK sent?           stopped  |  available
    No  | Yes               ----------------------------------
   -------------------            |                   |
    |          |          /STA PROG          MPP RUNNING?
 Send Data/    |                                No | Yes
  ACK/NAK      |                           -----------------------
    |          |                               |              |
 Get IMS Connect SVC Dump              Start MPP      /DIS Tran
           |                                              |
     Check internal Trace                        Get ENQ/DEQ Count
 for length received, & length sent                   (repeat)
     (see following foils)                                |
                                                  DEQ Count growing
                                                     No   |  Yes
                                          --------------------------------------
```

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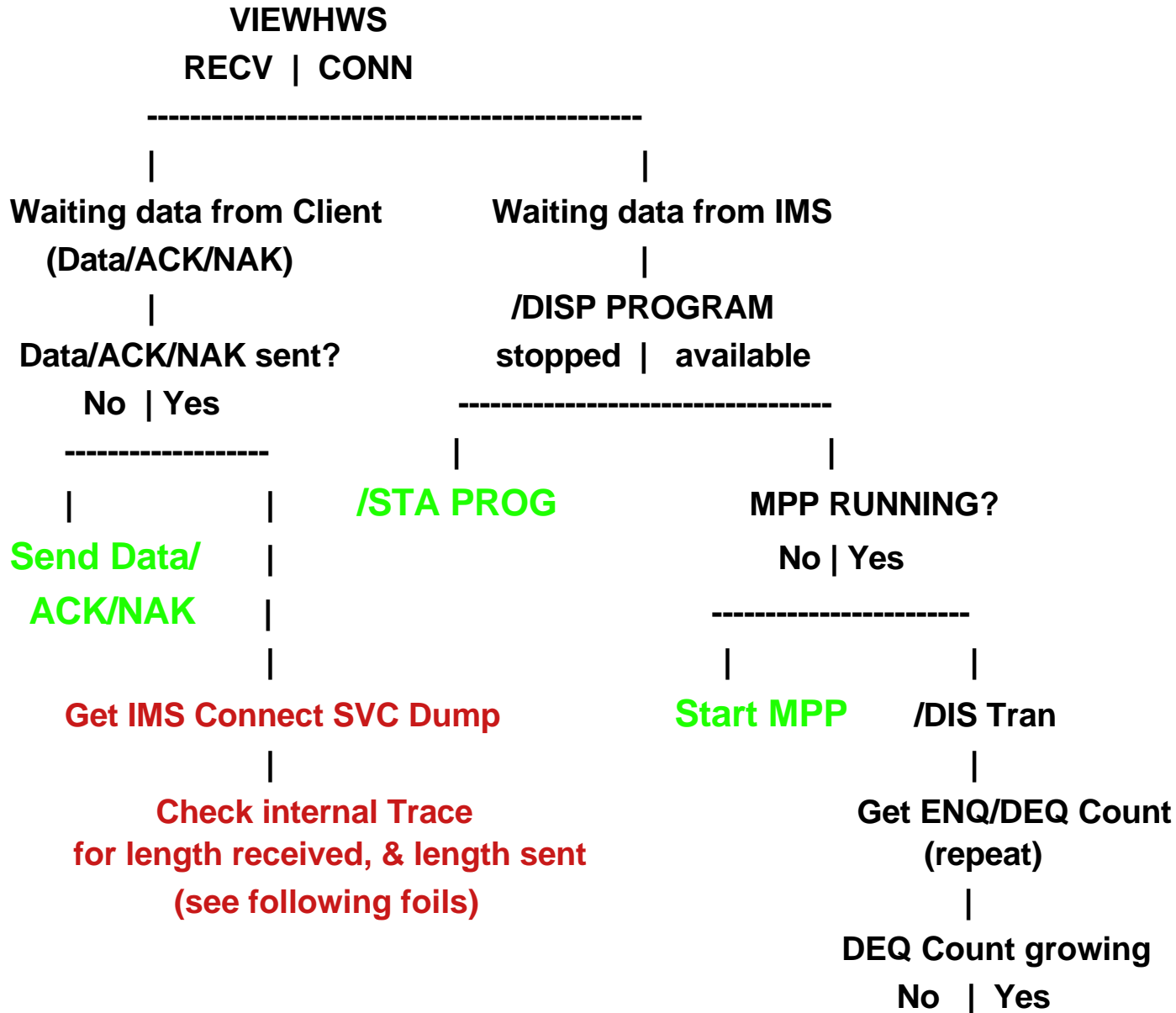
★ TRACE RECORD and STORAGE
(USER WRITTEN CLIENT)

```
TCPI :SDRCV  TCPIP READ COMPLETE        05760000 00000001 00000000
                                        00000000 06ADC280 00000020
                                        180 094931.724482              nnn Bytes Read
TCPI :SDRCV  TCPIP READ COMPLETE        05760000 0000001F 00000000    nnn Read Length
                                        00000080 06ADC281 0000001F    nnn Buffer Addr
                                        180 094932.068784              nnn  llll Length
TCPI :SDRCV  NON-IWEB READ              057B0000 06AE1040 00000080    nnn Inital 20 Byte
                                        00000020 06ADC280 00000000        Buffer Addr
                                        180 094932.096446              nnn Code and
TCPI :SDRCV  MID/LAST CLIENT READ       057C0000 00000056 00000000        Sub Code
                                        00000080 06AE10A0 00000060
                                        180 094932.096921
```

LLLL and X'1C' OF IRM
REMAINDER OF IRM
APPLICATION DATA   (FROM THE DATA WE SEE THAT THE CORRECT
EOM   llll SHOULD HAVE BEEN 00000076 NOT 00000080)

```
06AE1080  00000080   00500000   2A53414D   504C452A   | .....&......(&<.. |
06AE1090  00000000   00000000   C3D3C9C5   D5E3F0F1   | ........CLIENT01 |
06AE10A0  00200140   C9E3D6C3   F0F54040   E2D6C3D2   | ... ITOC05  SOCK |
