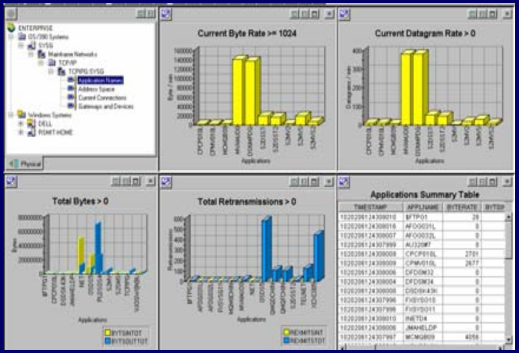
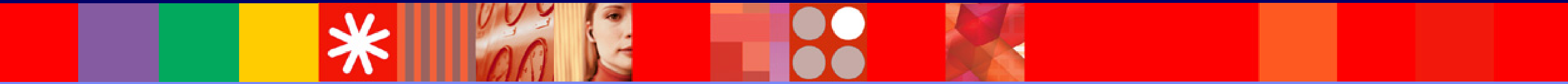
# IBM zSeries Network Performance Management


ENTERPRISE
OS/390 Systems
SYSG
Mainframe Networks
TCP/IP
TCPIPG SYSG
Application Names
Address Space
Current Connections
Gateways and Devices
Windows Systems
DELL
Physical
Current Byte Rate >= 1024
Current Datagram Rate > 0
Applications
Total Bytes > 0
Total Retransmissions > 0
Applications Summary Table
TIMESTAMP
APPLNAME
BYTERATE



**Ernie Gilman**
**IBM Sr. Consulting IT Specialist**
**egilman@us.ibm.com**

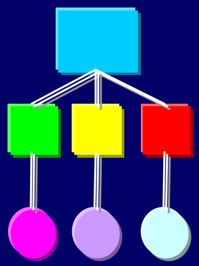
# AGENDA

- Overview of IBM Tivoli zSeries network management
- IBM Tivoli NetView for z/OS Integration

  with Tivoli Enterprise Portal  Scenarios
- IBM Tivoli OMEGAMON for Mainframe Network

  Using new CS for z/OS API

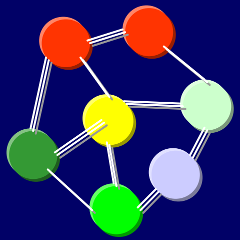
# Moving from SNA to TCP/IP



## *SNA*

- Generic Alerts
- VR Flow Control
- HPR
- SNI
- Intelligent agents
- Hierarchal (Subarea)
- LU2
- Sessions Controlled
- 3745 ( CCL)

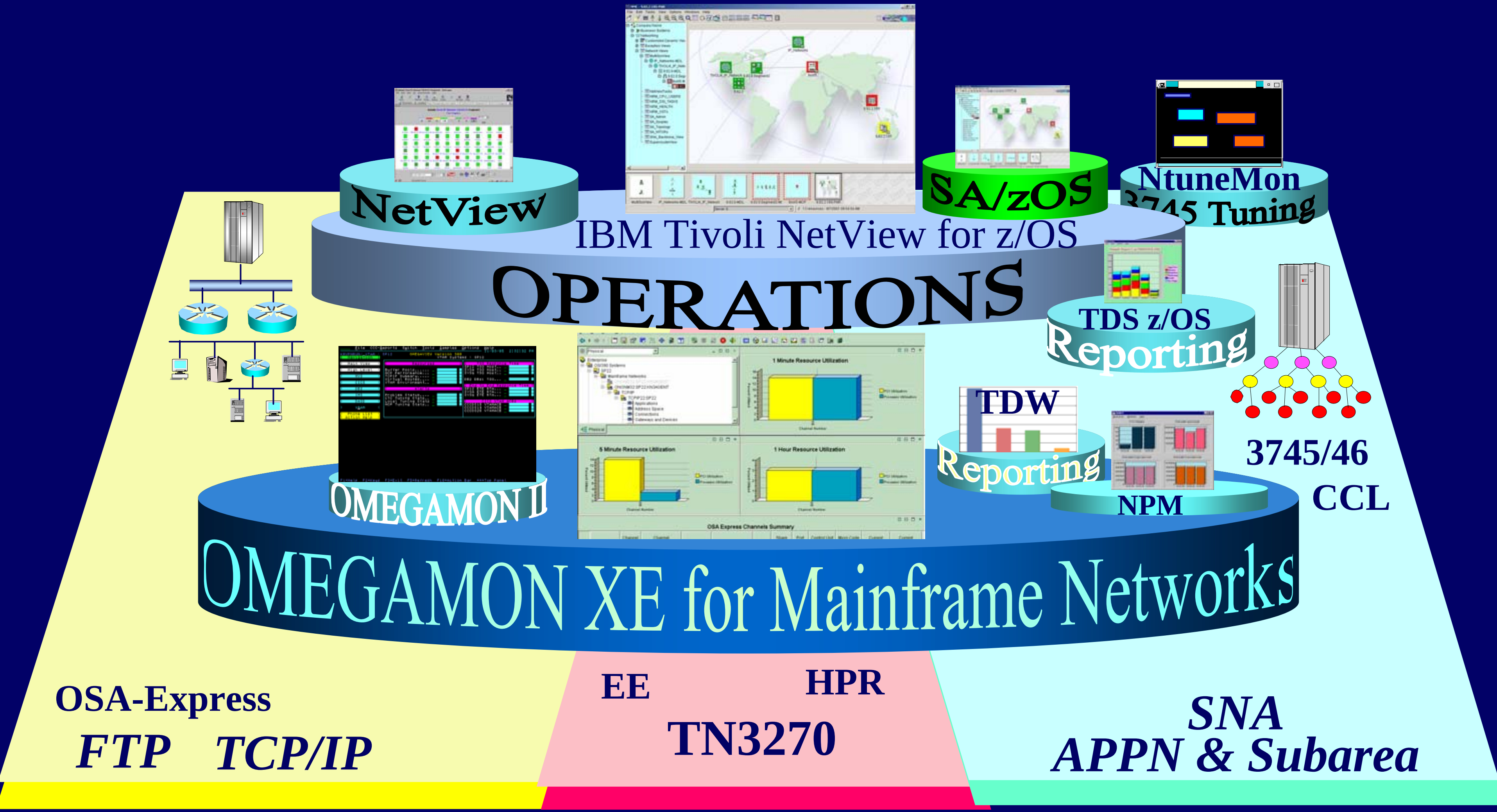
## *TCP/IP*



- Traps
- Discards
- Enterprise Extender
- Internet
- MIB Polling
- Peer to Peer
- TN3270
- FTP  Uncontrolled
- OSA-Express, Cisco CIP
- Denial of Service Attack

