



z/OS® V1R10 Communications Server

IPCS support for VTAM® display commands

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This presentation will discuss IPCS support for VTAM display commands

IPCS support for VTAM display commands

- New TSO command for IPCS dump analysis
 - ▶ DNET simulates the running of the VTAM operator command code from the IPCS dump.
 - It runs against the VTAM control block structures contained within the IPCS dump.
 - No interference with VTAM address Space
 - No requirement to run on "Production" LPAR

DNET is a new feature in V1R10. This is a new TSO command that allows you to run VTAM display commands against a dump, as if they were running against a real, active system.

DNET contains a Local Virtual Machine. DNET simulates the way the VTAM operator command responds when issued at the z/OS system console at the time that the dump was obtained. DNET works by retrieving the VTAM command code from a dump. It then runs that code against the dumped memory on a virtual machine. DNET is release independent since it runs whatever display code is in the dump.

DNET syntax

- DNET TSO command uses a TSO-command style “Keyword(Value)” syntax

```

>>-----TSO DNET operator-cmd-verb----->
|<----->
|+Option-keyword-----|
|<----->
|+Option-keyword(Option-keyword-value)-|
|<----->
|+Option-keyword(value1,value2-etc)----+

```

```

TSO DNET ADJCLUST NETID(NETSOUTH) E
TSO DNET BFRUSE BUFFER(SF00, SUMMARY)
TSO DNET DLURS

```

The Verbs, Keywords, and values are the same.

In General, “TSO Command” syntax specifies that keywords are separated from one other by spaces. Values for keywords are defined within a parenthesized list – *without* an equals sign, and parentheses are required to specify keyword Values.

Because DNET is a TSO command, its parameters must conform to TSO conventions, rather than operator console conventions. This generally means that the keywords are the same as the equivalent operator commands, but the separators are different. For example, NETID=NETSOUTH becomes NETID(NETSOUTH) and commas are replaced by spaces.

This slide shows a railroad track diagram of the TSO operator command syntax. Keywords are separated by spaces, and keyword values are enclosed in parentheses.

DNET limitations

- DNET can only access dumped storage available to IPCS
 - ▶ No coupling facility
 - ▶ No NCP hardware simulation
 - ▶ No sending of “test” or “ping” signals

DNET has some limitations because it is running on a dump and not on a live system.

DNET behaves as if VTAM is not aware of the coupling facility. This implies that no VTAM generic resources appear to be defined, and the multi-node persistent sessions (MNPS) facility does not appear to be in use. This means these commands are not supported: DNET GRAFFIN and DNET STATS TYPE(CFS)

DNET can not simulate the examination of an NCP's memory, nor examine the NCP's hard drive, which eliminates the possibility for DNET DISK and DNET NCPSTOR commands.

DNET can not search networks for information it needs to satisfy a user's request. It cannot test the availability of virtual routes (DNET ROUTE) or high performance routing (DNET HPR) pipes. It cannot test the availability of Enterprise Extender connections, and it cannot establish “Transaction Program” sessions. This means that many potential DNET commands are not supported: No DNET APING, DNET APINGDTP, DNET APINGTP, DNET DIRECTRY SCOPE(NSEARCH), DNET EEDIAG TEST(YES), DNET ROUTE DESTSUB(*subarea*), or DNET RTPS TEST(YES)

DNET - Using the command

- DNET is issued from the command line of any IPCS Panel under ISPF
- Regardless of the DNET command specified, the basic layout of the resulting output display contains the same four areas:

```

===== Display Command Interface =====
CMD ==>
IKV0016I IPCS.UT#DUMP3.V510 (Dump of z/OS) LINE 00001
IKV0017I DNET ID(VTAMSEG) E of 00008
-----
IST097I DISPLAY ACCEPTED
IST075I NAME = VTAMSEG , TYPE = APPL SEGMENT
IST486I STATUS= ACTIV , DESIRED STATE= ACTIV
IST360I APPLICATIONS:
.. < IST080I ISTATA00 CONCT ISTNOP ACTIV ISTPDCLU ACTIV
.. < IST080I SSCP1A ACTIV
IST314I END
*****> End of Messages <*****

```

**Full-Screen TSO Output Panel.
NOT ISPF**

DNET is invoked as a TSO command from any panel where TSO commands are permitted. This includes the IPCS Primary Option Panel, The IPCS Subcommand Entry Panel, and the IPCS Entry Panel.

The TSO Command “Prefix” is always required. An omission will cause ISPF to treat DNET as an ISPF command. This will cause an ISPF “Invalid command” error message – or will cause IPCS to treat DNET as an IPCS command – which will fail.

For various design considerations, the V1R10 version of DNET employs a full-screen TSO output panel, rather than a more popular ISPF interface. However, the basic geometry of the output panel should have a familiar feel. The panel contains two types of input areas and two types of output-only areas in the classic style of ISPF. This slide shows the full layout of the DNET panel. The detailed description of the sections of this panel will be discussed in more detail on the next few slides.

