

Getting Up and Running with NetView IP Management

Kirk Bean
Larry Green
IBM

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Session 12774

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Desired.

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?

```

DEMOVMS - [24 x 80]
File Edit View Communication Actions Window Help
FKXK2700      TCP/IP for 390 Resource Management      More: +
REFRESH 0_

Select an IP Management Active Monitoring command and press ENTER
1=ADD/START 2=DISPLAY/CHANGE 3=DELETE 4=START 5=STOP

Resource      Resource      TCP/IP      Actmon
Type          Stack        Definition  M Status
-----
**NEW**      IPHOST
**NEW**      IPPORT
PRINT224     IPHOST      DEMOMVS     ALLHOSTS   R DOWN
TCPSUN01     IPROUTER    DEMOMVS     ALLHOSTS   R DOWN
DEMOAIX      IPHOST      DEMOMVS     ALLHOSTS   A NORMAL
DEM14LNX     IPHOST      DEMOMVS     ALLHOSTS   A NORMAL
DEM17LNX     IPHOST      DEMOMVS     ALLHOSTS   A NORMAL
DEM26LNX     IPHOST      DEMOMVS     ALLHOSTS   A NORMAL
DEM27LNX     IPHOST      DEMOMVS     ALLHOSTS   A NORMAL
DEM32LNX     IPHOST      DEMOMVS     ALLHOSTS   A NORMAL
DEM37LNX     IPHOST      DEMOMVS     ALLHOSTS   A NORMAL
DEM42LNX     IPHOST      DEMOMVS     ALLHOSTS   A NORMAL

Command ==>
F1=Help      F2=Main Menu  F3=Return    F4=Commands  F5=Refresh    F6==Roll
F7=Backward  F8=Forward    F9=Display Opts  F10=Connections  F12==Cancel

MA  b  08/003

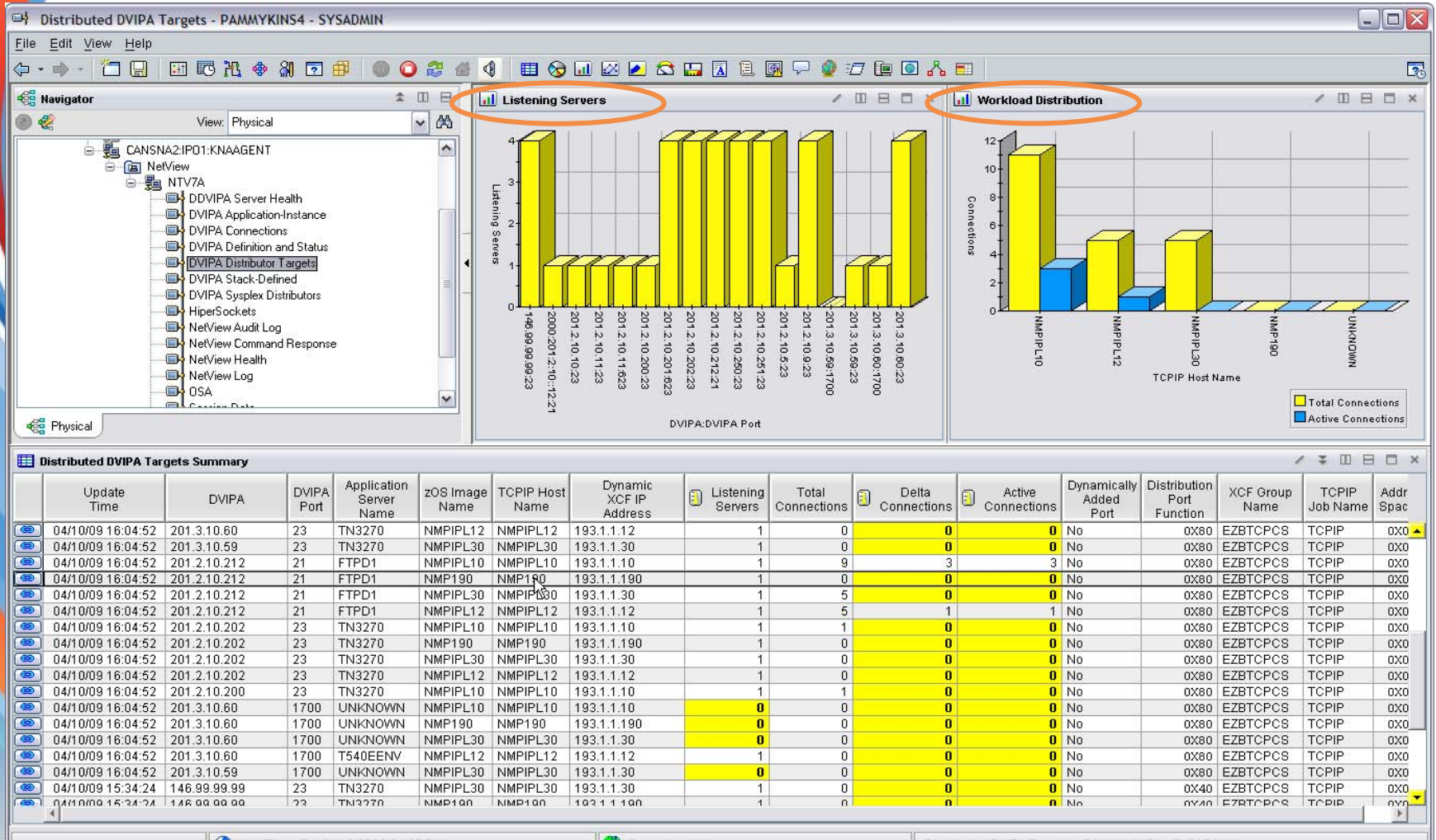
```

