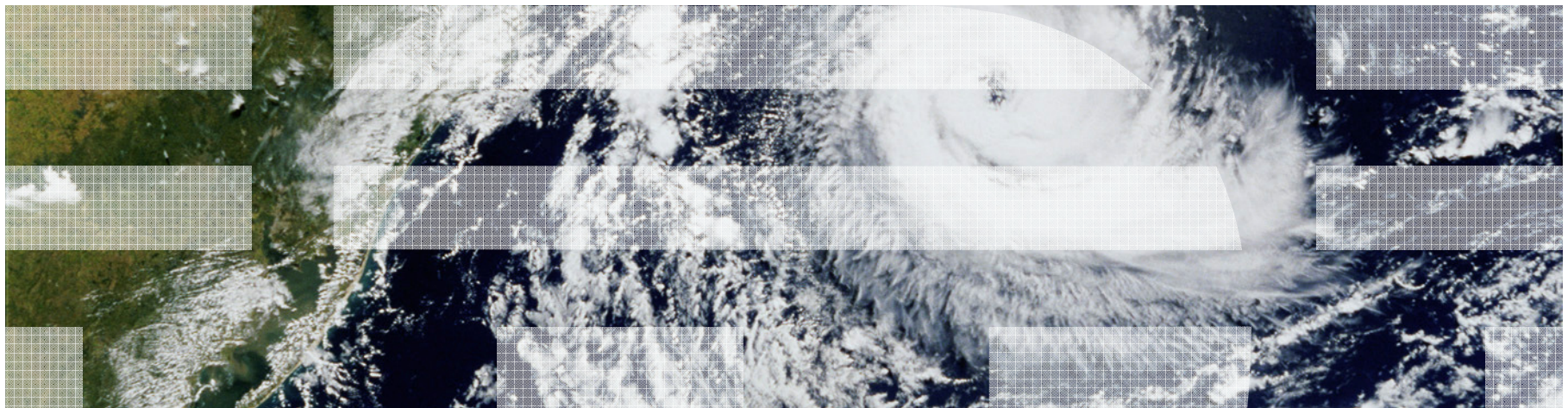


Ovies Brabson, Advisory SW Engineer

Jeff Weiner, Senior SW Engineer



# Mainframe TCP/IP Examples of Proactive Problem Determination and Automation



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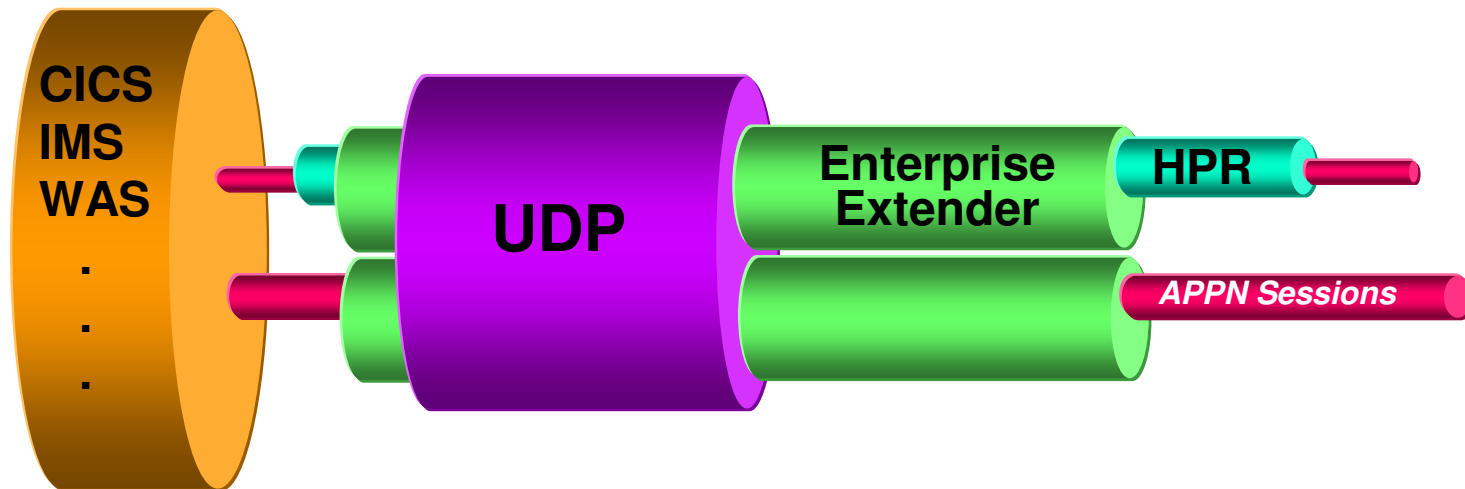
Also a thanks to Ernie Gilman, who authored some of these slides.

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## Agenda

- **Enterprise Extender (EE) Management**
- OSA Management
- TCP Connection Management
- TN3270 Management
- For More Information

## Enterprise Extender (EE) Management



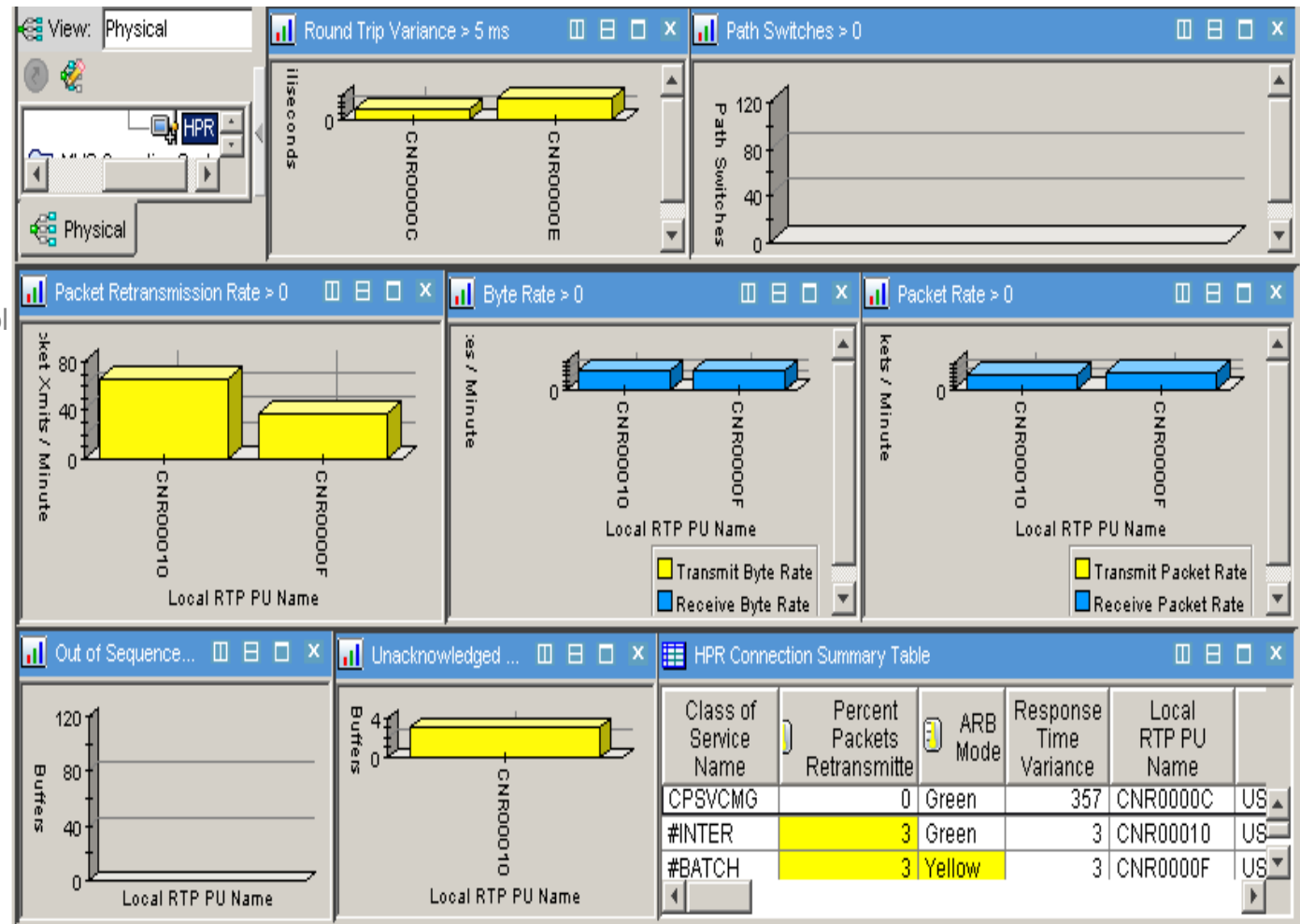
- EE flows over UDP
- EE performs retransmissions since UDP will not
- HPR can flow over EE
- HPR endpoints are responsible for error recovery and Flow Control
- Problems can occur in different places

Why is my session slow?



# High Performance Routing

- Retransmissions
- Path Switches
- ARB Mode
  - Adaptive Rate Based Flow control
    - Red
    - Yellow
    - Green
- Out of Sequence
- Response Time Variance
- Class of Service
- Throughput
- Watch for CSM increase
  - Backup of un-ack buffers
- Look at UDP workspace
  - Ports 12000-12004



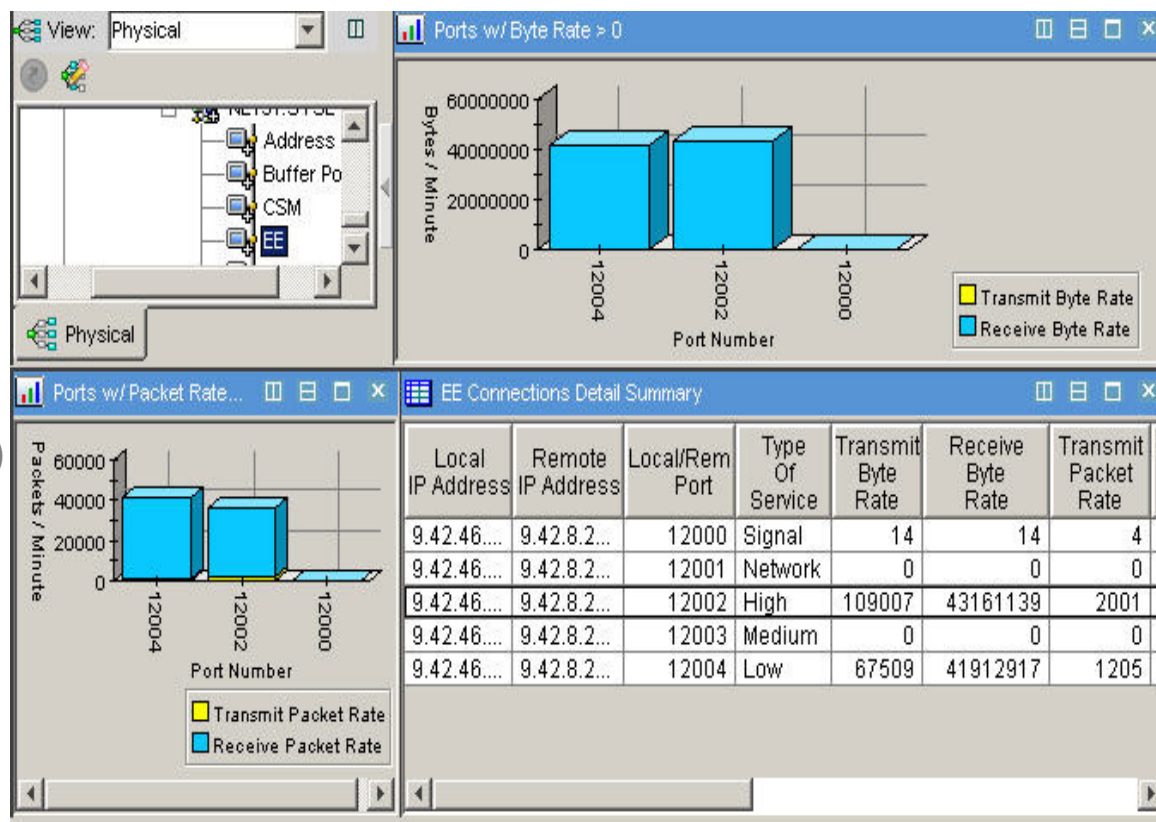
**OMEGAMON XE for Mainframe Networks HPR Connections Workspace**

# EE Connections

## EE Situations

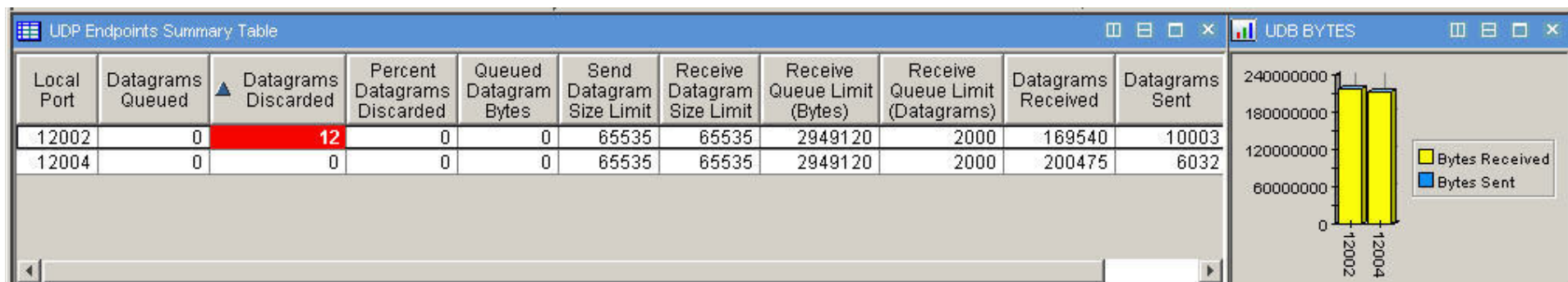
- % Retransmissions

- High Throughput Rates
- High Retransmission Rates
- Wrong Type of Service (TOS)
  - Too much at high priority



## OMEGAMON XE for Mainframe Networks EE Connection Details Workspace

## UDP problems could impact EE



### Part of OMEGAMON XE for Mainframe Networks UDP Endpoints Workspace

- **No Error recovery**
  - Done by endpoints, if any
- **High number of Discards**
- **Queued and Queue Limit**
- **Endpoints responsible for**
- **High Datagram and byte traffic**
  - at wrong priority

#### UDP Connection Situations

- % Datagrams Discarded
- Datagram Rate
- Byte Rate

# Customized EE workspace

Enterprise Extender - Microsoft Internet Explorer

Address: http://dem17nx.democentral.ibm.com:1920///cnp/kdh/lib/cnp.html?-1021A=Aggregation&-5001=TOP-109.03.20-17.40.33-000108-12006=SYSADMIN&-10105=1203b6f2622&-2401

Tivoli Enterprise Portal Welcome SYSADMIN Log out IBM

File Edit View Help

Navigator View: Networks

- Networks
  - MVSA
  - MVSB
  - MVSC

Networks Physical

### HPR Response Time Variance vs Throughput Rate

Node	Response Time Variance (ms)	Actual Throughput Rate (Kbps)
CNFR00005	4	350
CNFR00004	4	100
CNFR00002	4	150
CNFR00001	10	250
CNFR00004	4	150
CNFR00002	4	250
CNFR00001	4	350
CNFR00023	4	350
CNFR00008	4	150
CNFR00007	4	350
CNFR00008	4	150
CNFR00004	4	150
CNFR00003	10	350

### Enterprise Extender

Origin Node	System ID	Collection Time	PU Name	Local IP Address	Remote IP Address	RTP Pipes	Sessions	Packets Retransmitted	Percent of Packets Retransmitted
VTAM:MVSA	MVSA	08/04/09 13:42:12	EETOCSL	9.39.68.147	9.39.68.131	1	2	0	0

### HPR

System ID	Sessions	ARB Mode	F
MVSA	8	Red	CN
MVSB	2	Green	CN
MVSB	8	Green	CN
MVSB	1	Green	CN
MVSP	1	Green	CN

### UDP Ports 1200...

Local IP Address	Local Port	Origin Node
9.39.68.147	12000	TCPIP:MVSA
9.39.68.147	12001	TCPIP:MVSA
9.39.68.147	12002	TCPIP:MVSA
9.39.68.147	12003	TCPIP:MVSA
9.39.68.147	12004	TCPIP:MVSA

### SNA Sessions

System ID	Primary Name	Primary Domain	Secondary Name	Secondary Domain
MVSA	USIBMNR.NDCMVSB	CNM16	USIBMNR.NDCMVSA	CNM16
MVSA	USIBMNR.NDCMVSA	CNM16	USIBMNR.NDCMVSB	CNM16
MVSA	USIBMNR.TIVOLI	CNM16	USIBMNR.NDCMVSA	CNM16
MVSA	USIBMNR.NDCMVSC	CNM16	USIBMNR.NDCMVSA	CNM16
MVSA	USIBMNR.NDCMVSA	CNM16	USIBMNR.NDCMVSC	CNM16

