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Getting Up and Running with NetView IP Management

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IBM

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Session 12774

Insert Custom Session QR if Desired.

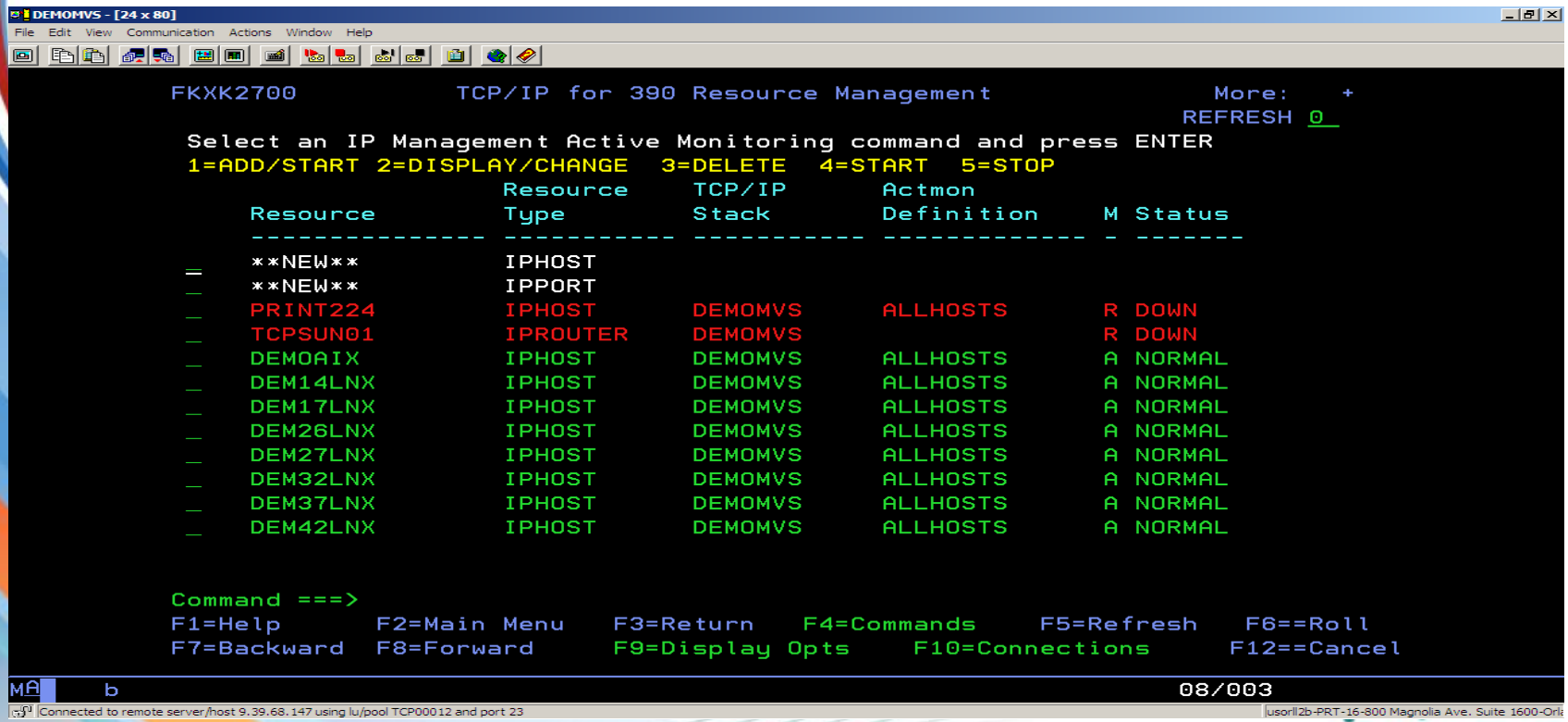
SHARE in San Francisco 2013

Agenda

- Why IP management ?
- z/OS® & TCP/IP considerations
  - z/OS symbols for IBM® Tivoli® NetView® for z/OS
  - TCP/IP & TN3270 profiles
- SNMP configuration
  - Agent & subagent operation
- NetView implementation
  - Customizing NetView for IP Management
    - General TOWER Statements
    - AON Tower vs IPMGT Tower
  - Packet Trace
- RODM considerations (Optional)
- TEMA considerations (Optional)

Why IP Management? - RESOURCE Availability

Ever wonder what the status is of key IP resources: remote hosts? Routers? z/OS socket applications? Do you need a PING monitor for IP printers?



Why IP Management? - DVIPA

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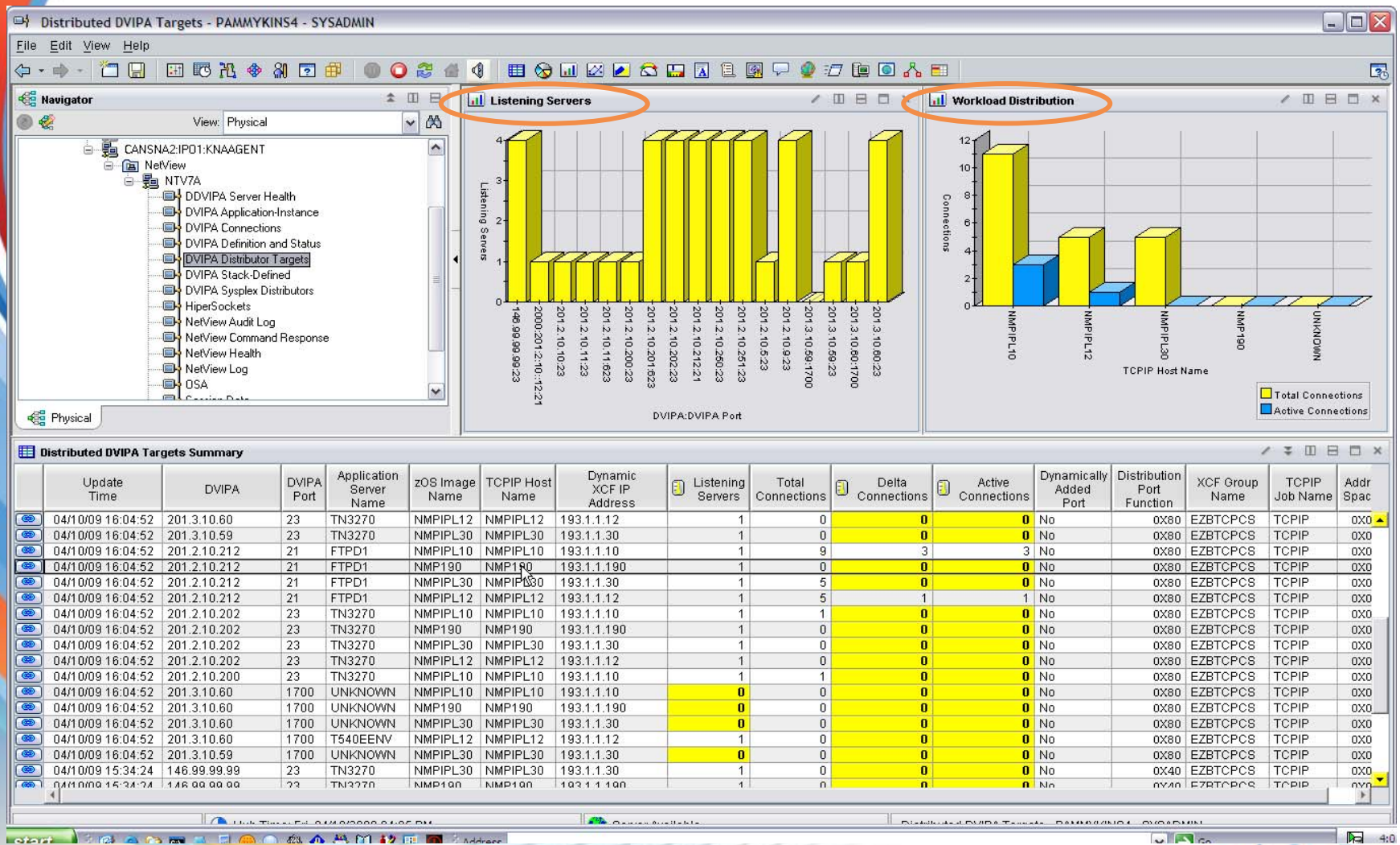
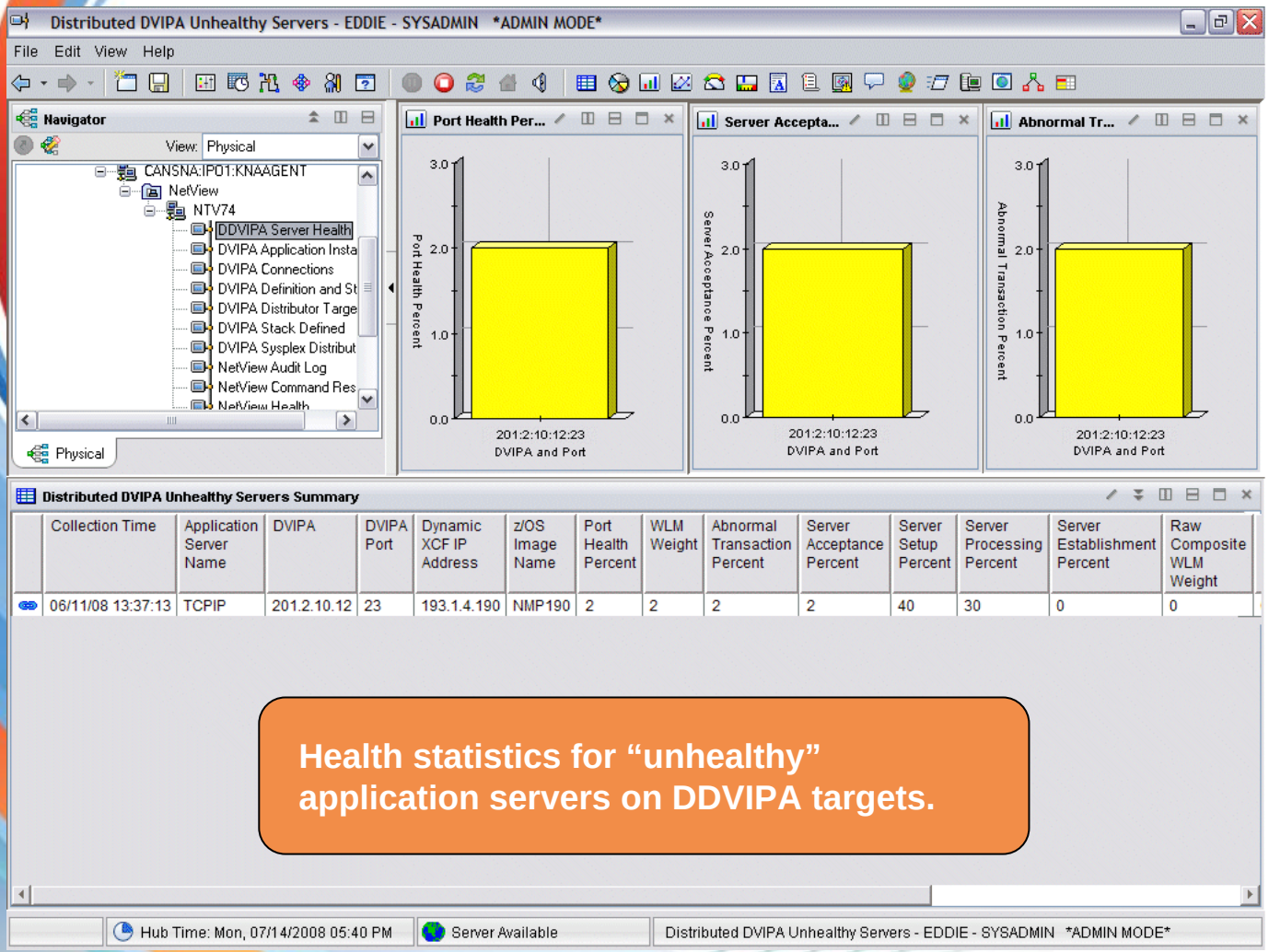
How efficient is the workload distribution? How many listening servers on each DVIPA:port? How many connections on each host?