DNET output panel geometry - Part 1

Non-scrollable
area for status
messages

```

===== Display Command Interface =====
CMD ==>
IKV0016I IPCS.UT#DUMP3.V510 (dump of z/os) LINE 00001
IKV0017I DNET ID(VTAMSEG) E of 00008
-----
IST097I DISPLAY ACCEPTED
IST075I NAME = VTAMSEG , TYPE = APPL SEGMENT
IST486I STATUS= ACTIV , DESIRED STATE= ACTIV
IST360I APPLICATIONS:
.. < IST080I ISTATA00 CONCT ISTNOP ACTIV ISTPDCLU ACTIV
.. < IST080I SSCP1A ACTIV
IST314I END
*****> End of Messages <*****

```

At the top of the DNET display result is a non-scrollable area for status messages from DNET. Typical Messages displayed in this area of the Output Display Panel include documentation of the z/OS Dataset name of the IPCS DUMP against which DNET was run. Also typically included are documentation of the specific DNET TSO command used and documentation of the position and extent of the messages contained within the Scrollable area of the Output Display Panel

DNET output panel geometry - Part 2

Scrollable area for the messages generated by the VTAM display operator command simulation.

```

----- Display Command Interface -----
CMD ==>
IKV0016I IPCS.UT#DUMP3.V510 (Dump of z/OS) LINE 00001
IKV0017I DNET ID(VTAMSEG) E of 00008
-----
IST097I DISPLAY ACCEPTED
IST075I NAME = VTAMSEG , TYPE = APPL SEGMENT
IST486I STATUS= ACTIV , DESIRED STATE= ACTIV
IST360I APPLICATIONS:
.. < IST080I ISTATA00 CONCT ISTNOP ACTIV ISTPDCLU ACTIV
.. < IST080I SSCPIA ACTIV
IST314I END
*****> End of Messages <*****

```

The largest area of the display is the scrollable area which contains the results of the DNET simulation of the VTAM Display Operator Command. This is the output of the display command and is the main part of the output.

DNET output panel geometry - Part 3

Primary command
Input area

```

----- Display Command Interface -----
CMD ==>
IKV0016I IPCS.UT#DUMP3.V510 (Dump of z/OS) LINE 00001
IKV0017I DNET ID(VTAMSEG) E of 00008
-----
IST097I DISPLAY ACCEPTED
IST075I NAME = VTAMSEG , TYPE = APPL SEGMENT
IST486I STATUS= ACTIV , DESIRED STATE= ACTIV
IST360I APPLICATIONS:
.. < IST080I ISTATA00 CONCT ISTNOP ACTIV ISTPDCLU ACTIV
.. < IST080I SSCP1A ACTIV
IST314I END
*****> End of Messages <*****

```

The primary command input area is at the top. Refer to “z/OS V1R10 Communications Server SNA Diagnosis Volume 2: FFST Dumps and the VIT” for a detailed description of the commands recognized by the Primary Command Input area. In general, the bulk of the commands (UP, DOWN, FIND, END, TSO) function in a manner consistent with IBM’s ISPF program product running in “Cursor Scrolling” mode.

VMPRINT sends a copy of the entire content of the scrollable area to the reader of a selected VM ID on a selected VM node.

ISPF invokes ISPF services to redisplay the primary ISPF option menu. Use of this command allows you to return to a multiple logical screen ISPF environment without terminating the DNET output display.

DNET output panel geometry - Part 4

```

----- Display Command Interface -----
CMD ==>
IKV0016I IPCS.UT#DUMP3.V510 (Dump of z/os)                LINE 00001
IKV0017I DNET ID(VTAMSEG) E                               of 00008
-----
IST097I DISPLAY ACCEPTED
IST075I NAME = VTAMSEG                                     , TYPE = APPL SEGMENT
IST486I STATUS= ACTIV                                     , DESIRED STATE= ACTIV
IST360I APPLICATIONS:
.. < IST080I ISTATA00 CONCT                               ISTRNOP  ACTIV  ISTDPCLU ACTIV
.. < IST080I SSCP1A  ACTIV
IST314I END
*****> End of Messages <*****

```

Input area for "Select" line commands

A powerful and easy to use feature of DNET is the input area for "select" line commands. This is the prefix area to the left of the command output area. When there is an entry field there, indicated by periods, this indicates that there is more information that can be displayed about the values which are highlighted in the display. You can cause DNET to automatically retrieve that additional information by typing Sn in that area, where n is the position of the parameter you are selecting. This is shown by example on the next few slides.

In the vast majority of cases, the command issued by "selecting" the field is "DNET ID(fieldvalue) E". Refer to *"z/OS V1R10 Communications Server SNA Diagnosis Volume 2: FFST Dumps and the VIT"* for the specific command issued for each selectable field of the various VTAM messages.