06AE10B0  C5E8C540   40404040   40404040   E4E2D9E3   | EYE      USRT |
06AE10C0  F0F0F340   E4E2C5D9   C7D9D740   40404040   | 003 USERGRP    |
06AE10D0  40404040   001E0000   C9E3D6C3   F0F54040   |    ....ITOC05  |
```

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★ TRACE RECORD and STORAGE
(IMS CONNECTOR FOR JAVA CLIENT)

```
TCPI :SDRCV  TCPIP READ COMPLETE        05760000 00000001  00000000
                                        00000000 06ADC280  00000020
                                        180 094931.724482              nnn Bytes Read
TCPI :SDRCV  TCPIP READ COMPLETE        05760000 0000001F  00000000   nnn Read Length
                                        00000080 06ADC281 0000001F     nnn Buffer Addr
                                        180 094932.068784             nnn  llll Length
TCPI :SDRCV  TCPIP READ COMPLETE        05760000 00000056  00000000   nnn Inital 20
Byte
                                        00000080 06AE10A0 00000060     Buffer Addr
                                        180 094932.068787             nnn Code and
                                                                      Sub Code
```

LLLL and X'1C' OF IRM

REMAINDER OF IRM   (FROM THE DATA WE SEE THAT THE CORRECT

APPLICATION DATA   llll SHOULD HAVE BEEN 00000076 NOT 00000080)

EOM

```
06AE1080  00000080  00500000  2A53414D  504C452A  | .....&......(&<.. |
06AE1090  00000000  00000000  C3D3C9C5  D5E3F0F1  | ........CLIENT01 |
06AE10A0  00200140  C9E3D6C3  F0F54040  E2D6C3D2  | ... ITOC05  SOCK |
06AE10B0  C5E8C540  40404040  40404040  E4E2D9E3  | EYE      USRT |
06AE10C0  F0F0F340  E4E2C5D9  C7D9D740  40404040  | 003 USERGRP     |
06AE10D0  40404040  001E0000  C9E3D6C3  F0F54040  |     ....ITOC05  |
06AE10E0  C3D3C9C5  D5E3F0F1  4040C3D3  C9C5D5E3  | CLIENT01  CLIENT |
06AE10F0  F0F20004  00000000  00000000  00000000  | 02.............. |
```

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★ TCP/IP TIPS

- **TCP/IP "SO_LINGER = Y/N,VALUE=n"**

  - **SO_LINGER=Y,VALUE=0**
    - Immediate return to Client Code
    - Socket Close can bypass data sent and the output will be lost

  - **SO_LINGER=N**
    - Immediate return to Client Code
    - Socket Close can bypass data sent and the output will be lost

  - **SO_LINGER=Y,VALUE=10**
    - Return to Client Code when ACK received from host, or wait for 10 sec before sending close.