Update Time	DVIPA	DVIPA Port	Application Server Name	zOS Image Name	TCPIP Host Name	Dynamic XCF IP Address	Listening Servers	Total Connections	Delta Connections	Active Connections	Dynamically Added Port	Distribution Port Function	XCF Group Name	TCPIP Job Name	Addr Spac
04/10/09 16:04:52	201.3.10.60	23	TN3270	NMPIPL12	NMPIPL12	193.1.1.12	1	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.3.10.59	23	TN3270	NMPIPL30	NMPIPL30	193.1.1.30	1	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.2.10.212	21	FTPD1	NMPIPL10	NMPIPL10	193.1.1.10	1	9	3	3	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.2.10.212	21	FTPD1	NMP190	NMP190	193.1.1.190	1	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.2.10.212	21	FTPD1	NMPIPL30	NMPIPL30	193.1.1.30	1	5	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.2.10.212	21	FTPD1	NMPIPL12	NMPIPL12	193.1.1.12	1	5	1	1	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.2.10.202	23	TN3270	NMPIPL10	NMPIPL10	193.1.1.10	1	1	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.2.10.202	23	TN3270	NMP190	NMP190	193.1.1.190	1	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.2.10.202	23	TN3270	NMPIPL30	NMPIPL30	193.1.1.30	1	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.2.10.202	23	TN3270	NMPIPL12	NMPIPL12	193.1.1.12	1	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.2.10.200	23	TN3270	NMPIPL10	NMPIPL10	193.1.1.10	1	1	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.3.10.60	1700	UNKNOWN	NMPIPL10	NMPIPL10	193.1.1.10	0	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.3.10.60	1700	UNKNOWN	NMP190	NMP190	193.1.1.190	0	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.3.10.60	1700	UNKNOWN	NMPIPL30	NMPIPL30	193.1.1.30	0	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.3.10.60	1700	T540EENV	NMPIPL12	NMPIPL12	193.1.1.12	1	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 16:04:52	201.3.10.59	1700	UNKNOWN	NMPIPL30	NMPIPL30	193.1.1.30	0	0	0	0	No	0X80	EZBTCPCS	TCPIP	0X0
04/10/09 15:34:24	146.99.99.99	23	TN3270	NMPIPL30	NMPIPL30	193.1.1.30	1	0	0	0	No	0X40	EZBTCPCS	TCPIP	0X0
04/10/09 15:34:24	146.99.99.99	23	TN3270	NMP190	NMP190	193.1.1.190	1	0	0	0	No	0X40	EZBTCPCS	TCPIP	0X0

Why IP Management? - DVIPA

Are your DVIPA servers healthy?



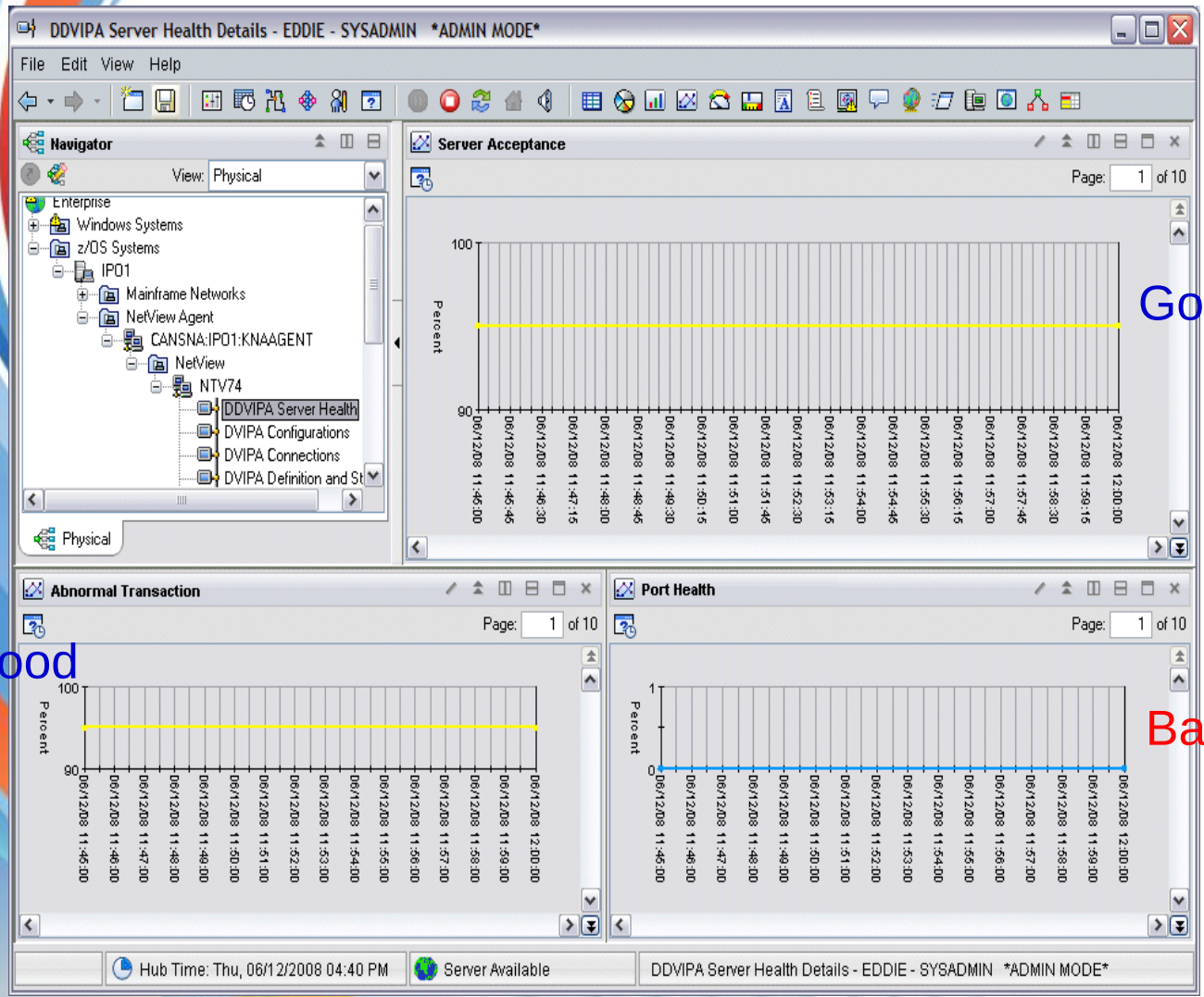
Health statistics for "unhealthy" application servers on DDVIPA targets.

Unhealthy = one or more of:

- WLM Weight = 0
- Port Health % < 90
- Server Acceptance Rate < 80%
- Abnormal Transaction Rate > 25%

Why IP Management? - DVIPA

What's the trend? Are servers gradually degrading?



Health statistics for specific application server on a DDVIPA target, over time.

Why IP Management? - Enterprise Extender

Do you need path information for an EE connection?
Correlate the IP and SNA portions?

```
CNMKWIND OUTPUT FROM  USIBMNT.DLD20101                    LINE 0 OF 85
*------------------------------ Top of Data --------------------------------
IST075I  NAME = USIBMNT.DLD20101 , TYPE = LOGICAL UNIT
IST486I  STATUS= ACT/S      , DESIRED STATE= ACTIV
IST1447I  REGISTRATION TYPE = NETSRVR
IST977I  MDLTAB=***NA*** ASLTAB=***NA***
IST861I  MODETAB=AMODETAB USSTAB=AUSSTAB  LOGTAB=***NA***
IST934I  DLOGMOD=MSDLCQ   USS LANGTAB=***NA***
IST597I  CAPABILITY-PLU INHIBITED,SLU ENABLED  ,SESSION LIMIT 00000001
IST136I  SWITCHED SNA MAJOR NODE = EESWMN2
IST135I  PHYSICAL UNIT = DPD20001
IST082I  DEVTYPE =           LU
IST654I  I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I  STATE TRACE = OFF
IST1936I  LOCADDR = 002
IST228I  ENCRYPTION = NONE         , TYPE = DES
IST1563I  CKEYNAME = DLD20101 CKEY = PRIMARY   CERTIFY = NO
IST1552I  MAC = NONE         MACTYPE = NONE
IST171I  ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
IST206I  SESSIONS:
IST1081I  ADJACENT LINK STATION = CNR00007
IST634I  NAME     STATUS          SID           SEND RECV VR TP NETID
IST635I  NTVD2010 ACTIV-P    F58B139E11365775 0006 000C       USIBMNT
IST314I  END
BNH061I ...ADJACENT LINK STATION  CNR00007...
IST075I  NAME = CNR00007          , TYPE = PU_T2.1
IST486I  STATUS= ACTIV--LX-, DESIRED STATE= ACTIV
IST1964I  APPNCOS = #CONNECT - PRIORITY = MEDIUM
IST1476I  TCID X'314E695C00010214' - REMOTE TCID X'0000000005000000'
IST1460I  TGN  CPNAME                 TG TYPE      HPR
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==>
```