DNET example of “selecting” new commands from the panel

This is the result of doing the “TSO DNET MAJNODES MAX(7)” command from IPCS panel command line...

```

===== Display Command Interface =====
CMD ==>
IKV0016I D74L.ML99999.#CMDS.UT#DUMP1 (Dump of z/os)          LINE 00001
IKV0017I DNET MAJNODES MAX(7)                                of 00013
-----
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = MAJOR NODES
.. < IST089I VTAMSEG TYPE = APPL SEGMENT , ACTIV
.. < IST089I RUSSIAPU TYPE = PU T4/5 , ACTIV
.. < IST089I ISTDILU TYPE = CDRSC SEGMENT , ACTIV
.. < IST089I ISTDJCP TYPE = ADJCP MAJOR NODE , ACTIV
.. < IST089I ISTDORDY TYPE = CDRSC SEGMENT , ACTIV
S. < IST089I ISTRTPMN TYPE = RTP MAJOR NODE , ACTIV
.. < IST089I ISTRTRL TYPE = TRL MAJOR NODE , ACTIV
IST1315I DISPLAY TRUNCATED AT MAX = 7
IST1454I 7 RESOURCE(S) DISPLAYED
IST314I END
*****> End of Messages <*****

```

You typed the “S” here to select ISTRTPMN

In this example, you have started by requesting a display of some of the VTAM major nodes from an IPCS dump. The output of this display is in the display output area, with several prefix areas indicated that more information is available. In this example, further examination of the RTP major node is requested through use of the “select” line command. By placing the S on the prefix area for the line with ISTRTPMN and keying ENTER, you are requesting a more detailed display of that element.

The results of the selection follow on the next slide.

DNET select command navigation (continued)

- This slide shows the result of the selection made on the previous slide. More information is displayed about the ISTRTPMN major node.

```

----- Display Command Interface -----
CMD ==>
IKV0016I D74L.ML99999.#CMDS.UT#DUMP1 (Dump of z/OS) LINE 00001
IKV0017I DNET ID(ISTRTPMN) E of 00014
-----
IST097I DISPLAY ACCEPTED
IST075I NAME = ISTRTPMN , TYPE = RTP MAJOR NODE
IST486I STATUS= ACTIV , DESIRED STATE= ACTIV
IST1486I RTP NAME STATE DESTINATION CP MNPS TYPE
.. < IST1487I CNR00045 CONNECTED NETSOUTH.Z40 NO LULU
.. < IST1487I CNR00039 CONNECTED NETSOUTH.SPAIN NO RSTP
.. < IST1487I CNR00010 CONNECTED NETSOUTH.PANAMA NO CPCP
.. < IST1487I CNR00008 CONNECTED NETSOUTH.TC5RS111 NO RSTP
.. < IST1487I CNR0000A CONNECTED NETSOUTH.TC5RS111 NO CPCP
S1 < IST1487I CNR00009 CONNECTED NETSOUTH.CS226Z47 NO CPCP
.. < IST1487I CNR00007 CONNECTED NETSOUTH.CS228Z46 NO CPCP
.. < IST1487I CNR00001 CONNECTED NETSOUTH.MEXICO NO CPCP
IST314I END
*****> End of Messages <*****

```

You typed the "S1" here to select CNR00009 (the first highlighted value)

You are presented with a detailed display of the minor nodes within the selected RTP major node. The DNET output panels are "nested" – meaning that when you "end-out" of this display, you are returned to the previous DNET display. Further examination of a specific RTP pipe is requested through use of the "select" line command in the prefix area. Note that since there are multiple choices to select from, you use "S1" to indicate that you want more information about the RTP pipe CNR00009. To get more information about the CP name NETSOUTH.CS226Z47, you type "S2".

The results of the selection follow on the next slide.

DNET select command navigation (continued)

- Result of the selection made on the previous slide:

```

===== Display Command Interface =====
CMD ==>
IKV0016I D74L.ML99999.#CMDS.UT#DUMP1 (Dump of z/OS)          LINE 00001
IKV0017I DNET ID(CNR00009) E HPRDIAG(YES)                   of 00092
-----
IST097I DISPLAY ACCEPTED
IST075I NAME = CNR00009          , TYPE = PU_T2.1
IST486I STATUS= ACTIV--LX-, DESIRED STATE= ACTIV
IST1043I CP NAME = CS226247 - CP NETID = NETSOUTH - DYNAMIC LU = YES
IST1589I XNETALS = YES
IST2238I DISCNT = DELAY - FINAL USE = FINAL
IST1392I DISCNTIM = 00000 DEFINED AT PU  FOR DISCONNECT
.. < IST231I RTP      MAJOR NODE = ISTRTPMN
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST2178I RPNCB ADDRESS 38670800
IST1962I APPNCOS = CPSVCMG - PRIORITY = NETWORK
IST1476I TCID X'3350FC2800010668' - REMOTE TCID X'00000001AE000C83'

```

You are presented with a detailed display of the characteristics of the selected RTP pipe PU. Since DNET recognized that the request involved an RTP pipe – the “selected” command included the HPRDIAG(YES) option – greatly expanding the resulting content.

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