Connected to remote server/host 9.39.68.147 using lu/pool TCP00012 and port 23

usorl2b-PRT-16-800 Magnolia Ave. Suite 1600-Orl

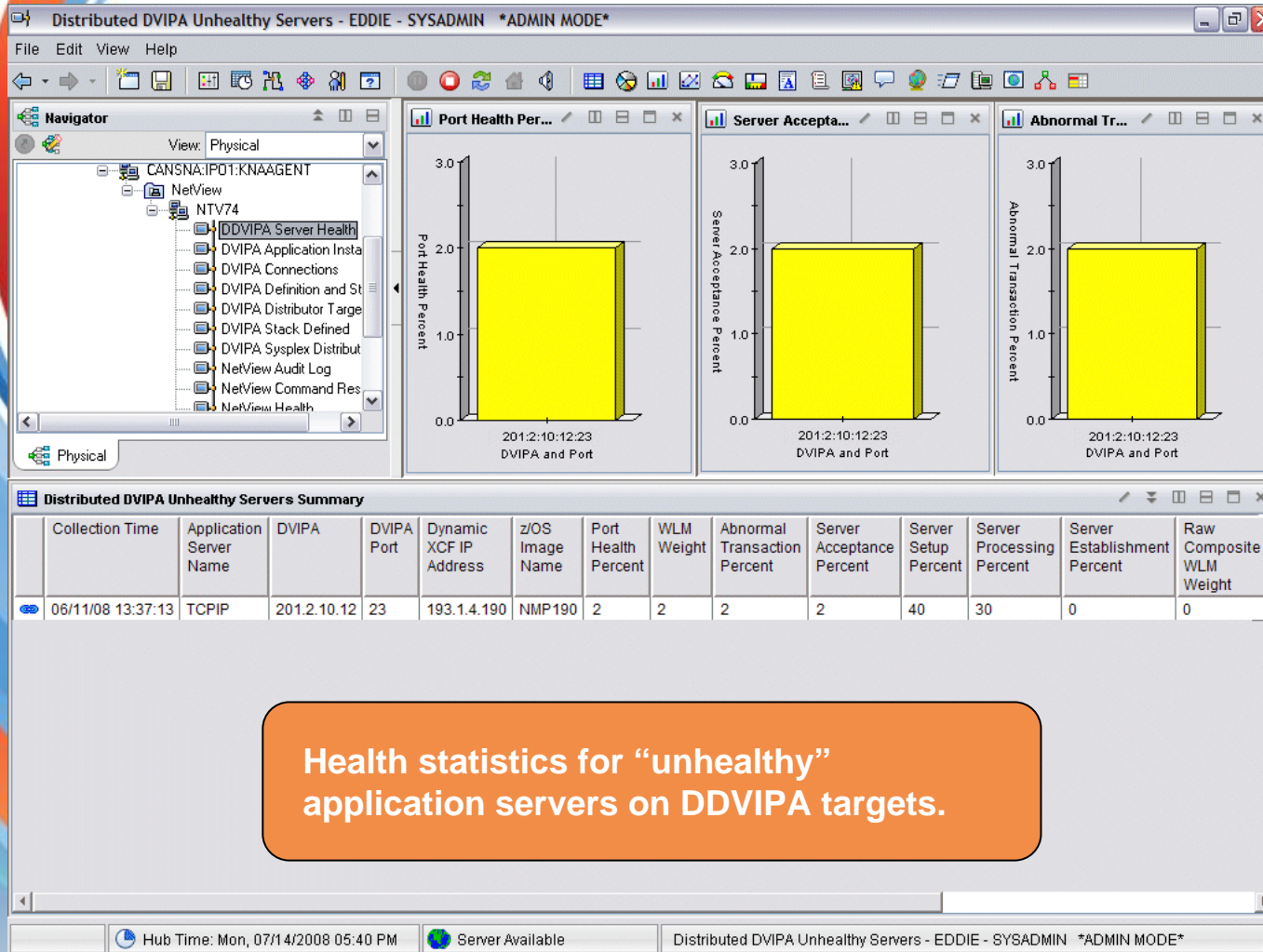
Why IP Management? - DVIPA

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



Why IP Management? - DVIPA

Are your DVIPA servers healthy?