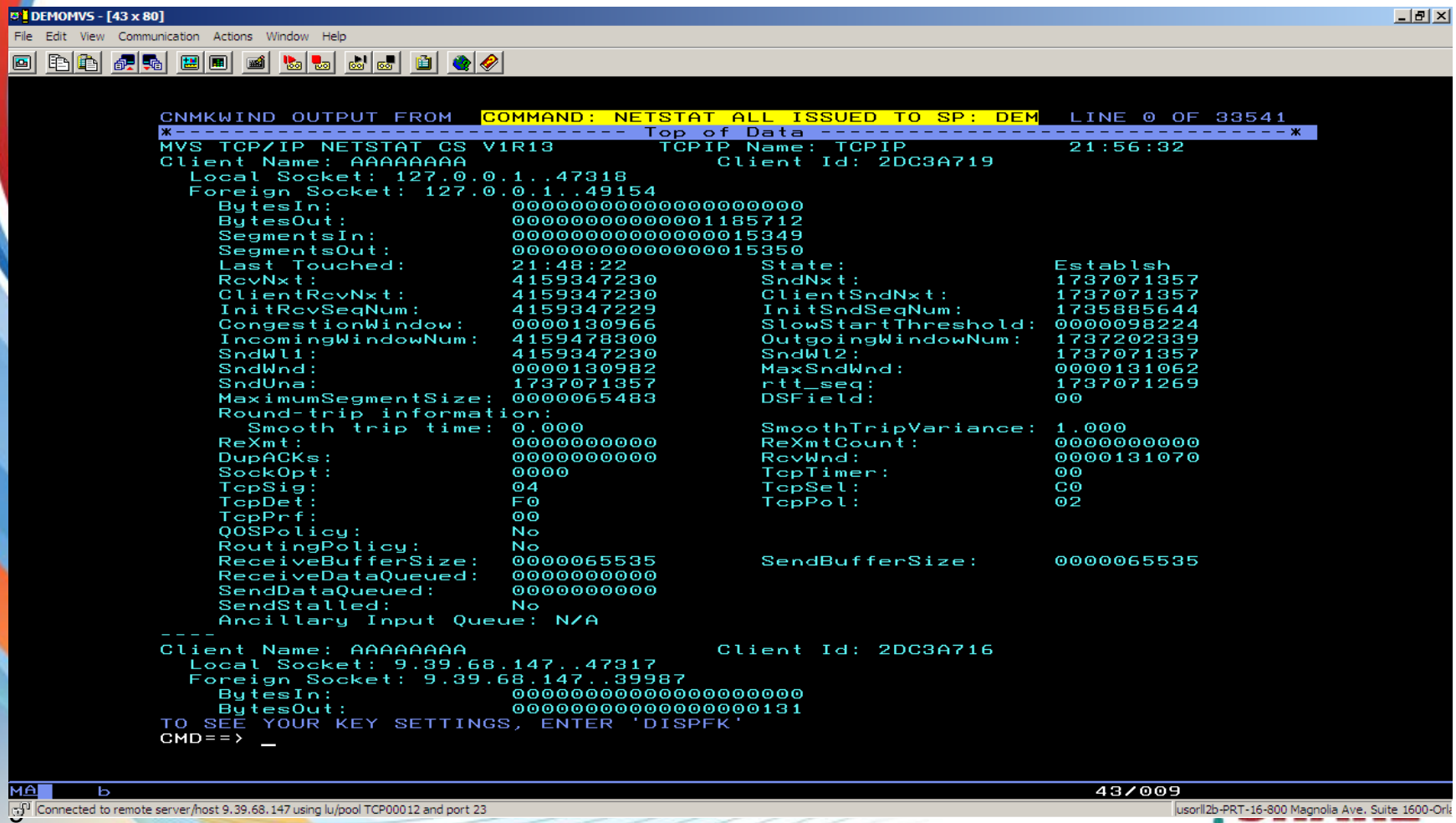
Why IP Management? - Enterprise Extender

Do you need path information for an EE connection?
Correlate the IP and SNA portions?

```
CNMKWIND OUTPUT FROM  USIBMNT.DLD20101                    LINE 28 OF 85
IST075I  NAME = CNR00007          , TYPE = PU_T2.1
IST1460I  TGN  CPNAME             TG TYPE      HPR
IST1461I   21  USIBMNT.SEPACECP   APPN         RTP
BNH061I ...RTP resource = EX000002...
IST075I  NAME = EX000002          , TYPE = PU_T2.1
IST1680I  LOCAL  IP ADDRESS 9.42.44.61
IST1680I  REMOTE IP ADDRESS 9.27.143.39
IST2022I  EE CONNECTION ACTIVATED ON 04/13/07 AT 16:55:28
IST2114I  LIVTIME:    INITIAL =   10   MAXIMUM =    0   CURRENT =    10
IST2023I  CONNECTED TO LINE EELOFE
IST2025I  LDLC SIGNALS RETRANSMITTED AT LEAST ONE TIME    =           0
IST2026I  LDLC SIGNALS RETRANSMITTED SRQRETRY TIMES       =           0
IST2009I  RTP PIPES =          4      LU-LU SESSIONS      =           5
IST2027I  DWINOP   = NO      REDIAL = *NA*        REDDELAY =        *NA*
IST2028I  KEEPACT = YES
IST2029I  MTU SIZE =   548
IST924I   -------------------------------------------------------------
IST2035I  TOTALS FOR ALL PORT PRIORITIES
IST2036I    NLPS SENT           =                1419   ( 001K )
IST2037I    BYTES SENT          =              113337   ( 113K )
IST2038I    NLPS RETRANSMITTED  =                   0   ( 000K )
IST2039I    BYTES RETRANSMITTED =                   0   ( 000K )
IST2040I    NLPS RECEIVED       =                1599   ( 001K )
IST2041I    BYTES RECEIVED      =              152017   ( 152K )
BNH061I ...related local RTP PIPE CNR00007 ...
IST1695I  PU NAME       CP NAME       COSNAME SWITCH CONGEST STALL SESS
IST1960I  CNR00007 USIBMNT.SEPACECP   #CONNECT  NO      NO      NO      1
BNH810I Tracing IP route to 9.27.143.39 max 30 hops
BNH811I 1: nmpipl50.tivlab.raleigh.ibm.com (9.42.44.50) 5ms
```

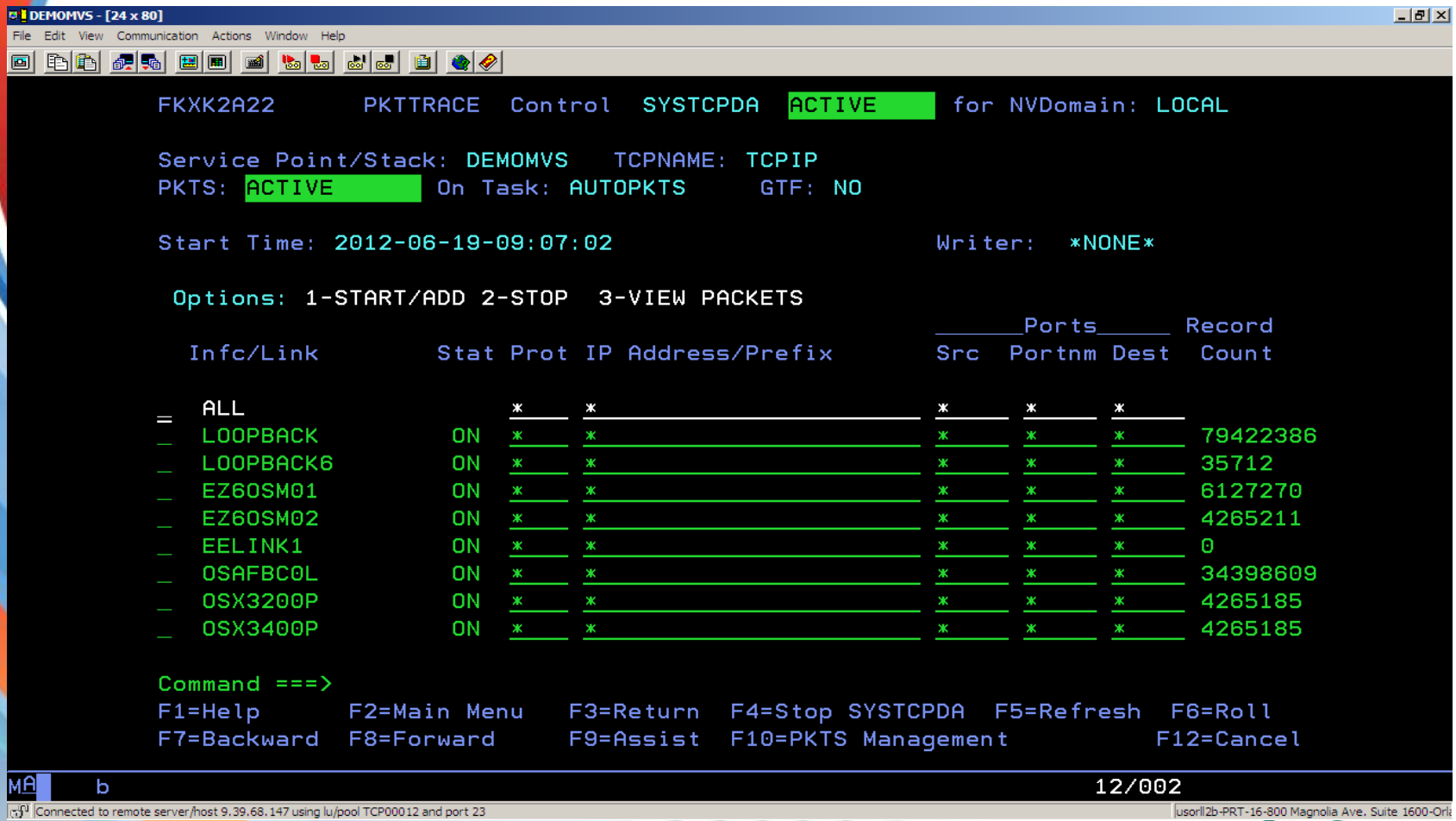
Why IP Management? - Command Interface

Do you need a command interface that won't roll off the screen?



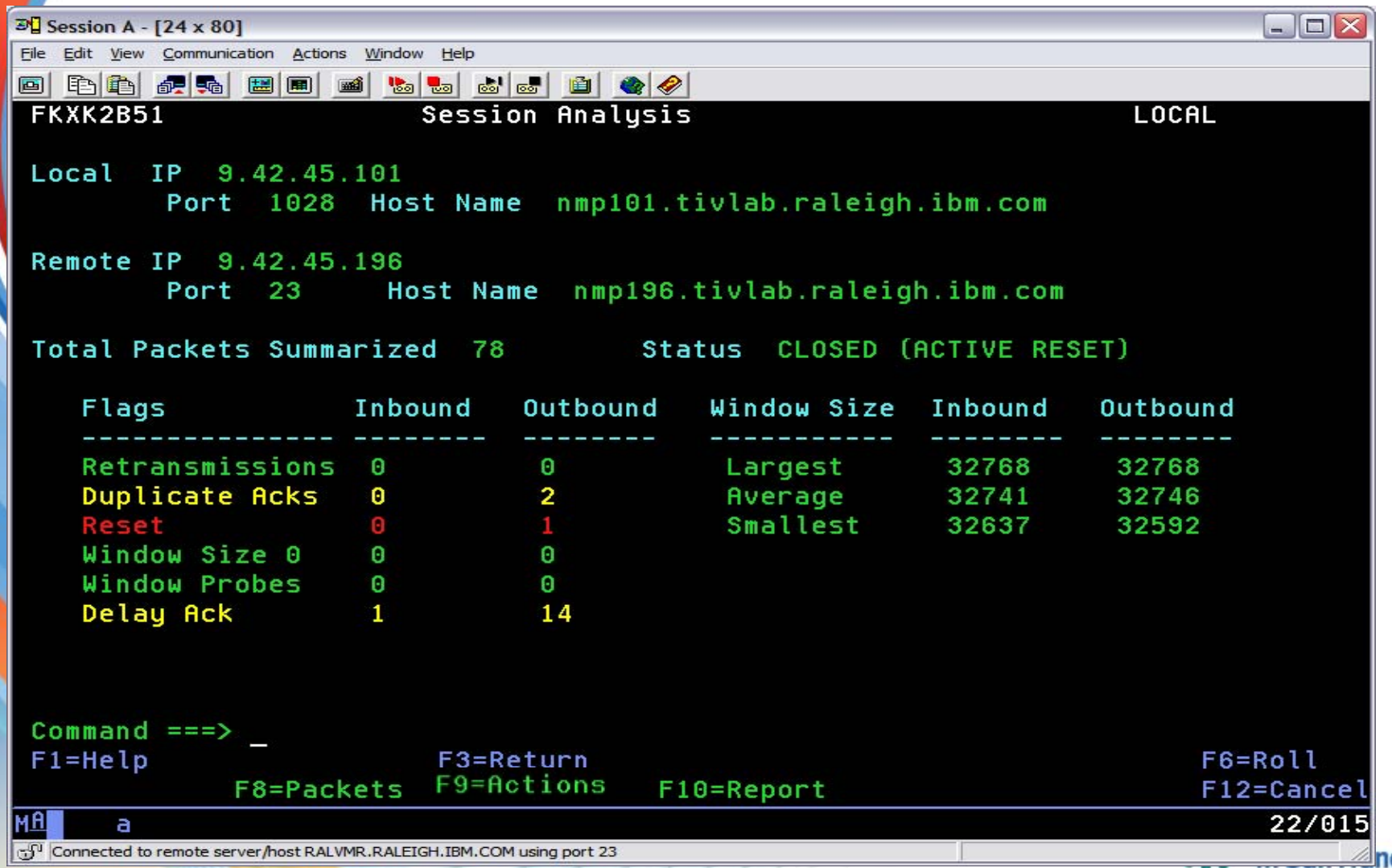
Why IP Management? - Real-time Packet Trace