Hub Time: Tue, 08/04/2009 01:47 PM Server Available Enterprise Extender - dem17nx.democentral.ibm.com - SYSADMIN

# Another, includes 3270 NetView

**Enterprise Extender**

Origin Node	System ID	Collection Time	PU Name	Local IP Address	Remote IP Address	RTP Pipes	Sessions	Packets Retransmitted	Percent of Packets Retransmitted	Ret
VTAM:MVSA	MVSA	08/04/09 13:32:12	EETOCSL	9.39.68.147	9.39.68.131	1	2	0	0	

**HPR**

Origin Node	Sessions	Local CP Name	Remote CP Name	System ID
VTAM:MVSB	2	USIBMNR.NDCMVSB	USIBMNR.NDCMVSC	MVSB
VTAM:MVSB	8	USIBMNR.NDCMVSB	USIBMNR.NDCMVSA	MVSB
VTAM:MVSB	1	USIBMNR.NDCMVSB	USIBMNR.NDCMVSA	MVSB
VTAM:MVSB	1	USIBMNR.NDCMVSB	USIBMNR.NDCMVSA	MVSB
VTAM:MVSC	7	USIBMNR.NDCMVSC	USIBMNR.NDCMVSA	MVSC

**SNA Sessions**

Origin Node	Primary Name	Primary Domain	Secondary Name	Secondary Domain
CNM16	USIBMNR.NDCMVSA	CNM16	USIBMNR.DDCTSO14	CNM16
CNM16	USIBMNR.NDCMVSA	CNM16	USIBMNR.TCP00067	CNM16
CNM16	USIBMNR.NDCMVSA	CNM16	USIBMNR.DDCTSO13	CNM16
CNM16	USIBMNR.NDCMVSA	CNM16	USIBMNR.TCP00066	CNM16
CNM16	USIBMNR.NDCMVSA	CNM16	USIBMNR.CNM16083	CNM16

Hub Time: Tue, 08/04/2009 01:43 PM    Server Available    NetView - dem17lnx.democentral.ibm.com - SYSADMIN



## List SNA Sessions that Use an EE Connection

```

**** PRIMARY ****      **** SECONDARY ****
NAME  TYPE  DOM   NAME  TYPE  DOM   START TIME   END TIME
SEPAC  ILU   C-C   NTV2   LU   NTV2   01/31 15:25:19 *** ACTIVE ***
ECP    LU    NTV2   SEPA    ILU  C-C    01/31 15:25:19 *** ACTIVE ***
NTV2   LU    NTV2   SEPA    ILU  C-C    01/31 15:24:11 *** ACTIVE ***
ECP    ILU   C-C   NTV2M  LU   NTV2   01/31 15:24:11 *** ACTIVE ***

```

### NetView for z/OS NLDM (Session Monitor)

*NLDM SESS name \* ACTREF*

```

NLDM.CON          SESSION CONFIGURATION DATA          PAGE 1
----- PRIMARY -----+----- SECONDARY -----
NAME SEPAC  SA 002  EL 0000042 | NAME NTV2  SA 002  EL 000002A
-----+-----
DOMAIN NTV2  C-C  PCID USIBMNT.SEPAC.E747BC617FFEA45E  DOMAIN NTV2
CNR00004  +-----+  ---  ---  +-----+
          |  ALS  |  APPN TP 03  |  CP/SSCP  |  NTV2MVS  |
          | LOCAL DATA |  SUBAREA PU  |  NTV2VTAM(0000) |
          +-----+  +-----+
          |  ILU  |  LU  |  NTV2  (002A) |
          +-----+  +-----+
APPNCOS  SNASVCMG
SUBACOS  N/A
LOGMODE  SNASVCMG
PADJ CP  SEPAECP
SADJ CP  N/A

```

- See sessions that transverse EE connections
- Are sessions going over correct EE?

## NetView NLDM Trace (Session Monitor)

```

NLDM.PIUT SESSION TRACE DATA PAGE 1
----- PRIMARY -----+----- SECONDARY -----+- DOM -
NAME ECHOA99 SA 00000063 EL 009D | NAME ECHOA09 SA 00000009 EL 00E1 | CNM99
-----+-----+-----
SEL#  TIME      SEQ# DIR TYPE  ***** REQ/RESP HEADER ***** RULEN SENS N
( 1)  09:30:47  00B6 P-S DATA  ....OC.DR.....BBEB.....          66   T
( 2)  09:30:47  00B6 S-P (+)RSP  ....OC.DR.....          0
( 3)  09:30:47  00B6 S-P DATA  ....OC.DR.....BBEB.....          66   T
( 4)  09:30:47  00B6 P-S (+)RSP  ....OC.DR.....          0
( 5)  09:30:47  00B7 P-S DATA  ....OC.DR.....BBEB.....          66   T
( 6)  09:30:47  00B7 S-P (+)RSP  ....OC.DR.....          0
( 7)  09:30:47  00B7 S-P DATA  ....OC.DR.....BBEB.....          66   T

END OF DATA ENTER SEL# OR COMMAND CMD==>

```

**NetView SNA tools Like NLDM work whenever SNA is in effect at the VTAM endpoint (EE, TN3270, etc).**



## NetView DIS Command

```

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==>

```

## DIS Output

```

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: nmpip150.tivlab.raleigh.ibm.com (9.42.44.50) 5ms

```

## DIS Output

```

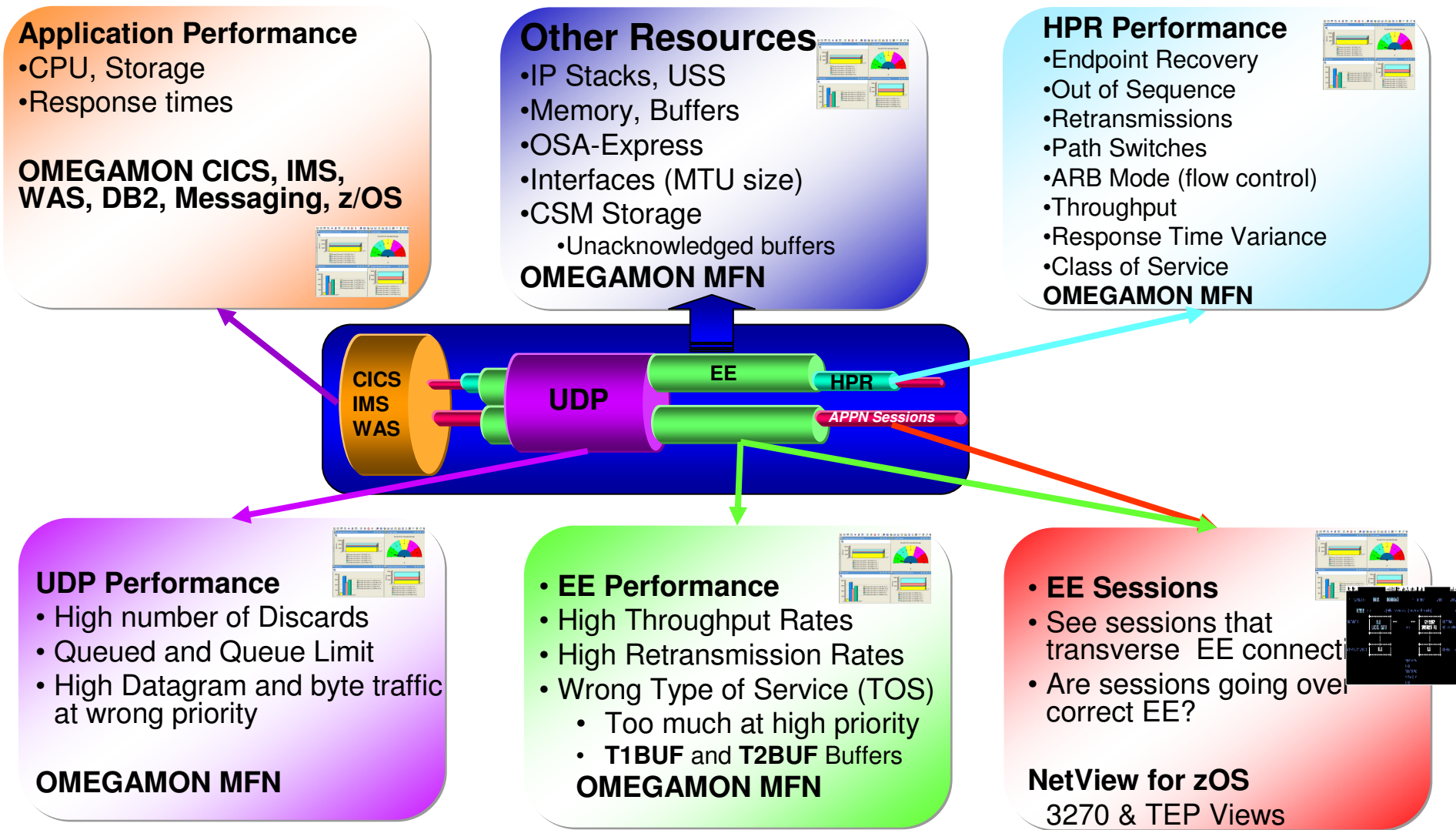
CNMKWIND OUTPUT FROM USIBMNT.DLD20101 LINE 55 OF 85
BNH810I Tracing IP route to 9.27.143.39 max 30 hops
BNH811I 1: nmpipl50.tivlab.raleigh.ibm.com (9.42.44.50) 5ms
BNH811I 2: mdf-rsm-vlan501.tivlab.raleigh.ibm.com (9.42.63.225) 20ms
BNH811I 3: core3-msfc.tivlab.raleigh.ibm.com (9.42.0.1) 14ms
BNH811I 4: dyn9042255252.raleigh.ibm.com (9.42.255.252) 21ms
BNH811I 5: RTP-fc-3b-g22.raleigh.ibm.com (9.42.254.41) 17ms
BNH811I 6: rtp-pd-10a-ge0-5.raleigh.ibm.com (9.42.254.3) 16ms
BNH811I 7: rtp-co-b-v842.raleigh.ibm.com (9.27.2.169) 17ms
BNH811I 8: rtp-ud-5a-v822.raleigh.ibm.com (9.27.2.90) 19ms
BNH811I 9: sepacce.raleigh.ibm.com (9.27.143.39) 59ms
BNH061I ...PU = DPD20001...
IST075I NAME = DPD20001 , TYPE = PU_T2
IST486I STATUS= ACTIV , DESIRED STATE= ACTIV
IST1043I CP NAME = ***NH*** - CP NETID = USIBMNT - DYNAMIC LU = YES
IST1589I XNETALS = YES
IST1354I DLUR NAME = SEPACECP MAJNODE = EESWMN2
IST1934I IDBLK = 05D IDNUM = 43330
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST1656I VTAMTOPO = REPORT , NODE REPORTED = YES
IST1657I MAJOR NODE VTAMTOPO = REPORT
BNH061I ...EEDIAG...
IST2066I ENTERPRISE EXTENDER CONNECTION SRQRETRY INFORMATION
IST924I -----
IST1680I LOCAL IP ADDRESS 9.42.44.61
IST1680I REMOTE IP ADDRESS 9.27.143.39
IST2024I CONNECTED TO SWITCHED PU EX000002
IST2074I SUCCESSFUL SRQRETRY ATTEMPT = 0 OCCURRENCES = 0
IST2074I SUCCESSFUL SRQRETRY ATTEMPT = 1 OCCURRENCES = 0
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==>

```

## DIS Output

```
CNMKWIND OUTPUT FROM USIBMNT.DLD20101 LINE 82 OF 85
IST2066I ENTERPRISE EXTENDER CONNECTION SRQRETRY INFORMATION
IST2074I SUCCESSFUL SRQRETRY ATTEMPT = 1 OCCURRENCES = 0
IST2074I SUCCESSFUL SRQRETRY ATTEMPT = 2 OCCURRENCES = 0
IST2074I SUCCESSFUL SRQRETRY ATTEMPT = 3 OCCURRENCES = 0
IST2070I SRQRETRY COUNTERS LAST CLEARED ON 04/13/07 AT 16:55:28
*----- Bottom of Data ----->
```

# Summary of Enterprise Extender and HPR

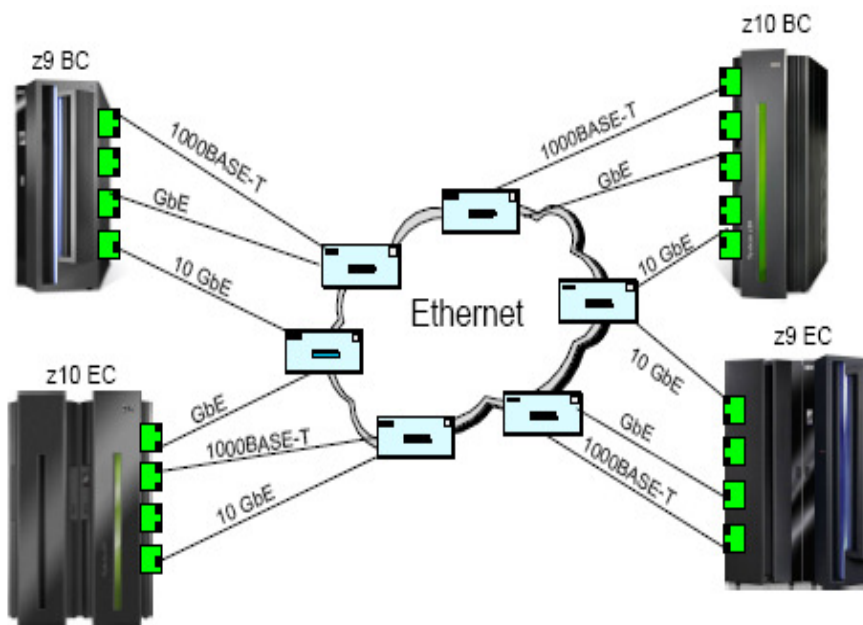


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## Agenda

- Enterprise Extender (EE) Management
- **OSA Management**
- TCP Connection Management
- TN3270 Management
- For More Information

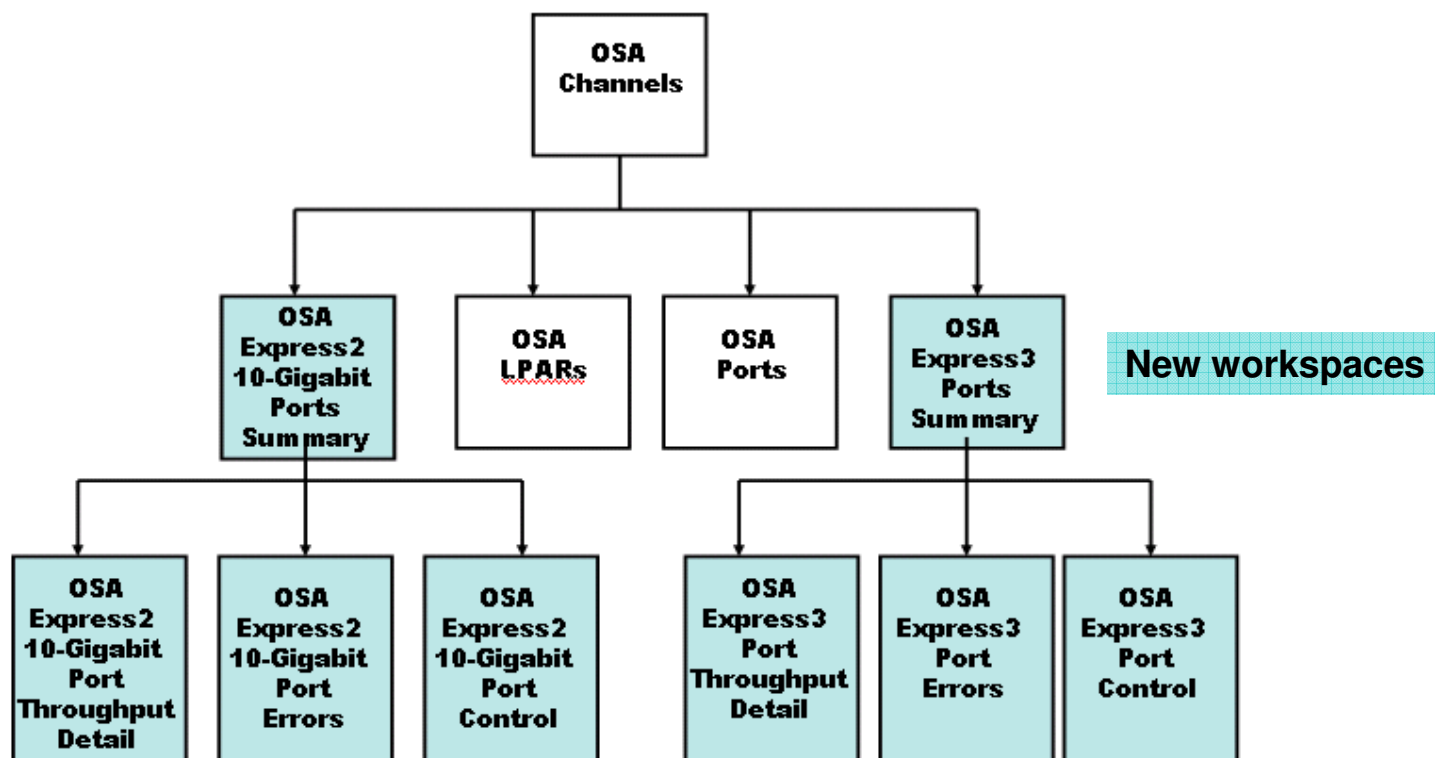
# OSA-Express



- Strategic communications device for the mainframe architecture
- A network controller that can be installed in a mainframe I/O cage
  - Integrates control unit and device into single card that connects to CPC I/O bus
- Integrates several hardware features and supports many networking protocols
- Four channel (CHPID) types supported:
  - OSD, OSE, OSC, OSN
- Highly efficient data transfer architecture
  - Host memory to LAN data transfers with OSA-Express3
- Many features when OSD
  - IP assist
  - OSA-Express Network Traffic Analyzer for z/OS