**•Implement Topology**
**•Set up MIB Polling**
**•Set Thresholds**
**•Traces**

# Tivoli z/OS Network Performance and Automation Management



NetView

SA/zOS

NtuneMon

3745 Tuning

IBM Tivoli NetView for z/OS

OPERATIONS

TDS z/OS

Reporting

TDW

Reporting

NPM

3745/46

CCL

OMEGAMON II

OMEGAMON XE for Mainframe Networks

OSA-Express

*FTP* *TCP/IP*

EE

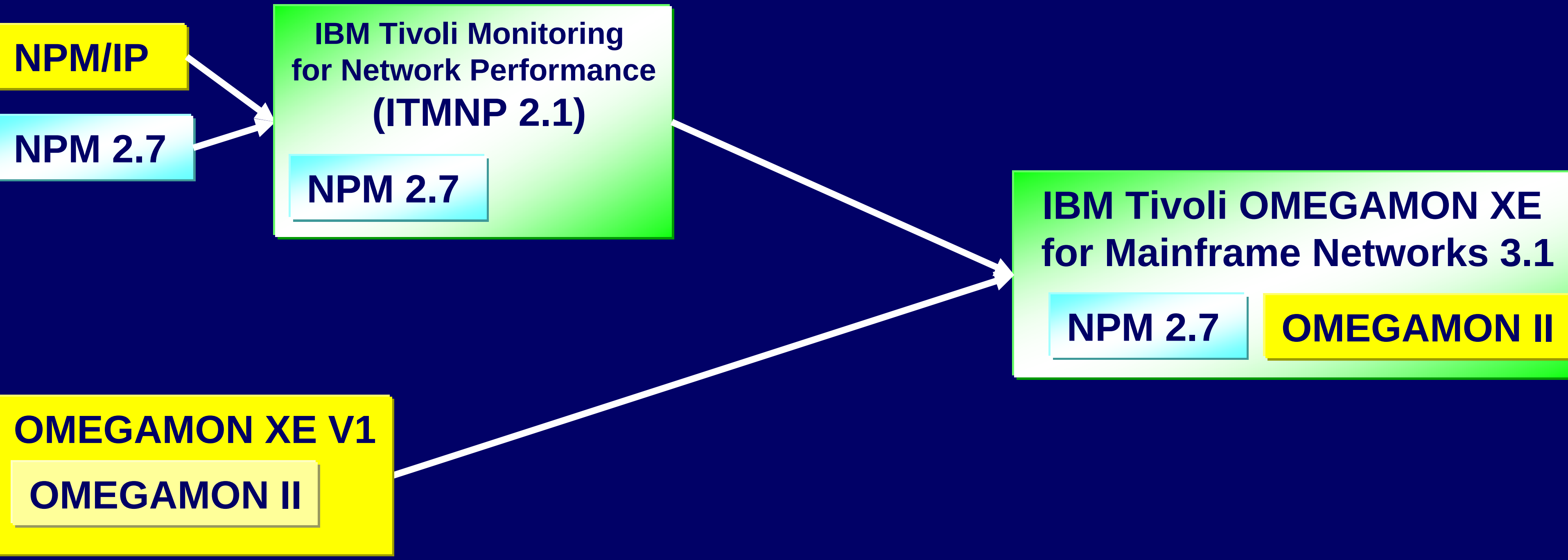
HPR

TN3270

*SNA*

*APPN & Subarea*

# IBM Network Performance Management Evolution



**NPM/IP**

**NPM 2.7**

**IBM Tivoli Monitoring for Network Performance (ITMNP 2.1)**

**NPM 2.7**

**OMEGAMON XE V1**

**OMEGAMON II**

**IBM Tivoli OMEGAMON XE for Mainframe Networks 3.1**

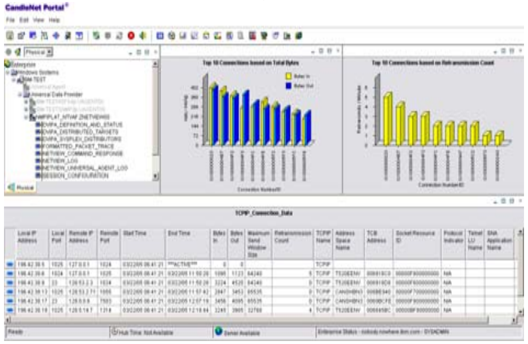
**NPM 2.7**

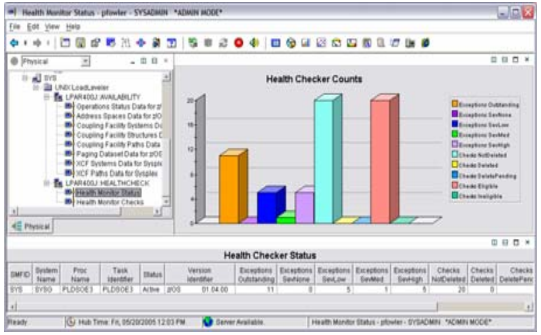
**OMEGAMON II**

# IBM leveraging OMEGAMON with existing solutions

z/OS

NetView for z/OS


NetView for z/OS V5.2

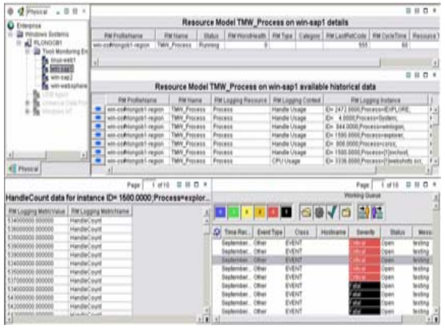

z/OS 1.7 Management Console

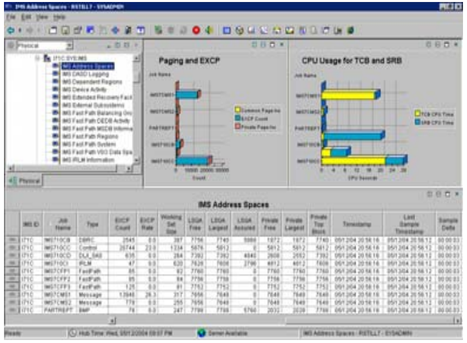
DB2 PE / PM

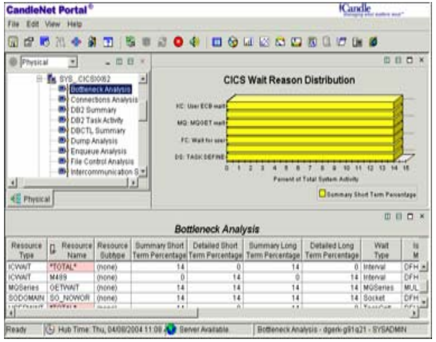
CICS PM

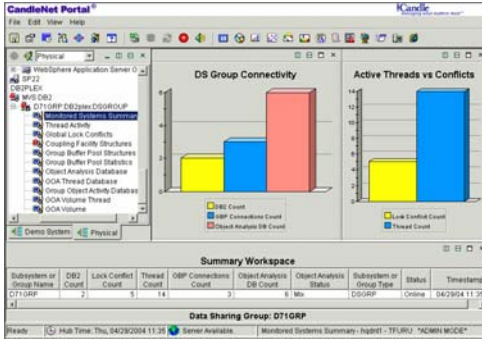
IMS PM

Distributed TEC & ITM

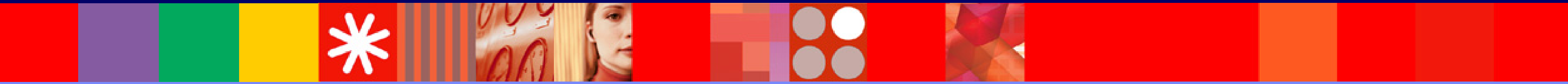

Tivoli Enterprise Console
ITM 6.1


OMEGAMON XE for IMS


OMEGAMON XE for CICS

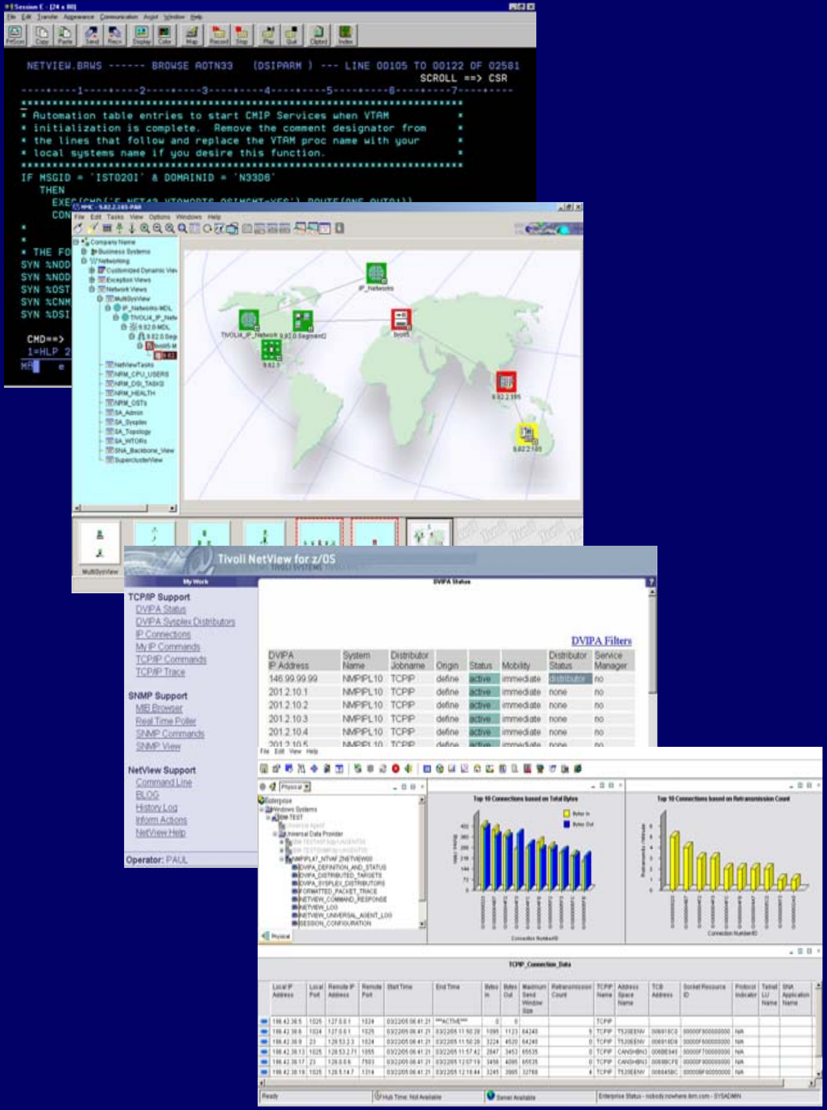

OMEGAMON for DB2 PM
OMEGAMON for DB2 PE

# NetView for z/OS Integration with Tivoli Enterprise Portal Scenarios



# NetView for z/OS user interfaces

- Console Evolution
  - Text-based 3270-type display
  - Web browser 3270-type display
  - Platform Independent Java 3270-type console
  - Platform Independent Java Graphics console provides graphical at-a-glance views of the network's status
  - Tivoli enterprise Portal



```
NETVIEW.BRWS ------ BROWSE AOTN33   (DSIPARM ) --- LINE 00105 TO 00122 OF 02581
                                                              SCROLL ==> CSR
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----
*************************************************************************
* Automation table entries to start CMIP Services when VTAM             *
* initialization is complete.  Remove the comment designator from       *
* the lines that follow and replace the VTAM proc name with your        *
* local systems name if you desire this function.                       *
*************************************************************************
IF MSGID = 'IST020I' & DOMAINID = 'N33D6'
   THEN
      EXE
      CON
*
*
* THE FO
SYN %NOD
SYN %NOD
SYN %DST
SYN %CNM
SYN %DSI

 CMD==>
 1=HLP 2
```

**Tivoli NetView for z/OS**

**DVIPA Status**

**DVIPA Filters**

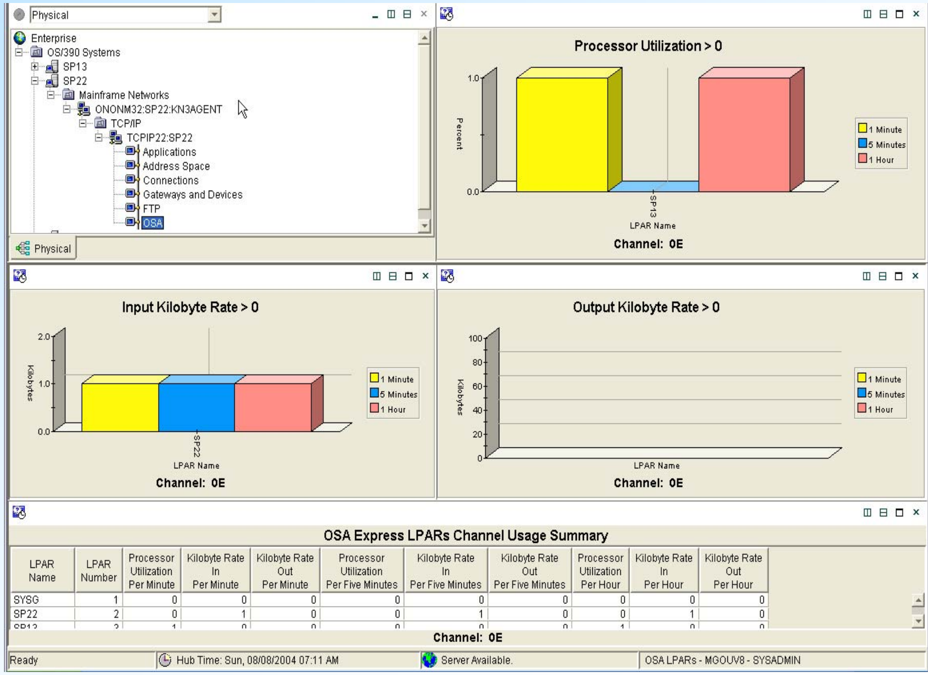
| DVIPA IP Address | System Name | Distributor Jobname | Origin | Status | Mobility | Distributor Status | Service Manager |
|---|---|---|---|---|---|---|---|
| 146.99.99.99 | NMPIPL10 | TCPIP | define | active | immediate | distributor | no |
| 201.2.10.1 | NMPIPL10 | TCPIP | define | active | immediate | none | no |
| 201.2.10.2 | NMPIPL10 | TCPIP | define | active | immediate | none | no |
| 201.2.10.3 | NMPIPL10 | TCPIP | define | active | immediate | none | no |
| 201.2.10.4 | NMPIPL10 | TCPIP | define | active | immediate | none | no |
| 201.2.10.5 | NMPIPL10 | TCPIP | define | active | immediate | none | no |

Operator: PAUL

Company Name
Business Systems
Networking
Customized Dynamic View
Exception Views
Network Views
MultiSysView
IP_Networks
TIVOLI4_IP_Network
9.82.0 Segment2
9.82.2.185
NetViewTasks
NRM_CPU_USERS
NRM_DSI_TASKS
NRM_HEALTH
NRM_OSTs
SA_Admin
SA_Sysplex
SA_Topology
SA_WTORs
SNA_Backbone_View
My Work
TCP/IP Support
DVIPA Status
DVIPA Sysplex Distributors
IP Connections
My IP Commands
TCP/IP Commands
TCP/IP Trace
SNMP Support
MIB Browser
Real Time Poller
SNMP Commands
SNMP View
NetView Support
Command Line
BLOG
History Log
Inform Actions
NetView Help
File Edit View Help
Physical
Enterprise
Windows Systems
Universal Data Provider
DVIPA_DEFINITION_AND_STATUS
DVIPA_DISTRIBUTED_TARGETS
DVIPA_SYSPLEX_DISTRIBUTORS
FORMATTED_PACKET_TRACE
NETVIEW_COMMAND_RESPONSE
NETVIEW_LOG
NETVIEW_UNIVERSAL_AGENT_LOG
SESSION_CONFIGURATION
Top 10 Connections based on Total Bytes
Bytes In
Bytes Out
Top 10 Connections based on Retransmission Count
TCPIP_Connection_Data

# Tivoli Enterprise Portal Highlights

- **Common user interface**
  - Candle Net Portal (CNP) and Tivoli Enterprise Portal (TEP)
  - Manage z/OS system resources from a single user interface.
  - Easy to use and Intuitive
  - Displays data in graphs, charts and table format
- **Easy to configure**
  - Define thresholds, Filters, Sort
  - Customize workspaces and reports
  - Generate Events
- **Out of the box**
  - Situations
  - Problem signatures and Expert Advice
- **Integrated**
  - OMEGAMON products
  - NetView for z/OS
  - TEC
  - ITM 6.1 (TEP)
  - z/OS Health Checker


Physical
Processor Utilization > 0
1.0
0.0
Percent
SP13
LPAR Name
Channel: 0E
1 Minute
5 Minutes
1 Hour
Input Kilobyte Rate > 0
2.0
1.0
0.0
Kilobytes
SP22
LPAR Name
Channel: 0E
1 Minute
5 Minutes
1 Hour
Output Kilobyte Rate > 0
100
80
60
40
20
0
Kilobytes
LPAR Name
Channel: 0E
1 Minute
5 Minutes
1 Hour

- Enterprise
  - OS/390 Systems
    - SP13
    - SP22
      - Mainframe Networks
        - ONONM32:SP22:KN3AGENT
          - TCP/IP
            - TCPIP22:SP22
              - Applications
              - Address Space
              - Connections
              - Gateways and Devices
              - FTP
              - OSA

OSA Express LPARs Channel Usage Summary

| LPAR Name | LPAR Number | Processor Utilization Per Minute | Kilobyte Rate In Per Minute | Kilobyte Rate Out Per Minute | Processor Utilization Per Five Minutes | Kilobyte Rate In Per Five Minutes | Kilobyte Rate Out Per Five Minutes | Processor Utilization Per Hour | Kilobyte Rate In Per Hour | Kilobyte Rate Out Per Hour |
|---|---|---|---|---|---|---|---|---|---|---|
| SYSG | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SP22 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| SP13 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

Channel: 0E

Ready | Hub Time: Sun, 08/08/2004 07:11 AM | Server Available. | OSA LPARs - MGOUV8 - SYSADMIN