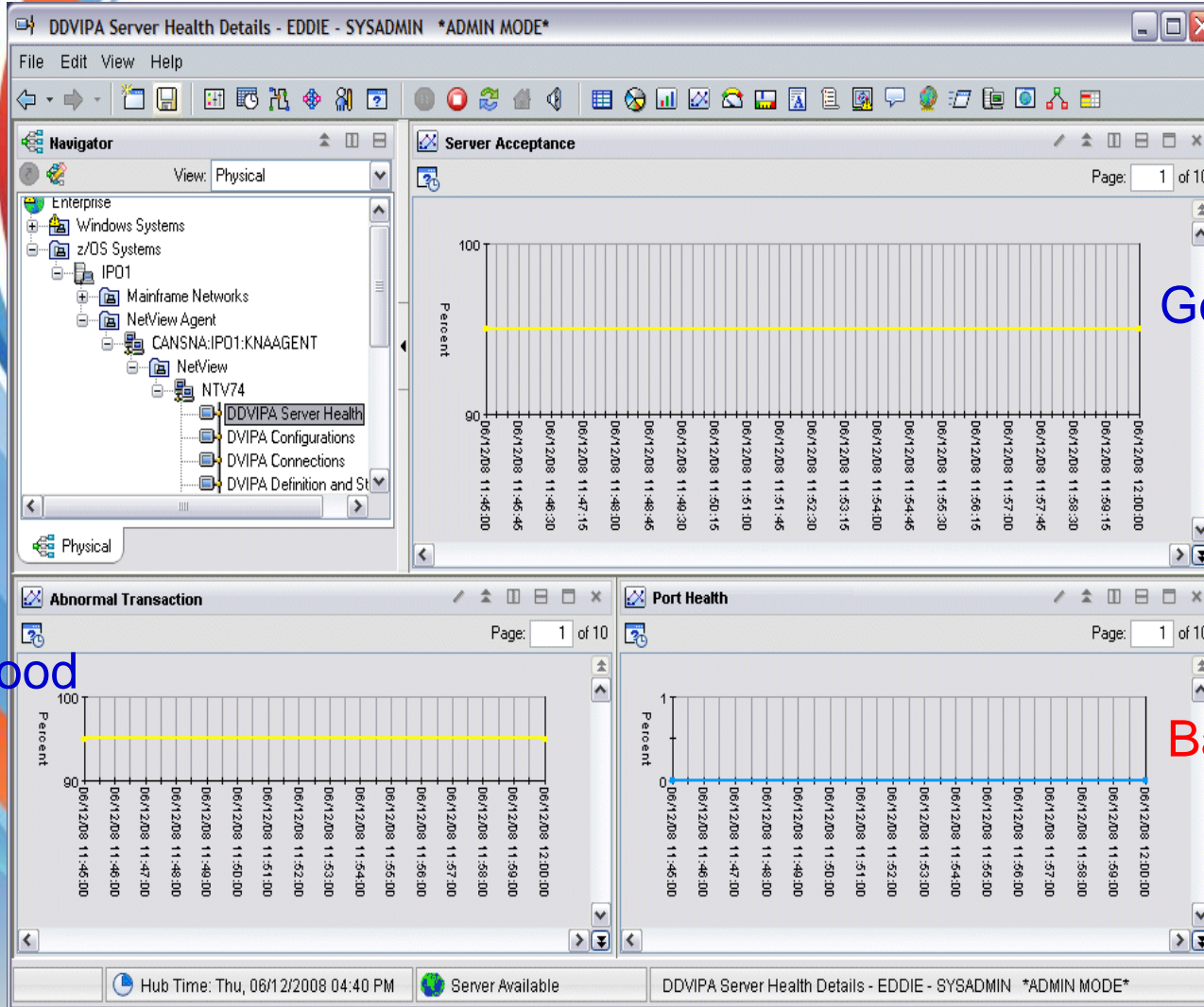


Health statistics for "unhealthy" application servers on DDVIPA targets.

- 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?

```
CNMK WIND 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
IST035I  PHYSICAL UNIT = DPD20001
IST082I  DEVTYP = 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 TC 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?

```

DEMOVMS - [43 x 80]
File Edit View Communication Actions Window Help
[Icons]

CNMKWIND OUTPUT FROM  COMMAND: NETSTAT ALL ISSUED TO SP: DEM  LINE 0 OF 33541
----- Top of Data -----*
MVS TCP/IP NETSTAT CS V1R13          TCPIP Name: TCPIP          21:56:32
Client Name: AAAAAAAAAA              Client Id: 2DC3A719
Local Socket: 127.0.0.1.47318
Foreign Socket: 127.0.0.1.49154
BytesIn: 000000000000000000000000
BytesOut: 00000000000001185712
SegmentsIn: 000000000000000015349
SegmentsOut: 000000000000000015350
Last Touched: 21:48:22
RcvNxt: 4159347230
ClientRcvNxt: 4159347230
InitRcvSeqNum: 4159347229
CongestionWindow: 0000130966
IncomingWindowNum: 4159478300
SndWl1: 4159347230
SndWnd: 0000130982
SndUna: 1737071357
MaximumSegmentSize: 0000065483
Round-trip information:
Smooth trip time: 0.000
ReXmt: 000000000000
DupACKs: 000000000000
SockOpt: 0000
TcpSig: 04
TcpDet: F0
TcpPrf: 00
QOSPolicy: No
RoutingPolicy: No
ReceiveBufferSize: 0000065535
ReceiveDataQueued: 000000000000
SendDataQueued: 000000000000
SendStalled: No
Ancillary Input Queue: N/A
State: Establish
SndNxt: 1737071357
ClientSndNxt: 1737071357
InitSndSeqNum: 1735885644
SlowStartThreshold: 0000098224
OutgoingWindowNum: 1737202339
SndWl2: 1737071357
MaxSndWnd: 0000131062
rtt_seq: 1737071269
DSField: 00
SmoothTripVariance: 1.000
ReXmtCount: 000000000000
RcvWnd: 0000131070
TcpTimer: 00
TcpSel: C0
TcpPol: 02
SendBufferSize: 0000065535

-----
Client Name: AAAAAAAAAA              Client Id: 2DC3A716
Local Socket: 9.39.68.147.47317
Foreign Socket: 9.39.68.147.39987
BytesIn: 000000000000000000000000
BytesOut: 00000000000000000000131
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD=> _

```

Why IP Management? - Real-time Packet Trace

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

```

DEMOVMS - [24 x 80]
File Edit View Communication Actions Window Help
[Icons]

FKXX2A22      PKTRACE  Control  SYSTCPDA  ACTIVE  for NVDomain: LOCAL

Service Point/Stack: DEMOMVS  TCPNAME: TCP/IP
PKTS: ACTIVE  On Task: AUTOPKTS  GTF: NO

Start Time: 2012-06-19-09:07:02  Writer: *NONE*

Options: 1-START/ADD 2-STOP 3-VIEW PACKETS

  Infc/Link      Stat Prot IP Address/Prefix      Ports      Record
                               Src  Portnm Dest  Count

=  ALL          *      *      *      *      *
-  LOOPBACK     ON  *      *      *      *      79422386
-  LOOPBACK6    ON  *      *      *      *      35712
-  EZ60SM01     ON  *      *      *      *      6127270
-  EZ60SM02     ON  *      *      *      *      4265211
-  EELINK1      ON  *      *      *      *      0
-  OSAFBC0L     ON  *      *      *      *      34398609
-  OSX3200P     ON  *      *      *      *      4265185
-  OSX3400P     ON  *      *      *      *      4265185

Command ==>
F1=Help      F2=Main Menu  F3=Return  F4=Stop SYSTCPDA  F5=Refresh  F6=Roll
F7=Backward  F8=Forward    F9=Assist  F10=PKTS Management  F12=Cancel

MA  b  12/002
Connected to remote server/host 9.39.68.147 using lu/pool TCP00012 and port 23
[usor]2b-PRT-16-800 Magnolia Ave, Suite 1600-Orl
  
```

Why IP Management? - Smart Packet Trace

Would you like to easily locate the problem?