Do you need to trace IP or OSA packets in real time?



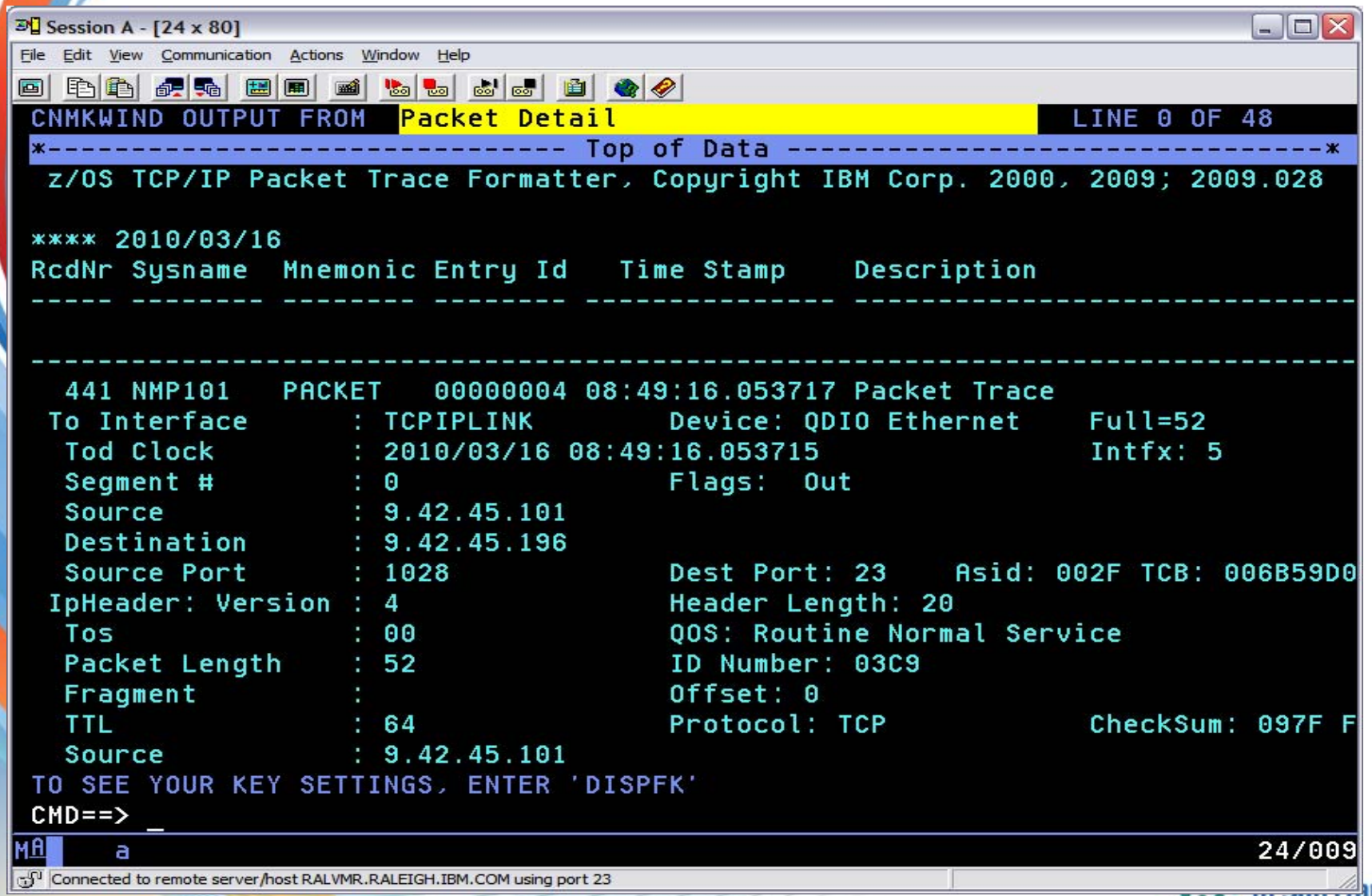
Why IP Management? - Smart Packet Trace

Would you like to easily locate the problem?



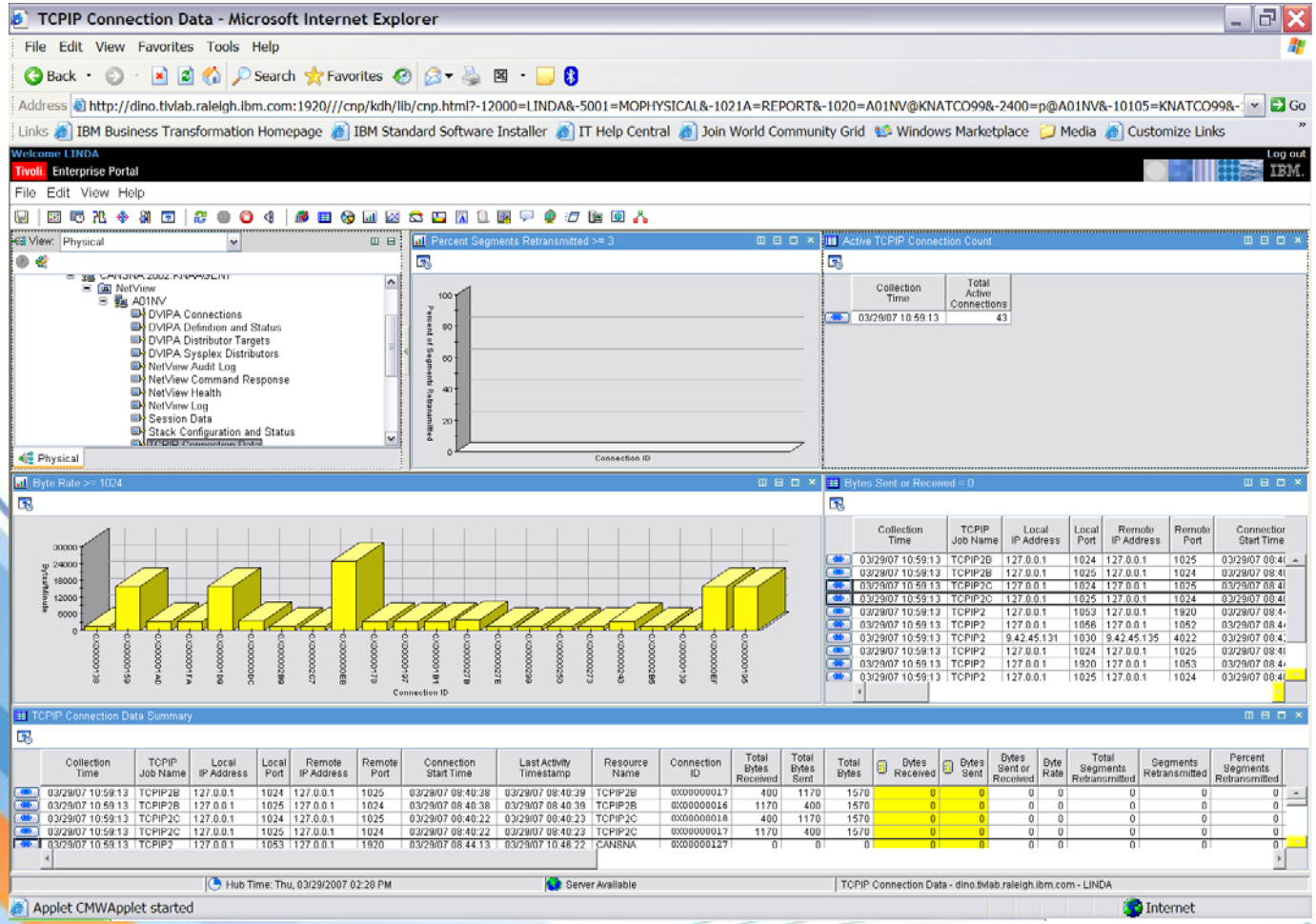
Why IP Management? - Packet Trace Detail

Need to see what's actually flowing?