## OSA Express3 and OSA Express2 10Gb Enhancements in Mainframe Networks V410 IF2



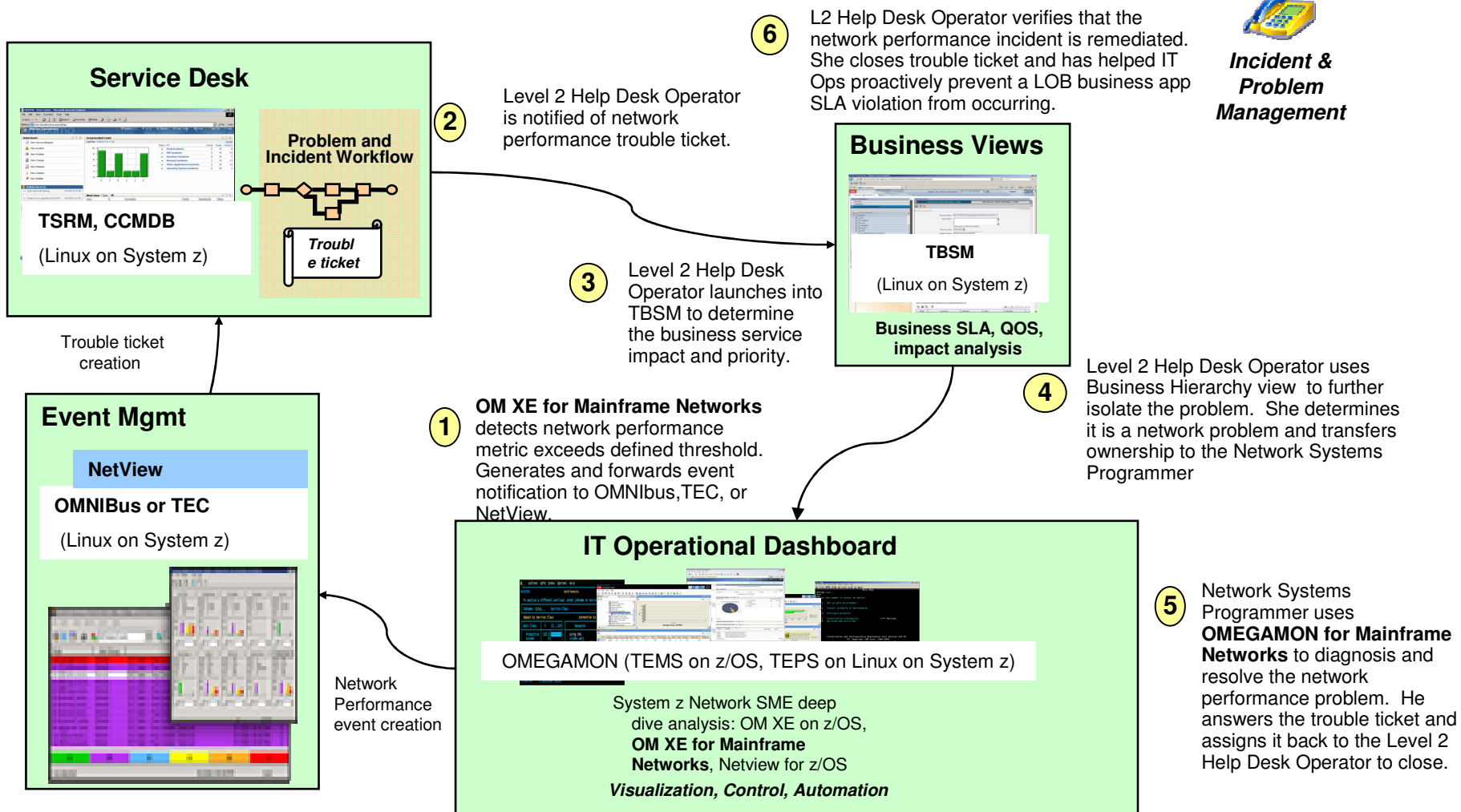
- Additional OSA-Express2 10 Gigabit Port Table workspaces
- Additional OSA-Express3 Port Table workspaces
- New missed packets situation

---

## Situations – The key to proactive management

- A situation describes a condition or set of conditions you want to examine to determine if a potential problem exists in the systems and resources you are monitoring.
- When all of the conditions of a situation are met (the situation is triggered), an event is registered.
- The operator is alerted to events by indicator icons that appear in the Navigator and by sound.
- An action can be defined for the event. The action is performed when the event is triggered.
- Customized expert advice may be provided for each situation.
- The event can be forwarded to an event integration facility such as NetCool OMNIBus, TEC, or NetView.

# Integration with Netcool/OMNibus, TEC, and NetView for problem management



# Situation fires

- Event indicator is displayed on node detecting error and on every node above it
- Event action is performed
- Event forwarded to EIF

The screenshot shows the Enterprise Status - OVIESB - SYSADMIN interface. On the left is a Navigator tree with a physical view of the network hierarchy. The main area displays a 'Situation Event Console (Paused)' with a table of events and a detailed view of the selected event. Below the console is a 'Message Log' table.

Situation Name	Display Item	Source	Impact	Opened
OSA-Express CRC Errors		TCPIP22:SP22	OSA	03/15/10 13:26

Status	Name	Display Item	Origin Node	Global Timestamp	Local Timestamp
Open	MS_Offline		VTAM:IPO1	03/15/10 13:34:54	03/15/10 13:34:54
Open	MS_Offline		V421N3:IPO1:KN3AGENT	03/15/10 13:34:54	03/15/10 13:34:54
Open	MS_Offline		TCPIP:IPO1	03/15/10 13:34:54	03/15/10 13:34:54
Open	MS_Offline		OVIESB:Warehouse	03/15/10 13:34:54	03/15/10 13:34:54
Open	OSA-Express CRC Errors		TCPIP22:SP22	03/15/10 13:26:55	03/15/10 13:26:55

- Hover over event indicator to display event name and link to the situation workspace for more information about the event.

# Situation workspace

- Displays initial and current situation values so you can determine if problem still exists
- Expert Advice tells you about the problem and possible corrective actions
- Issue command from Take Action view -- start OSA trace
- Right click situation on navigation tree to acknowledge it

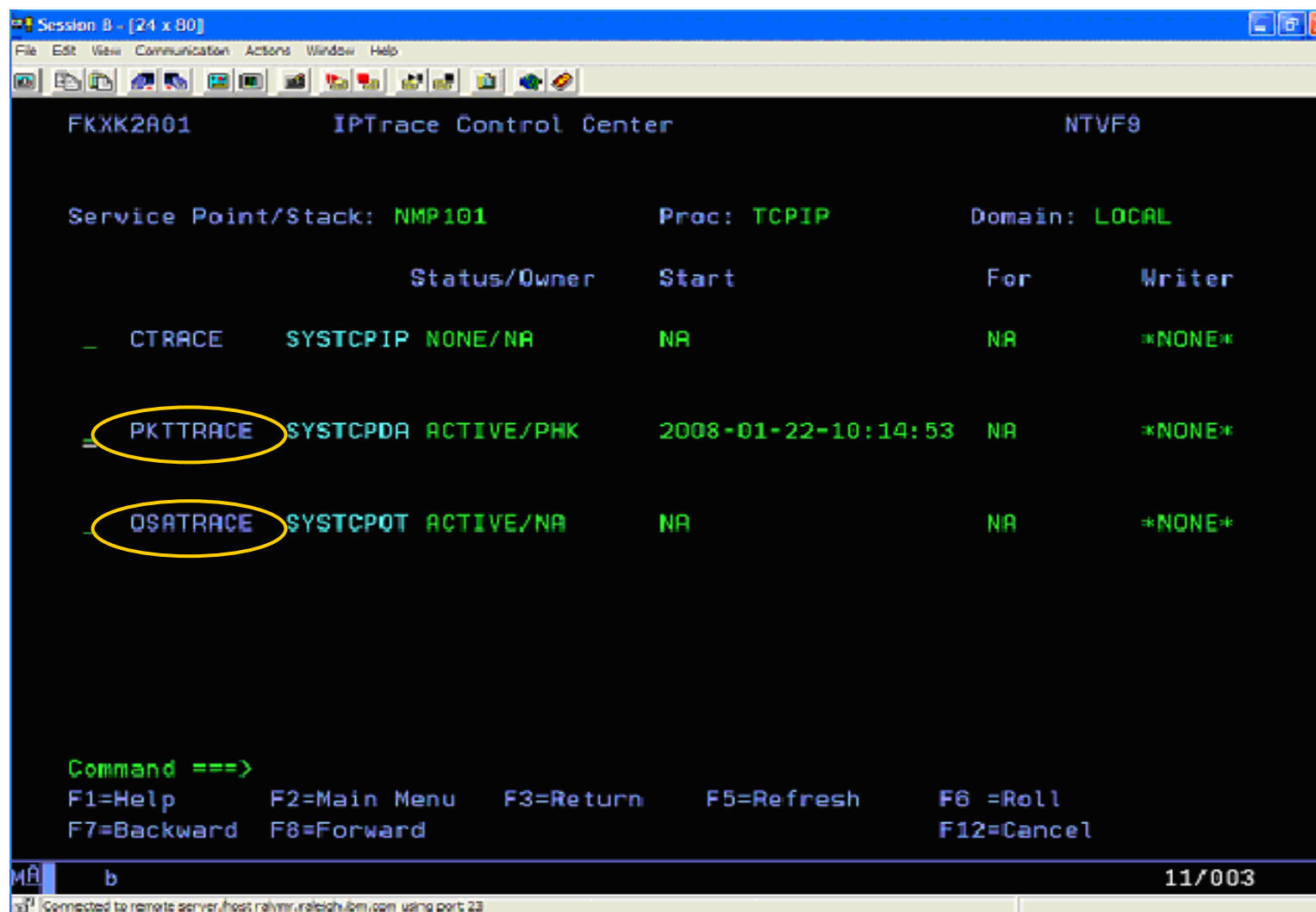
The screenshot shows the OSA-Express CRC Errors - OVIESB - SYSADMIN workspace. The Navigator pane on the left shows a tree view with 'OSA-Express CRC Errors' selected. The 'Initial Situation Values' and 'Current Situation Values' panes display the following data:

CRC Errors	Origin Node	System ID	Host Name	TCPIP STC Name	Collection Time	Channel Number	Port Name	Port Number	Total CRC Errors
30	TCPIP22:SP22	SP22	SP22	TCPIP22	02/15/10 17:01:55	FF	03ETHD0P	0	789

The 'Expert Advice' pane provides the following text: "The port is detecting cyclic redundancy errors. There may be a hardware error that is corrupting the data. To understand the problem you may need to turn on the z/OS OSA-Express traffic analyzer trace. Resetting the port may fix the problem. For more information on how to reset the port refer to the OSA-Express Customer's Guide and Reference: [http://publibz.boulder.ibm.com/cgi-bin/bookmgr\\_OS390/BOOKS/IOA2Z170/CCONTENTS](http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/IOA2Z170/CCONTENTS)".

The 'Take Action' pane shows a dropdown menu for 'Action' and a 'Command' field. A context menu is open over the 'OSA-Express CRC Errors' node in the Navigator, with 'Acknowledge Event...' selected.

# NetView IPTRACE Control Center now includes OSA tracing in 5.4



# Begin to investigate problem with OSA Channels workspace

Situation workspace showed that OE3THD0P was the port experiencing the problem. Use link to OSA-Express3 Ports workspace to investigate problem.

The screenshot displays the OSA Channels workspace with the following components:

- Navigator:** Shows a tree view with 'Physical' selected.
- 1 Minute Resource Utilization:** A bar chart showing PCI Utilization Per Minute (yellow) and Processor Utilization Per Minute (blue) for channels B6, FC, and FF.
- 5 Minute Resource Utilization:** A bar chart showing PCI Utilization Per Five Minutes (yellow) and Processor Utilization Per Five Minutes (blue) for channels B6, FC, and FF.
- 1 Hour Resource Utilization:** A bar chart showing PCI Utilization Per One Hour (yellow) and Processor Utilization Per One Hour (blue) for channels B6, FC, and FF.
- OSA-Express Channels Summary Table:**

Collection Time	Device or Port Name	Channel Number	Channel Type	Subtype	Mode	State	Share Indicator	Port Count	Control Unit Number	Micro Code Level	Cur LPAR
02/09/10 10:57:27	OSA1	B6	osaDirectExpress	oneThousandBaseTEthernet			shared	1		0X063A	
02/15/10 16:56:55	O3ETHA0P	FC	osaDirectExpress	osaexp3gigabitEthernet			shared	1		0XFFFFFFFFFFFFB155	
02/15/10 16:56:55	O3ETHD0P	FF	osaDirectExpress	osaexp3gigabitEthernet			shared	1		0XFFFFFFFFFFFFB155	
- Context Menu:** A menu is open over the table, showing options: OSA LPARs, OSA-Express3 Ports (highlighted), Link Wizard..., and Link Anchor...
- Status Bar:** Shows 'Hub Time: Mon, 03/15/2010 04:24 PM', 'Server Available', and 'OSA Channels - OVIESB - SYSADMIN'.