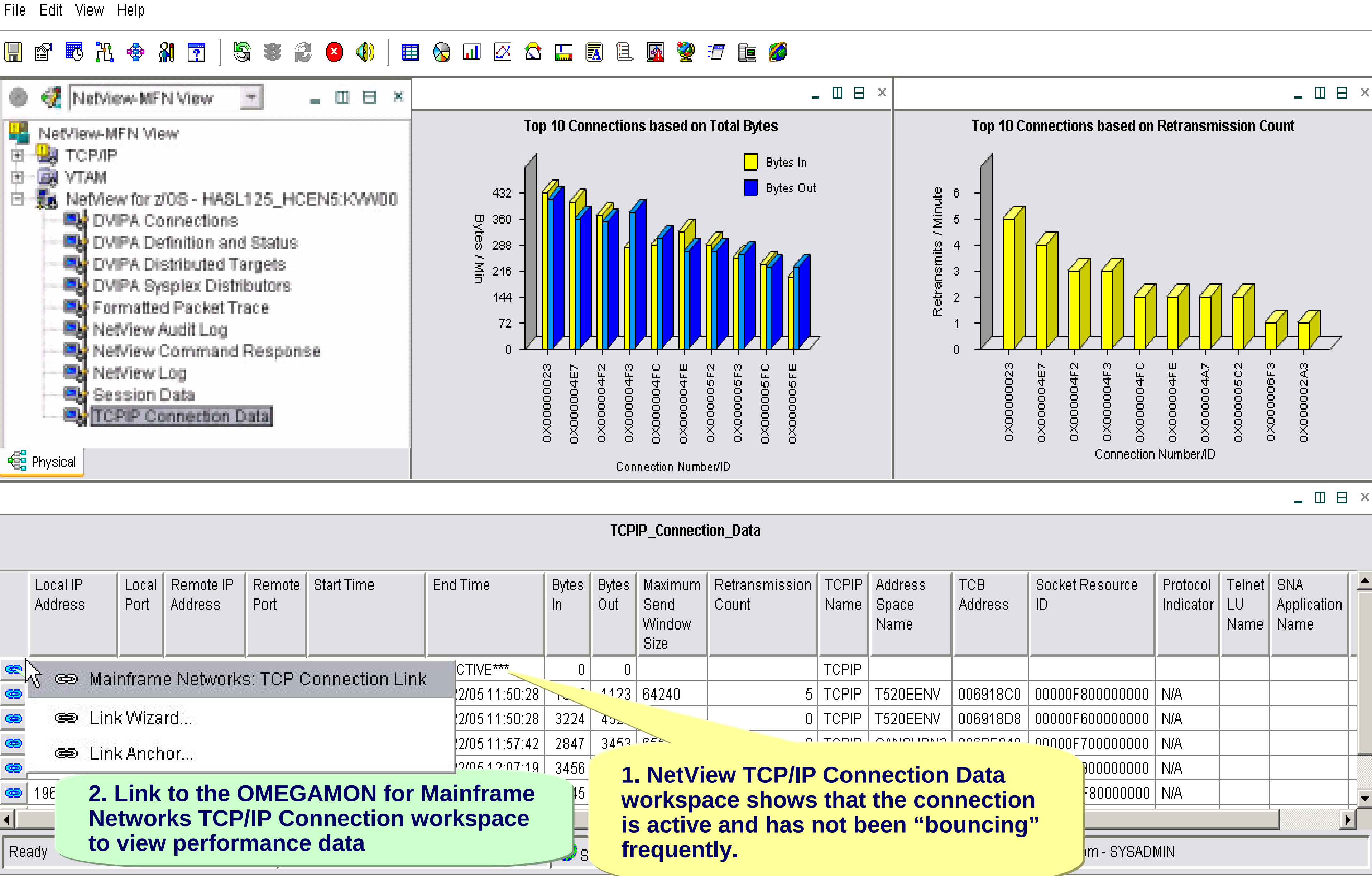
# Scenario 1

## OSA-Express performance problems

## Scenario Background

- The System Programmer gets notified by the Operator that a user is having response time problems accessing a z/OS Telnet applications.

# NetView TCP/IP Connection Data Workspace


File Edit View Help
NetView-MFN View
NetView-MFN View
TCP/IP
VTAM
NetView for z/OS - HASL125_HCEN5:KVW00
DVIPA Connections
DVIPA Definition and Status
DVIPA Distributed Targets
DVIPA Sysplex Distributors
Formatted Packet Trace
NetView Audit Log
NetView Command Response
NetView Log
Session Data
TCPIP Connection Data
Physical
Top 10 Connections based on Total Bytes
Bytes In
Bytes Out
Bytes / Min
432
360
288
216
144
72
0
0X00000023
0X000004E7
0X000004F2
0X000004F3
0X000004FC
0X000004FE
0X000005F2
0X000005F3
0X000005FC
0X000005FE
Connection Number/ID
Top 10 Connections based on Retransmission Count
Retransmits / Minute
6
5
4
3
2
1
0
0X00000023
0X000004E7
0X000004F2
0X000004F3
0X000004FC
0X000004FE
0X00000447
0X000005C2
0X000006F3
0X00000243
Connection Number/ID
Mainframe Networks: TCP Connection Link
Link Wizard...
Link Anchor...
Ready
m - SYSADMIN

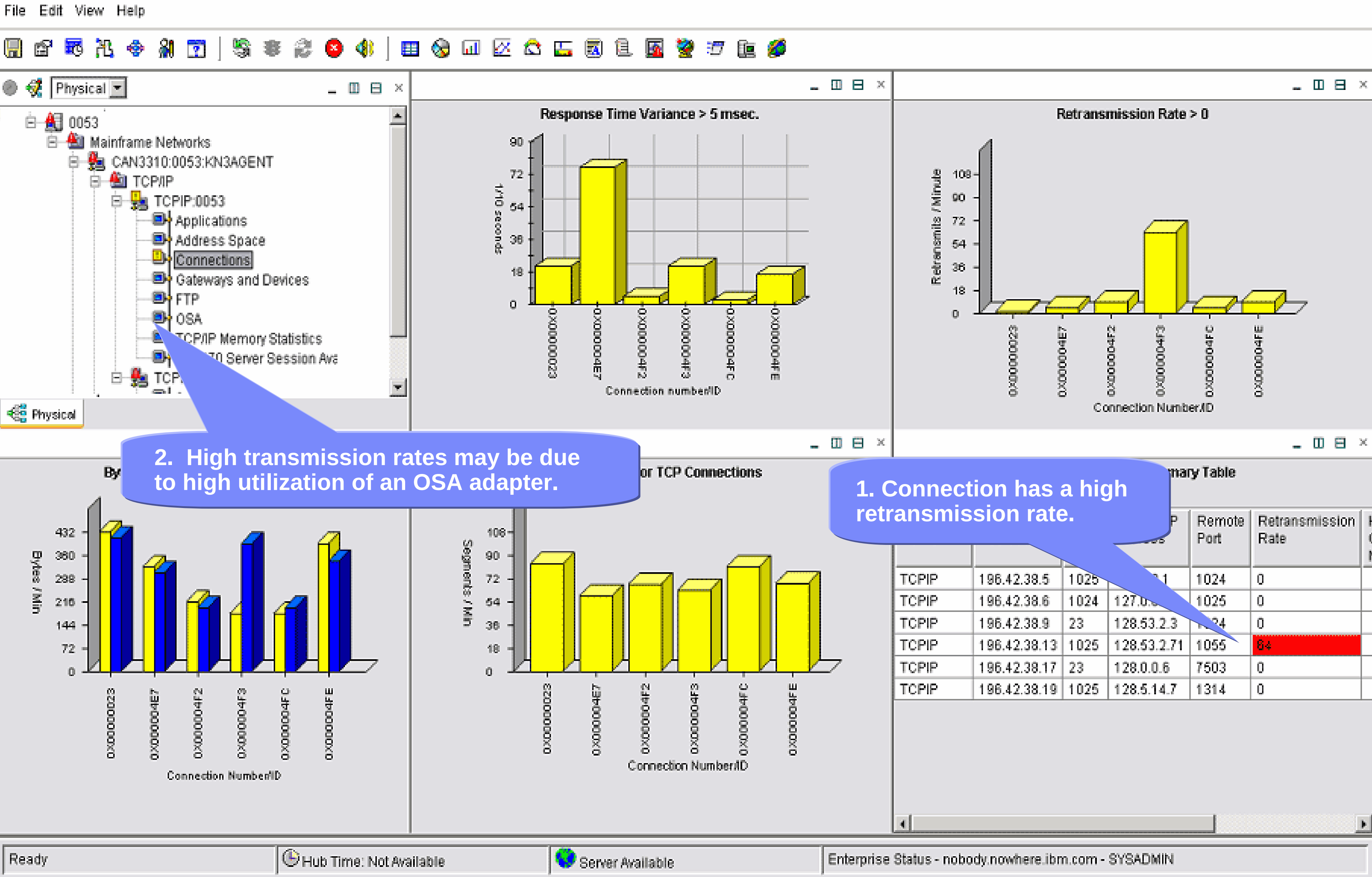
TCPIP_Connection_Data

| Local IP Address | Local Port | Remote IP Address | Remote Port | Start Time | End Time | Bytes In | Bytes Out | Maximum Send Window Size | Retransmission Count | TCPIP Name | Address Space Name | TCB Address | Socket Resource ID | Protocol Indicator | Telnet LU Name | SNA Application Name |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CTIVE*** | 0 | 0 | | | TCPIP | | | | | | |
| | | | | | 2/05 11:50:28 | | 1123 | 64240 | 5 | TCPIP | T520EENV | 006918C0 | 00000F800000000 | N/A | | |
| | | | | | 2/05 11:50:28 | 3224 | | | 0 | TCPIP | T520EENV | 006918D8 | 00000F600000000 | N/A | | |
| | | | | | 2/05 11:57:42 | 2847 | 3453 | | | | | | 00000F700000000 | N/A | | |
| | | | | | | 3456 | | | | | | | 00000000 | N/A | | |
| 196 | | | | | | | | | | | | | F80000000 | N/A | | |

**1. NetView TCP/IP Connection Data workspace shows that the connection is active and has not been “bouncing” frequently.**

**2. Link to the OMEGAMON for Mainframe Networks TCP/IP Connection workspace to view performance data**

# OMEGAMON TCP/IP Connection Data Workspace

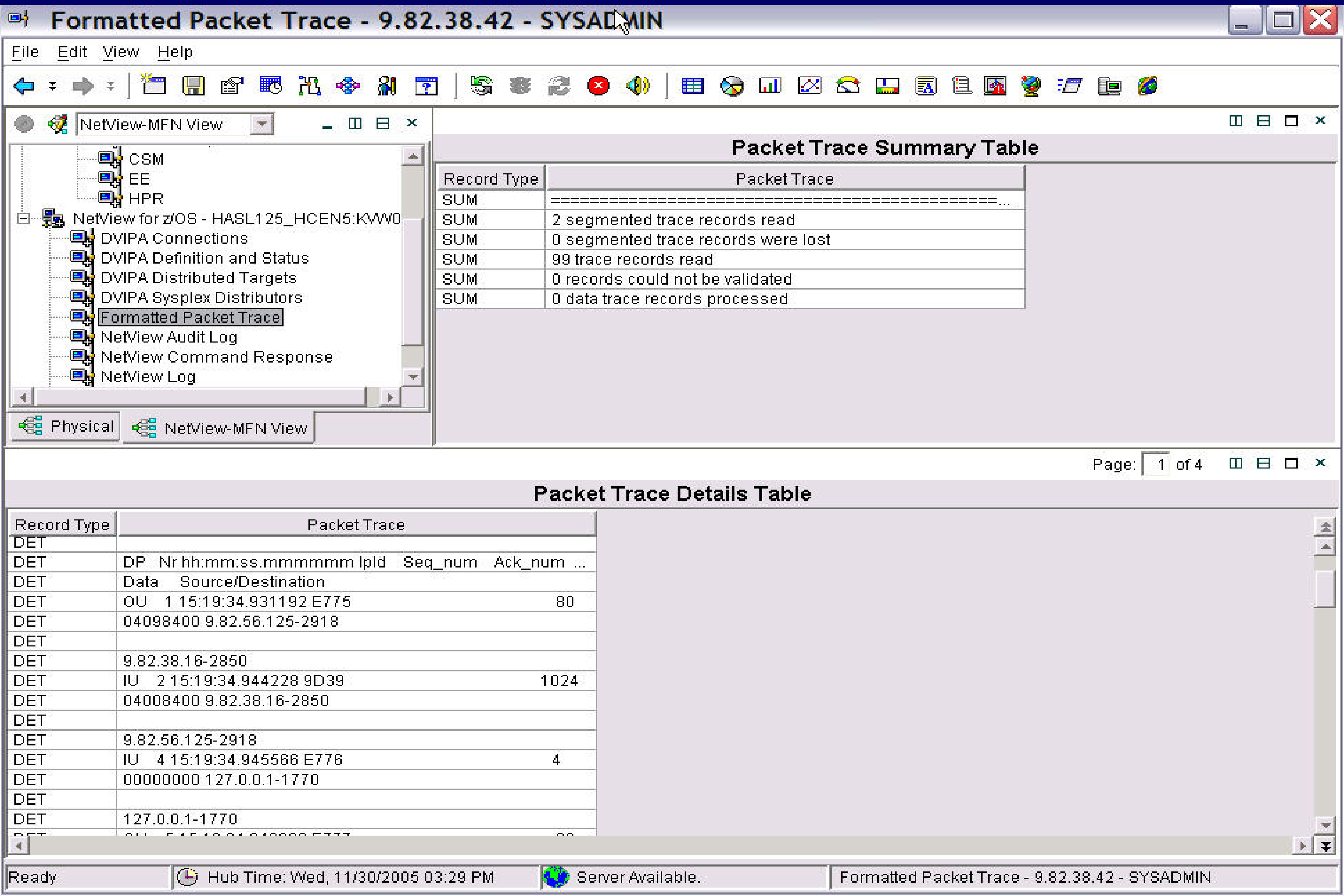

File Edit View Help
Physical
0053
Mainframe Networks
CAN3310:0053:KN3AGENT
TCP/IP
TCPIP:0053
Applications
Address Space
Connections
Gateways and Devices
FTP
OSA
TCP/IP Memory Statistics
…70 Server Session Ava
TCP…
Physical
Response Time Variance > 5 msec.
1/10 seconds
0
18
36
54
72
90
0X00000023
0X000004E7
0X000004F2
0X000004F3
0X000004FC
0X000004FE
Connection number/ID
Retransmission Rate > 0
Retransmits / Minute
0
18
36
54
72
90
108
0X00000023
0X000004E7
0X000004F2
0X000004F3
0X000004FC
0X000004FE
Connection Number/ID
By…
Bytes / Min
0
72
144
216
288
360
432
0X00000023
0X000004E7
0X000004F2
0X000004F3
0X000004FC
0X000004FE
Connection Number/ID
…or TCP Connections
Segments / Min
0
18
36
54
72
90
108
0X00000023
0X000004E7
0X000004F2
0X000004F3
0X000004FC
0X000004FE
Connection Number/ID
…mary Table
Ready
Hub Time: Not Available
Server Available
Enterprise Status - nobody.nowhere.ibm.com - SYSADMIN

|  |  |  | …P<br>…ess | Remote Port | Retransmission Rate |
|---|---|---|---|---|---|
| TCPIP | 196.42.38.5 | 1025 | …1 | 1024 | 0 |
| TCPIP | 196.42.38.6 | 1024 | 127.0.… | 1025 | 0 |
| TCPIP | 196.42.38.9 | 23 | 128.53.2.3 | …24 | 0 |
| TCPIP | 196.42.38.13 | 1025 | 128.53.2.71 | 1055 | 64 |
| TCPIP | 196.42.38.17 | 23 | 128.0.0.6 | 7503 | 0 |
| TCPIP | 196.42.38.19 | 1025 | 128.5.14.7 | 1314 | 0 |