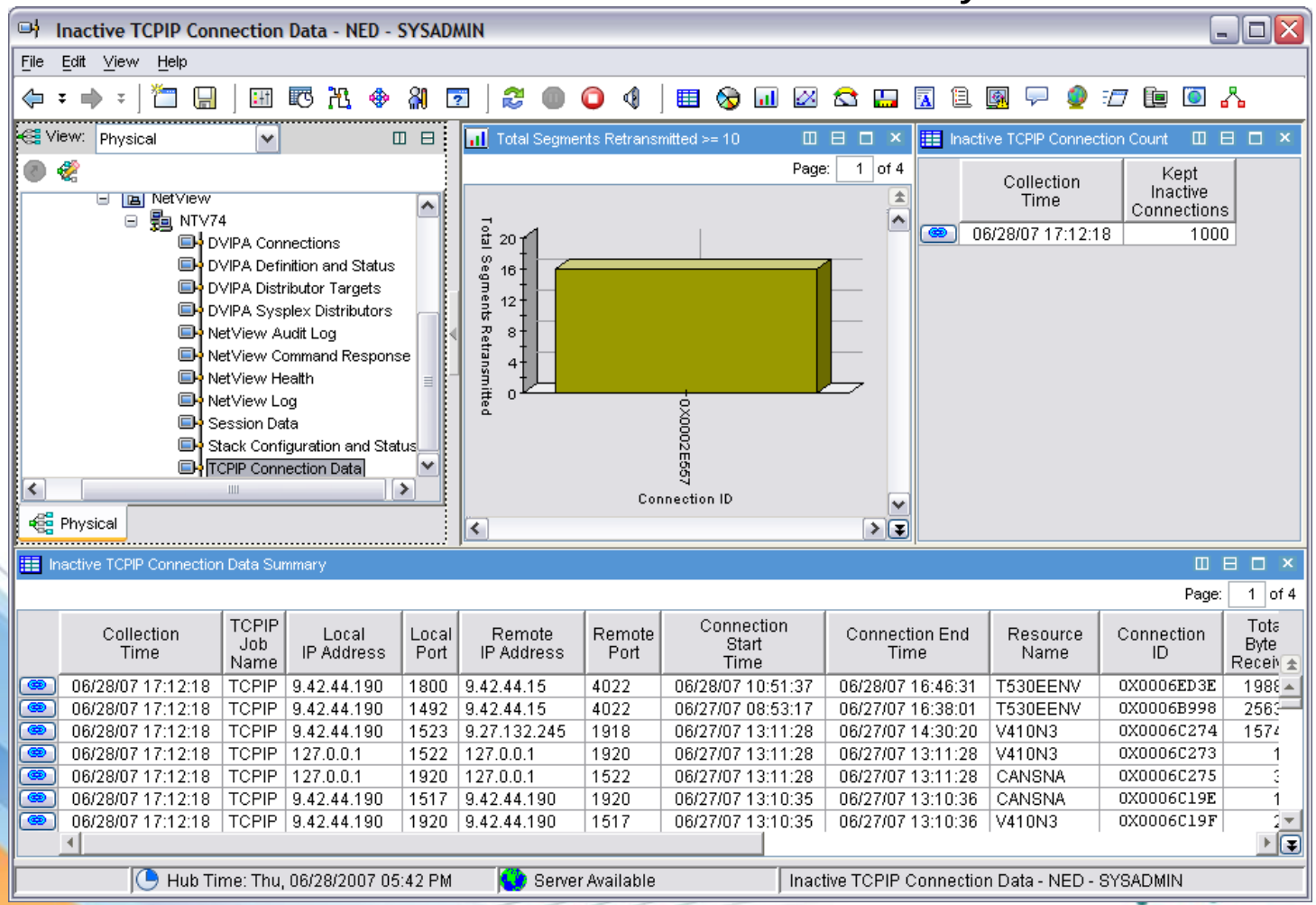
Why IP management? - Active Connections

Need info about active connections?



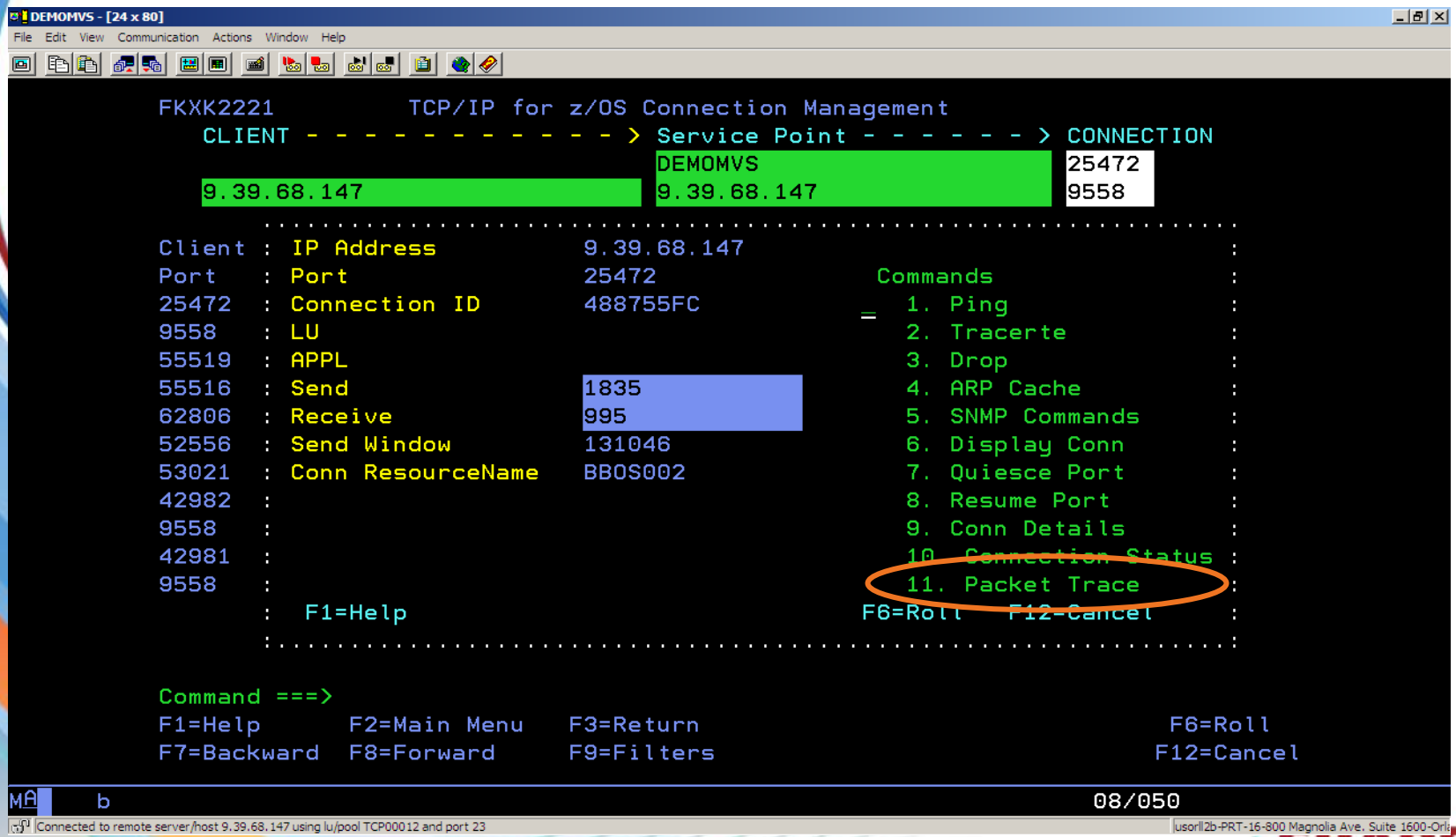
Why IP management? - Inactive Connections

Need info about inactive connections? When and why did that connection end?



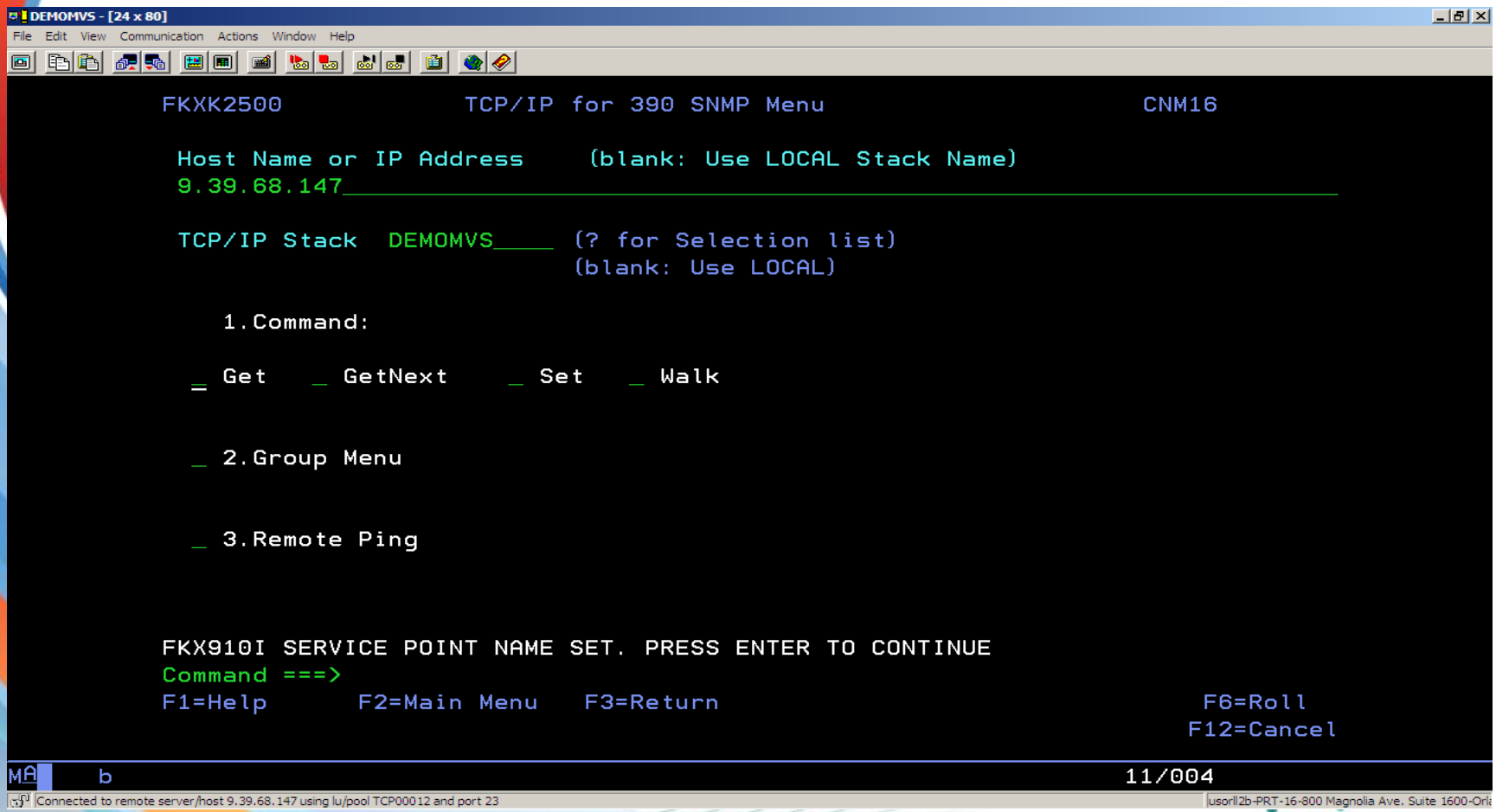
Why IP management? - Connection Details

Do you need details on a connection? Need a packet trace on the fly?



Why IP Management? - SNMP

Do you need to get or set MIB data?