```
Session A - [24 x 80]
File Edit View Communication Actions Window Help
FKXX2B51 Session Analysis LOCAL
Local IP 9.42.45.101
Port 1028 Host Name nmp101.tivlab.raleigh.ibm.com
Remote IP 9.42.45.196
Port 23 Host Name nmp196.tivlab.raleigh.ibm.com
Total Packets Summarized 78 Status CLOSED (ACTIVE RESET)
Flags Inbound Outbound Window Size Inbound Outbound
-----
Retransmissions 0 0 Largest 32768 32768
Duplicate Acks 0 2 Average 32741 32746
Reset 0 1 Smallest 32637 32592
Window Size 0 0
Window Probes 0 0
Delay Ack 1 14
Command ==> _
F1=Help F3=Return F6=Roll
F8=Packets F9=Actions F10=Report F12=Cancel
MA a 22/015
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23
```

Why IP Management? - Packet Trace Detail

Need to see what's actually flowing?

```
Session A - [24 x 80]
File Edit View Communication Actions Window Help
CNMKWIND OUTPUT FROM Packet Detail LINE 0 OF 48
*----- Top of Data -----*
z/OS TCP/IP Packet Trace Formatter, Copyright IBM Corp. 2000, 2009; 2009.028

**** 2010/03/16
RcdNr Sysname Mnemonic Entry Id Time Stamp Description
-----
441 NMP101 PACKET 00000004 08:49:16.053717 Packet Trace
To Interface : TCPIPLINK Device: QDIO Ethernet Full=52
Tod Clock : 2010/03/16 08:49:16.053715 Intfx: 5
Segment # : 0 Flags: Out
Source : 9.42.45.101
Destination : 9.42.45.196
Source Port : 1028 Dest Port: 23 Asid: 002F TCB: 006B59D0
IpHeader: Version : 4 Header Length: 20
Tos : 00 QOS: Routine Normal Service
Packet Length : 52 ID Number: 03C9
Fragment : Offset: 0
TTL : 64 Protocol: TCP CheckSum: 097F F
Source : 9.42.45.101
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
MA a 24/009
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23
```

Why IP management? - Active Connections

Need info about active connections?

TCPIP Connection Data - Microsoft Internet Explorer

Address: <http://dino.tivlab.raleigh.ibm.com:1920///cnp/kdh/lib/cnp.html?12000=LINDA&-5001=MOPHYSICAL&-1021A=REPORT&-1020=A01INV@KNATCO99&-2400=p@A01INV&-10105=KNATCO99&->

Welcome LINDA

Tivoli Enterprise Portal

View: Physical

Percent Segments Retransmitted >= 3

Active TCPIP Connection Count

Collection Time	Total Active Connections
03/29/07 10:59:13	43

Byte Rate >= 1024

Bytes Sent or Received = 0

TCPIP Connection Data Summary

Collection Time	TCPIP Job Name	Local IP Address	Local Port	Remote IP Address	Remote Port	Connection Start Time	Last Activity Timestamp	Resource Name	Connection ID	Total Bytes Received	Total Bytes Sent	Total Bytes	Bytes Received	Bytes Sent	Bytes Sent or Received	Byte Rate	Total Segments Retransmitted	Segments Retransmitted	Percent Segments Retransmitted	
03/29/07 10:59:13	TCPIP2B	127.0.0.1	1024	127.0.0.1	1025	03/29/07 08:40:38	03/29/07 08:40:39	TCPIP2B	0000000017	400	1170	1570	0	0	0	0	0	0	0	0
03/29/07 10:59:13	TCPIP2B	127.0.0.1	1025	127.0.0.1	1024	03/29/07 08:40:38	03/29/07 08:40:39	TCPIP2B	0000000016	1170	400	1570	0	0	0	0	0	0	0	0
03/29/07 10:59:13	TCPIP2C	127.0.0.1	1024	127.0.0.1	1025	03/29/07 08:40:22	03/29/07 08:40:23	TCPIP2C	0000000018	400	1170	1570	0	0	0	0	0	0	0	0
03/29/07 10:59:13	TCPIP2C	127.0.0.1	1025	127.0.0.1	1024	03/29/07 08:40:22	03/29/07 08:40:23	TCPIP2C	0000000017	1170	400	1570	0	0	0	0	0	0	0	0
03/29/07 10:59:13	TCPIP2	127.0.0.1	1053	127.0.0.1	1020	03/29/07 08:44:13	03/29/07 10:48:22	CANSNA	0000000129	0	0	0	0	0	0	0	0	0	0	0

Hub Time: Thu, 03/29/2007 02:20 PM

Server Available

TCPIP Connection Data - dino.tivlab.raleigh.ibm.com - LINDA

Applet CMWApplet started

Internet

Why IP management? - Inactive Connections

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

Inactive TCPIP Connection Data Summary

Collection Time	TCPIP Job Name	Local IP Address	Local Port	Remote IP Address	Remote Port	Connection Start Time	Connection End Time	Resource Name	Connection ID	Total Byte Received
06/28/07 17:12:18	TCPIP	9.42.44.190	1800	9.42.44.15	4022	06/28/07 10:51:37	06/28/07 16:46:31	T530EENV	0X0006ED3E	1986
06/28/07 17:12:18	TCPIP	9.42.44.190	1492	9.42.44.15	4022	06/27/07 08:53:17	06/27/07 16:38:01	T530EENV	0X0006B998	2563
06/28/07 17:12:18	TCPIP	9.42.44.190	1523	9.27.132.245	1918	06/27/07 13:11:28	06/27/07 14:30:20	V410N3	0X0006C274	1574
06/28/07 17:12:18	TCPIP	127.0.0.1	1522	127.0.0.1	1920	06/27/07 13:11:28	06/27/07 13:11:28	V410N3	0X0006C273	1
06/28/07 17:12:18	TCPIP	127.0.0.1	1920	127.0.0.1	1522	06/27/07 13:11:28	06/27/07 13:11:28	CANSNA	0X0006C275	3
06/28/07 17:12:18	TCPIP	9.42.44.190	1517	9.42.44.190	1920	06/27/07 13:10:35	06/27/07 13:10:36	CANSNA	0X0006C19E	1
06/28/07 17:12:18	TCPIP	9.42.44.190	1920	9.42.44.190	1517	06/27/07 13:10:35	06/27/07 13:10:36	V410N3	0X0006C19F	2

Why IP management? - Connection Details

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