**2. High transmission rates may be due to high utilization of an OSA adapter.**

**1. Connection has a high retransmission rate.**

# NetView Formatted TCP/IP Packet Trace



Formatted Packet Trace - 9.82.38.42 - SYSADMIN

- CSM
- EE
- HPR
- NetView for z/OS - HASL125_HCEN5:KWW0
  - DVIPA Connections
  - DVIPA Definition and Status
  - DVIPA Distributed Targets
  - DVIPA Sysplex Distributors
  - Formatted Packet Trace
  - NetView Audit Log
  - NetView Command Response
  - NetView Log

**Packet Trace Summary Table**

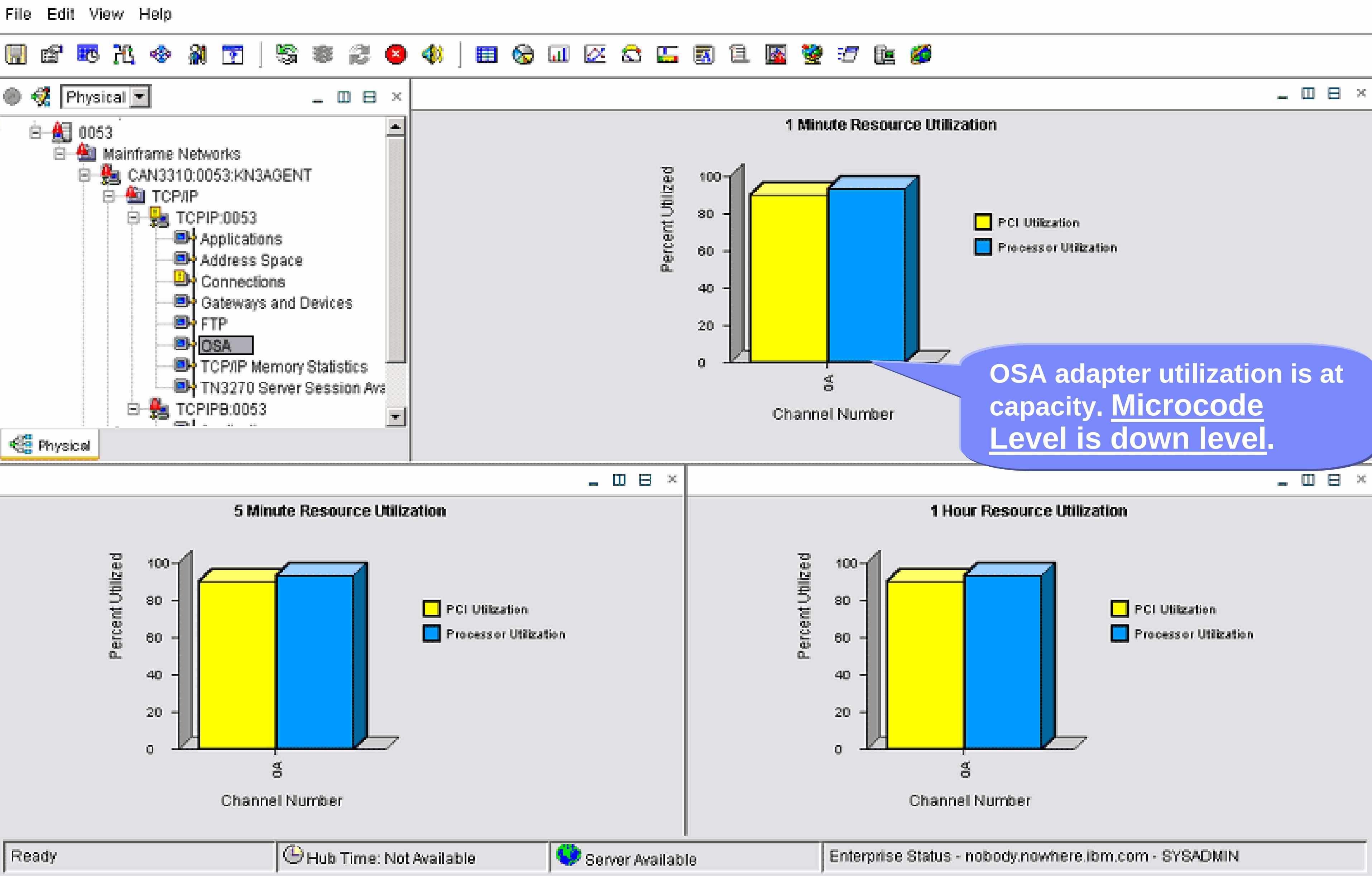
| Record Type | Packet Trace |
|---|---|
| SUM | ==========================================... |
| SUM | 2 segmented trace records read |
| SUM | 0 segmented trace records were lost |
| SUM | 99 trace records read |
| SUM | 0 records could not be validated |
| SUM | 0 data trace records processed |

**Packet Trace Details Table**

| Record Type | Packet Trace |
|---|---|
| DET | |
| DET | DP Nr hh:mm:ss.mmmmmm IpId Seq_num Ack_num ... |
| DET | Data Source/Destination |
| DET | OU 1 15:19:34.931192 E775 80 |
| DET | 04098400 9.82.56.125-2918 |
| DET | |
| DET | 9.82.38.16-2850 |
| DET | IU 2 15:19:34.944228 9D39 1024 |
| DET | 04008400 9.82.38.16-2850 |
| DET | |
| DET | 9.82.56.125-2918 |
| DET | IU 4 15:19:34.945566 E776 4 |
| DET | 00000000 127.0.0.1-1770 |
| DET | |
| DET | 127.0.0.1-1770 |

Ready | Hub Time: Wed, 11/30/2005 03:29 PM | Server Available. | Formatted Packet Trace - 9.82.38.42 - SYSADMIN

# OMEGAMON OSA Channel Workspace


File Edit View Help
Physical
0053
Mainframe Networks
CAN3310:0053:KN3AGENT
TCP/IP
TCPIP:0053
Applications
Address Space
Connections
Gateways and Devices
FTP
OSA
TCP/IP Memory Statistics
TN3270 Server Session Avg
TCPIPB:0053
Physical
1 Minute Resource Utilization
5 Minute Resource Utilization
1 Hour Resource Utilization
Percent Utilized
100
80
60
40
20
0
0A
Channel Number
PCI Utilization
Processor Utilization

Ready

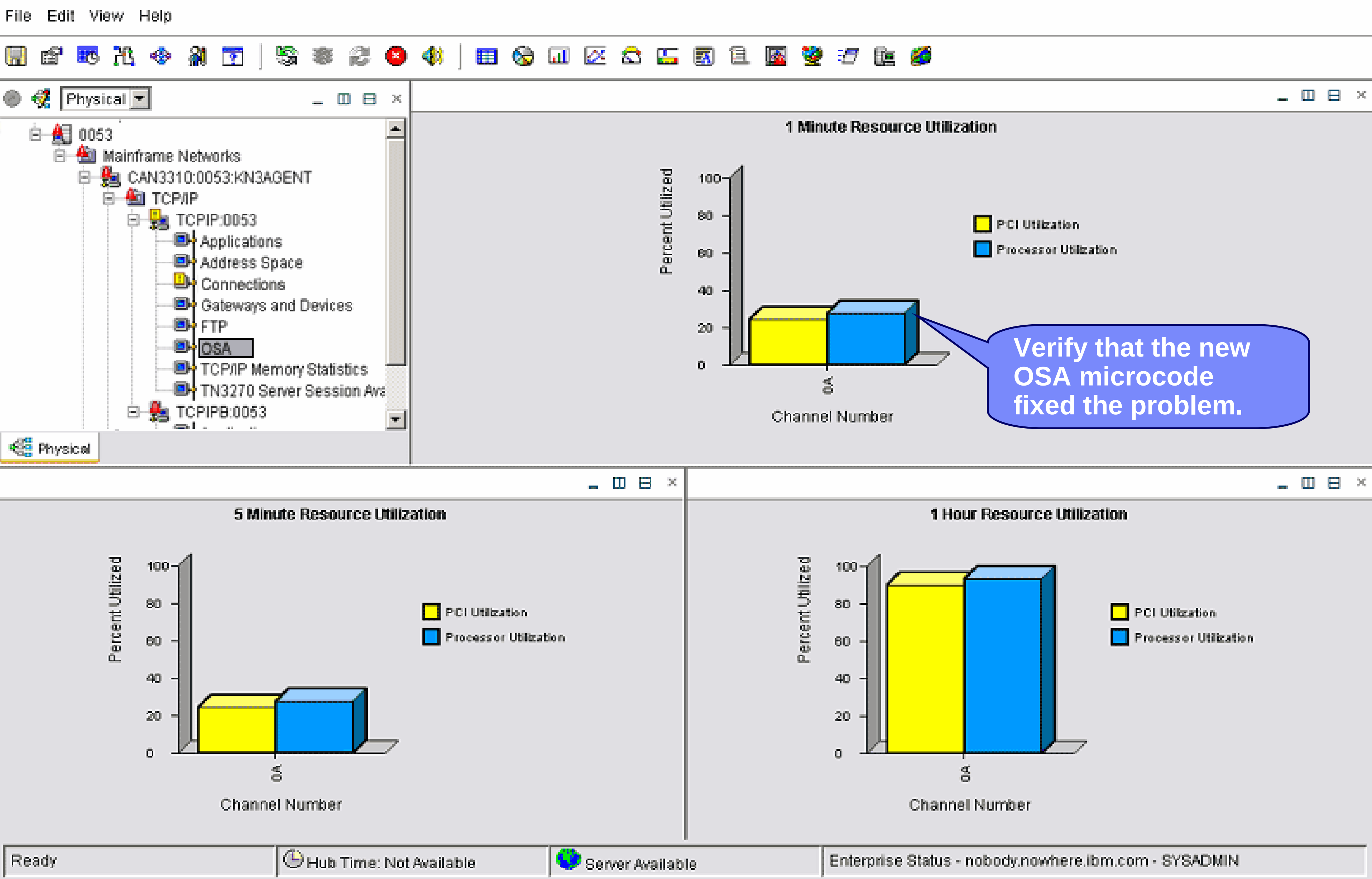
Hub Time: Not Available

Server Available

Enterprise Status - nobody.nowhere.ibm.com - SYSADMIN

OSA adapter utilization is at capacity. Microcode Level is down level.

# OMEGAMON OSA Channel Workspace


File
Edit
View
Help
Physical
0053
Mainframe Networks
CAN3310:0053:KN3AGENT
TCP/IP
TCPIP:0053
Applications
Address Space
Connections
Gateways and Devices
FTP
OSA
TCP/IP Memory Statistics
TN3270 Server Session Ava
TCPIPB:0053
Physical
1 Minute Resource Utilization
Percent Utilized
100
80
60
40
20
0
0A
Channel Number
PCI Utilization
Processor Utilization
5 Minute Resource Utilization
1 Hour Resource Utilization

Verify that the new OSA microcode fixed the problem.