# Investigate problem with OSA-Express3 Ports Summary and Port Errors workspaces

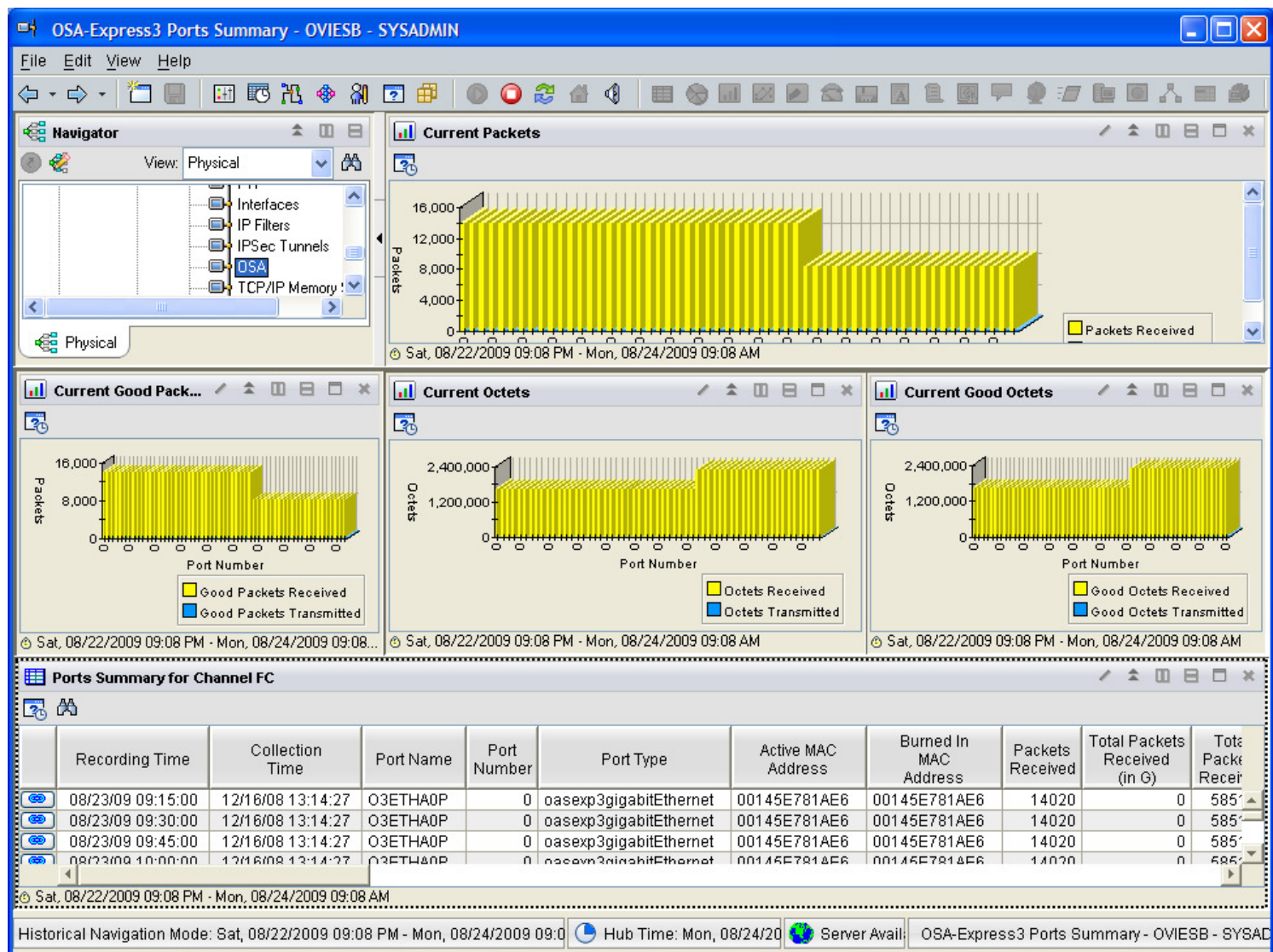
Differences between packets/octets and good packets/octets can indicate errors are occurring

Ports summary shows port is disabled due to internalPortFailure (0x0001)  
 Port Errors shows port is detecting CRC errors  
 Starting w/ 420 IF1, may navigate to Interface Metrics or Gateways and Devices workspaces

Total Good Octets Received (in G)	Total Good Octets Received	Good Octets Transmitted	Total Good Octets Transmitted (in G)	Total Good Octets Transmitted	LAN Traffic State	Service Mode	Disabled Status
542	198445799	259140	367	374334645	disabled	No	0X0001

Collection Time	Port	Single Collisions	Total Single Collisions	Multiple Collisions	Total Multiple Collisions	Excessive Collisions	Total Excessive Collisions	Late Collisions	Total Late Collisions	CRC Errors	Total CRC Errors	Jabber Frames Received	Total Jabber Frames Received	Not Started
02/15/2010 12:35 PM	03ETHD0P	0	0	0	0	0	0	0	0	30	789	0	0	0

# Look at historical view to see if problem has occurred in the past and how often



# Use historical navigation to link to detailed view for same time span

**OSA Channels - OVIESB - SYSADMIN**

1 Minute Resource Utilization

5 Minute Resource Utilization

1 Hour Resource Utilization

**OSA-Express Channels Summary**

Recording Time	Collection Time	Device or Port Name	Channel Number	Channel Type	Subtype
08/22/09 18:15:00	12/16/08 13:24:27	O3ETHG0P	D6	osaDirectExpress	osaexp3tenGigabitE
08/22/09 18:15:00	12/16/08 13:24:27	O3ETHA0P	FC	osaDirectExpress	osaexp3gigabitE

Historical Navigation Mode: Fri, 08/21/2009 09:55 PM - Sun, 08/23/2009 09:55 AM

**OSA-Express3 Ports Summary - OVIESB - SYSADMIN**

Current Packets

Current Good Pack...

Current Octets

Current Good Octets

**Ports Summary for Channel FF**

Recording Time	Collection Time	Port Name	Port Number	Port Type	Active MAC Address	Burned In MAC Address	Packets Received	Total Packets Received (In G)	Total Packets Received
08/22/09 18:15:00	12/16/08 13:14:27	O3ETHD0P	0	oasexp3gigabitEthernet	00145E781186	00145E781186	15842	0	4911
08/22/09 18:30:00	12/16/08 13:14:27	O3ETHD0P	0	oasexp3gigabitEthernet	00145E781186	00145E781186	15842	0	4911

Historical Navigation Mode: Fri, 08/21/2009 09:55 PM - Sun, 08/23/2009 09:55 AM

Hub Time: Sun, 08/23/2009 09:55 AM

Server Avail: OSA-Express3 Ports Summary - OVIESB - SYSADMIN

Select the Time Span

Lock time span for Historical Navigation

# NMC Topology Support for OSA in NetView 5.4 shows you VLANs affected

**OSA Port Node**  
 Port number, Port type, LAN state, Service mode indicator, Disabled status indicator, Configured speed, Actual speed & mode, Current MAC address in use, Burned-in MAC address on OSA, Port name

**OSA Port + VLANs for each OSA interface**



# Sample situations trigger NetView Automation in OMEGAMON XE for Mainframe Networks V420 IF1

The screenshot displays the Situation Editor interface. On the left, a tree view shows a hierarchy of situations under 'TCP/IP', with 'N3T\_Sample\_NetViewAuto\_Cmd' selected. The main window is split into two panes. The top pane shows the configuration for 'N3T\_Sample\_NetViewAuto\_Cmd', including its name, description, and a formula that checks 'CPU Percentage' against a threshold of 0. The bottom pane shows the configuration for 'N3T\_Sample\_NetViewAuto\_Msg', where the 'Action Selection' is set to 'System Command' and the command text is 'F NetViewProcName,KN3SITEX N3T\_Sample\_NetViewAuto\_Cmd CPUPercentage &{TCPIP\_Address\_Space.CF'. A table in the formula pane shows the following data:

	CPU Percentage
1	>= 0
2	
3	

- N3T\_Sample\_NetViewAuto\_Cmd
  - MVS MODIFY command for NetView application procedure
  - Executes command in NetView address space
  - KN3SITEX, sample REXX EXEC provided in TKANSAM. Parses messages containing MfN situation names.
- N3T\_Sample\_NetViewAuto\_Msg
  - MVS SEND command
  - Message text contains situation information
  - KN3AUMSG, sample automation table entry provided in TKANSAM. Recognizes messages containing MfN situation names.

## Configure situation to forward event to EIF server

The screenshot displays the configuration interface for Tivoli Enterprise Monitoring Server. The top window, titled "Situations for - Address Space", shows a tree view of situations under "Address Space" and "TCP/IP". The selected situation is "N3T\_CPU\_Pct\_Critical". The main configuration area is titled "Event Integration Facility Forwarding" and includes the following settings:

- Forward Events to an EIF Receiver
- EIF Severity: **Critical** (dropdown menu)
- EIF Receivers:
  - Assigned EIF Receivers: < Default EIF Receiver >
  - Available EIF Receivers: NetView

Below the main configuration area is a "Tivoli Enterprise Monitoring Server Configuration" window. It includes the following options:

- TEMS Type:
  - Hub
  - Remote
- Configuration Auditing
- Security: Validate User
- LDAP Security: Validate User with LDAP ?
- Address Translation
- Tivoli Event Integration Facility
- Disable Workflow Policy/Tivoli Emitter Agent Event Forwarding

- Tivoli event integration facility must have been selected when TEMS was configured
- NetView may be Default EIF Receiver
- NetView may be added as an additional EIF Receiver
  - tacmd createEventDest
  - Selectable for specific events
- NetView Event Automation Service (EAS) and Subsystem Interface (SSI) must be running
- EAS converts situation to NMVT and forwards it to NPDA

# Display situations on NetView Hardware Monitor

```

NETVIEW          SESSION DOMAIN: NTV94   NETOP1   10/08/09 17:34:05
NPDA-30B          * ALERTS-STATIC *

SEL#  DOMAIN RESNAME  TYPE  TIME  ALERT DESCRIPTION:PROBABLE CAUSE
( 1)  NTV94 ITM        APPL  05:54 N3T_CPU_Pct_Critical:severity=CRITICAL;
( 2)  NTV94 ITM        APPL  05:53 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
( 3)  NTV94 ITM        APPL  05:53 N3T_CPU_Pct_Critical:severity=CRITICAL;
( 4)  NTV94 ITM        APPL  05:53 N3T_CPU_Pct_Critical:severity=CRITICAL;
( 5)  NTV94 ITM        APPL  05:49 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
( 6)  NTV94 ITM        APPL  05:49 N3T_CPU_Pct_Critical:severity=CRITICAL;
( 7)  NTV94 ITM        APPL  05:33 N3T_CPU_Pct_Critical:severity=CRITICAL;
( 8)  NTV94 ITM        APPL  05:32 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
( 9)  NTV94 ITM        APPL  05:32 N3T_CPU_Pct_Critical:severity=CRITICAL;
(10)  NTV94 ITM        APPL  05:30 N3T_CPU_Pct_Critical:severity=CRITICAL;
(11)  NTV94 ITM        APPL  05:24 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
(12)  NTV94 ITM        APPL  05:24 N3T_CPU_Pct_Critical:severity=CRITICAL;
(13)  NTV94 ITM        APPL  05:20 N3T_CP
(14)  NTV94 ITM        APPL  05:19 N3T_CP
(15)  NTV94 ITM        APPL  05:19 N3T_CP
(16)  NTV94 ITM        APPL  05:14 N3T_CP
(17)  NTV94 ITM        APPL  05:12 N3T_CP
(18)  NTV94 ITM        APPL  05:12 N3T_CP
(19)  NTV94 ITM        APPL  05:11 N3T_CP
(20)  NTV94 ITM        APPL  05:09 MS_Off
(21)  NTV94 ITM        APPL  05:09 N3T_CP
(22)  NTV94 ITM        APPL  04:35 N3T_CP
(23)  NTV94 ITM        APPL  04:10 MS_Off

DEPRESS ENTER KEY TO VIEW ALERTS-DYN
ENTER SEL# (ACTION),OR SEL# PLUS M (

???
CMD==> _

```

- Press enter to display ALERTS-STATIC panel
- Select event to display it

MA b

▪ NPDA ALERTSD to display events

```

NETVIEW          SESSION DOMAIN: NTV94   NETOP1   10/08/09 17:31:24
NPDA-30A          * ALERTS-DYNAMIC *

DOMAIN RESNAME  TYPE  TIME  ALERT DESCRIPTION:PROBABLE CAUSE
NTV94 ITM        APPL  05:54 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:53 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
NTV94 ITM        APPL  05:53 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:49 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
NTV94 ITM        APPL  05:49 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:33 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:32 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
NTV94 ITM        APPL  05:32 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:30 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:24 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
NTV94 ITM        APPL  05:24 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:20 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:19 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
NTV94 ITM        APPL  05:19 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:14 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:12 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
NTV94 ITM        APPL  05:12 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:11 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  05:09 MS_Offline:severity=UNKNOWN;
NTV94 ITM        APPL  05:09 N3T_CPU_Pct_Critical(CPU:severity=CRITICAL;
NTV94 ITM        APPL  04:35 N3T_CPU_Pct_Critical:severity=CRITICAL;
NTV94 ITM        APPL  04:10 MS_Offline(CPU:severity=UNKNOWN;

DEPRESS ENTER KEY TO VIEW ALERTS-STATIC

???
CMD==> _

```



# Event information displayed on NetView Hardware Monitor

```

NETVIEW          SESSION DOMAIN: NTV94      NETOP1      10/08/09 17:36:14
NPDA-43S        * EVENT DETAIL *          PAGE 3 OF 6

NTV94          IP01          9.42.45.      ITM
DOMAIN         +-----+ +-----+ +-----+
               | PWS  | |---| | NTID | |---| | APPL |
               +-----+ +-----+ +-----+

msg=N3T_CPU_Pct_Critical(CPU_Percentage>=0 ) ON TCPIP:IP01
(CPU_Percentage=0 )";
collection_interval=1;
cpu_percentage=0;
paging_rate=0;
csa_usage_below_16mb=136;
csa_percent_below_16mb=0;
total_csa_usage=29872;
total_csa_percentage=0;
gateway_count=2;
connection_count=32;
byte_rate=14304;
application_count=11;
device_count=4;
telnet_pool_size=10;
telnet_session_count=0;
telnet_pool_percentage=0;
input_segment_count=60223;

integration_type=N;
master_reset_flag='';
appl_label='';
situation_name=N3T_CPU_Pct_Critical;
situation_type=S;
situation_origin=TCPIP:IP01;
situation_time=10/08/2009 05:53:40.001;
situation_status=Y;
situation_thrnode=HUB_OVIESB;
situation_fullname=N3T_CPU_Pct_Critical;
situation_displayitem='';
source=ITM;
sub_source=TCPIP:IP01;
hostname=IP01;
origin=9.42.45.206;
adapter_host=IP01;
date=10/08/2009;
severity=CRITICAL;

ENTER A (ACTION)
???
CMD==> _

MÁ  b
    
```

```

NETVIEW          SESSION DOMAIN: NTV94      NETOP1      10/08/09 17:35:33
NPDA-43S        * EVENT DETAIL *          PAGE 2 OF 6

NTV94          IP01          9.42.45.      ITM
DOMAIN         +-----+ +-----+ +-----+
               | PWS  | |---| | NTID | |---| | APPL |
               +-----+ +-----+ +-----+

integration_type=N;
master_reset_flag='';
appl_label='';
situation_name=N3T_CPU_Pct_Critical;
situation_type=S;
situation_origin=TCPIP:IP01;
situation_time=10/08/2009 05:53:40.001;
situation_status=Y;
situation_thrnode=HUB_OVIESB;
situation_fullname=N3T_CPU_Pct_Critical;
situation_displayitem='';
source=ITM;
sub_source=TCPIP:IP01;
hostname=IP01;
origin=9.42.45.206;
adapter_host=IP01;
date=10/08/2009;
severity=CRITICAL;

ENTER A (ACTION)
???
CMD==> _

MÁ  b
    
```

---

## NMVT NetView automation samples provided in TKANSAM dataset

- KN3AUMSU
  - A sample NetView automation table entry to recognize OMEGAMON XE for Mainframe Networks situation events that have been converted to NMVTs and to invoke sample REXX exec KN3SITMS.
- KN3SITMS
  - A sample REXX EXEC that parses an NMVT containing an OMEGAMON XE for Mainframe Networks situation event. The situation name and the attribute name/value pairs received are displayed.

# NMC Event Viewer

The screenshot shows the 'Event Viewer' window for the resource 'nmp196b.tivlab.raleigh.ibm.com'. The interface includes a menu bar (Event, Edit, Options, Windows, Help) and a toolbar with status indicators for various severity levels and event counts. The main area displays a table of events, with the first event selected. A blue callout box highlights the text 'Events for a selected resource'. The status bar at the bottom shows 'Manual refresh', '7 events as of 9/22/2009 05:24:38 PM', and '1 of 7 selected'.