```

DEMONVS - [24 x 80]
File Edit View Communication Actions Window Help
FKXK2221      TCP/IP for z/OS Connection Management
CLIENT - - - - - > Service Point - - - - - > CONNECTION
9.39.68.147   DEMONVS      25472
              9.39.68.147   9558

Client : IP Address      9.39.68.147
Port   : Port            25472
25472  : Connection ID    488755FC
9558   : LU
55519  : APPL
55516  : Send              1835
62806  : Receive           995
52556  : Send Window      131046
53021  : Conn ResourceName BBOS002
42982  :
9558   :
42981  :
9558   :
      : F1=Help
      : F6=Roll F12=Cancel

Commands
- 1. Ping
  2. Tracerte
  3. Drop
  4. ARP Cache
  5. SNMP Commands
  6. Display Conn
  7. Quiesce Port
  8. Resume Port
  9. Conn Details
 10. Connection Status
 11. Packet Trace

Command ==>
F1=Help      F2=Main Menu    F3=Return      F6=Roll
F7=Backward  F8=Forward       F9=Filters     F12=Cancel

M&  b                                     08/050

```

Why IP Management? - SNMP

Do you need to get or set MIB data?

```
DEMOMVS - [24 x 80]
File Edit View Communication Actions Window Help
FKXK2500          TCP/IP for 390 SNMP Menu          CNM16

Host Name or IP Address      (blank: Use LOCAL Stack Name)
9.39.68.147_____

TCP/IP Stack  DEMOMVS_____ (? for Selection list)
                (blank: Use LOCAL)

1. Command:
_ Get   _ GetNext  _ Set   _ Walk

_ 2. Group Menu

_ 3. Remote Ping

FKX910I SERVICE POINT NAME SET. PRESS ENTER TO CONTINUE
Command ==>
F1=Help      F2=Main Menu   F3=Return
F6=Roll     F12=Cancel

MA  b 11/004
Connected to remote server/host 9.39.68.147 using lu/pool TCP00012 and port 23
lusorl2b-PRT-16-800 Magnolia Ave. Suite 1600-Orl
```


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

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
Canzlog FROM='2/11/11 00:00:00',TO='2/14/11 23:59:59' 02/14/11 09:43:03 -- 09:59:56
09:43:03 LOGON
09:43:04 $HASP100 USER1 ON TSOINRDR
09:43:04 $HASP373 USER1 STARTED
09:43:04 IEF125I USER1 - LOGGED ON - TIME=09.43.04
09:43:04 IOS000I 0404,93,WRI,E7,0200,,00000001,COMM01,CATALOG ,
8002000000000000000000000000000000000000000040320F00000040E000000000
09:43:04 IOS000I 0404,93,WRI,E7,0200,,00000001,COMM01,CATALOG ,
8002000000000000000000000000000000000000000040320F00000040E000000000
09:43:04 IEC331I 050-018(00201110,COMM01),USER1,GENERAL,VMVC,IGGOCLE2
09:43:05 IEW4009I FETCH FAILED FOR MODULE ISPCFIGU FROM DDNAME -LNKLST- BECAUSE
09:43:05 CSV031I LIBRARY SEARCH FAILED FOR MODULE ISPCFIGU, RETURN CODE 24, REAS
09:59:11 IST819I CDRM NTB5MVS COMMUNICATION LOST - RECOVERY IN PROGRESS
09:59:11 IST521I GBIND QUEUED FOR COS ISTVTCOS FROM NT7EMVS TO NTB5MVS
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
09:59:11 IST093I NTB5MVS ACTIVE
09:59:41 IST2180I DYNLU = YES FOR USIBMNT.NTB5MVS SET FROM NMP130
09:59:41 IST590I CONNECTIN ESTABLISHED FOR PU NMP130 ON LINE EEL000
09:59:52 BROWSE LOG
09:59:56 IST1086I APPN CONNECTION FOR USIBMNT.NTB5MVS IS ACTIVE - TGN = 6
09:59:56 IST1488I ACTIVATION OF RTP CNR00003 AS ACTIVE TO USIBMNT.NTB5MVS
If you don't know your PF keys by now, DISPFK will show 'em.
CMD==>

```

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.

TCPIP Connection Data Summary Table

Local IP Address	Local Port	Remote IP Address	Remote Port	Start Time	End Time	Bytes
9.42.45.133	1031	9.42.9.129	17510	11/03/05 09:28:03		0.0
9.42.45.133	1920	9.42.45.133	1030	11/03/05 09:27:02		0.0
9.42.45.133	1030	9.42.45.133	1920	11/03/05 09:27:02		0.0
9.42.45.133	1027	9.42.45.146	4022	11/03/05 09:24:38		0.0
9.42.45.133	4022	9.42.45.146	1028	11/03/05 09:24:33		0.0
9.42.45.133	1027	9.42.45.208	1027	11/03/05 09:24:23		0.0
9.42.45.133	1027	9.42.45.208	1025	11/03/05 09:22:09		0.0
127.0.0.1	1025	127.0.0.1	1024	11/03/05 09:22:09		0.0
9.42.45.133	8008	9.42.9.183	1086	09/30/05 16:56:01	09/30/05 16:56:04	108.0
9.42.45.133	8008	9.42.9.183	1086	09/30/05 16:50:59	09/30/05 16:51:01	108.0

NetView workspace

OMEGAMON XE for Mainframe Networks workspace

Response Time Variance > 5 msec.