Ready

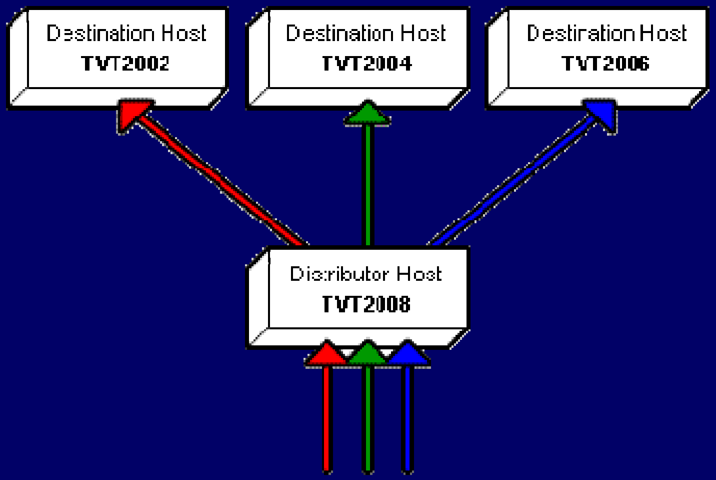
Hub Time: Not Available

Server Available

Enterprise Status - nobody.nowhere.ibm.com - SYSADMIN

# Scenario 2

## DVIPA Workload by Destination Hosts

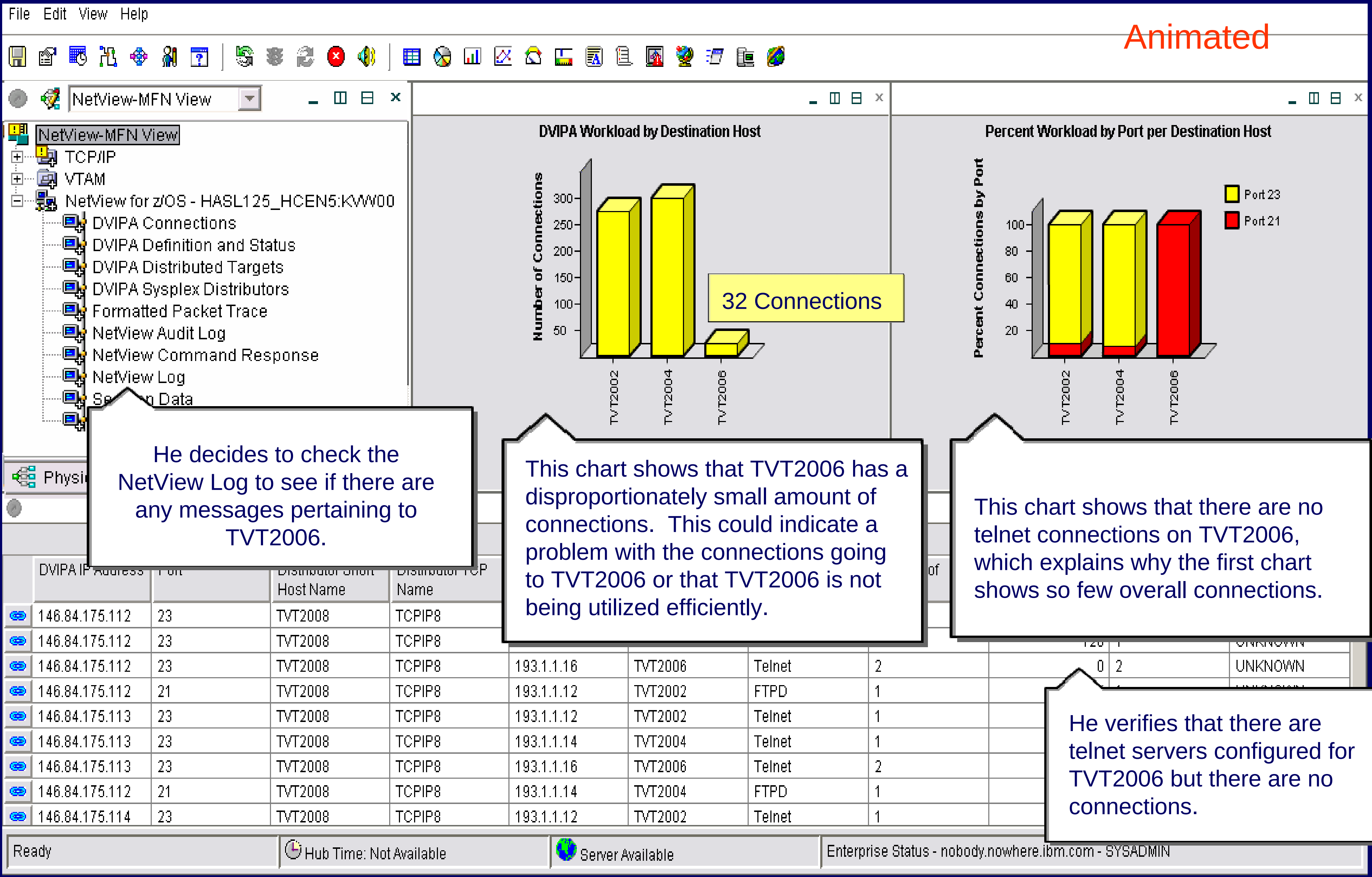

Destination Host
TVT2002
Destination Host
TVT2004
Destination Host
TVT2006
Distributor Host
TVT2008

## Scenario Background

- The System Programmer gets notified by the Operator that a user is having response time problems accessing a z/OS Telnet applications.
- The System Programmer views the DVIPA Distributed Targets Workspace to investigate the workload distribution of the telnet connections across the DVIPA telnet targets.

# DVIPA Distributed Targets Workspace

Animated


File Edit View Help
NetView-MFN View
NetView-MFN View
TCP/IP
VTAM
NetView for z/OS - HASL125_HCEN5:KVW00
DVIPA Connections
DVIPA Definition and Status
DVIPA Distributed Targets
DVIPA Sysplex Distributors
Formatted Packet Trace
NetView Audit Log
NetView Command Response
NetView Log
Data
Physi
DVIPA Workload by Destination Host
Number of Connections
300
250
200
150
100
50
TVT2002
TVT2004
TVT2006
32 Connections
Percent Workload by Port per Destination Host
Percent Connections by Port
100
80
60
40
20
TVT2002
TVT2004
TVT2006
Port 23
Port 21

He decides to check the NetView Log to see if there are any messages pertaining to TVT2006.

This chart shows that TVT2006 has a disproportionately small amount of connections. This could indicate a problem with the connections going to TVT2006 or that TVT2006 is not being utilized efficiently.

This chart shows that there are no telnet connections on TVT2006, which explains why the first chart shows so few overall connections.

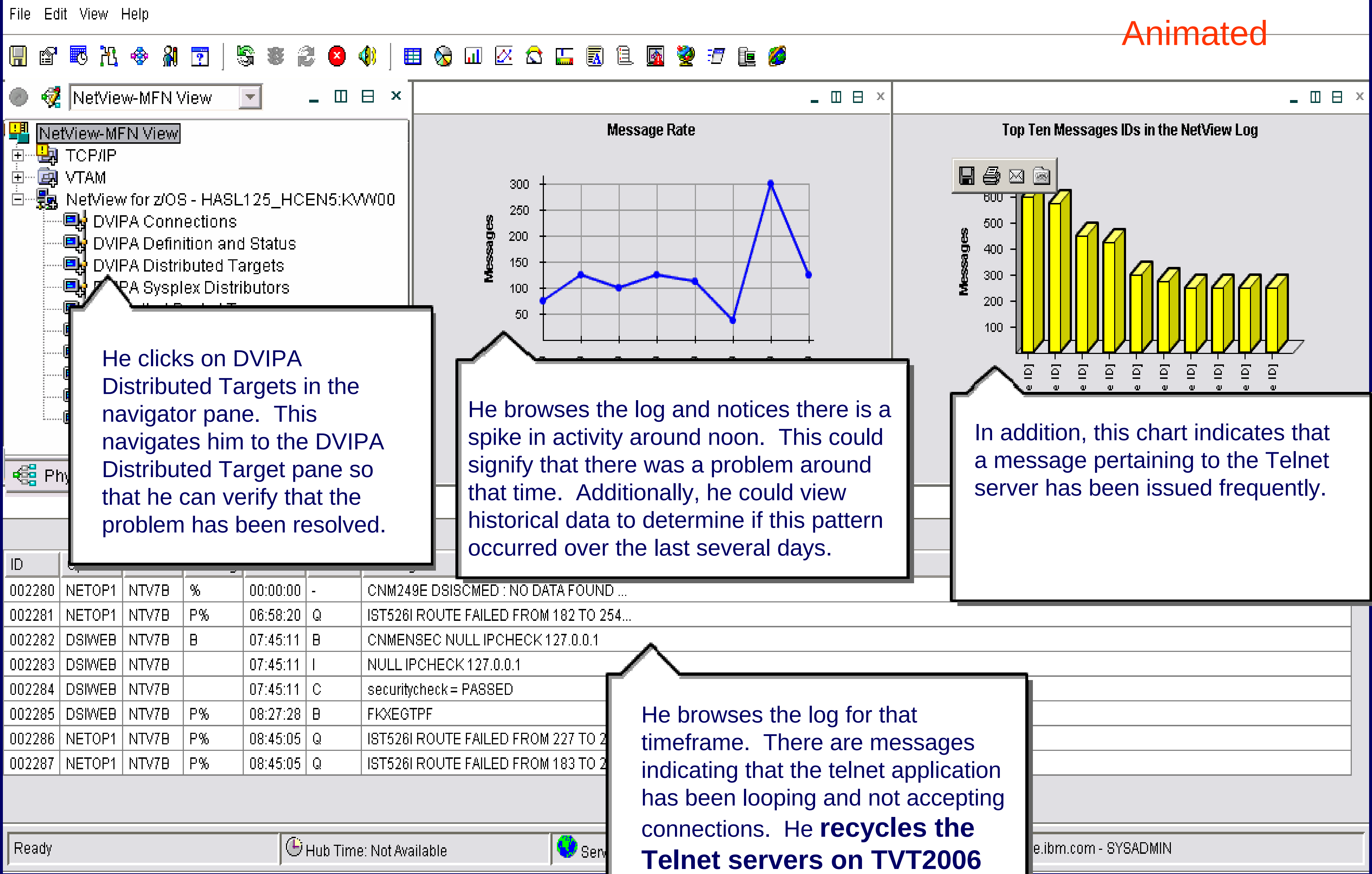
| | DVIPA IP Address | Port | Distributor Short Host Name | Distributor TCP Name | | | | of | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 146.84.175.112 | 23 | TVT2008 | TCPIP8 | | | | | | | |
| | 146.84.175.112 | 23 | TVT2008 | TCPIP8 | | | | | | | |
| | 146.84.175.112 | 23 | TVT2008 | TCPIP8 | 193.1.1.16 | TVT2006 | Telnet | 2 | 0 | 2 | UNKNOWN |
| | 146.84.175.112 | 21 | TVT2008 | TCPIP8 | 193.1.1.12 | TVT2002 | FTPD | 1 | | | |
| | 146.84.175.113 | 23 | TVT2008 | TCPIP8 | 193.1.1.12 | TVT2002 | Telnet | 1 | | | |
| | 146.84.175.113 | 23 | TVT2008 | TCPIP8 | 193.1.1.14 | TVT2004 | Telnet | 1 | | | |
| | 146.84.175.113 | 23 | TVT2008 | TCPIP8 | 193.1.1.16 | TVT2006 | Telnet | 2 | | | |
| | 146.84.175.112 | 21 | TVT2008 | TCPIP8 | 193.1.1.14 | TVT2004 | FTPD | 1 | | | |
| | 146.84.175.114 | 23 | TVT2008 | TCPIP8 | 193.1.1.12 | TVT2002 | Telnet | 1 | | | |

He verifies that there are telnet servers configured for TVT2006 but there are no connections.

Ready | Hub Time: Not Available | Server Available | Enterprise Status - nobody.nowhere.ibm.com - SYSADMIN

# NetView Log Workspace

Animated



File Edit View Help
NetView-MFN View
TCP/IP
VTAM
NetView for z/OS - HASL125_HCEN5:KWW00
DVIPA Connections
DVIPA Definition and Status
DVIPA Distributed Targets
DVIPA Sysplex Distributors
Phy
Message Rate
Messages
300
250
200
150
100
50
Top Ten Messages IDs in the NetView Log
Messages
600
500
400
300
200
100

| ID | | | | | | |
|---|---|---|---|---|---|---|
| 002280 | NETOP1 | NTV7B | % | 00:00:00 | - | CNM249E DSISCMED : NO DATA FOUND ... |
| 002281 | NETOP1 | NTV7B | P% | 06:58:20 | Q | IST526I ROUTE FAILED FROM 182 TO 254... |
| 002282 | DSIWEB | NTV7B | B | 07:45:11 | B | CNMENSEC NULL IPCHECK 127.0.0.1 |
| 002283 | DSIWEB | NTV7B | | 07:45:11 | I | NULL IPCHECK 127.0.0.1 |
| 002284 | DSIWEB | NTV7B | | 07:45:11 | C | securitycheck = PASSED |
| 002285 | DSIWEB | NTV7B | P% | 08:27:28 | B | FKXEGTPF |
| 002286 | NETOP1 | NTV7B | P% | 08:45:05 | Q | IST526I ROUTE FAILED FROM 227 TO 2 |
| 002287 | NETOP1 | NTV7B | P% | 08:45:05 | Q | IST526I ROUTE FAILED FROM 183 TO 2 |

Ready | Hub Time: Not Available | Serv | e.ibm.com - SYSADMIN

He clicks on DVIPA Distributed Targets in the navigator pane. This navigates him to the DVIPA Distributed Target pane so that he can verify that the problem has been resolved.