    - Socket Close will not bypass data sent

- **TCP/IP "TCPNODELAY=ENABLE/DISABLE "**

  - **TCPNODELAY=ENABLE**
    - **Data Transmitted per JAVA Write**
    - **Waits 1 Millisec before Transmission**
    - **Multiple Writes will result in Multiple Transmissions**

  - **TCPNODELAY=DISABLE**
    - **Data Collected from Writes when received from Client**
    - **Waits till Buffer Full before Transmission**
    - **Multiple Writes will result in 1 to n Transmissions**

★ TRACE RECORDS AND TCPNODELAY=ENABLE

TCPI :SDRCV TCPIP READ COMPLETE   05760000 00000001 00000000
                                          00000000 06ADC280 00000020
                                          180 094931.724482

TCPI :SDRCV TCPIP READ COMPLETE   05760000 00000001 00000000
                                          00000000 06ADC281 0000001F
                                          180 094932.068784

TCPI :SDRCV TCPIP READ COMPLETE   05760000 00000002 00000000
                                          00000080 06ADC282 0000001E
                                          180 094931.724486

TCPI :SDRCV TCPIP READ COMPLETE   05760000 00000002 00000000
                                          00000080 06ADC284 0000001C
                                          180 094932.068788

★ IMS CONNECT CLIENT ERROR MESSAGE PROTOCOL: Persistent Socket

Message Output to Client	Persistent Socket			
	Commit Mode 1		Commit Mode 0	
	Synch Level Confirm	Synch Level none	Synch Level Confirm	Synch Level none
Invalid transaction code DFS0064	DFS0064 (1)	DFS0064 (1)	N/A	N/A
Transaction stopped DFS0065	DFS0065 (1)	DFS0065 (1)	N/A	N/A
Transaction abended DFS555	DFS555 (7)	DFS555 (1)	N/A	N/A
Output DFS2082	DFS2082 (2)	DFS2082 (1)	N/A	N/A
IMS Command Output	Cmd output (1)	Cmd output (1)	N/A	N/A
Security Failure DFS1292	DFS1292 (1)	DFS1292 (1)	N/A	N/A
Segment greater than 32 K	DFS1294 (5)	DFS1294 (5)	N/A	N/A

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Message Output to Client	Transaction Socket			
	Commit Mode 1		Commit Mode 0	
	Synch Level Confirm	Synch Level none	Synch Level Confirm	Synch Level none
Invalid transaction code DFS0064	DFS0064 (1)	DFS0064 (1)	DFS0064 (1)	N/A
Transaction stopped DFS0065	DFS0065 (1)	DFS0065 (1)	DFS0065 (1)	N/A
Transaction abended DFS555	DFS555 (7)	DFS555 (1)	DFS0065 (7)	N/A
Output DFS2082	DFS2082 (2)	DFS2082 (1)	TIMEOUT (3)	N/A
IMS Command Output	Cmd output (1)	Cmd output (1)	Cmd output (4)	N/A
Security Failure DFS1292	DFS1292 (1)	DFS1292 (1)	DFS1292 (1)	N/A
Segment greater than 32 K	DFS1294 (5)	DFS1294 (5)	DFS1294 (6)	N/A

★ **Notes for: IMS CONNECT CLIENT ERROR**

MESSAGE PROTOCOL

Note: 1 Does not require an ACK to DFS messages. A second read is required to get a deallocate response (RSM).

Note: 2 Requires both an ACK to DFS messages and a second read to get a deallocate response.

Note: 3 The read to receive the transaction output will time out. No data will be received. OTMA treats Commit mode=0 and Synch level=Confirm as asynchronous output. If the IMS Host application does not return a message (ISRT to IOPCB), OTMA does not send a deallocate. The TIMEOUT= value specified in the IMS Connect configuration file will have to expire before the disconnect is complete.