Retransmission Rate > 0

Byte Rates for TCP Connect

Segment Rates for TCP Connect

TCP Connections Summary Table

Client Name	Telnet LU Name	Segments Retransmitted	Total Segments Retransmitted	Percent Segments Retransmitted	Retransmission Rate
		2	13	1	0

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)
- 49 TEMA Considerations (Optional)

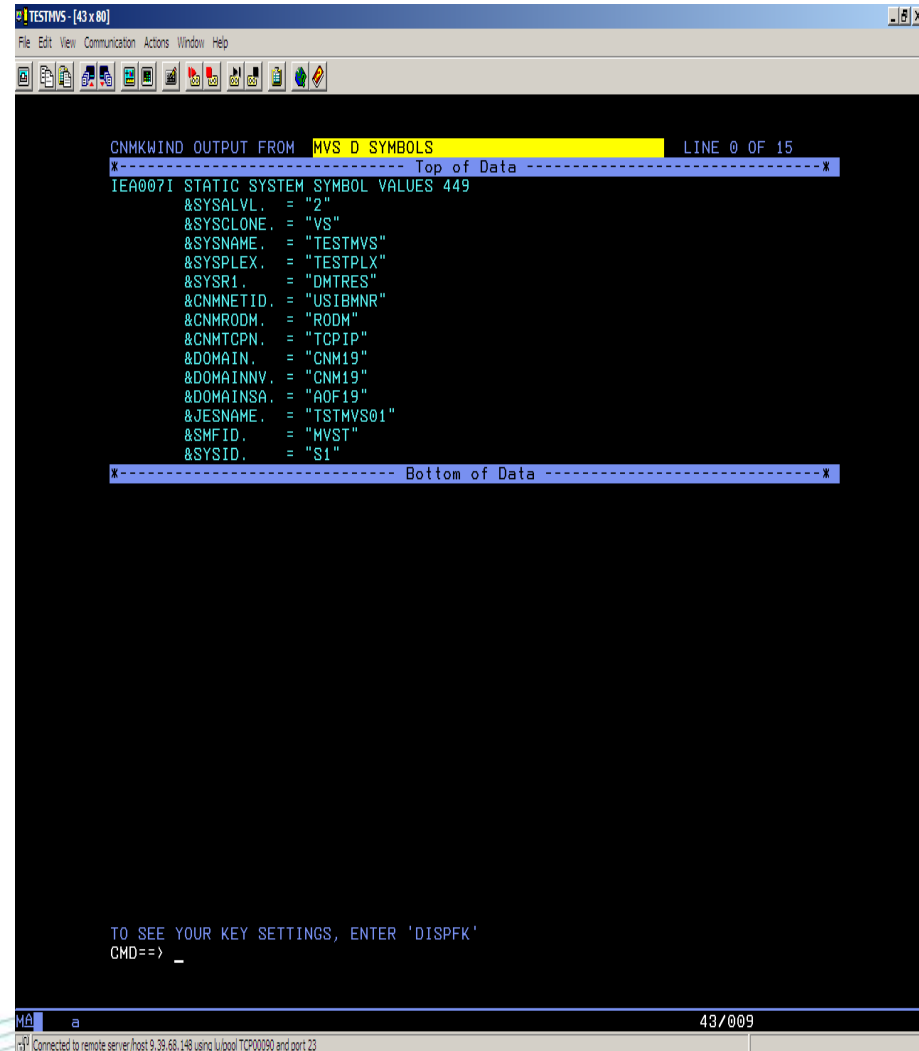
z/OS and TCP/IP Considerations

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 →



The screenshot shows a terminal window titled 'TESTMVS - [43 x 80]'. The main content is a list of NetView symbols and their values, starting with 'IEA007I STATIC SYSTEM SYMBOL VALUES 449'. The symbols listed are: &SYSALVL, &SYSCLONE, &SYSNAME, &SYSPLEX, &YSR1, &CNMNETID, &CNMRODM, &CNMTCPN, &DOMAIN, &DOMAINNV, &DOMAINSA, &JESNAME, &SMFID, and &SYSID. The values are: "2", "VS", "TESTMVS", "TESTPLX", "DMTRES", "USIBMNR", "RODM", "TCP/IP", "CNM19", "CNM19", "AOF19", "TSTMVS01", "MVST", and "S1". The terminal also shows 'Top of Data' and 'Bottom of Data' markers. At the bottom, it prompts 'TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'' and 'CMD==> _'. The status bar at the bottom indicates '43/009' and 'Connected to remote server/host 9.29.68.148 using /u/pool TCP00090 and port 23'.

```
CNMKIND OUTPUT FROM MVS D SYMBOLS LINE 0 OF 15
----- Top of Data -----
IEA007I STATIC SYSTEM SYMBOL VALUES 449
&SYSALVL. = "2"
&SYSCLONE. = "VS"
&SYSNAME. = "TESTMVS"
&SYSPLEX. = "TESTPLX"
&YSR1. = "DMTRES"
&CNMNETID. = "USIBMNR"
&CNMRODM. = "RODM"
&CNMTCPN. = "TCP/IP"
&DOMAIN. = "CNM19"
&DOMAINNV. = "CNM19"
&DOMAINSA. = "AOF19"
&JESNAME. = "TSTMVS01"
&SMFID. = "MVST"
&SYSID. = "S1"
----- Bottom of Data -----

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

43/009
Connected to remote server/host 9.29.68.148 using /u/pool TCP00090 and port 23
```

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

Agenda

- Why IP Management ?
- z/OS and TCP/IP Considerations
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- **SNMP Configuration**
 - **Agent & subAgent operation**
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 - AON Tower vs IPMGT Tower
 - Packet Trace
- RODM Considerations (Optional)
- TEMA Considerations (Optional)