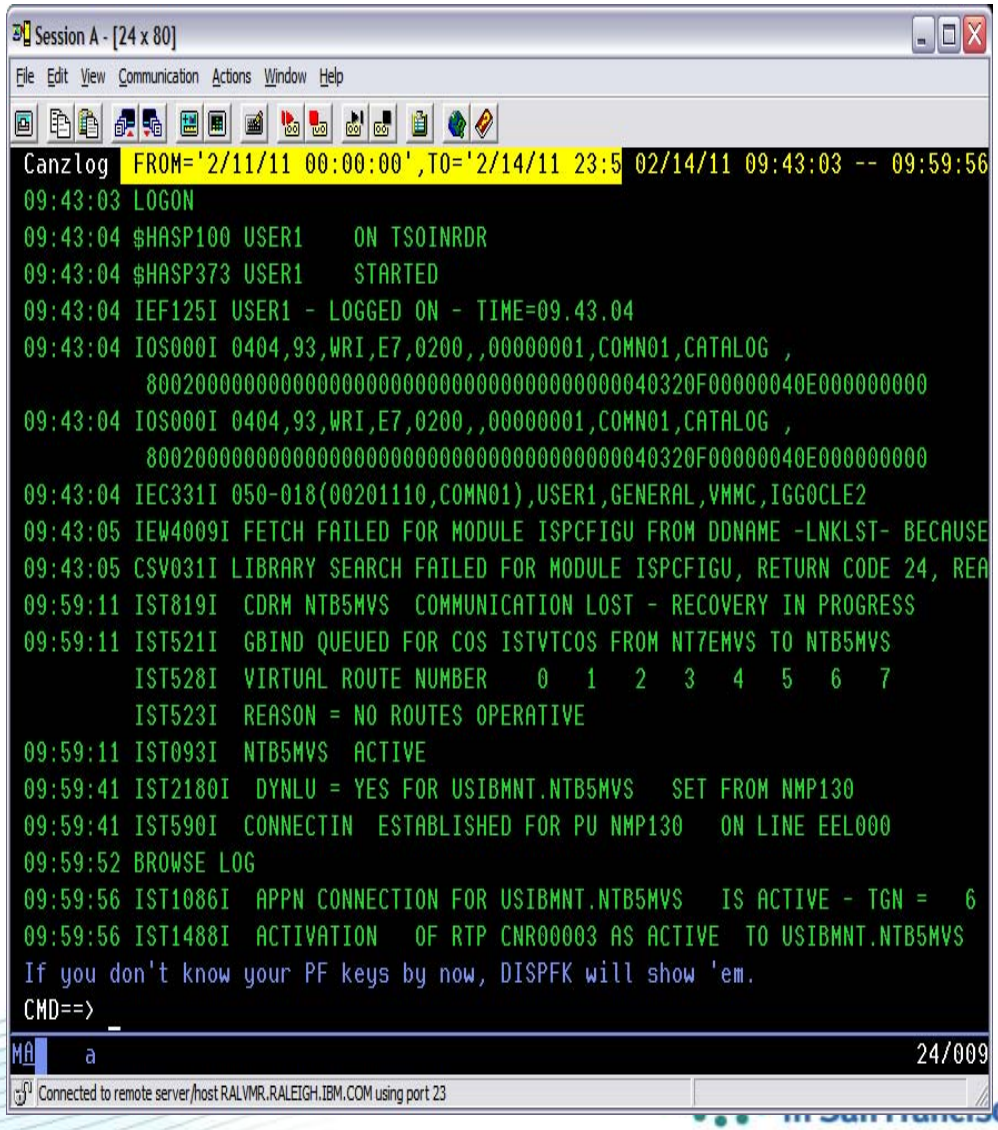


Why IP Management? - Consolidated Log

Do you want to see Syslog, Joblog, and Netlog data on one screen?

New CANZLOG log for enhanced problem solving and automation

- Combines records from Syslog, Joblogs, Netlog into one log
- Seamless archiving
- Automate any message in the consolidated log
- Browse with robust filtering
  - Define your own message attributes
  - Define and save sets of filter criteria, per operator or installation-wide

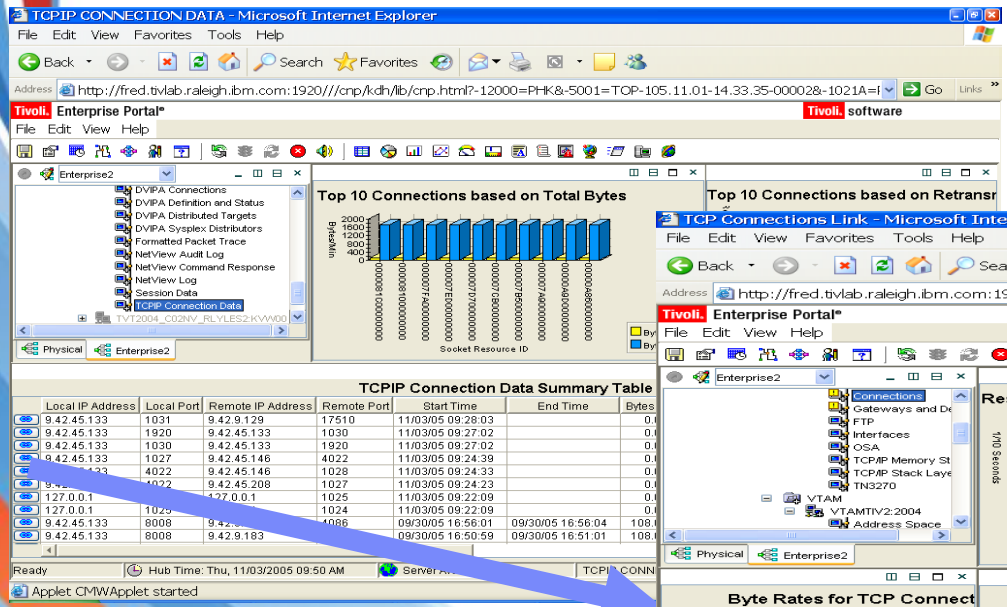


Why IP Management? - Integration

Want to seamlessly move from NetView to performance data?

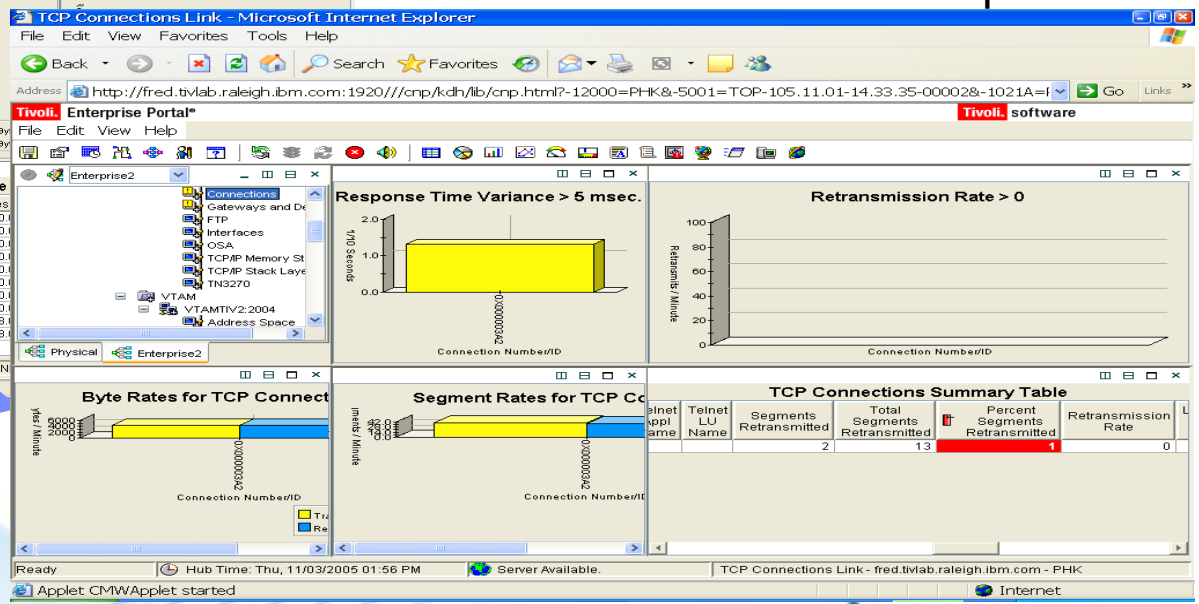
Scenario

Cross-link from NetView TCP/IP connection availability data to OMEGAMON for Mainframe Networks TCP/IP connection performance data.



NetView workspace

OMEGAMON XE for Mainframe Networks workspace



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- Why IP Management ?
- **z/OS and TCP/IP Considerations**
  - **z/OS symbols for NetView**
  - **TCP/IP & TN3270 profiles**
- SNMP Configuration
  - Agent & subAgent operation
- NetView Implementation
  - Customizing NetView for IP Management
    - General TOWER statements
    - AON Tower vs IPMGT Tower
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- RODM Considerations (Optional)
- TEMA Considerations (Optional)

z/OS and TCP/IP Considerations

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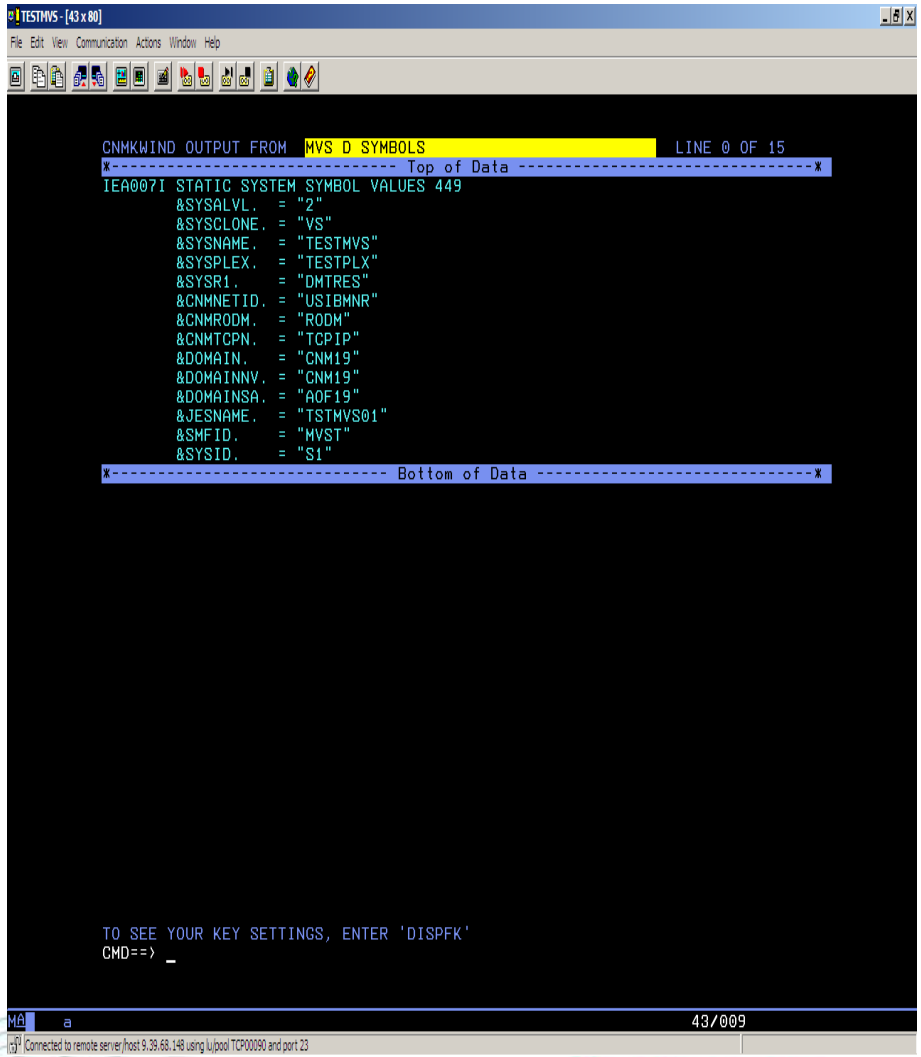
Symbols and TCP/IP Profiles

- Ensure these NetView symbols are defined in z/OS:
  - &CNMNETID.
  - &CNMRODM.
  - &CNMTCPN.
  - &DOMAIN.