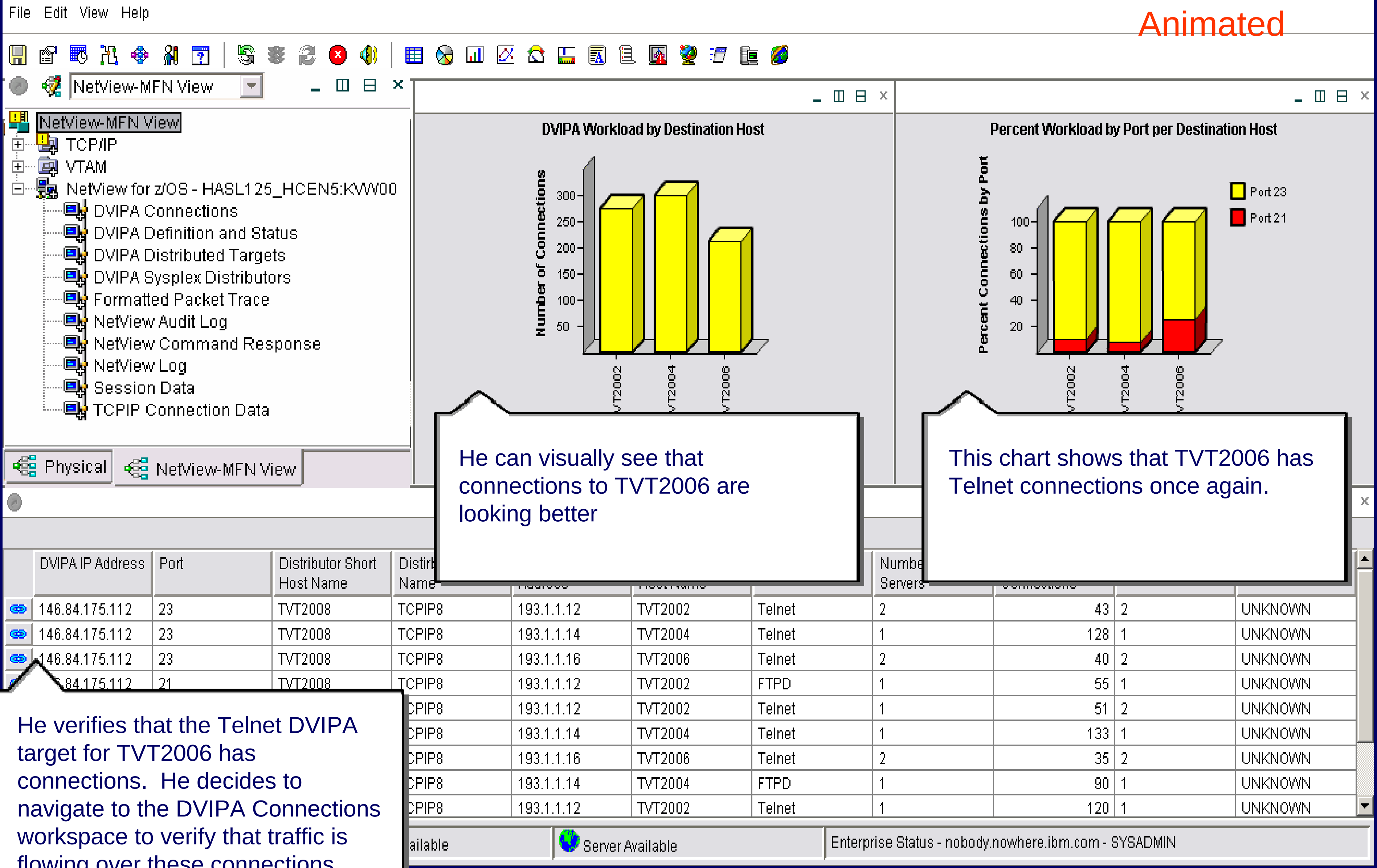
He browses the log and notices there is a spike in activity around noon. This could signify that there was a problem around that time. Additionally, he could view historical data to determine if this pattern occurred over the last several days.

In addition, this chart indicates that a message pertaining to the Telnet server has been issued frequently.

He browses the log for that timeframe. There are messages indicating that the telnet application has been looping and not accepting connections. He **recycles the Telnet servers on TVT2006**

# DVIPA Distributed Targets Workspace

Animated


File
Edit
View
Help
NetView-MFN View
TCP/IP
VTAM
NetView for z/OS - HASL125_HCEN5:KVW00
DVIPA Connections
DVIPA Definition and Status
DVIPA Distributed Targets
DVIPA Sysplex Distributors
Formatted Packet Trace
NetView Audit Log
NetView Command Response
NetView Log
Session Data
TCPIP Connection Data
Physical
NetView-MFN View
DVIPA Workload by Destination Host
Number of Connections
300
250
200
150
100
50
VT2002
VT2004
VT2006
Percent Workload by Port per Destination Host
Percent Connections by Port
100
80
60
40
20
Port 23
Port 21
VT2002
VT2004
VT2006
ailable
Server Available
Enterprise Status - nobody.nowhere.ibm.com - SYSADMIN

| | DVIPA IP Address | Port | Distributor Short Host Name | Distri Name | | | | Numbe Servers | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 146.84.175.112 | 23 | TVT2008 | TCPIP8 | 193.1.1.12 | TVT2002 | Telnet | 2 | 43 | 2 | UNKNOWN |
| | 146.84.175.112 | 23 | TVT2008 | TCPIP8 | 193.1.1.14 | TVT2004 | Telnet | 1 | 128 | 1 | UNKNOWN |
| | 146.84.175.112 | 23 | TVT2008 | TCPIP8 | 193.1.1.16 | TVT2006 | Telnet | 2 | 40 | 2 | UNKNOWN |
| | 84.175.112 | 21 | TVT2008 | TCPIP8 | 193.1.1.12 | TVT2002 | FTPD | 1 | 55 | 1 | UNKNOWN |
| | | | | CPIP8 | 193.1.1.12 | TVT2002 | Telnet | 1 | 51 | 2 | UNKNOWN |
| | | | | CPIP8 | 193.1.1.14 | TVT2004 | Telnet | 1 | 133 | 1 | UNKNOWN |
| | | | | CPIP8 | 193.1.1.16 | TVT2006 | Telnet | 2 | 35 | 2 | UNKNOWN |
| | | | | CPIP8 | 193.1.1.14 | TVT2004 | FTPD | 1 | 90 | 1 | UNKNOWN |
| | | | | CPIP8 | 193.1.1.12 | TVT2002 | Telnet | 1 | 120 | 1 | UNKNOWN |

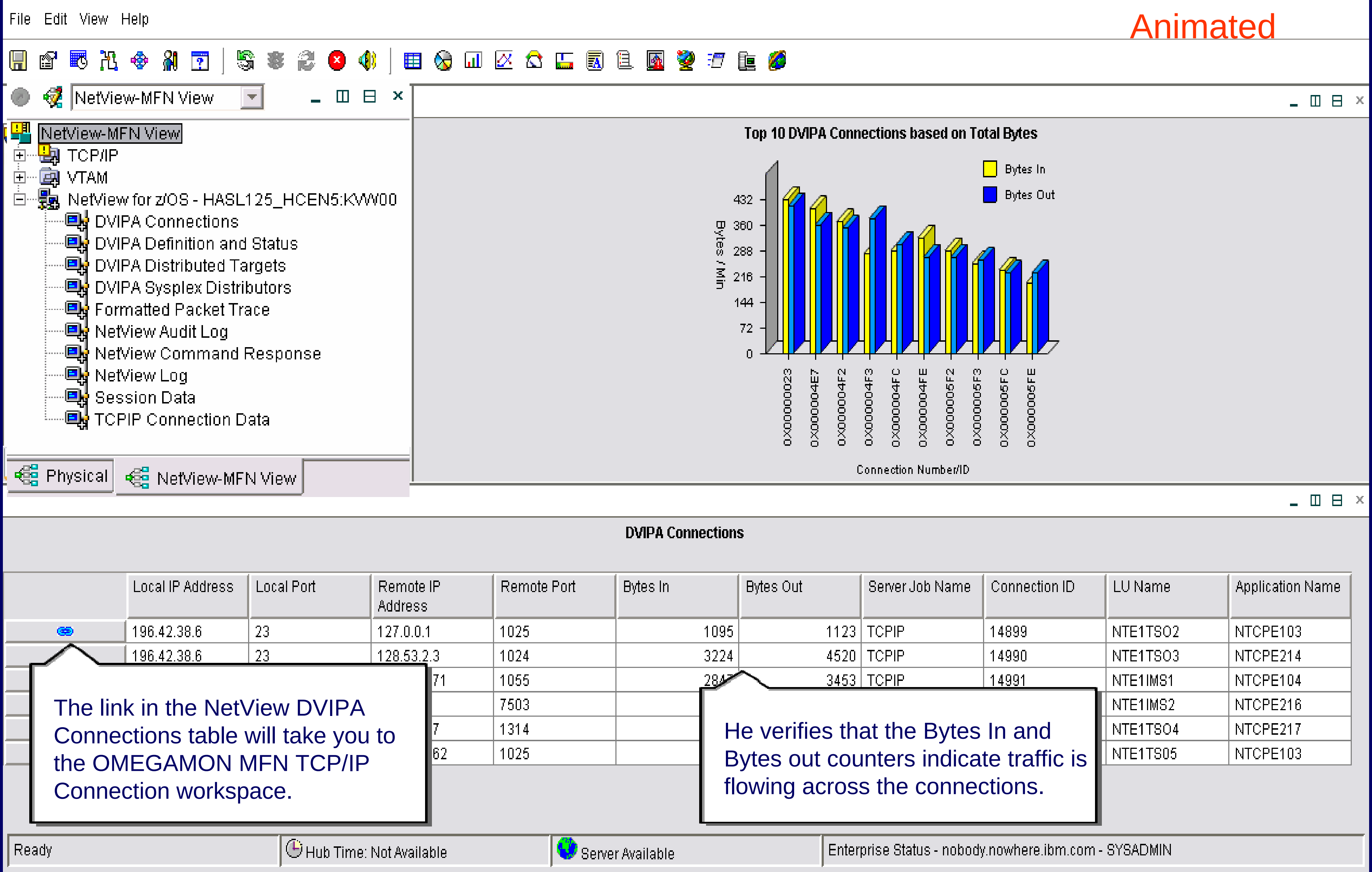
He can visually see that connections to TVT2006 are looking better

This chart shows that TVT2006 has Telnet connections once again.

He verifies that the Telnet DVIPA target for TVT2006 has connections. He decides to navigate to the DVIPA Connections workspace to verify that traffic is flowing over these connections.

# DVIPA Connections Workspace

Animated


File Edit View Help
NetView-MFN View
Physical
NetView-MFN View
Top 10 DVIPA Connections based on Total Bytes
Bytes In
Bytes Out
Bytes / Min
432
360
288
216
144
72
0
0X00000023
0X000004E7
0X000004F2
0X000004F3
0X000004FC
0X000004FE
0X000005F2
0X000005F3
0X000005FC
0X000005FE
Connection Number/ID
Ready
Hub Time: Not Available
Server Available
Enterprise Status - nobody.nowhere.ibm.com - SYSADMIN

- NetView-MFN View
  - TCP/IP
  - VTAM
  - NetView for z/OS - HASL125_HCEN5:KVW00
    - DVIPA Connections
    - DVIPA Definition and Status
    - DVIPA Distributed Targets
    - DVIPA Sysplex Distributors
    - Formatted Packet Trace
    - NetView Audit Log
    - NetView Command Response
    - NetView Log
    - Session Data
    - TCPIP Connection Data

**DVIPA Connections**

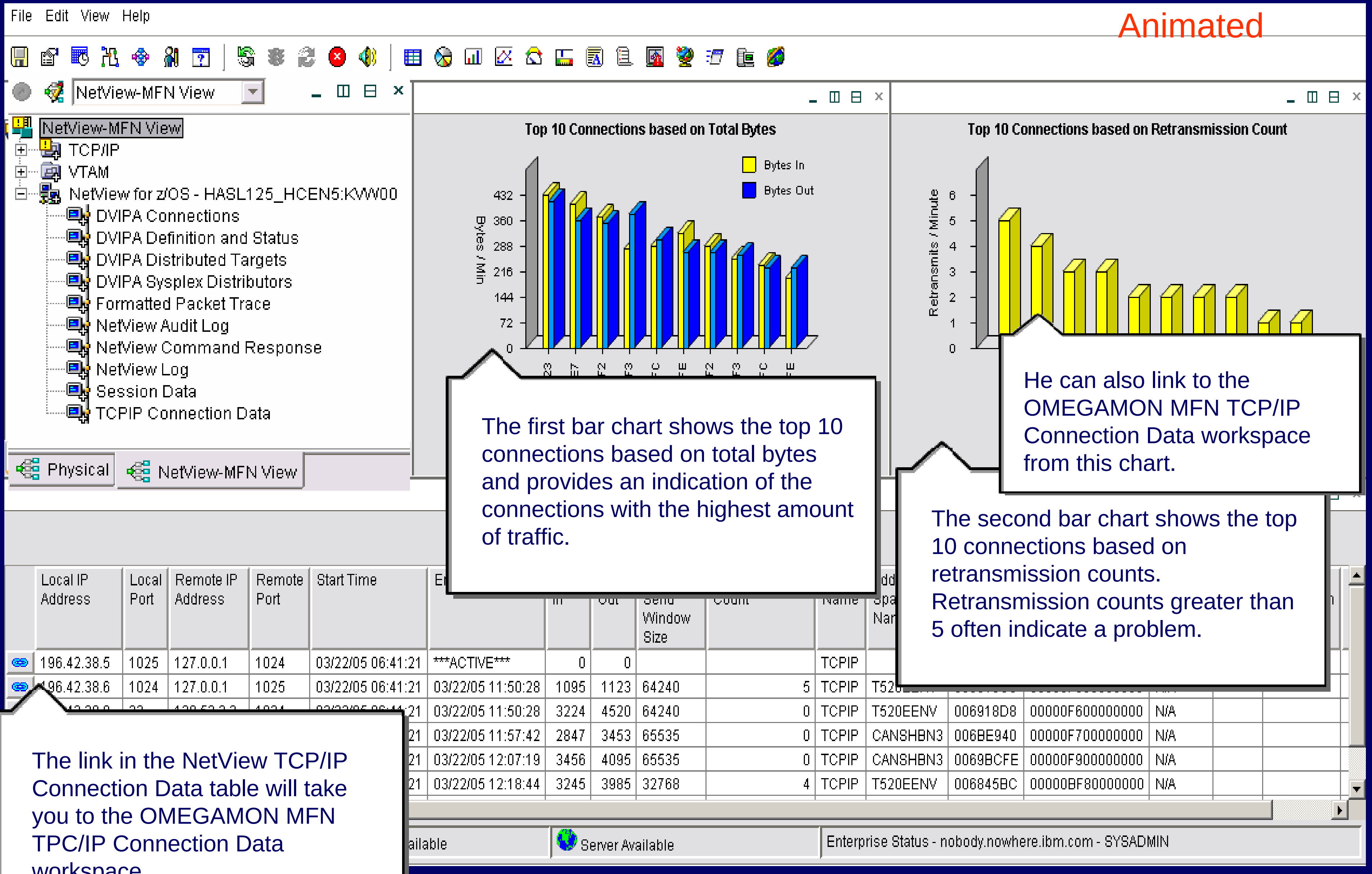
| | Local IP Address | Local Port | Remote IP Address | Remote Port | Bytes In | Bytes Out | Server Job Name | Connection ID | LU Name | Application Name |
|---|---|---|---|---|---|---|---|---|---|---|
| 🔗 | 196.42.38.6 | 23 | 127.0.0.1 | 1025 | 1095 | 1123 | TCPIP | 14899 | NTE1TSO2 | NTCPE103 |
| | 196.42.38.6 | 23 | 128.53.2.3 | 1024 | 3224 | 4520 | TCPIP | 14990 | NTE1TSO3 | NTCPE214 |
| | | | 71 | 1055 | 284 | 3453 | TCPIP | 14991 | NTE1IMS1 | NTCPE104 |
| | | | | 7503 | | | | | NTE1IMS2 | NTCPE216 |
| | | | 7 | 1314 | | | | | NTE1TSO4 | NTCPE217 |
| | | | 62 | 1025 | | | | | NTE1TSO5 | NTCPE103 |

The link in the NetView DVIPA Connections table will take you to the OMEGAMON MFN TCP/IP Connection workspace.