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

Agent and subagent operation

- Verify your SNMP operation =====>

```
CNMKWD 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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 - **Packet Trace**
- RODM Considerations (Optional)
- 25 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
* U0029RDP End
* U006RDP Begin
TOWER = SA *AON IPMGT *Graphics NPDA NLDM TCPIP COLLECT
*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

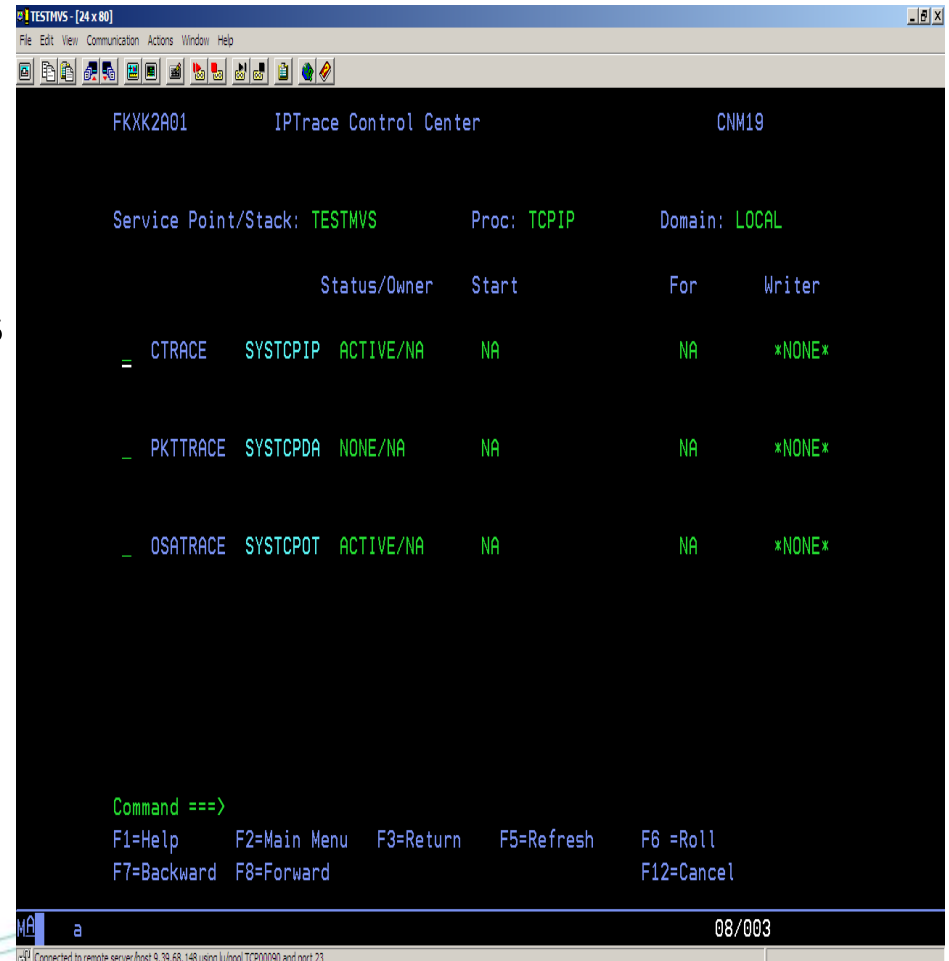
CMD==>
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
```

- 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 ===→



The screenshot shows a terminal window titled "TESTMVS - [24 x 80]" with a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a toolbar. The main display area shows the "IPTrace Control Center" for tower "FKXK2A01" and subtower "CNM19". It displays the following information:

```
Service Point/Stack: TESTMVS      Proc: TCPIP      Domain: LOCAL
Status/Owner      Start      For      Writer
- CTRACE SYSTCPIP ACTIVE/NA      NA      NA      *NONE*
- PKTRACE SYSTCPDA NONE/NA      NA      NA      *NONE*
- OSATRACE SYSTCPOT ACTIVE/NA      NA      NA      *NONE*
```

At the bottom, it shows the command prompt "Command ==>" and a list of function keys: F1=Help, F2=Main Menu, F3=Return, F5=Refresh, F6=Roll, F7=Backward, F8=Forward, F12=Cancel. The status bar at the bottom indicates "MA a" and "08/003". A small footer at the very bottom reads "Connected to remote server/host 9.39.68.148 using lu/pool TCP00090 and port 23".

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

RODM Considerations (Optional)

