



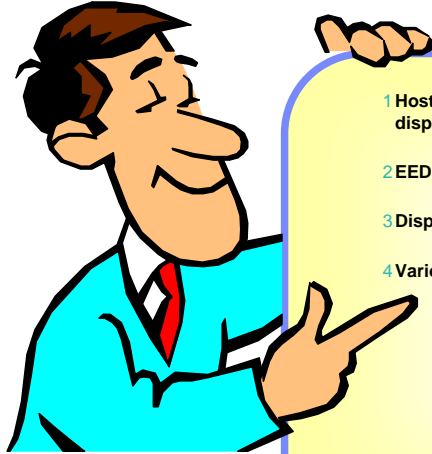
IBM eServer™

Enterprise Extender and SNA: Display enhancements

@business on demand software

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Agenda - SNA and Enterprise Extender



- 1 Hostname resolution support for EE and EEDIAG display commands
- 2 EEDIAG command enhancements
- 3 Display of blocked conversations
- 4 Various SNA Message Enhancements

Hostname resolution support for
EE and EEDIAG display
commands

Hostnames on Display EE and Display EEDIAG commands

➤ Communications Server V1R6 - Display EE commands

- Useful to display EE connection transmission statistics
- Uses command filters to limit output to specific EE connections

➤ Communications Server V1R7 - Display EEDIAG commands

- Useful to display EE connections by retransmission rates
- Useful to display LDLC retry information
- Uses command filters to limit output to specific EE connections

➤ DISPLAY EE and DISPLAY EEDIAG commands

- Useful, but have limitations when using HOSTNAME filters
 - Requires EE be configured with HOSTNAMES
 - Inconsistent results when using remote HOSTNAME filter

➤ VTAM® will in z/OS® V1R8 always call the IP resolver to resolve hostname filters for the DISPLAY EE and DISPLAY EEDIAG commands.

- Relieves the requirement of EE being configured using HOSTNAMES to use hostname filters on EE displays
- Provides consistent display results

Hostname resolution support - example - part 1/2

➤ D NET,EE,HN=(IP.SSCP1A.RALEIGH.IBM.COM,IP.SSCP2A.RALEIGH.IBM.COM)

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = EE
IST2119I ENTERPRISE EXTENDER DISPLAY CORRELATOR: EE000001
IST2120I HOSTNAME RESOLUTION IN PROGRESS
IST314I END

IST350I DISPLAY TYPE = EE
IST2119I ENTERPRISE EXTENDER DISPLAY CORRELATOR: EE000001
IST2121I HOSTNAME RESOLUTION COMPLETE
IST1680I LOCAL IP ADDRESS 9.67.1.1
IST1910I LOCAL HOSTNAME IP.SSCP1A.RALEIGH.IBM.COM
IST1680I REMOTE IP ADDRESS 9.67.1.2
IST1909I REMOTE HOSTNAME IP.SSCP2A.RALEIGH.IBM.COM
IST314I END
```

Hostname resolution support - example - part 2/2

```

IST350I DISPLAY TYPE = EE
IST2001I ENTERPRISE EXTENDER CONNECTION INFORMATION
IST2119I ENTERPRISE EXTENDER DISPLAY CORRELATOR: EE000001
IST924I -----
IST1680I LOCAL IP ADDRESS 9.67.1.1
IST1910I LOCAL HOSTNAME IP.SSCP1A.RALEIGH.IBM.COM
IST1680I REMOTE IP ADDRESS 9.67.1.2
IST1909I REMOTE HOSTNAME IP.SSCP2A.RALEIGH.IBM.COM
IST2022I EE CONNECTION ACTIVATED ON 08/12/05 AT 09:27:15
IST2023I CONNECTED TO LINE LNEE1000
IST2024I CONNECTED TO SWITCHED PU SWEE2A1
IST2025I LDLC SIGNALS RETRANSMITTED AT LEAST ONE TIME      =      0
IST2026I LDLC SIGNALS RETRANSMITTED SRQRETRY TIMES        =      0
IST2009I RTP PIPES =              7      LU-LU SESSIONS    =      6
IST2027I DWINOP = NO      REDIAL = *NA*      REDDELAY =      *NA*
IST2028I KEEPACT = NO
IST2029I MTU SIZE = 1232
IST924I -----
IST2035I TOTALS FOR ALL PORT PRIORITIES
IST2036I  NLPS SENT           =              95182 ( 095K )
IST2037I  BYTES SENT          =             10787917 ( 010M )
IST2038I  NLPS RETRANSMITTED =                0 ( 000K )
IST2039I  BYTES RETRANSMITTED =                0 ( 000K )
IST2040I  NLPS RECEIVED      =              95227 ( 095K )
IST2041I  BYTES RECEIVED     =             9756692 ( 009M )
IST2042I 1 OF 1 EE CONNECTIONS DISPLAYED
IST314I END

```

New VTAM start option to control number of resolver queries

➤ New start option - MAXHNRES

- Governs the number of concurrent resolver subtasks allowed for display processing
- Once maximum limit is exceeded, new display requests are rejected
 - IST2122I EE DISPLAY REJECTED - MAXHNRES LIMIT EXCEEDED
- Closely related to DLRTCB start option
- Cannot be modified (like DLRTCB)