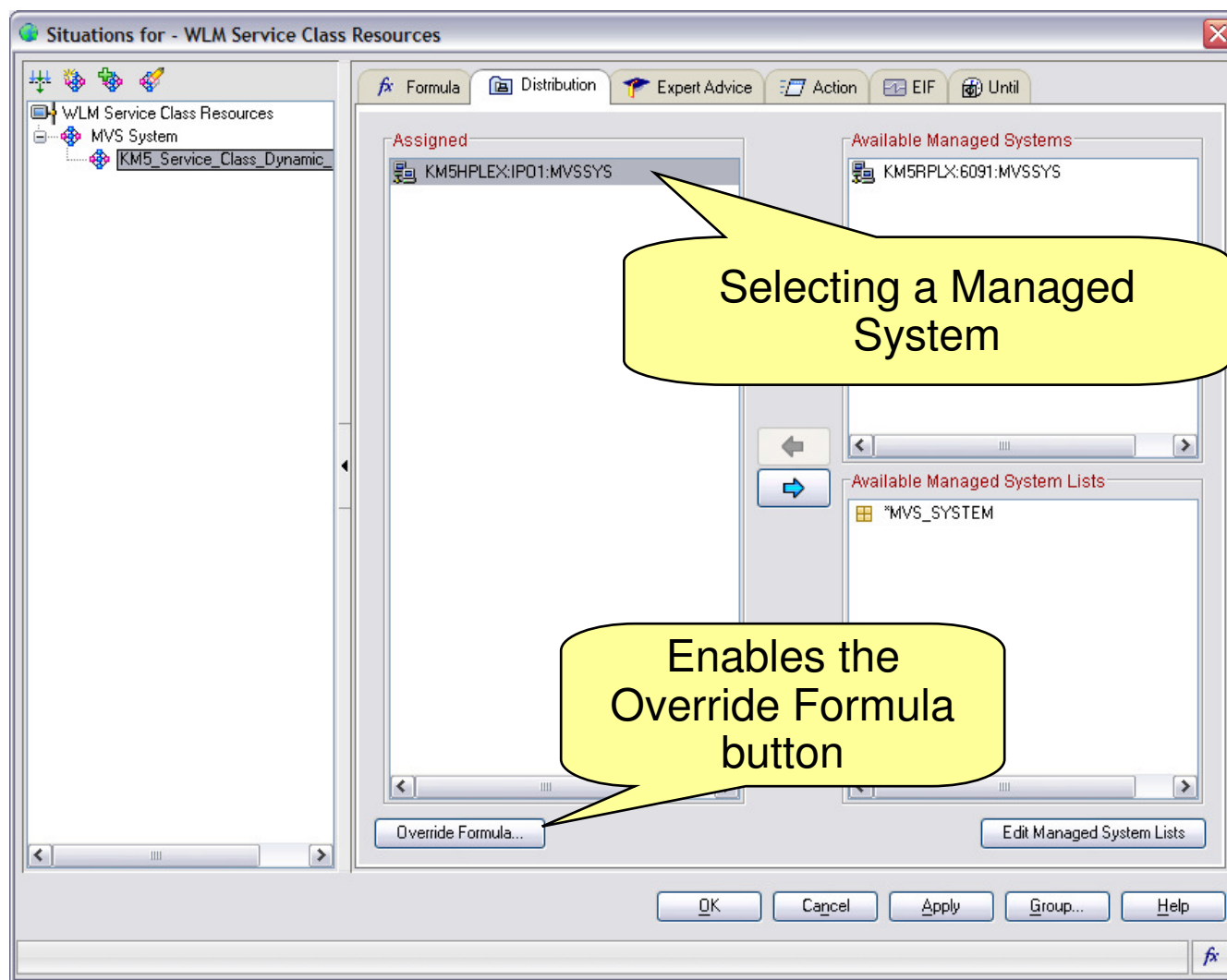
Severity	Status	Date Received	Message	Source
Unknown	OPEN	05:24:36 PM 9/22...	TCP/IP CONNECTION FAILURE:REVIEW EVENT DETAIL FOR PROBABLE CAUSE	NPDA
Unknown	OPEN	05:23:36 PM 9/22...	TCP/IP CONNECTION FAILURE:REVIEW EVENT DETAIL FOR PROBABLE CAUSE	NPDA
Unknown	OPEN	05:22:36 PM 9/22...	TCP/IP CONNECTION FAILURE:REVIEW EVENT DETAIL FOR PROBABLE CAUSE	NPDA
Unknown	OPEN	05:21:36 PM 9/22...	TCP/IP CONNECTION FAILURE:REVIEW EVENT DETAIL FOR PROBABLE CAUSE	NPDA
Unknown	OPEN	05:20:36 PM 9/22...	TCP/IP CONNECTION FAILURE:REVIEW EVENT DETAIL FOR PROBABLE CAUSE	NPDA
Unknown	OPEN	05:19:36 PM 9/22...	TCP/IP CONNECTION FAILURE:REVIEW EVENT DETAIL FOR PROBABLE CAUSE	NPDA
Unknown	OPEN	05:18:37 PM 9/22...	TCP/IP CONNECTION FAILURE:REVIEW EVENT DETAIL FOR PROBABLE CAUSE	NPDA

**Events for a selected resource**

Manual refresh | 7 events as of 9/22/2009 05:24:38 PM | 1 of 7 selected

## Dynamic thresholding with situation override

### New in ITM 6.2.1



- Allows you to customize formula for a system because of unique characteristics of the managed system
- Allows you to specify different formulas for different days and times
- Allows you to set thresholds based on analysis of collected historical data

# Override original formula

**Add Expression Overrides**

Reference formula

Table View Graphic View

Performance Index  
 >= 1.20

Original conditions are repeated here

Formula overrides

Expressions Details

	Service Class	Workload	Resource Group	Performance Index
<input type="checkbox"/>				<input type="checkbox"/> >=

Override condition is set here

Add Expression Remove Expression

**Performance Index** Performance index for the host; a measure of how well a service class period is performing relative to its goal. Valid value is a 4-byte integer in the range 0.00 - 100.00. A performance index of less than 1 indicates that the period is performing better than its goal. A performance index of 1 indicates the period is meeting its goal. A performance index greater than 1 indicates the period is performing worse than its goal.

OK Cancel Apply Remove Help

## Select schedule for threshold

Click the clock

Select calendar entry to set schedule

- To create, delete, or modify calendar entries, use the `tacmd addCalendarEntry` command.
- For more information, refer to the *IBM Tivoli Monitoring Command Reference*

---

## History Based thresholds - tacmd

- Once customer has sufficient history in warehouse they can use
  - tacmd suggestBaseline
    - Generate threshold based on history for specific calendar periods
    - Using one of several built in statistical calculations.
  - tacmd acceptBaseline
    - Install thresholds for specific situation based on calendar periods

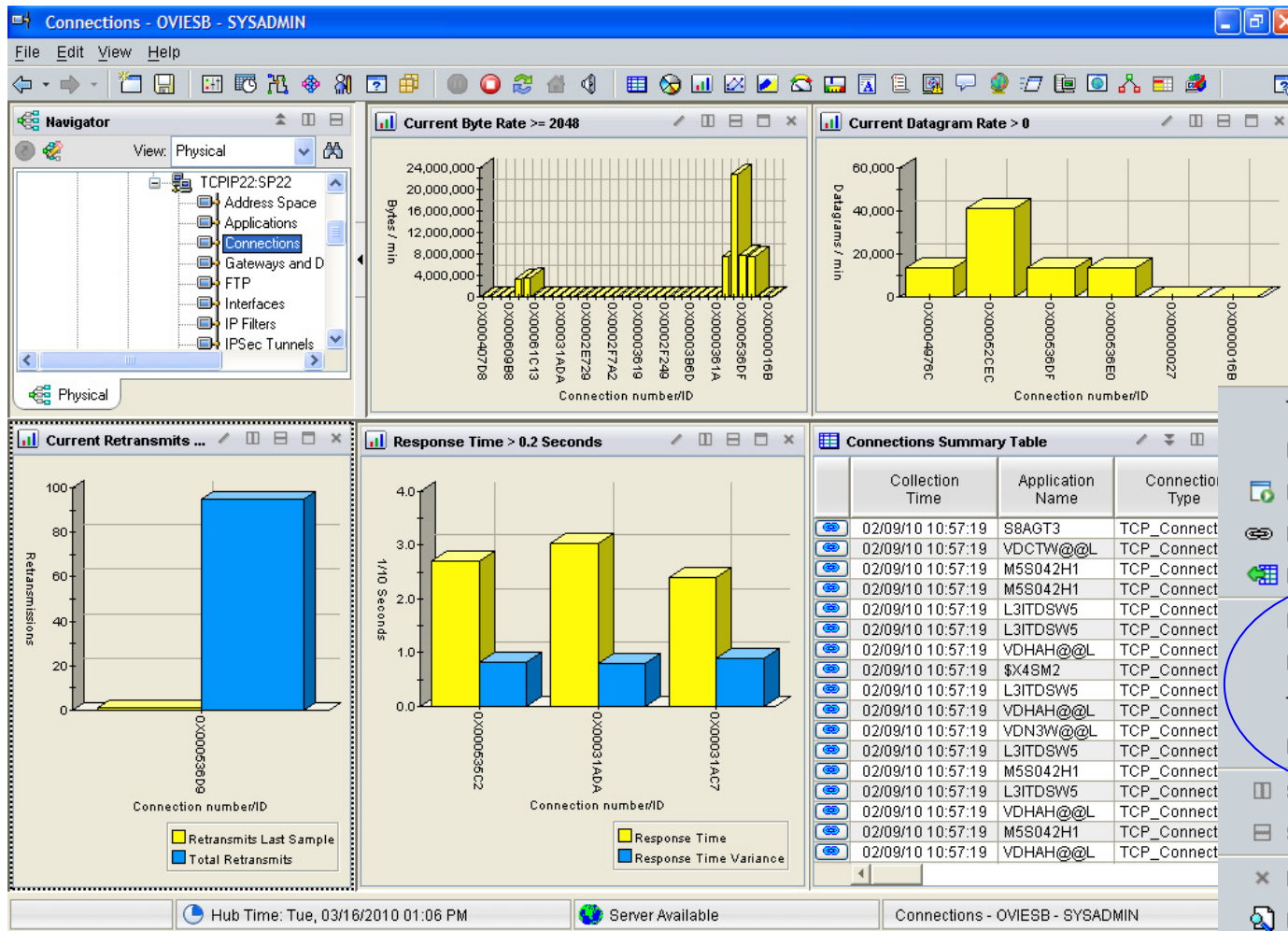
---

## Agenda

- Enterprise Extender (EE)
- OSA Management
- **TCP Connection Management**
- TN3270 Management
- For More Information



# MfN Connections Workspaces



- Identify connections with
  - High data rates
  - High retransmits
  - High response times and response time variance
- Issue commands in context

A context menu is shown over the summary table, listing various actions:

- Take Action...
- Link To...
- Launch...
- Link Anchor...
- Export...
- Drop Connection**
- Ping IP Address
- Tracerte IP Address
- NSLookup IP Address
- Split vertically
- Split horizontally
- Remove
- Print Preview...
- Print...
- Find...
- Properties...

## Tracerte command

**Tracerte IP Address**

**Command Input**

Hostname or IP Address:

Packet Size:

Interface:

Source IP Address:

Max:

TOS:

Debug:

Verbose:

LimDisp:

TCP Stack:

Port:

Try:

Wait:

NoName:

NoRoute:

Addrtype:  IPv4  IPv6

**Command Output**

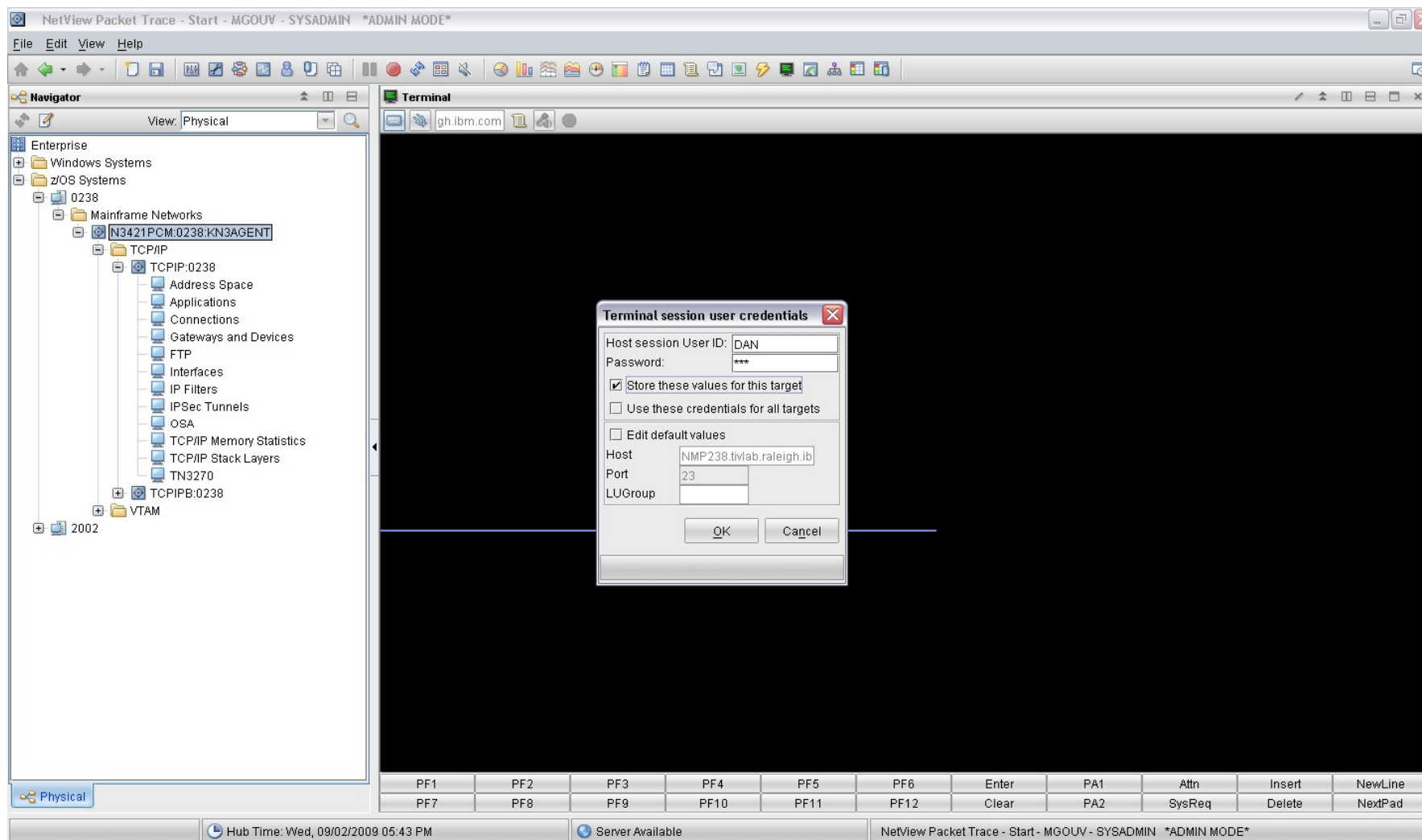
```
08/26/09 14:14:31 TRACERTE 9.27.142.64 (V)
08/26/09 14:14:31 CS V1R11: Traceroute to 9.27.142.64 (9.27.142.64)
08/26/09 14:14:31 1 9.42.45.1 (9.42.45.1) 36 bytes to 9.42.45.238 1 ms 1 ms 0 ms
08/26/09 14:14:31 2 core3-6500.tivlab.raleigh.ibm.com (9.42.0.1) 36 bytes to 9.42.45.238 0 ms 0 ms 0 ms
08/26/09 14:14:31 3 dyn9042255253.raleigh.ibm.com (9.42.255.253) 36 bytes to 9.42.45.238 0 ms 0 ms 0 ms
08/26/09 14:14:31 4 RTP-fc-3a-g32.raleigh.ibm.com (9.42.254.37) 36 bytes to 9.42.45.238 0 ms 0 ms 0 ms
08/26/09 14:14:31 5 rtp-pd-10a-ge0-5.raleigh.ibm.com (9.42.254.3) 36 bytes to 9.42.45.238 1 ms 1 ms 1 ms
08/26/09 14:14:31 6 rtp-co-a-v840.raleigh.ibm.com (9.27.2.161) 36 bytes to 9.42.45.238 1 ms 1 ms 1 ms
08/26/09 14:14:31 7 rtp-ud-5b-v821.raleigh.ibm.com (9.27.2.86) 36 bytes to 9.42.45.238 1 ms 1 ms 1 ms
08/26/09 14:14:31 8 rtp-ud-5a-v910.raleigh.ibm.com (9.27.1.169) 36 bytes to 9.42.45.238 1 ms 1 ms 1 ms
08/26/09 14:14:31 9 MGOUV.raleigh.ibm.com (9.27.142.64) 48 bytes to 9.42.45.238 2 ms 2 ms 2 ms
```