He verifies that the Bytes In and Bytes out counters indicate traffic is flowing across the connections.

# TCP/IP Connection Data Workspace

Animated


File Edit View Help
NetView-MFN View
NetView-MFN View
TCP/IP
VTAM
NetView for z/OS - HASL125_HCEN5:KVW00
DVIPA Connections
DVIPA Definition and Status
DVIPA Distributed Targets
DVIPA Sysplex Distributors
Formatted Packet Trace
NetView Audit Log
NetView Command Response
NetView Log
Session Data
TCPIP Connection Data
Physical
NetView-MFN View
Top 10 Connections based on Total Bytes
Bytes In
Bytes Out
Bytes / Min
0
72
144
216
288
360
432
23
E7
F2
F3
FC
FE
F2
F3
FC
FE
Top 10 Connections based on Retransmission Count
Retransmits / Minute
0
1
2
3
4
5
6
ailable
Server Available
Enterprise Status - nobody.nowhere.ibm.com - SYSADMIN

| | Local IP Address | Local Port | Remote IP Address | Remote Port | Start Time | Er | In | Out | Send Window Size | Count | Name | dd Spa Nar | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 196.42.38.5 | 1025 | 127.0.0.1 | 1024 | 03/22/05 06:41:21 | ***ACTIVE*** | 0 | 0 | | | TCPIP | | | | |
| | 96.42.38.6 | 1024 | 127.0.0.1 | 1025 | 03/22/05 06:41:21 | 03/22/05 11:50:28 | 1095 | 1123 | 64240 | 5 | TCPIP | T52 | | | |
| | | | | | 21 | 03/22/05 11:50:28 | 3224 | 4520 | 64240 | 0 | TCPIP | T520EENV | 006918D8 | 00000F600000000 | N/A |
| | | | | | 21 | 03/22/05 11:57:42 | 2847 | 3453 | 65535 | 0 | TCPIP | CANSHBN3 | 006BE940 | 00000F700000000 | N/A |
| | | | | | 21 | 03/22/05 12:07:19 | 3456 | 4095 | 65535 | 0 | TCPIP | CANSHBN3 | 0069BCFE | 00000F900000000 | N/A |
| | | | | | 21 | 03/22/05 12:18:44 | 3245 | 3985 | 32768 | 4 | TCPIP | T520EENV | 006845BC | 00000BF80000000 | N/A |

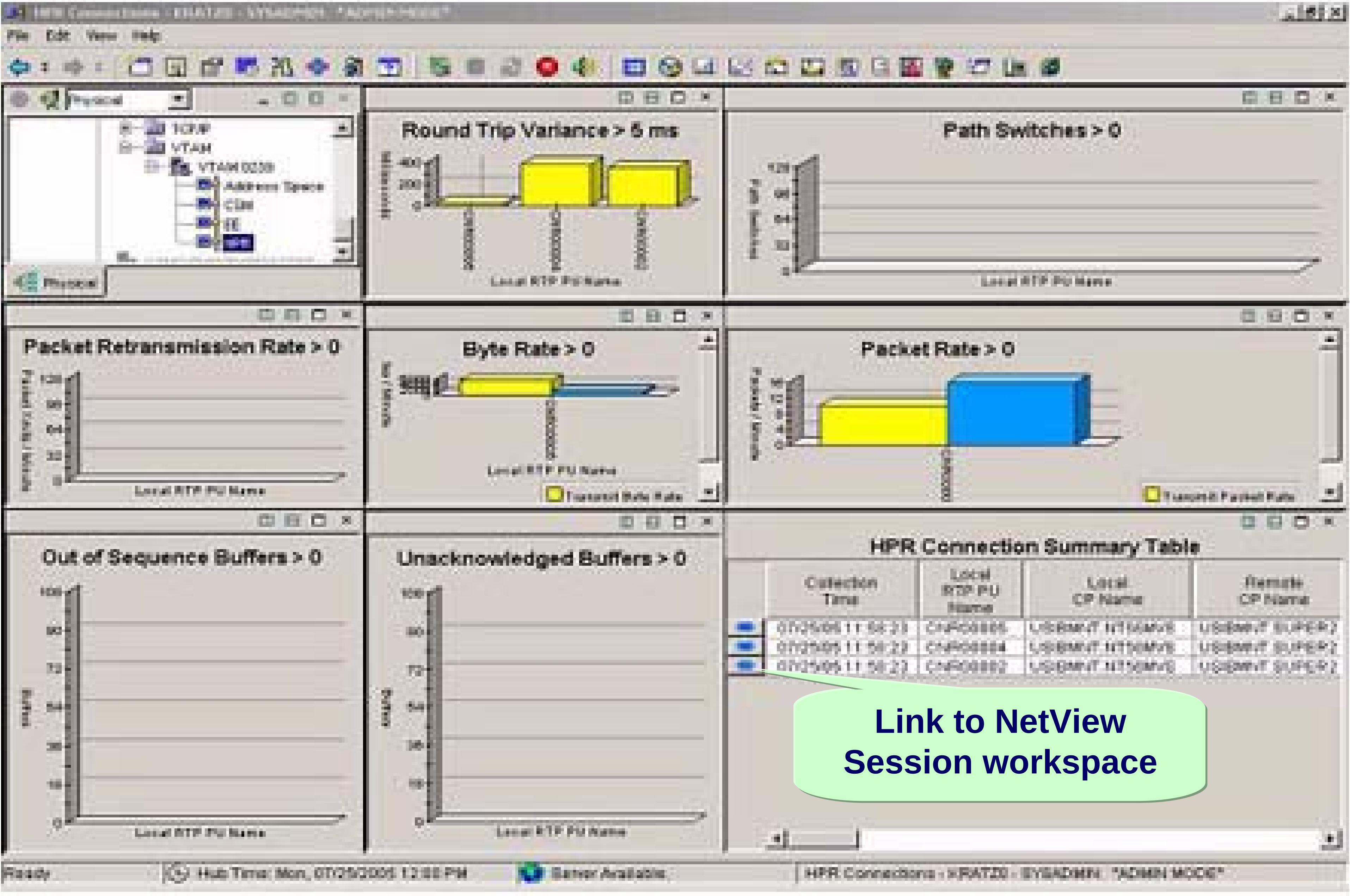
The first bar chart shows the top 10 connections based on total bytes and provides an indication of the connections with the highest amount of traffic.

He can also link to the OMEGAMON MFN TCP/IP Connection Data workspace from this chart.

The second bar chart shows the top 10 connections based on retransmission counts. Retransmission counts greater than 5 often indicate a problem.

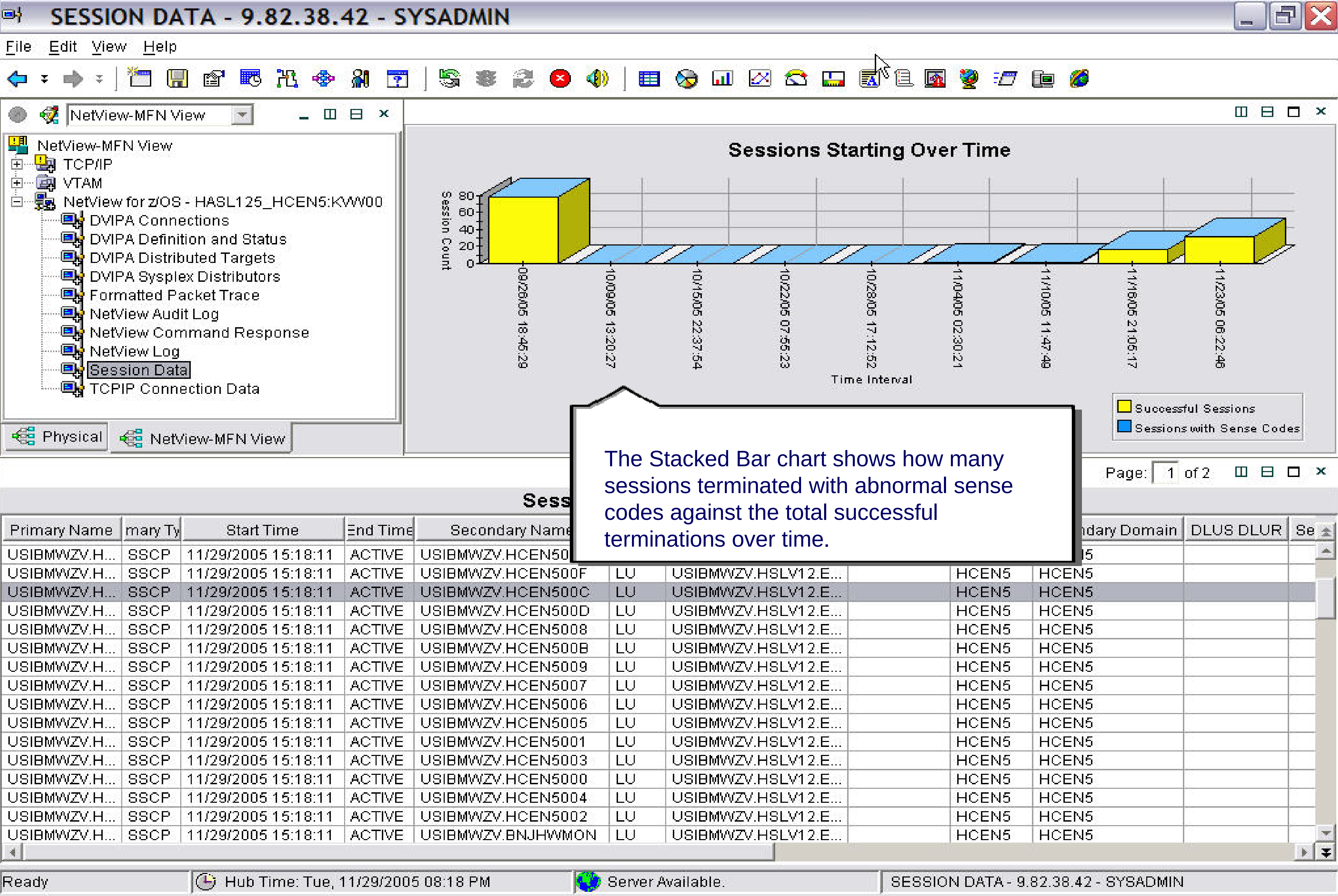
The link in the NetView TCP/IP Connection Data table will take you to the OMEGAMON MFN TPC/IP Connection Data workspace.