```
.-MAXHNRES=100-----.  
>>+-----+<<  
'-MAXHNRES=max_hostname_resolutions-----'  
  
range:          2-500
```

MAXHNRES notes

NOTES

- Specifies the maximum number of hostname resolution requests which are allowed to run concurrently. This start option governs the number of resolver requests associated with hostname filters specified on D NET,EE and D NET,EEDIAG commands. When this maximum is reached, all subsequent D NET,EE and D NET,EEDIAG commands which specify hostname filters are rejected until some of the previous resolver requests complete.
- The MAXHNRES start option is closely related to the DLRTCB start option. The MAXHNRES controls the number of subtasks that VTAM will allow for Enterprise Extender hostname resolution requests that are generated as a result of a DISPLAY EE or DISPLAY EEDIAG commands. The MAXHNRES start option value is internally added to the value of the DLRTCB start option value, not to exceed the DLRTCB upper limit of 32767. This allows VTAM to govern the number of TCBs used to perform EE hostname resolutions.
- Restriction: The DLRTCB and MAXHNRES start options cause control blocks to be built below the 16-megabyte line. Therefore, the availability of storage might limit the value that you can code, and conversely, the value you code might impact the availability of the storage.
- Result: When a D NET,EE or D NET,EEDIAG command is entered with both a local and remote HOSTNAME filter, VTAM will initiate two hostname resolution requests. Therefore, one display command accounts for two of the allowed hostname resolutions that are allowed to run concurrently.

Things to think about

➤ **DISPLAY EE and DISPLAY EEDIAG outputs have changed when using hostname filters.**

This may affect:

- Primary Program Operator (PPO)
- Secondary Program Operator (SPO)
- Existing CLISTs

➤ **MAXHNRES start option**

- Default is 100
- DLRTCB and MAXHNRES start options cause control blocks to be built below the 16-megabyte line
- The value you code may impact 24-bit addressable storage

EEDIAG command
enhancements

How to monitor progress of long-running, asynchronous commands

➤ Introduced potentially long-running functions

- Hostname resolution is now always performed when hostname filters are being used on the D EE or D EEDIAG commands
- EE connectivity test

➤ New variation of the DISPLAY EEDIAG command

- D NET,EEDIAG,TEST=PENDING
 - Displays pending Display EE and Display EEDIAG commands
 - Shows current status of the display
 - Use display correlator to match with console log



Display EEDIAG,TEST=PENDING example

>D NET,EEDIAG,TEST=PENDING

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = EEDIAG
IST2145I PENDING ENTERPRISE EXTENDER DISPLAY COMMANDS
IST2067I EEDIAG DISPLAY ISSUED ON 10/29/05 AT 21:07:27
IST924I -----
IST2147I CORRELATOR: EE000001 LINE: ***NA*** STATUS: PGAIN - LOC/REM
IST2067I EEDIAG DISPLAY ISSUED ON 10/29/05 AT 21:07:00
IST1910I LOCAL HOSTNAME SSCP1A.TCP.RALEIGH.IBM.COM
IST1909I REMOTE HOSTNAME SSCP2A.TCP.RALEIGH.IBM.COM
IST924I -----
IST2147I CORRELATOR: EE000003 LINE: ***NA*** STATUS: PGAIN - REMOTE
IST2067I EEDIAG DISPLAY ISSUED ON 10/29/05 AT 21:07:15
IST1680I LOCAL IP ADDRESS 9.67.1.1
IST1910I LOCAL HOSTNAME IP.SSCP1A
IST1909I REMOTE HOSTNAME IP.SSCPAA
IST924I -----
IST2147I CORRELATOR: EE000004 LINE: LNIP1 STATUS: TEST-IN-PROGRESS
IST2148I EE CONNECTIVITY TEST REACHES MAXTIME ON 10/29/05 AT 21:37:53
IST1680I LOCAL IP ADDRESS 9.67.1.1
IST1680I REMOTE IP ADDRESS 9.67.1.5
IST924I -----
IST2149I 3 OF 3 CORRELATORS DISPLAYED
IST314I END
```