OK Cancel Help

Pre-filled  
values from  
context



# Prompt for NetView Logon Information



# Packet Trace Definitions after Link Script Completion

The screenshot displays the NetView Packet Trace interface in ADMIN MODE. The left pane shows a tree view of the network configuration, with 'TCP/IP:0238' selected. The main terminal window shows the following configuration and active trace definitions:

```

FOOK2A22  PKTTRACE  Control  SYSTCPDA  ACTIVE  for NVDomain: LOCAL
                                                z/OS    : VIR11

Service Point/Stack: MMP238  TCPNAME: TCPIP
PKTS: ACTIVE  On Task: TCPPAUTO  GIF: NO

Start Time: 2009-09-02-17:50:48  Writer: *NONE*

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

Infc/Link	Stat	Prot	IP Address/Prefix	Ports		Record Count
				Src	PortMm Dest	
TOVTAM	ON	TCP	9.77.131.76/32	1046	1918	0
TCPIPLINK2	ON	TCP	9.77.131.76/32	1046	1918	0
TCPIPLINK	ON	TCP	9.77.131.76/32	1046	1918	5
TCPIPLINK6	ON	TCP	::FFFF:9.77.131.76	1046	1918	0

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\* a 12/002

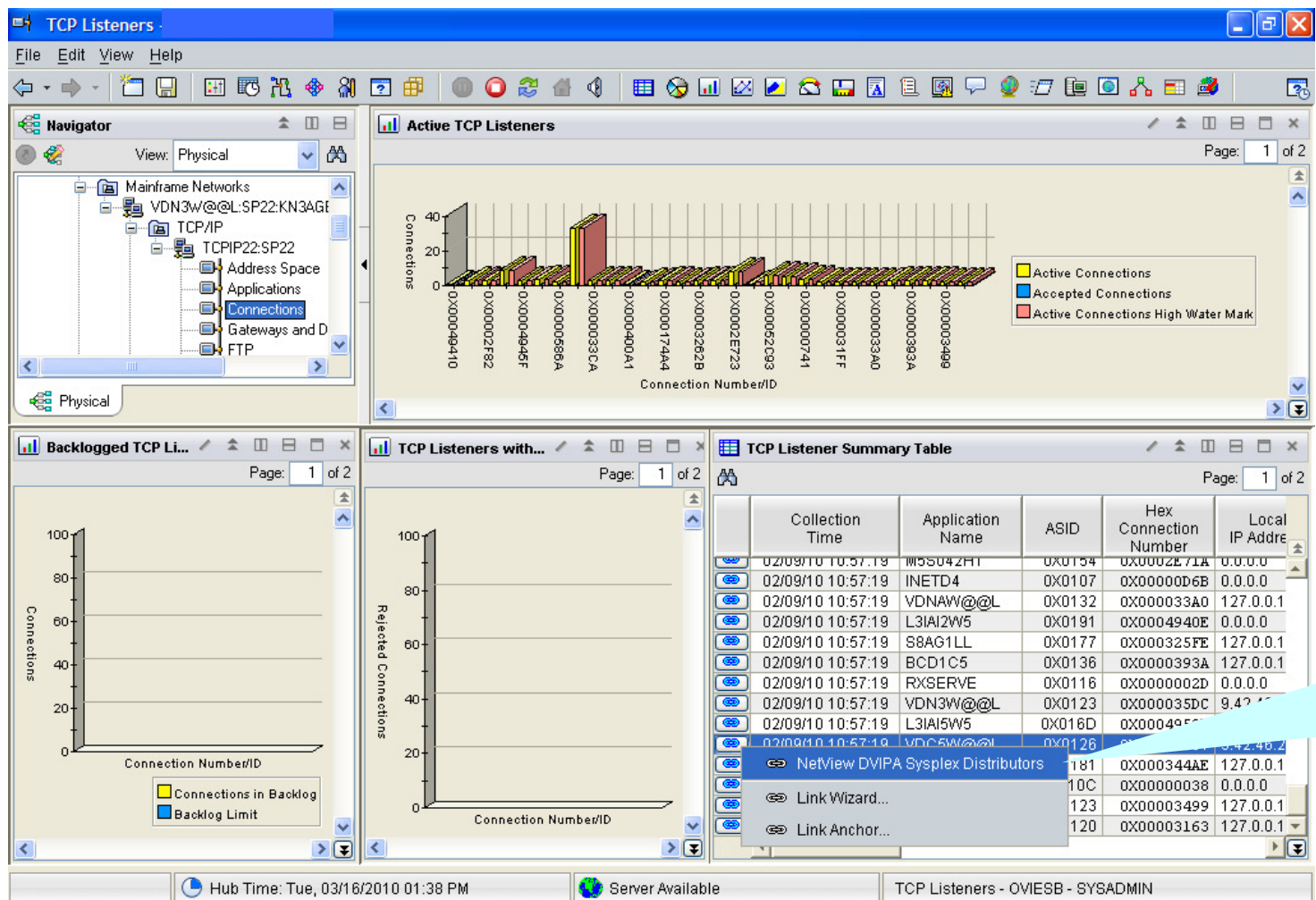
Physical

Hub Time: Wed, 09/02/2009 05:53 PM Server Available NetView Packet Trace - Start - MGOUV - SYSADMIN \*ADMIN MODE\*



# MfN TCP Listeners Workspace

## Are any servers rejecting connections?



Is there a problem with sysplex distributor or a DVIPA?

# NetView DVIPA Sysplex Distributors Workspace

## Is DVIPA traffic being distributed as expected?

**DVIPA Sysplex Distributors - OVIESB - SYSADMIN**

File Edit View Help

Navigator View: Physical

- NetView
  - ND221
    - DDVIPA Server Health
    - DVIPA Application-Insta
    - DVIPA Connections
    - DVIPA Definition and St
    - DVIPA Distributor Targe
    - DVIPA Stack-Defined
    - DVIPA Sysplex Distrib**
    - HiperSockets
    - NetView Audit Log
    - NetView Command Res

Physical

**Listening Servers for DVIPA**

DVIPA	Listening Servers
201.102.1.11	6
201.102.1.12	6
201.102.1.16	2
9.42.54.130	14
9.42.54.131	12

**Target Stacks for DVIPA**

DVIPA	Active Target Stacks
201.102.1.11	6
201.102.1.12	6
201.102.1.16	2
9.42.54.130	14
9.42.54.131	12

**DVIPA Sysplex Distributors Summary**

	Update Time	DVIPA	DVIPA Port	ZOS Image Name	TCPIP Host Name	Status	Rank	Mobility	Configured Target Stacks	Active Target Stacks	Listening Servers	Distribution Method	Timed Affinity	Sysplex Port Enabled	DESTIP ALL	PRC
	07/30/09 16:12:20	9.42.54.130	21324	SP22	SP22	active	255	immediate	N/A	6	6	baseWlm	0	No	Yes	1
	07/30/09 16:12:20	9.42.54.131	21324	SP22	SP22	active	255	immediate	N/A	6	6	baseWlm	0	No	Yes	1
	07/30/09 16:12:20	201.102.1.12	21324	SP22	SP22	active	255	immediate	N/A	6	6	baseWlm	0	No	Yes	1
	07/30/09 16:12:20	201.102.1.11	21324	SP22	SP22	active	255	immediate	N/A	6	6	baseWlm	0	No	Yes	1
	07/30/09 16:12:20	9.42.54.130	21324	SP22	SP22	active	255	immediate	2	2	2	baseWlm	0	No	No	1
	07/30/09 16:12:20	201.102.1.16	21324	SP22	SP22	active	255	immediate	2	2	2	baseWlm	0	No	No	1
	07/30/09 16:12:20	9.42.54.130	623	SP22	SP22	active	255	immediate	N/A	6	6	baseWlm	0	No	Yes	1
	07/30/09 16:12:20	9.42.54.131	623	SP22	SP22	active	255	immediate	N/A	6	6	baseWlm	0	No	Yes	1

Hub Time: Tue, 03/16/2010 01:46 PM    Server Available    DVIPA Sysplex Distributors - OVIESB - SYSADMIN



# NetView TCPIP Connection Data Workspace

- Percent segments retransmitted can indicate network congestion
- Navigate to Inactive TCPIP Connection Data to see connection termination reason

The screenshot displays the NetView TCPIP Connection Data workspace. At the top, there is a menu bar (File, Edit, View, Help) and a toolbar. The main area is divided into several panes:

- Navigator:** A tree view on the left showing the hierarchy of data, with 'TCPIP Connection Data' selected.
- Percent Segments Retrans...**: A 3D bar chart showing the percentage of segments retransmitted for a specific connection ID (0X000065330). The Y-axis ranges from 0 to 600.
- Active TCPIP Connection Count:** A small table showing the total active connections for a given collection time.
- Main Table:** A large table listing active connections with columns for 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, and Total Bytes Received.

At the bottom, there is a status bar showing 'Hub Time: Tue, 03/16/2010 10:32 AM', 'Server Available', and 'TCPIP Connection Data - OVIESB - SYSADMIN'.

- Workspace
- Take Action...
- Link To...
- Launch...
- Situations...
- Split vertically
- Split horizontally
- Print Preview...
- Print...
- Find...
- Properties...

- DWL to MfN Connections Link workspace

# NetView TCP Connection Data Workspace (cont)

TCPIP Connection Data Summary

Page: 1 of 4

	Total Segments Received	Total Segments Sent	Total Segments	Segments Received	Segments Sent	Segments Sent or Received	Connection State	Last Activity Remote Timestamp	Last Timestamp Age	Max Send Window Size	Current Send Window Size	Number of Duplicate ACKS	Passive or Active
	0	1	1	0	1	1	SYN_SENT	0X00000000	0X00000000	0	1460	0	Active
	23	15	38	19	12	31	FIN_WAIT_2	0X00000000	0X00000000	65535	64950	0	Passive
	89	120	209	1	2	3	ESTABLISHED	0X00000000	0X00000000	65535	65467	1	Passive
	2314	2458	4772	281	271	552	ESTABLISHED	0X0206A369	0X0F5AFDE7	743424	47744	1	Passive
	1609	2335	3944	81	83	164	ESTABLISHED	0X00000000	0X00000000	32768	31603	85	Passive
	2	1	3	0	0	0	ESTABLISHED	0X0EBF3ACB	0X0EBF3ACB	512	512	0	Passive
	1	2	3	0	0	0	ESTABLISHED	0X0EBF3ACB	0X0EBF3ACB	512	512	0	Active
	711	855	1566	28	37	65	ESTABLISHED	0X00043515	0X0F59FDE5	32768	32270	12	Active
	3	1	4	0	0	0	ESTABLISHED	0X0F2A53F7	0X0F2A53F7	32768	32768	1	Passive
	1	3	4	0	0	0	ESTABLISHED	0X0EBEFE75	0X0EBEFE75	32768	32768	0	Active
	455	425	880	21	21	42	ESTABLISHED	0X0F59FDE5	0X0F59FDE5	512	512	0	Passive
	425	455	880	21	21	42	ESTABLISHED	0X0F59FEFF	0X0F59FEFF	512	511	0	Active

- Connection state
- Congestion control info
  - Send/Receive window sizes
  - Number of duplicate ACKs
  - Segment retransmit statistics

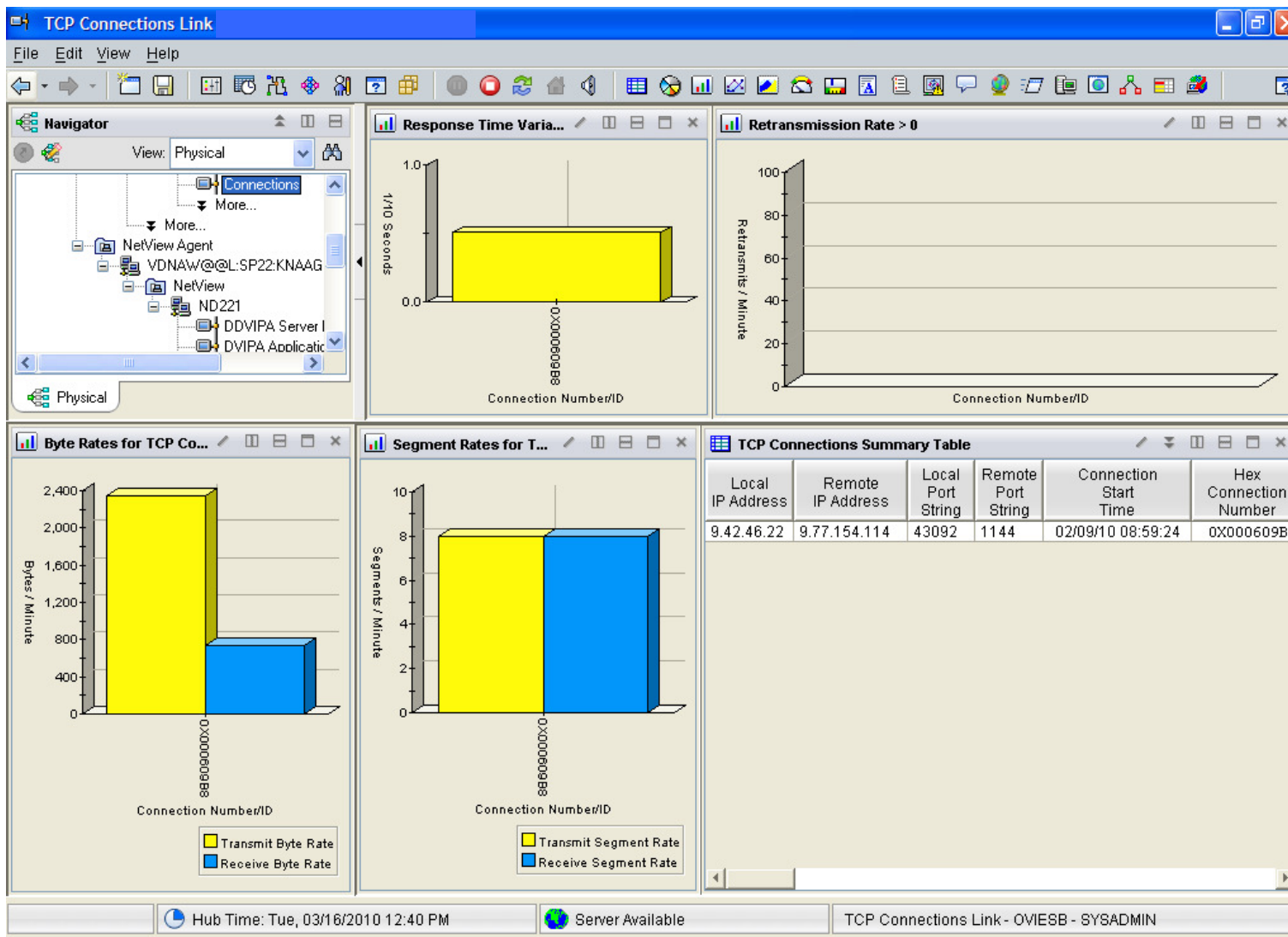
- Telnet information
- Security information

TCPIP Connection Data Summary

Page: 1 of 4

CP/IP tName	ZOS Image Name	Address Space ID	TCB Address	Telnet APPL Name	Telnet LU Name	Telnet User Client Name	Telnet Logmode	Telnet Protocol	AT-TLS Policy Status	AT-TLS Connection Status	AT-TLS SSL Protocol	AT-TLS Cipher	AT-TLS Security Type	AT-TLS Partner Userid
	SP22	0X00F8	007C6898					N/A	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X0020	007FF350					N/A	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X006C	00000000		TCP22025			TN3270E	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X011C	007BE898					N/A	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X0154	007BA898					N/A	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X00F8	00000000					N/A	Not_Known	Not_Secu...	N/A		N/A	
	SP22	0X00F8	007C6898					N/A	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X00F8	007C6898					N/A	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X00F1	007C8898					N/A	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X00F8	007C6898					N/A	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X00F8	00000000					N/A	No_TTLS	Not_Secu...	N/A		N/A	
	SP22	0X00F8	007C6898					N/A	No_TTLS	Not_Secu...	N/A		N/A	

## MfN TCP Connections Link Workspace provides additional connection metrics



- Response time variance
- Window size frequency
  - Number of times window set to 0
- Out of order segment statistics



# NetView Inactive TCPIP Connection Data Workspace

The screenshot shows the 'Inactive TCPIP Connection Data' workspace. On the left is a 'Navigator' tree with 'Physical' selected. In the center is a graph titled 'Total Segments Retransmitted...' with a y-axis from 0 to 100 and an x-axis for 'Connection ID'. On the right is a table titled 'Inactive TCPIP Connection Count' with columns for 'Collection Time' and 'Kept Inactive Connections'.