  These are used in the NetView stylesheet parameters that initialize IP management functions.
- Make required changes to your TCP/IP profile and TN3270 profile in order to enable network management APIs.
- Example of z/OS symbols ➔



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NetView Stylesheets

- CNMSTYLE
  - Shipped sample
  - Don’t change

  CNMSTUSR
  - Your customization of config parms
    - Intended for customization that is common to all systems where NetView runs
  - Overrides values in CNMSTYLE
- CNMSTGEN
  - Your customization of config parms
    - Intended for customization that is more specific to a particular system or group of systems
  - Overrides values in CNMSTYLE and CNMSTUSR

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SNMP Configuration

Agent and subagent operation

- Enable the SNMP daemon to work with NetView:
  - Copy or ftp **`snmpd.conf`** and **`mibs.data`** from **`/usr/lpp/tcpip/samples`** into **`/etc`** HFS

  If you have a zEnterprise with a zBX Extension Cage, use the **`mibs.data.osazBX`** file.
- Modify **`snmpd.conf`** with your community name. If there is no community name value in your TCP/IP profile, use "public".
- Provide the proper MIB pointer information for the z/OS level:
  - Copy or ftp **`osnmpd.data`** from **`/usr/lpp/tcpip/samples`** to **`/etc`**.
- Bring up SNMPD (SNMP agent) and IOBSNMP (OSA subagent).

SNMP Configuration

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Agent and subagent operation

- Verify your SNMP operation =======➔

```
CNMKWIND OUTPUT FROM   COMMAND: OSNMP -H TESTMVS -C DEMONET W   LINE 0 OF 4
*-------------------------------- Top of Data --------------------------------*
1.3.6.1.2.1.1.9.1.3.1 = z/OS SNMP Agent
1.3.6.1.2.1.1.9.1.3.2 = OSA subagent
1.3.6.1.2.1.1.9.1.3.3 = z/OS TCP/IP SNMP Subagent
1.3.6.1.2.1.1.9.1.3.4 = z/OS TN3270 SNMP Subagent
*------------------------------ Bottom of Data -------------------------------*

TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
```

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- RODM Considerations (Optional)
- TEMA Considerations (Optional)

NetView Implementation

Customizing NetView for IP Management - TOWERS

- Assumed: you already have a customized and running NetView that is not managing IP. If not the case, refer to the NetView *Installation: Getting Started* guide (SC31-8872-nn) and customize a new NetView.
- Activate these towers:
  - For general IP management functions:
    - **TCPIPCOLLECT**
    - **DISCOVERY**

    These will spawn the autotasks needed to manage IP and dynamically discover IP interfaces.
  - For DVIPA monitoring
    - **DVIPA**
  - For ITM TEP graphical displays
    - **TEMA**
  - If you are not using AON:
    - the **IPMGT** tower.
    - Customize DSIPARM member **CNMIPMGT**.
  - If you already have a NetView with AON implemented for SNA:
    - the **AON.TCP** subtower.
    - Customize DSIPARM member **FKXCFG01**.

NetView Implementation

Customizing NetView for IP Management - TOWERS

- Sample tower statements in a **CNMSTGEN** override stylesheet member ==========➔

```
 NETVIEW.BRWS ------ BROWSE CNMSTGEN (DSIPARM ) --- LINE 00074 TO 00110 OF 00402
                                                        SCROLL ==> CSR
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----
RMTINIT.IP   = Yes
*MTSYN.USIBMNR.CNM16 = 9.39.68.147    // IP address & default port
*MTSYN.USIBMNR.CNM19 = 9.39.68.148    // IP address & default port
*MTSYN.USIBMNR.CNM20 = 9.39.68.149    // IP address & default port
*MTSYN.USIBMNR.CNM21 = 9.39.68.150    // IP address & default port
* U029RDP End
* U006RDP Begin
TOWER =  SA *AON  IPMGT  *Graphics  NPDA  NLDM  TCPIPCOLLECT
  *AMI *TARA  DVIPA TEMA  *NVSOA  DISCOVERY  *ACTIVEACTIVE
TOWER.AON =  SNA  TCP
TOWER.IPMGT = ACTMON *IDS
TOWER.TEMA =  HEALTH  CONNACT  CONINACT  SESSACT  DVDEF  DVTAD  DVCONN
   SYSPLEX  TELNET  DVROUT  OSA  HIPERSOCKETS  ACTIVEACTIVE
* U006RDP End
* U023RDP Begin
* U035FJC Begin
TOWER.SA  = SYSOPS PROCOPS
```

NetView Implementation

Customizing NetView for IP Management - COMMANDS

- NetView can run USS/OMVS and TSO netstat commands.
- To use the USS command interface:
  - Copy the sample USS interface proc to a proclib and customize appropriately.
  - Copy sample **CNMSUNXS** to your DSIPARM and customize appropriately.
- To use the TSO command interface:
  - Copy the sample TSO interface proc to a proclib and customize appropriately.
- Both command interfaces can be used simultaneously.
- If the IPMGT tower is used, they are started by auxinit statements provided in the stylesheet.

NetView Implementation

Customizing NetView for IP Management - COMMANDS

- Example of **CNMSTGEN** to start the command interfaces ==========➔

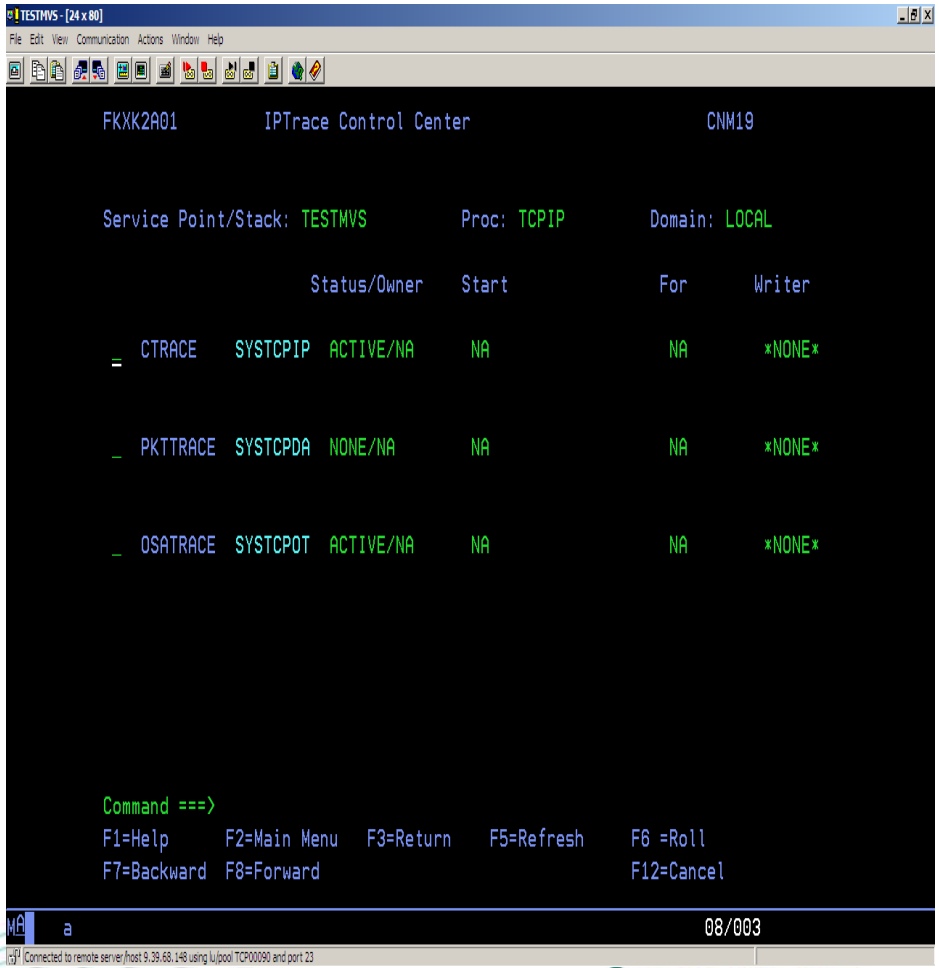
```
 NETVIEW.BRWS ------ BROWSE CNMSTGEN (DSIPARM ) --- LINE 00329 TO 00365 OF 00402
                                                      SCROLL ==> CSR
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----
PKTS.STORAGE.TCPIP = 50M
OPKT.STORAGE.TCPIP = 50M
* U027FJC Begin
RTNDEF.BASE.AGENT.sysname = USIBNMR.CNM19
RTNDEF.BASE.AGENT.sysname = USIBMNR.CNM20
RTNDEF.BASE.AGENT.sysname = USIBMNR.CNM21
* U027FJC End
* U041FJC BEGIN
TOWER.DISCOVERY = INTERFACES TELNET
TOWER.DISCOVERY.INTERFACES = OSA HIPERSOCKETS
*UNIX & TSO server start commands for use with IPMGT Tower
auxInitCmd.SUNIX = EXCMD AUTO1,START UNIXSERV=*
auxInitCmd.STSO = EXCMD AUTO1 START TSOSERV=NETVTSO,MEM=NETVTSO,OP=NONE
endcmd.close.leeway = 3    // seconds for End of NetView cmds
auxInitCmd.UNIXSTOP = EXCMD ?PRIMARY,NVENDCMD    // invoke endcmd clist

 CMD==>
 TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
```

- If the AON tower is used, the command interface procs are started by AON.