Display of blocked conversations

Blocked VTAM/APPC conversations

➤ **VTAM/APPC applications may sometimes hang due to a blocked send request (APPCCMD RPL) for a conversation:**

- Network or partner application problems can result in a blocked send due to the following reasons:
- Missing session level pacing response
- Blocked virtual route
- HPR backpressure

➤ **How do you determine which conversations are blocked for sending for hung VTAM/APPC application:**

- Not easy to determine if conversation is blocked due to missing pacing response.
- May require dump/trace analysis by VTAM service.
- Current display commands do not filter for blocked sessions.
- Often requires recycling the application; especially if application issues API requests in synchronous TCB mode.

➤ **VTAM will in V1R8 provide the means to display VTAM/APPC conversations which are blocked for sending. Additional information has been added to the DISPLAY CONVID command output.**

- Enables display filtering of conversations which are blocked for sending.
- Provides time period a conversation has been blocked for sending.
- Operator can terminate the blocked LU 6.2 session(s) using V NET,TERM,SID= command.

Display blocked VTAM/APPC conversations

```
>>-DISPLAY NET,CONVID,ID=appl_name+----->
>-----+-----<
-DIAG=BLOCKED-----'
      |
      |           BTIME=0-----'
      |           |
      |-----'
      |
      |           BTIME=number of minutes-----'
```

➤ The new status values returned by message IST1008I are as follows:

- /B session level pacing block
- /V virtual route pacing block
- /H HPR backpressure in effect

➤ D NET,CONVID is for VTAM/APPC applications only

- APPC=YES on APPL statement

➤ D NET,CONVID,ID=APPCAP05,DIAG=BLOCKED

```
JOB    2  IST097I NOCDQ DISPLAY ACCEPTED
JOB    2  IST1040I COCDC CONVERSATION(S) FOUND FOR APPCAP05
IST1007I COCDC PARTNER = NETA.APPCAP06, LOGMODE = BATCH
IST1008I COCDC CONVID = 01000005, STATUS = SEND /B, ETIME = 48
IST2161I COCDC BLOCKED TIME = 48
IST1009I COCDC SID = D5376DF40E32C11E, HPDT = YES
IST924I COCDC -----
IST314I COCDC END
```

Things to think about

- **Session level pacing response can be withheld due to session partner not issuing a receive.**
- **D NET,SESSIONS,SID=xxxxxxx command can be used to examine current session level pacing values**

Various SNA Message Enhancements

Coupling Facility structure events

- **The Coupling Facility Services(CFS) Component provides support for all VTAM and TCPIP functions which access any Coupling Facility Structure.**
 - Generic Resources
 - MNPS (Multinode Persistent Sessions)
 - VTAM connectivity
 - SYSPLEX Ports for TCPIP

- **When CFS Rebuild fails during a move of systems from one coupling facility to a backup coupling facility, VTAM messages would aid analysis of the problem.**

- **When VTAM disconnects from the Coupling Facility, users would like messages to report the reason for the disconnection.**

- **VTAM in z/OS V1R8 adds 11 disconnect messages to the IST1380I message group when VTAM disconnects from the coupling facility structure for either normal or failure reasons.**

- **It also adds a new message group when rebuild or move of the coupling facility structure fails.**

CF rebuild messages

- In the case of rebuilding, a message will be issued to clarify the reason that the rebuild was stopped.

```
IST2163I  REBUILD FOR STRUCTURE structure STOPPED
ISTxxxxI  REASON IS (one of the reasons described below)
IST314I   END
```

Possible reasons that the new messages will be issued for are:

IST2164I - lost connection to new structure
IST2165I - lost connection to original structure
IST2166I - failure of the original structure

CF disconnection messages

➤ In the case of disconnecting, 11 new messages will be issued with IST1380I to specify the reason for the disconnection.