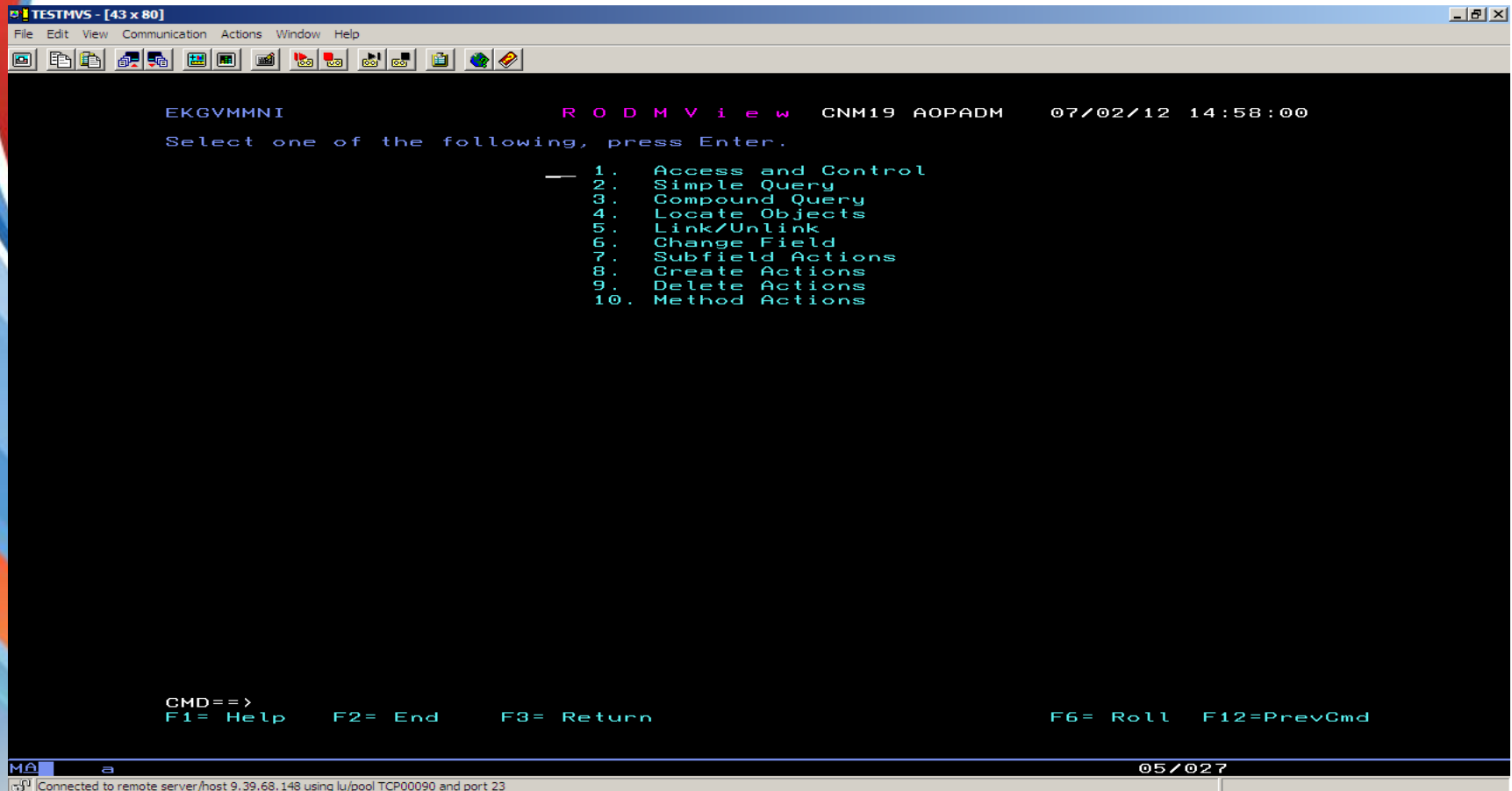
- RODM: required to view NetView's OSA and HiperSockets® information in the Tivoli Enterprise Portal.
- If you did not customize your stylesheet to enable the TEMA tower, you do not need RODM.

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**



```
TESTMVS - [43 x 80]
File Edit View Communication Actions Window Help
EKGVMNI                                R O D M V i e w  CNM19 AOPADM  07/02/12 14:58:00
Select one of the following, press Enter.
— 1. Access and Control
   2. Simple Query
   3. Compound Query
   4. Locate Objects
   5. Link/Unlink
   6. Change Field
   7. Subfield Actions
   8. Create Actions
   9. Delete Actions
  10. Method Actions

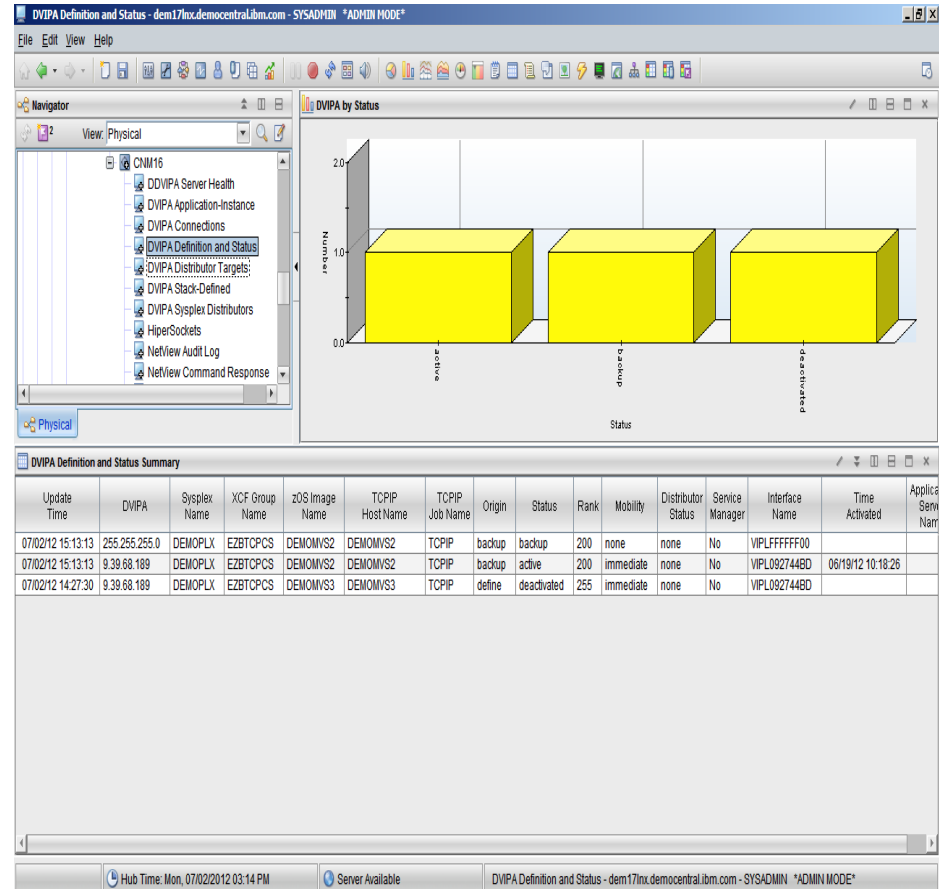
CMD==>
F1= Help    F2= End    F3= Return    F6= Roll    F12=PrevCmd
05/027
Connected to remote server/host 9.39.68.148 using lu/pool TCP00090 and port 23
```

Agenda

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- **34 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 35 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*.

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

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>
- NetView media gallery
<https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Tivoli+System+z+Monitoring+and+Application+Management/page/Media+Gallery+for+Tivoli+NetView+for+zOS>
- Service Management Connect: System z community
<https://www.ibm.com/developerworks/servicemanagement/z/index.html>

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