NetView Implementation

Customizing NetView for IP Management – Packet Trace

- NetView can trace IP packets for any protocol or trace them at the link layer via an OSA trace.
- When either the IPMGT or AON.TCP towers and subtowers are activated, the autotasks that handle packet tracing are activated.
- If the TCPIPCOLLECT tower is also activated, trace functions are enabled.
- Verify by executing the IPTRACE command ===➔



Agenda

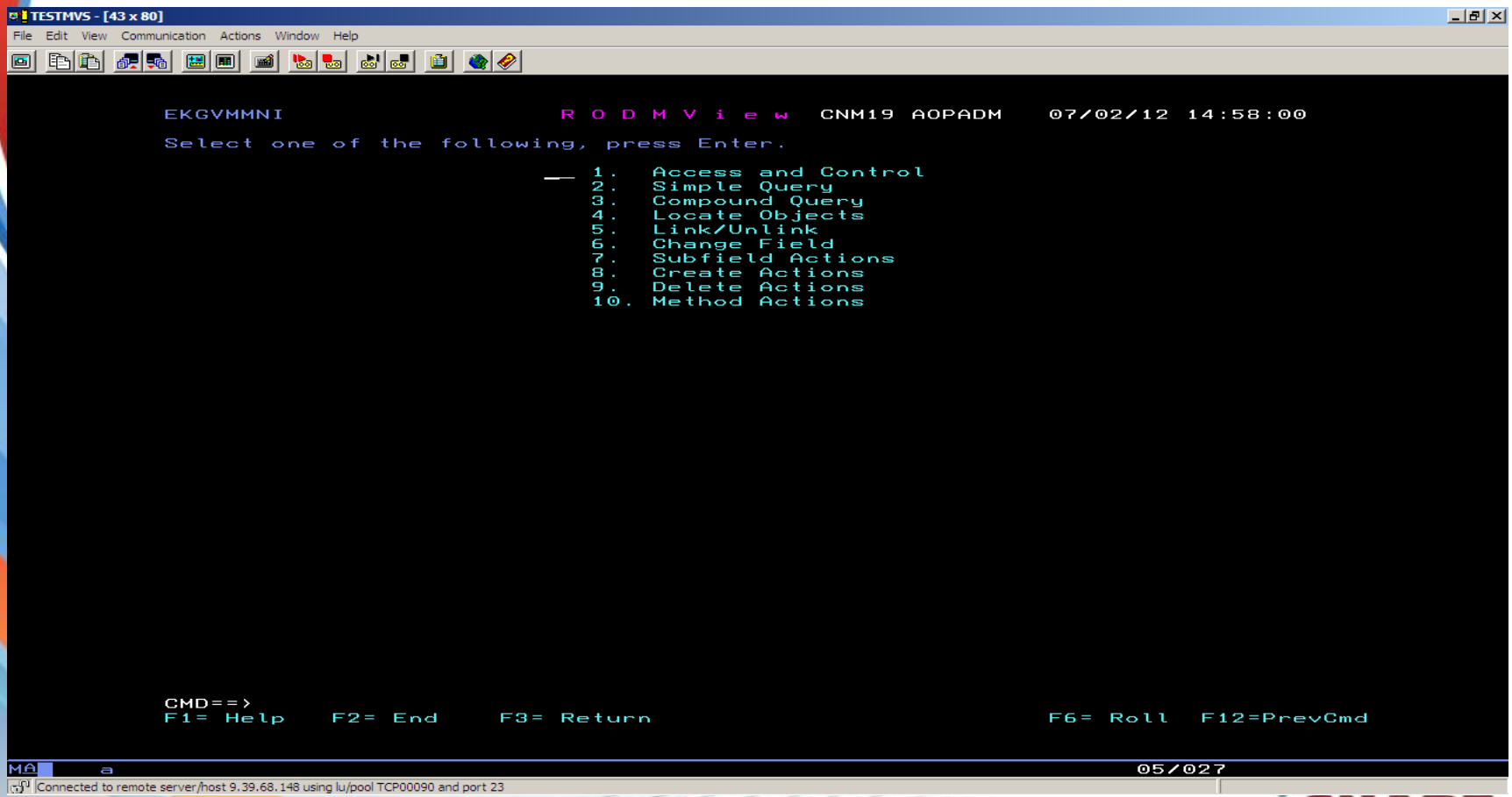
- Why IP Management?
- z/OS and TCP/IP Considerations
  - z/OS symbols for NetView
  - TCP/IP & TN3270 profiles
- SNMP Configuration
  - Agent & subAgent operation
- NetView Implementation
  - Customizing NetView for IP Management
    - General TOWER statements
    - AON Tower vs IPMGT Tower
  - Packet trace
- **RODM Considerations (Optional)**
- TEMA Considerations (Optional)

RODM Considerations (Optional)

- RODM: required to view NetView's OSA and HiperSockets® information in the Tivoli Enterprise Portal.
- If you did not customize your stylesheet to enable the TEMA tower, you do not need RODM.
- If you need RODM implemented, follow these steps:
  - Define the VSAM EKG datasets. See job **CNMSJ004** and member EKGSI101 in the IBM-supplied .CNMSAMP dataset and
  - Run the steps needed to define RODM's datasets.
  - Copy member **EKGXRODM** from the IBM-supplied .CNMSAMP dataset to a PROCLIB.
  - Copy member **EKGLOADP** from the IBM-supplied .CNMSAMP dataset to a PROCLIB.
  - Customize both **EKGLOADP** and **EKGXRODM** for your environment.
  - Copy member **CNMSJH12** from the IBM-supplied .CNMSAMP dataset to a JOBLIB.
  - Customize **CNMSJH12** for your environment.
  - Start EKGXRODM (or RODM if you so named it.)
  - Run **CNMSJH12** to populate NetView's data model.

RODM Considerations (Optional)

- Verify your RODM environment with **RODMVIEW**



Agenda

- Why IP Management?
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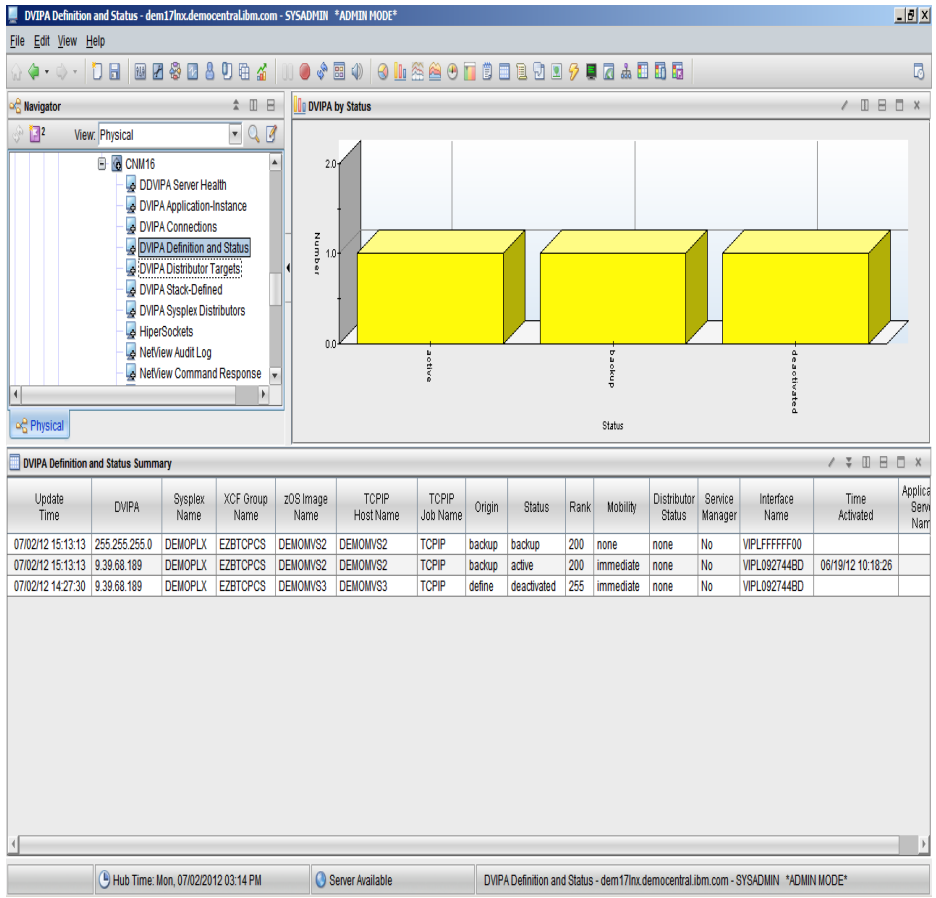
- **TEMA Considerations (Optional)**

TEMA Considerations (Optional)

- TEMA: The NetView Tivoli Enterprise Management Agent provides data to the Tivoli Enterprise Portal (TEP). The TEP provides NetView views for DVIPA information, OSA information and status, and HIPERSOCKETS information.*
- If you did not customize **CNMSTGEN** to enable the TEMA Tower, you do not need to go further.
- If you want to implement NetView in the TEP:
  - Follow the instructions for customizing the TEMA via ICAT or PARMGEN using *Installation: Configuring the Tivoli NetView for z/OS Enterprise Management Agent* (SC31-6969-nn).
  - Ensure the TEMA tower is enabled in **CNMSTGEN**.
  - When properly configured, your TEP views should look similar to this ====➔



DVIPA Definition and Status workspace

* This information is also available in the NetView 3270 console.

Why IP Management ?

- NetView for z/OS
  - provides functions to maintain the highest degree of availability for IBM System z® networks.
  - offers extensive set of tools for managing and maintaining complex, multi-vendor, multi-platform networks and systems from a single point of control.
  - provides advanced correlation facilities to automate any network or system event and provides support for both TCP/IP and SNA networks.
  - provides a set of user interfaces to meet the needs of any user.
  - provides management functions that work with other products to provide a complete picture of your networks and systems.
- TCP/IP management is an integral part of NetView for z/OS.

Getting Started…

Do you need to get NetView's IP management functions up and running right away?

If so, consider using the NetView IP Management *Rapid Results Package.*

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NetView for z/OS IP Management Rapid Results Package
General Information

This implementation package should help you rapidly implement and deploy the NetView for z/OS Version 5 or Version 6 IP management functions. It was built using both NetView for z/OS V5R4 and V6R1. It will most likely work with any supported Version 5 NetView.

The approach brings together documented steps in a number of NetView guides. It is highly recommended that you review those guides for a better understanding of the implementation.
References:

Installation: Getting Started (SC31-8872-nn)
Installation: Configuring Additional Components (SC31-8874-nn)
Security Reference (SC31-8870-nn)
IP Management Guide (SC27-2506-nn)
z/OS Communications Server V1.11,12,13 *IP Configuration Reference* (SC31-8776-nn)
z/OS Communications Server V1.11,12,13 *IP Configuration Guide* (SC31-8775-nn)

No IBM Licensed Code is delivered. The package contains instructions, parameters and JCL only.

Author: Frank Castiglia/IBM fjcastig@us.ibm.com

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Contact the author to get the latest .zip file.

More Information

- NetView website
  http://www.ibm.com/software/tivoli/products/netview-zos/
- NetView customer forum
  http://tech.groups.yahoo.com/group/NetView/
- Whitepaper on IP management with NetView
  https://www.ibm.com/developerworks/mydeveloperworks/groups/service/html/communityview?communityUuid=5e65990a-9690-42e2-93b1-c2267be7620c#fullpageWidgetId=Waa62f018a05a_4ca4_b612_49ffee80398e&file=1fafd5bd-512c-40cd-aa90-61112457f9fc
- NetView wiki
  https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Tivoli+System+z+Monitoring+and+Application+Management/page/Tivoli+NetView+for+zOS
- NetView documentation
  https://www.ibm.com/developerworks/wikis/display/tivolidoccentral/Tivoli+NetView+for+zOS
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- Service Management Connect: System z community
  https://www.ibm.com/developerworks/servicemanagement/z/index.html

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