Collection Time	Kept Inactive Connections
03/11/10 16:39:57	8

- Provides statistics and information about connections that have terminated
  - Useful for billing or capacity planning
  - Termination Reason code can be helpful in troubleshooting

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 Bytes Received	Total Bytes Sent
03/11/10 16:39:57	TCPIP22	9.42.45.206	21	9.27.143.183	2289	03/11/10 15:20:00	03/11/10 15:37:06	FTPD1	0X000000BE	147	528
03/11/10 16:39:57	TCPIP22	9.42.45.206	20	9.27.143.183	2293	03/11/10 15:20:42	03/11/10 15:20:42	USER1	0X000000C3	0	365
03/11/10 16:39:57	TCPIP22	9.42.45.206	20	9.27.143.183	2292	03/11/10 15:20:34	03/11/10 15:20:40	USER1	0X000000C1	0	14056274
03/11/10 16:39:57	TCPIP22	9.42.45.206	20	9.27.143.183	2291	03/11/10 15:20:20	03/11/10 15:20:20	USER1	0X000000C0	0	365
03/11/10 16:39:57	TCPIP22	:::1	1045	:::1	1920	03/11/10 15:13:58	03/11/10 15:13:58	V421N3	0X00000089	125	297
03/11/10 16:39:57	TCPIP22	:::1	1920	:::1	1045	03/11/10 15:13:58	03/11/10 15:13:58	NA54NA	0X0000008A	297	125
03/11/10 16:39:57	TCPIP22	127.0.0.1	1044	127.0.0.1	1920	03/11/10 15:13:58	03/11/10 15:13:58	V421N3	0X00000086	125	301
03/11/10 16:39:57	TCPIP22	127.0.0.1	1920	127.0.0.1	1044	03/11/10 15:13:58	03/11/10 15:13:58	NA54NA	0X00000087	301	125

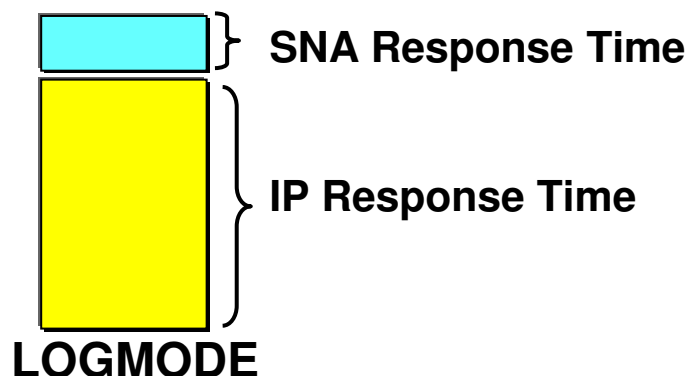
Total Bytes	Byte Rate	Total Segments Retransmitted	Max Send Window Size	Telnet APPL Name	Telnet LU Name	Telnet Logmode	Telnet Protocol	TCB Address	AT-TLS Connection Status	AT-TLS Policy Status	Termination Reason Code	Passive or Active Open	Type of Service
28	675	39	0	16560			N/A	006E6B70	Not_Secu...	No_TTLS	Finwait2_Timeout	Passive	0X00
65	365	3726802	0	16560			N/A	006FF1D8	Not_Secu...	No_TTLS	App_Closed	Active	0X00
74	14056274	150525571	0	16560			N/A	006FF1D8	Not_Secu...	No_TTLS	App_Closed	Active	0X00
65	365	4309579	0	16560			N/A	006FF1D8	Not_Secu...	No_TTLS	App_Closed	Active	0X00
97	422	8922267	0	32768			N/A	006D1608	Not_Secu...	No_TTLS	App_Closed	Active	0X00
25	422	8981660	0	32768			N/A	006D2608	Not_Secu...	No_TTLS	App_Closed	Passive	0X00
01	426	8033236	0	32768			N/A	006D1608	Not_Secu...	No_TTLS	App_Closed	Active	0X00
25	426	8085329	0	32768			N/A	006D2608	Not_Secu...	No_TTLS	App_Closed	Passive	0X00

---

## Agenda

- Enterprise Extender (EE)
- OSA Management
- TCP Connection Management
- **TN3270 Management**
- For More Information

## TN3270 Management



- Can cause logon failures
- See NetView NLDM for details
- Wrong screen sizes

### Response times

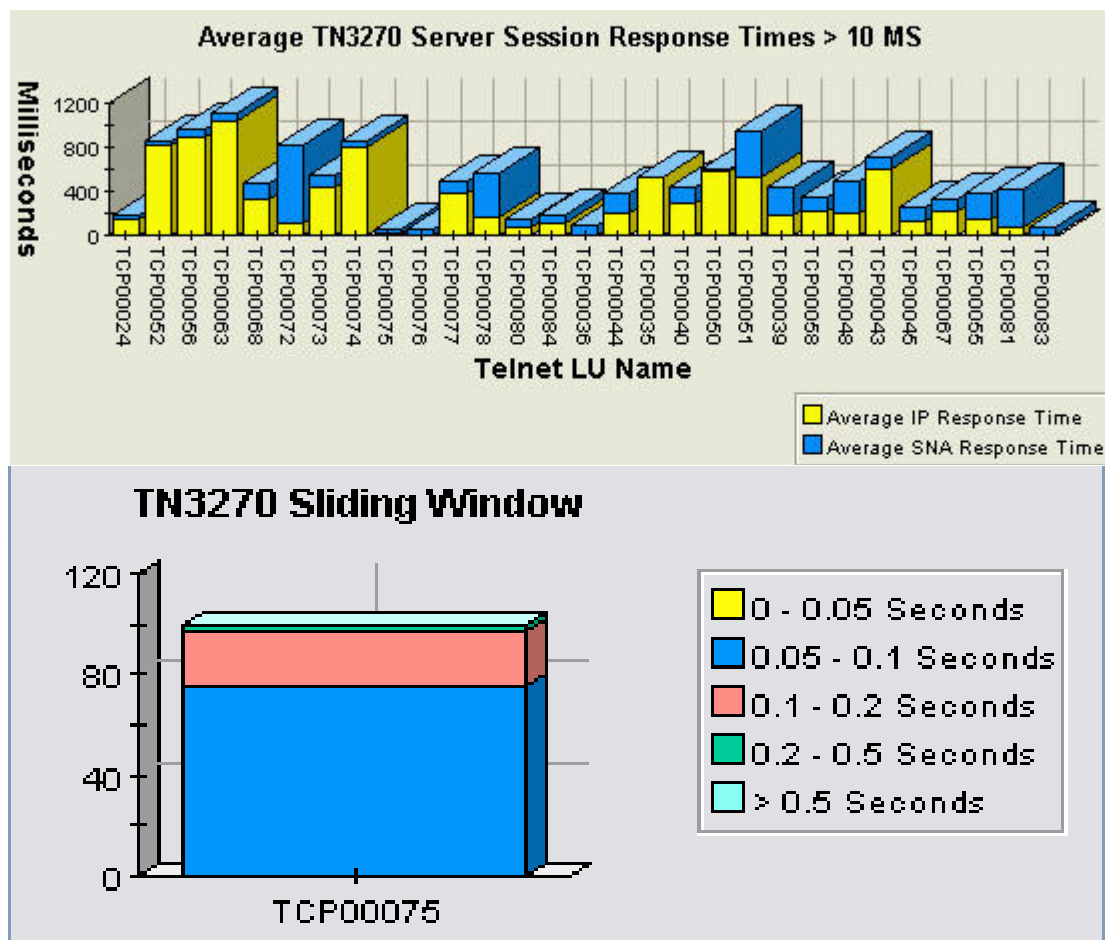
- Average by IP & SNA time
- Standard Variation by IP & SNA time
- Sliding Window (Buckets)
- Check Telnet Pool Entries in use
- Check if using wrong LOGMODE

**NetView for z/OS will also show connections and drill down into MfN**

### High response time - investigate:

- High application workload spike
- z/OS system resource constraints.

**OMEGAMON XE for MfN**



# MfN TN3270 Server Session workspace

The screenshot displays the 'TN3270 Server Sessions' workspace. It includes a Navigator pane on the left, a 3D bar chart titled 'Average TN3270 Server Session Response Times > 2 Seco...' showing response times in milliseconds for Telnet LU Name NTC000102, a line graph titled 'Active TH3270 Server Sessi...' showing active connections over time, and a table titled 'Active TH3270 Sessions...' with columns for Collection Time and Telnet Session Count. Below these is a 'TN3270 Server Session Summary Table' with columns for Average Total Response Time, Collection Time, TN3270 Server Name, Telnet LU Name, SNA Application Name, Remote IP Address, Remote Port, Local IP Address, Local Port, Session Start, Session End, and Average Response Time. The status bar at the bottom shows 'Hub Time: Wed, 08/19/2009 03:44 PM', 'Server Available', and 'TN3270 Server Sessions - OVIESB - SYSADMIN'.

Collection Time	Telnet Session Count
10/01/08 14:18:34	4101

	Average Total Response Time	Collection Time	TN3270 Server Name	Telnet LU Name	SNA Application Name	Remote IP Address	Remote Port	Local IP Address	Local Port	Session Start	Session End	Average Response
	1	08/19/08 16:11:51	TN3270	NTC00106		9.42.8.221	2776	9.42.32.85	23	08/01/08 17:14:30		
	1	08/19/08 16:11:51	TN3270	NTC00107	A06TSO01	9.42.8.221	2812	9.42.32.85	23	08/01/08 19:12:15		
	<b>4064</b>	08/19/08 16:11:51	TN3270	NTC00102	A06TSO05	9.42.8.221	1864	9.42.32.85	23	07/30/08 15:54:55		
	75	08/19/08 16:11:51	TN3270	NTC00118	A06TSO04	9.42.8.221	2912	9.42.32.85	23	08/19/08 13:42:56		
	85	08/19/08 15:32:56	TN3270	NTC00118	A06TSO04	9.42.8.221	2912	9.42.32.85	23	08/19/08 13:42:56	08/19/08 15:32:56	
	133	08/19/08 15:33:35	TN3270	NTC00102	A06TSO02	9.42.8.221	1864	9.42.32.85	23	07/30/08 15:54:55	08/19/08 15:33:35	



## NetView 5.4 Server Config and Status workspace

The screenshot displays the NetView 5.4 Server Configuration and Status workspace. The interface includes a Navigator pane on the left, a main workspace with three panels, and a status bar at the bottom.

**Navigator:** Shows a tree view of system components, with 'Telnet Server Configuration and Status' selected.

**Telnet Server Summary:** A table showing server configuration details.

Telnet Server Job Name	Address Space ID	Configured Ports	Active Ports	Server Status	zOS Image Name
:03 TN3270	0X0025	1	1	ACTIVE	NMP190

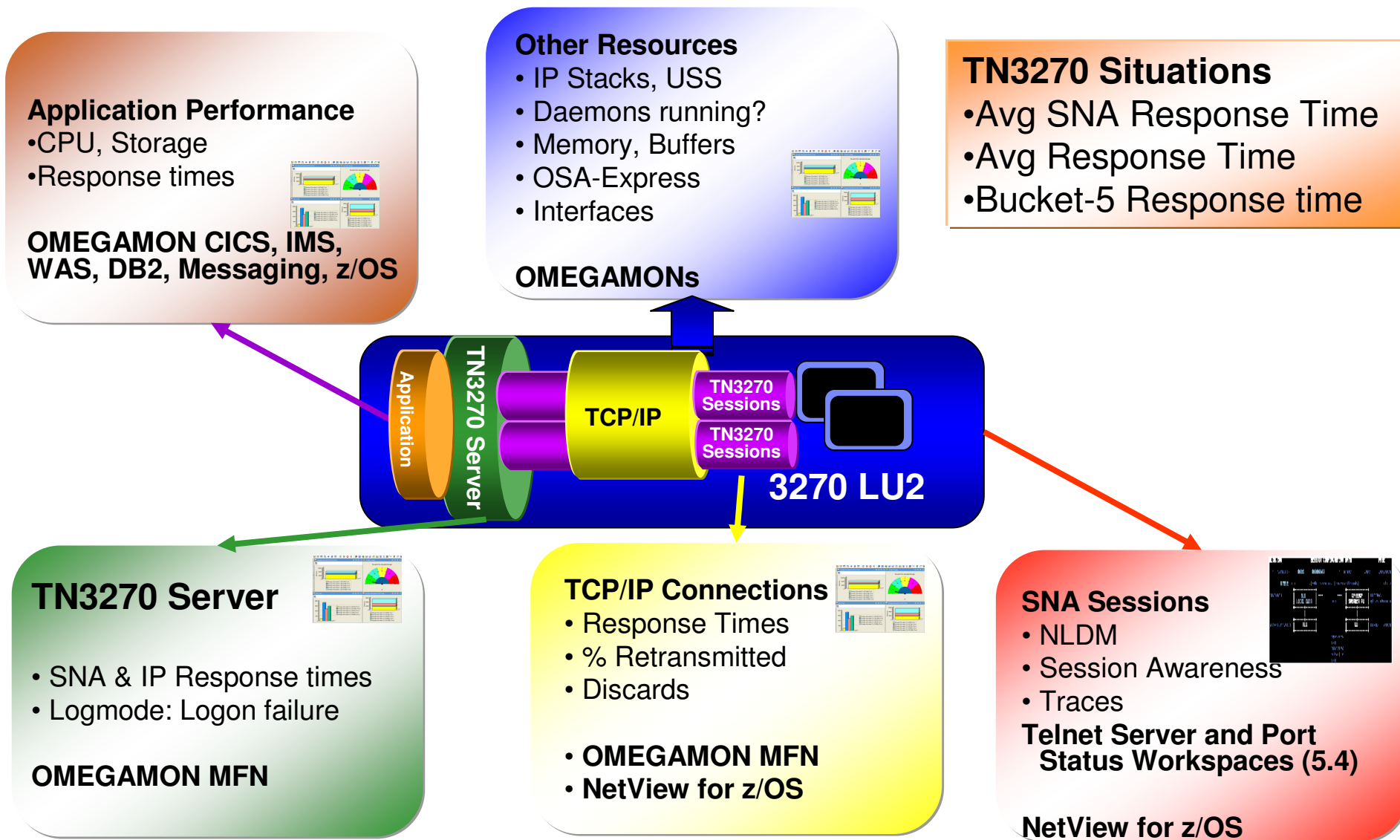
**Number of Ports by Server:** A bar chart showing the number of configured and active ports for the server TN3270. The Y-axis represents the number of ports (0.0 to 2.0). The X-axis represents the Telnet Server Job Name (TN3270). The legend indicates that yellow bars represent Configured Ports and blue bars represent Active Ports.

**Telnet Server Port Summary:** A table showing detailed port information.

Update Time	Telnet Server Job Name	Address Space ID	Resource Name	Server Status	Port	Port Status	TCPIP Job Name	Active Connections	Dropped Connections	TCPIP Stack Affinity	Sysplex Name	zOS Image Name	zOS Re Lev
08/19/09 15:19:03	TN3270	0X0025	TN3270	ACTIVE	23	ACTIVE	TCPIP	1	999	NONE	NVDPLEX1	NMP190	V1R11

**Status Bar:** Shows Hub Time: Wed, 08/19/2009 03:22 PM, Server Available, and Telnet Server Configuration and Status - EDDIE - SYSADMIN.

# TN3270 Summary



# Defining new DWL link

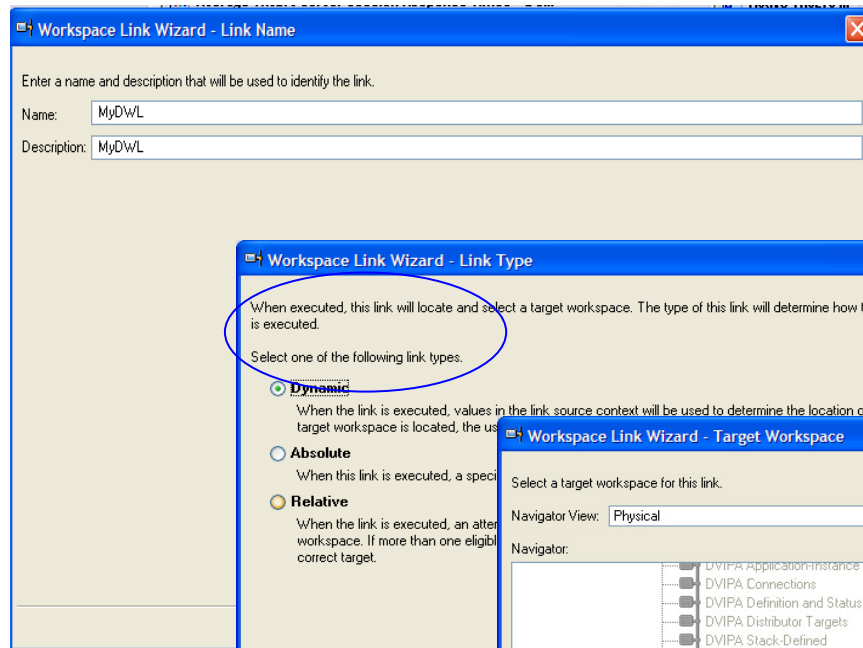
The screenshot shows the 'TN3270 Server Sessions' application. The main window displays a 3D bar chart titled 'Average TN3270 Server Session Response Times > 2 S...'. The Y-axis is labeled 'Milliseconds' and ranges from 0 to 6,000. The X-axis is labeled 'Telnet LU Name' and shows 'NTC000102'. A legend indicates that yellow bars represent 'Average IP Response Time' and blue bars represent 'Average SNA Response Time'. Below the chart is a table with columns: 'Server Name', 'Telnet LU Name', 'SNA Application Name', 'Remote IP Address', 'Remote Port', 'Local IP Address', and 'Local Port'. A context menu is open over the table, listing options such as 'TN3270 Server Session Pair', 'Link Wizard...', and 'Link Anchor...'. The 'Link Wizard...' option is highlighted. A 'Workspace Link Wizard - Welcome' dialog box is overlaid on the bottom right, with the 'Create a new link' radio button selected.

Server Name	Telnet LU Name	SNA Application Name	Remote IP Address	Remote Port	Local IP Address	Local Port		
1	08/19/08 16:11:51	TN3270	NTC00106	A06TS001	9.42.8.221	2776	9.42.32.85	23
1	08/19/08 16:11:51	TN3270	NTC00107	A06TS001	9.42.8.221	2812	9.42.32.85	23
4064	08/19/08 16:11:51	TN3270	NTC00102	A06TS005	9.42.8.221	1864	9.42.32.85	23