New disconnect reason messages will be issued for:

- IST2167I - operator command
- IST2168I - normal disconnect
- IST2169I - subtask abend
- IST2170I - VTAM halting
- IST2171I - loss connectivity
- IST2172I - bad structure type
- IST2173I - internal CFS failure
- IST2174I - bad connection name
- IST2175I - process timed out
- IST2176I - MVS event
- IST2177I - unsupported CF level

CSM storage usage

- The existing "Display CSM" command includes a high-water value representing the maximum used since the last "Display CSM" command was issued.
- This enhancement provides a true "high-water mark" that represents the absolute maximum allocated since IPL.

➤ D NET,CSM

```

IVT5529I PROCESSING DISPLAY CSM COMMAND - OWNERID NOT SPECIFIED
IVT5530I BUFFER BUFFER
IVT5531I SIZE SOURCE INUSE FREE TOTAL
IVT5532I -----
IVT5533I 4K ECSA 0M 256K 256K
IVT5533I 16K ECSA 0M 0M 0M
IVT5533I 32K ECSA 0M 0M 0M
IVT5533I 60K ECSA 0M 0M 0M
IVT5534I 180K ECSA POOL DOES NOT EXIST
IVT5535I TOTAL ECSA 0M 256K 256K
IVT5532I -----

IVT5538I FIXED MAXIMUM = 100M FIXED CURRENT = 400K
IVT5541I FIXED MAXIMUM USED = 400K SINCE LAST DISPLAY CSM
IVT5594I FIXED MAXIMUM USED = 500K SINCE IPL
IVT5539I ECSA MAXIMUM = 100M ECSA CURRENT = 414K
IVT5541I ECSA MAXIMUM USED = 414K SINCE LAST DISPLAY CSM
IVT5594I ECSA MAXIMUM USED = 640K SINCE IPL
IVT5559I CSM DATA SPACE 1 NAME: CSM64001
IVT5559I CSM DATA SPACE 2 NAME: CSM31002
IVT5599I END
    
```

Enhanced EE Dial out failure notification

- **When no dial-out lines are available to establish an Enterprise Extender (EE) connection, the dial attempt fails with a generic sense of 08010000.**
- **Normally indicated by message IST242I, which reports the sense code.**
- **Not very useful to the user**
 - Sense code is not intuitive (has to be looked up)
 - Sense code is too generic (covers a wide range of failures)
- **Solution: An additional message (IST2179I) will be issued in response to EE dial failures.**
 - Whenever a switched connection cannot be established because no EE line is available for the specified puname.
 - Explicitly states the reason for the failure.

```
v net,dial,id=swip2a1
JOB    4  IST097I VARY ACCEPTED
.
.
IST2179I NO DIAL-OUT LINE FOUND FOR SWITCHED PU SWIP2A1
IST242I VARY DIAL COMMAND FAILED FOR ID = SWIP2A1 SENSE = 08010000
```

Enhanced EE Dial out failure notification- Notes

NOTES

- Should message IST2179I appear, proceed as follows to resolve the dial failure:
 - Issue D NET,PATHS,ID=puname (to determine GROUP being used for the dial)
 - Display that GROUP
 - If any EE lines are defined but currently not active
 - Issue V NET,ACT,ID=groupname,SCOPE=ALL
 - Otherwise
 - Define additional dial out lines in the EE XCA major node VTAMLST member
 - Add lines to the existing GROUP
 - Modify the AUTOGEN keyword (if specified on the GROUP statement)
 - Issue V NET,ACT,ID=eexcamajornode,UPDATE=ADD

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