Note: 4 Requires an ACK to command output. A second read is not required to get a deallocate response. The command output gets treated as asynchronous output.

Note: 5 Does not require ACK to DFS1294 output. A second receive is required to receive the DFS555 message.

Note: 6 Client will receive DFS1297 rather than DFS1294. The DFS1294 message does not require an ACK. No DFS555 message gets sent, so a second receive is not required. The application is committed, and the application output gets discarded because the segment is larger than 32 K.

Note: 7 For IMS Versions 6 and 7, does not require an ACK to DFS messages. To receive the deallocate response (RSM), a second read is required. For IMS Version 5, requires an ACK to DFS messages. To receive the deallocate response (RSM), a second read is required.

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★ REQUIREMENTS LIST

- **REQUESTED REQUIREMENTS**
  - UNI-CODE SUPPORT
  - S/390 NON-TCP/IP CONNECTION
  - #DISTRIBUTED SYNCHPOINT
  - #AUTO RECONNECT TO IMS
  - #AUTO RECONNECT TO TCP/IP
  - NON "WTOR" COMMAND SUPPORT
  - PERSISTENT SOCKET FOR COMMIT MODE 0
  - ACK/NAK RESPONSE REQUIRED NOTIFICATION BACK TO CLIENT
  - RACF ENHANCEMENTS
    - ➤ #OVERRIDE RACF PER CALL FROM MSG EXIT
    - ➤ PASSWORD NOT REQUIRED
    - ➤ #COMMAND TO CHANGE PASSWORD
  - IMS CONNECT COMMAND SUPPORT FROM CLIENTS
  - #DEALLOCATE RECORDER TRACE AT "RECORDER CLOSE" COMMAND TIME
  - DYNAMIC RE-LOAD OF MESSAGE EXITS
  - ALLOW USER MSG EXIT TO RETURN DATA TO TRACE
  - WIRELESS IP ADDRESS
  - #COMMAND AUTOMATION
  - XML SUPPORT
- **REQUIEMENTS SHIPPED WITH IMS CONNECT 1.1**
  - #COMMAND TO ACTIVAT/DEACTIVATE IMS CONNECT TRACE (FORCE COMMAND)
  - #TIMEOUT DETECTION
  - #SUPPORT ALTPCB FULLY
  - #SAMPLE DRU EXIT
  - #QUIESCE/FORCE CLOSEHWS OPTIONS
  - #PERSISTENT SOCKETS (COMMIT MODE 1)
  - #REMOVE AUTO LOAD OF HWSWEB00 EXITG
- **REJECTED REQUIREMENTS**
  - #RETURN MSG TO EXIT IF DATASTORE NOT AVAILABLE
  - #REMOVE MANDATORY EXITS (HWSJAVA0 and HWSINIT still required)

 # DENOTE OFFICAL CUSTOMER REQUIREMENT
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★ IMS CONNECT PERFORMANCE

	IMS TOC 2.1.3 Proto-type Persistent sockets		IMS CONNECT FEATURE Persistent Sockets		IMS CONNECT 1.1 Persistent Sockets	
IMS Systems	1	IMS 6.1 fast path	1	IMS 7.1 fast path	1	IMS 7.1 fast path
IMS Connect	3	IMS TOC 2.1.3	2	IMS Connect	1	IMS Connect
Ports	30	Ports	20	Ports	4	Ports
Total Sockets	120	Sockets	200	Sockets (10/Port)	400	Sockets (100/Port)
Hardware	1	9672-RX5 10-way	1	9672-ZZ7 12-way	1	9672-ZZ7 12-way
MVS Level		OS/390 2.6		OS/390 2.7		OS/390 2.7
TCP/IP Level		3.5		3.7		3.7
CPU Usage		73%		32.2%		39%
Driven by (1/Port)	12	TPNS scripts	20	TPNS scripts (1/Port)	4	TPNS scripts
from	2	9672-RX3S	1	9672-RX5	1	9672-ZZ7
Tran Rate	844	trans/sec	2052	trans/sec	3408	trans/sec