75	08/19/08 16:11:51	TN3270	NTC00118	A06TS004	9.42.8.221	2912	9.42.32.85	23
85	08/19/08 15:32:56	TN3270	NTC00118	A06TS004	9.42.8.221	2912	9.42.32.85	23
133	08/19/08 15:33:35	TN3270	NTC00102	A06TS002	9.42.8.221	1864	9.42.32.85	23

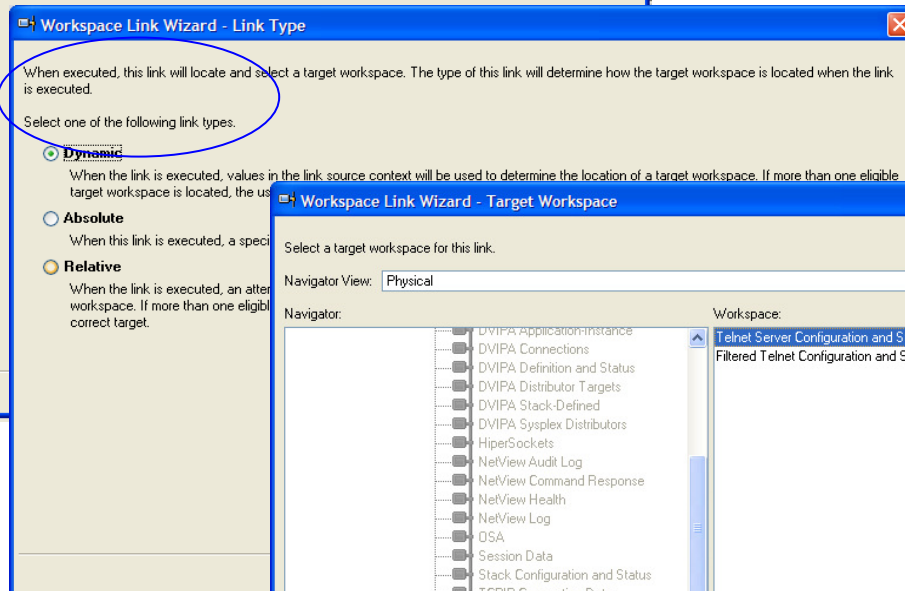
- Application support files for source and target application must be installed
- Link fails if agent for target application not running

# Defining new DWL link

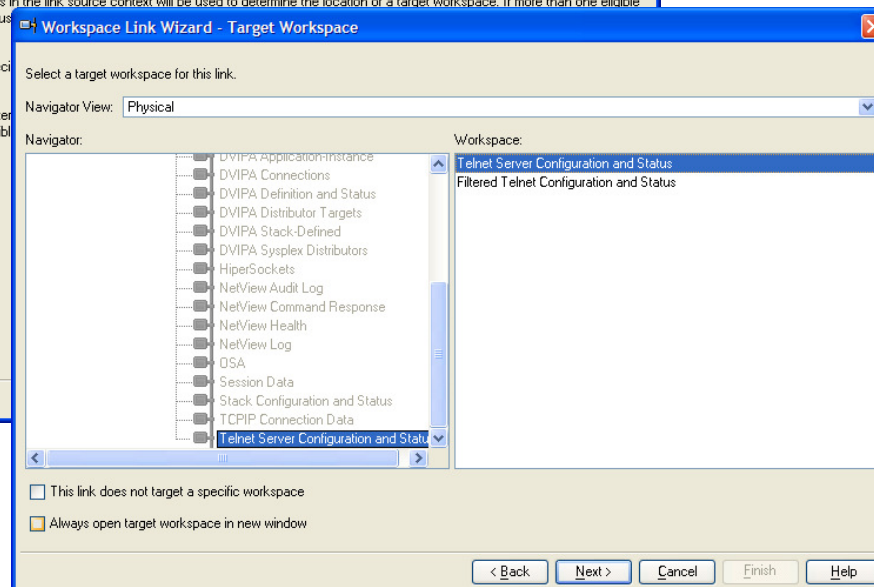
## Specify name, description, link type and target



▪ Specify link name and description



▪ Select link type of Dynamic

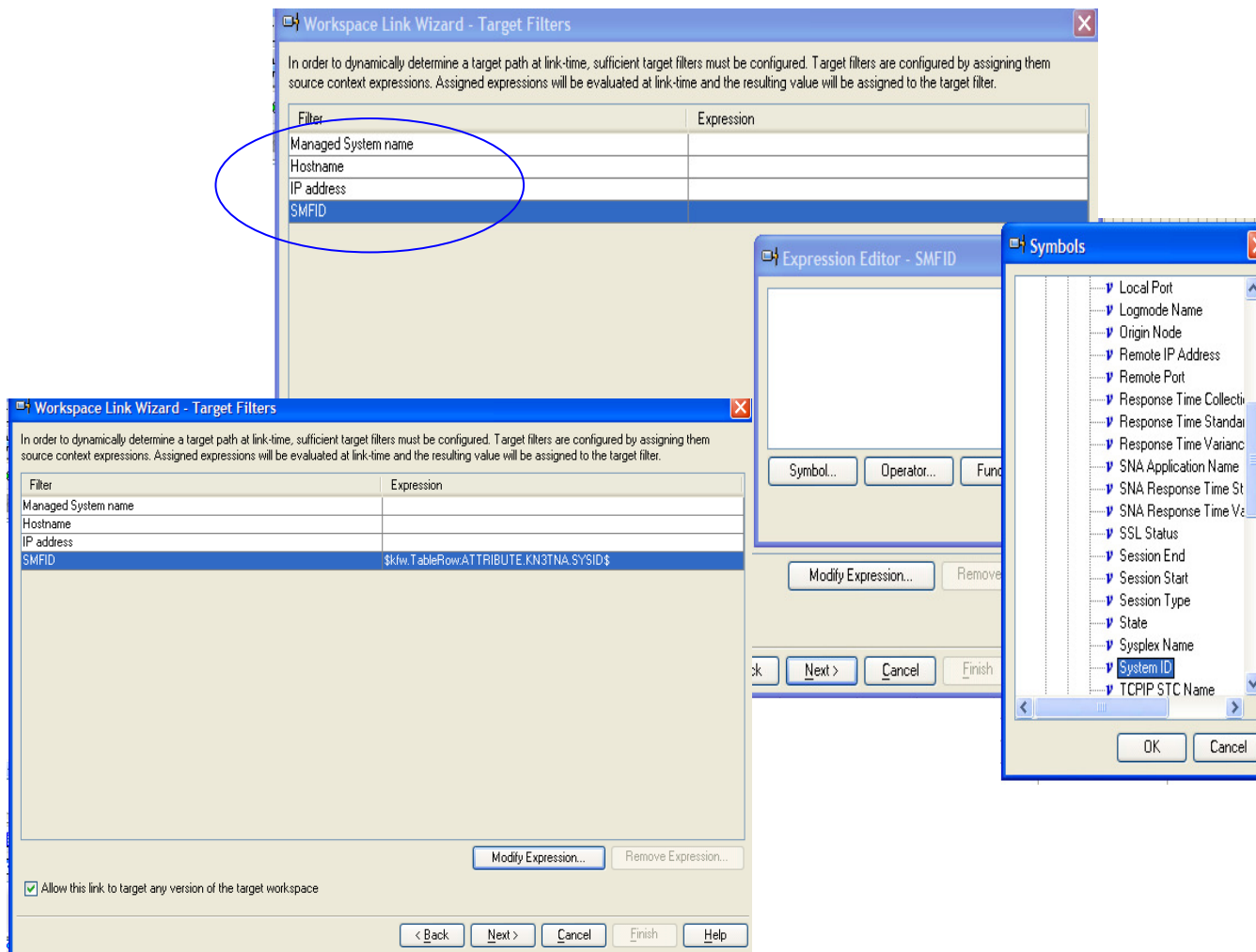


▪ Navigation tree showing all applications installed is displayed

▪ Select target workspace

# Define new DWL link

## Identify target workspace navigation tree node



- Four symbols provided to identify location of target workspace in navigation tree
- Expression that uses values from source workspace can be provided
- During link operation, the node names in the navigation tree are examined for a match with the expression provided
- In this example the node names on the navigation tree will be examined for a match on the value of the System ID attribute of the source workspace

# Defining new DWL link

## Specify filters for target workspace

Workspace Link Wizard - Parameters

Assign expressions to any of the following target workspace parameters to provide link-time values for them.

Parameter	Expression
[-] Properties	
[-] Symbols	
contextIsAvailable	\$kfw.TableRow:-1021A\$ == \$kfw.LinkSymbolsGroup:PBASED.SOURC
linksEnabled	true
openTargetInNewWindow	false
[-] Target Workspace	
[-] Query - Telnet Server Configuration and Status	
[-] Symbols	
AFFIN	
IMAGE	
JOB	
PLEX	
TPORT	
TSJOBN	
[-] Table - Telnet Server Port Summary	
Footer	
Header	
[-] Query - Telnet Server	
[-] Symbols	
IMAGE	
TSJOBL	

Buttons: Add Symbol... Remove Symbol Modify Expression... Re...

Navigation: < Back Next > Cancel Finish

■ Provide expression that references attributes in source workspace.  
 ■ The evaluated value of the expression at link time is used to filter data at target workspace.

Workspace Link Wizard - Summary

Review the task and then press Finish to complete the wizard.

The following link will be created:

Name: MyDWL

Description: MyDWL

Type: Dynamic

Target workspace: Telnet Server Configuration and Status

Buttons: < Back Next > Cancel Finish Help



For More Information

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## For More Information

- NetView for z/OS Home Page  
<http://www.ibm.com/software/tivoli/products/netview-zos>
- OMEGAMON XE for Mainframe Networks Home Page  
<http://www.ibm.com/software/tivoli/products/omegamon-xe-mainframe>
- NetView for z/OS documentation  
<http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/index.jsp?toc=/com.ibm.itnetviewforzos.doc/toc.xml>
- OMEGAMON XE for Mainframe Networks documentation  
<http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/index.jsp?toc=/com.ibm.omegamon.mn.doc/toc.xml>

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## For More Information

- z/NetView Customer Forum  
<http://groups.yahoo.com/group/NetView/>
- IBM Tivoli Monitoring version 6.2.1 documentation  
<http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/index.jsp?toc=/com.ibm.itm.doc/toc.xml>
- IBM Tivoli System z Monitoring and Application Management Wiki  
<http://www.ibm.com/developerworks/wikis/display/tivoliomegamon/Home>
- OSA-Express Customer's Guide and Reference [http://publibz.boulder.ibm.com/cgi-bin/bookmgr\\_OS390/BOOKS/IOA2Z170/CCONTENTS?DT=20081024114856](http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/IOA2Z170/CCONTENTS?DT=20081024114856)
- OSA-Express Implementation Guide: <http://www.redbooks.ibm.com/abstracts/sg245948.html>

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 Asia Pacific: [tivtrainingap@au1.ibm.com](mailto:tivtrainingap@au1.ibm.com)  
 EMEA: [tived@uk.ibm.com](mailto:tived@uk.ibm.com)

Training

- Classroom
- Differences
- Document
- Foundation
- How-to
- Self-paced
- Web seminar
- Skills

Classroom	
Title	Duration
→ AF/OPERATOR and OMEGACENTER Gateway Basics	5 Days
→ CIMS Server 4.3 Implementation and Administration	3 Days
→ Comprehensive Technical Training for IBM Tivoli	15 Days
→ Configuring WebSphere MQ using IBM Tivoli OMEGAMON XE for WebSphere MQ	As needed
→ Creating an ETL for Tivoli Data Warehouse 1.2	4 Days
→ Deploying an Integrated IBM Tivoli Security Solution	3 Days
→ Disaster Preparation and Recovery for IBM Tivoli Storage Manager 5.3	2 Days
→ Extending IBM Tivoli Identity Manager 4.6	4 Days
→ IBM OMEGAMON z/OS Management Console 1.1.0	As needed
→ IBM Tivoli Access Manager for Business Integration 5.1 System Administration	3 Days
→ IBM Tivoli Access Manager for e-business 6.0 Customization	4 Days

Related links

- Warranty info
- Business Partners
- Tivoli Developer Domain
- Resource Center
- Industry Solutions
- Licensing
- Contact Tivoli
- IBM Tivoli Open
- Process Automation

1. Click **Product** tab
2. Select **N** for NetView for z/OS

Web site contains links to *product training roadmaps*, including prerequisite and supplemental training.

[http://www.ibm.com/software/tivoli/education/edu\\_type.html](http://www.ibm.com/software/tivoli/education/edu_type.html)

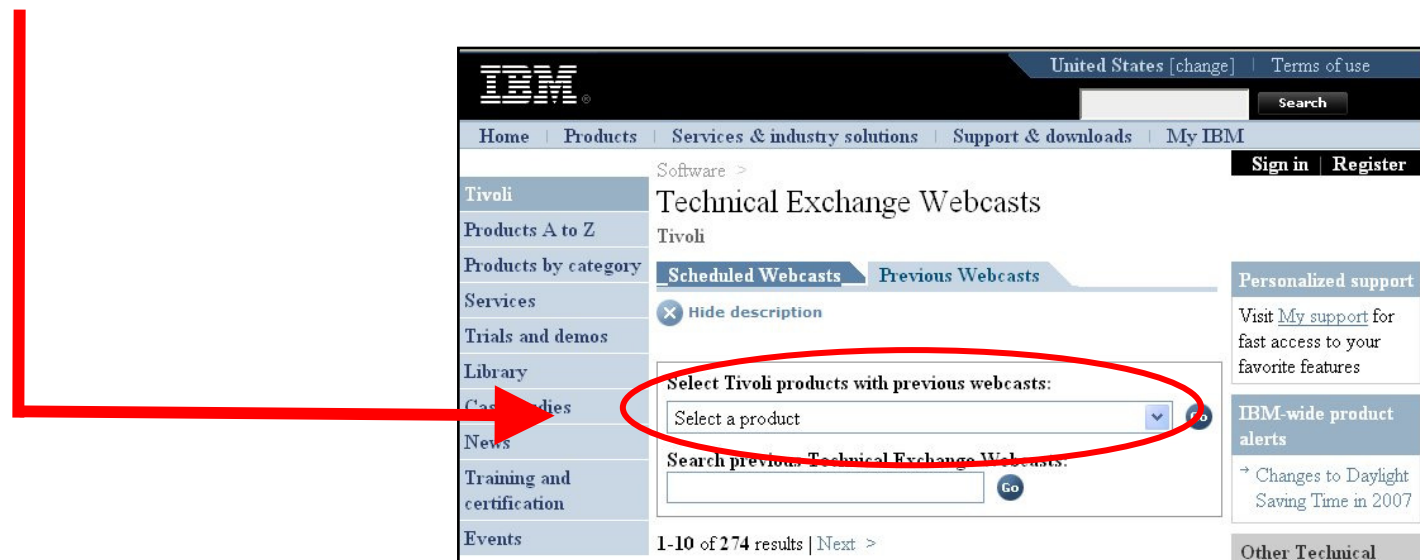
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## Classes

- New / updated classes
  - NetView for z/OS 5.3 Technical Update
    - October 20-1, Berlin
    - [http://www.ibm.com/services/learning/de/ta-iris.nsf/\(ExtCourseNr\)/TM78D0DE](http://www.ibm.com/services/learning/de/ta-iris.nsf/(ExtCourseNr)/TM78D0DE)
  - NetView for z/OS 5.3 Workshop: Fundamentals, Automation, REXX and PIPEs
    - September 28 – October 2, Paris,
    - October 5-9, London
    - October 13-17, Pittsburgh
    - November 2-6, San Francisco
    - May 17-21, Berlin
    - <http://www.ibm.com/software/tivoli/education/U188790N96197Y71.html>
  - NetView for z/OS 5.3 Workshop: Fundamentals
  - NetView for z/OS 5.3 Workshop: Automation Techniques
  - NetView for z/OS 5.3 Workshop: REXX Programming
  - NetView for z/OS 5.3 Workshop: NetView PIPEs

## Where to find Web Seminars

- Recordings of all Web Seminars are available at the STE Web page:
  - [http://www.ibm.com/software/sysmgmt/products/support/supp\\_tech\\_exch.html](http://www.ibm.com/software/sysmgmt/products/support/supp_tech_exch.html)
- Search *Previous Webcasts*
  - NetView for z/OS



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## Webinars

- Descriptions and Recordings
  - [http://www.ibm.com/software/tivoli/education/edu\\_prd.html#N](http://www.ibm.com/software/tivoli/education/edu_prd.html#N)
- Examples
  - NetView for z/OS 5.3 Enterprise Management Agent (EMA)
  - TCP/IP Management – Part 1
  - TCP/IP Management – Part 2
  - Automation
  - Time to Value, Ease of Use, and Migration Considerations



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## IBM System z Advisor

- A monthly e-newsletter to provide IBM System z practitioners with a mechanism to broaden System z knowledge and keep up to date with technical developments and futures.
- Launched August 2009
- Replaces CCR2
- System z Advisor home page  
<http://www.ibm.com/software/tivoli/systemz-advisor>

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## Technotes

- Technotes & Tips are published by the Technical Support organizations to assist IBM customers and personnel in the installation, use and management of IBM products. See the individual product's home page or Support page.

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# Questions?

Thank You!