# OMEGAMON HPR WorkSpace


File Edit View Help
Physical
TCP/IP
VTAM
Round Trip Variance > 5 ms
Local RTP PU Name
Path Switches > 0
Local RTP PU Name
Packet Retransmission Rate > 0
Local RTP PU Name
Byte Rate > 0
Local RTP PU Name
Packet Rate > 0
Out of Sequence Buffers > 0
Local RTP PU Name
Unacknowledged Buffers > 0
Local RTP PU Name
HPR Connection Summary Table
Collection Time
Local RTP PU Name
Local CP Name
Remote CP Name
Ready
Server Available

**Link to NetView Session workspace**

# Session Data Workspace


SESSION DATA - 9.82.38.42 - SYSADMIN
File Edit View Help
NetView-MFN View
NetView-MFN View
TCP/IP
VTAM
NetView for z/OS - HASL125_HCEN5:KWW00
DVIPA Connections
DVIPA Definition and Status
DVIPA Distributed Targets
DVIPA Sysplex Distributors
Formatted Packet Trace
NetView Audit Log
NetView Command Response
NetView Log
Session Data
TCPIP Connection Data
Physical
NetView-MFN View
Sessions Starting Over Time
Session Count
80
60
40
20
0
09/26/05 18:45:29
10/09/05 13:20:27
10/15/05 22:37:54
10/22/05 07:55:23
10/28/05 17:12:52
11/04/05 02:30:21
11/10/05 11:47:49
11/16/05 21:05:17
11/23/05 06:22:46
Time Interval
Successful Sessions
Sessions with Sense Codes
Page: 1 of 2
Sess

The Stacked Bar chart shows how many sessions terminated with abnormal sense codes against the total successful terminations over time.

| Primary Name | mary Ty | Start Time | End Time | Secondary Name | | | | | ndary Domain | DLUS DLUR | Se |
|---|---|---|---|---|---|---|---|---|---|---|---|
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN50 | | | | | 5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN500F | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN500C | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN500D | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5008 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN500B | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5009 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5007 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5006 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5005 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5001 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5003 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5000 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5004 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.HCEN5002 | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |
| USIBMWZV.H... | SSCP | 11/29/2005 15:18:11 | ACTIVE | USIBMWZV.BNJHWMON | LU | USIBMWZV.HSLV12.E... | | HCEN5 | HCEN5 | | |

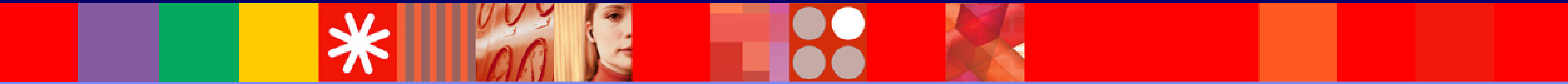
Ready | Hub Time: Tue, 11/29/2005 08:18 PM | Server Available. | SESSION DATA - 9.82.38.42 - SYSADMIN

# NetView for z/OS 5.2 Value Proposition

- Enterprise Interoperability and Integration
  - Share IP availability and performance data between NetView and OMEGAMON for Mainframe Networks
  - Service Desk Integration with leading trouble ticket providers (From NetView, open incident records, etc.)
  - Consolidate Events through Common Event Infrastructure for display and automation.
  - MSM Agent for ITM Data
- IP Management and Automation
  - TCP/IP packet tracing & formatting , intrusion detection, and TCP/IP connection management
  - SNMPv3 support and IPv6 capabilities
- Enhanced Operations Support
  - Automated Message Attribute Handling
  - Increased RODM capacity
- Accelerate time to value
  - Simplified style sheet migration and reporting

- **Interoperate with OMEGAMON, TSA, TBSM, and Trouble Ticket Products**
- **Richer TCP/IP Network Management**
- **Expanded Automation**
- **Manage growing Networks**
- **Improved Customer Time-to-Value**
- **Improved Ease of Use**

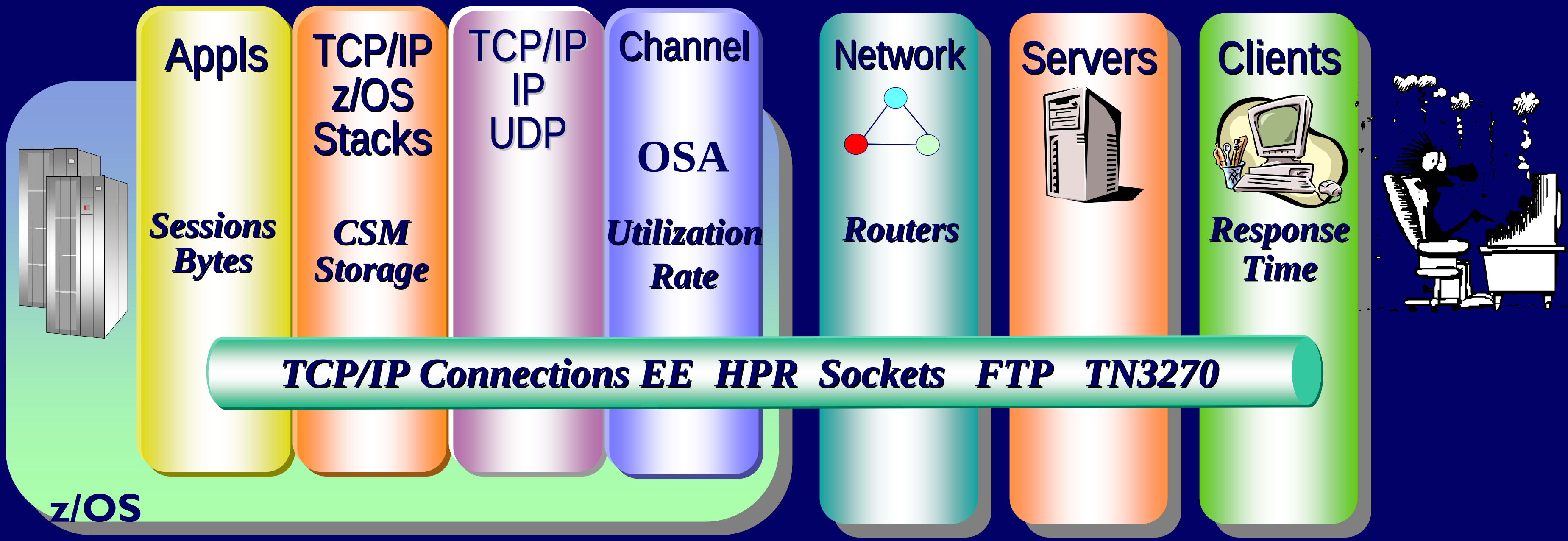
# OMEGAMON XE for Mainframe Networks 3.1



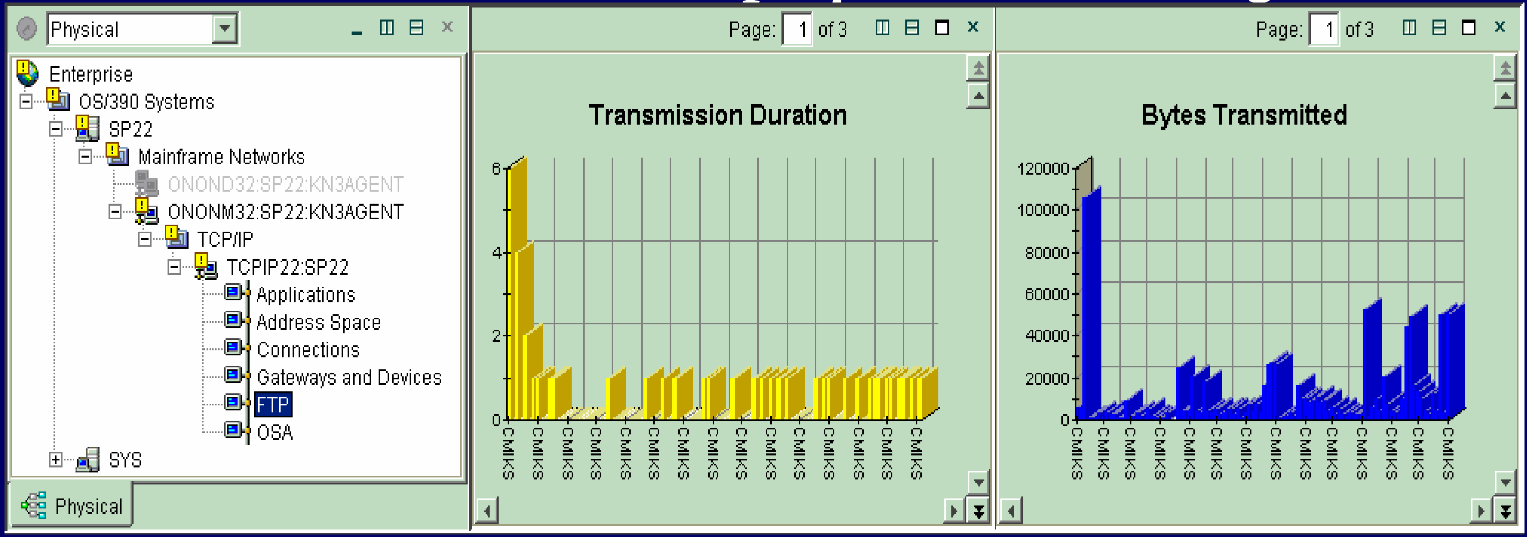
# Common z/OS TCP/IP Problems

- IBM TCP/IP z/OS (Communications Server)
- FTP problems, failures, timeouts, hangs
- Unauthorized users doing large FTPs
- TCP/IP just slows down or hangs.
- Long problem resolution times for network problems
- Managing multiple z/OS IP stacks at once
- How to manage SNA over IP
  - (EE, HPR, TN3270)
- Channel problems – OSA Express
- TCP/IP tools do not understand the mainframe

# IBM Network Performance Management


Appls
Sessions
Bytes
TCP/IP
z/OS
Stacks
CSM
Storage
TCP/IP
IP
UDP
Channel
OSA
Utilization
Rate
Network
Routers
Servers
Clients
Response
Time
TCP/IP Connections EE HPR Sockets FTP TN3270
z/OS

## *z/OS Oriented TCP/IP end to end performance management*


Physical
Page: 1 of 3
Page: 1 of 3
Physical

- Enterprise
  - OS/390 Systems
    - SP22
      - Mainframe Networks
        - ONOND32:SP22:KN3AGENT
        - ONONM32:SP22:KN3AGENT
          - TCP/IP
            - TCPIP22:SP22
              - Applications
              - Address Space
              - Connections
              - Gateways and Devices
              - FTP
              - OSA
    - SYS

Transmission Duration
6
4
2
0
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
Bytes Transmitted
120000
100000
80000
60000
40000
20000
0
CMIKS
CMIKS
CMIKS
CMIKS
CMIKS
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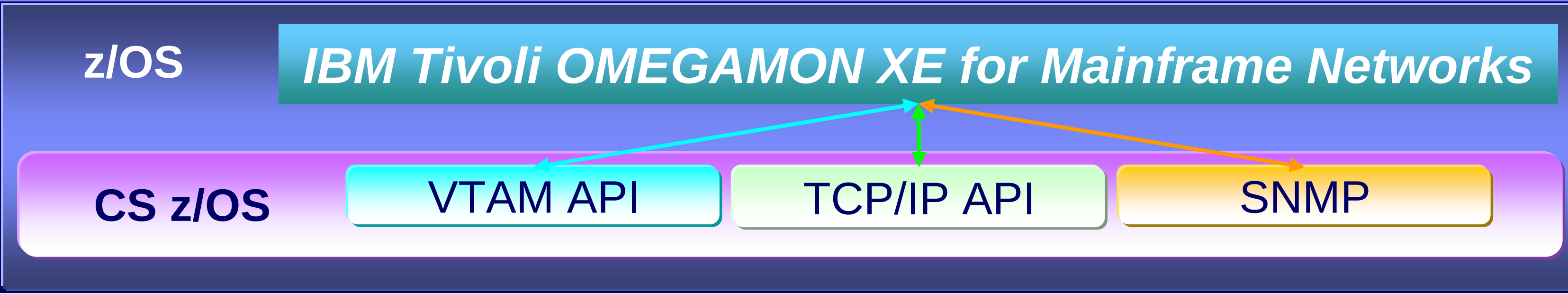
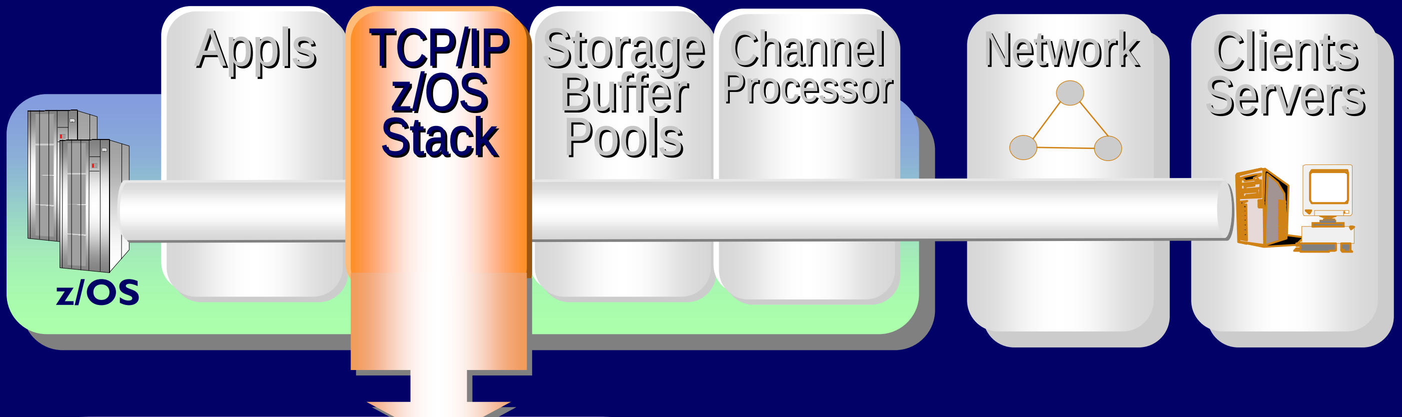
# z/OS Network Performance Data Collection Points

- ✓**Fast**
- ✓**Scalable**
- ✓**Reliable**


z/OS
*IBM Tivoli OMEGAMON XE for Mainframe Networks*
CS z/OS
VTAM API
TCP/IP API
SNMP

- **Collected using the z/OS Communications Server TCP/IP API:**
  - Applications
  - Connections including TCP Connections, TCP Listeners and UDP End Points
  - FTP Sessions and Transfers
  - TN3270 Server Sessions
  - TCP/IP Memory Statistics
- **Collected using the z/OS Communications Server VTAM API:**
  - VTAM Summary
  - CSM Buffer Pools
  - Enterprise Extender connections (EE)
  - High Performance Routing connections (HPR)
- **Collected using SNMP:**
  - TCP/IP Summary
  - TCP/IP Stack Layers
  - Gateways and Devices
  - Interfaces
  - OSA

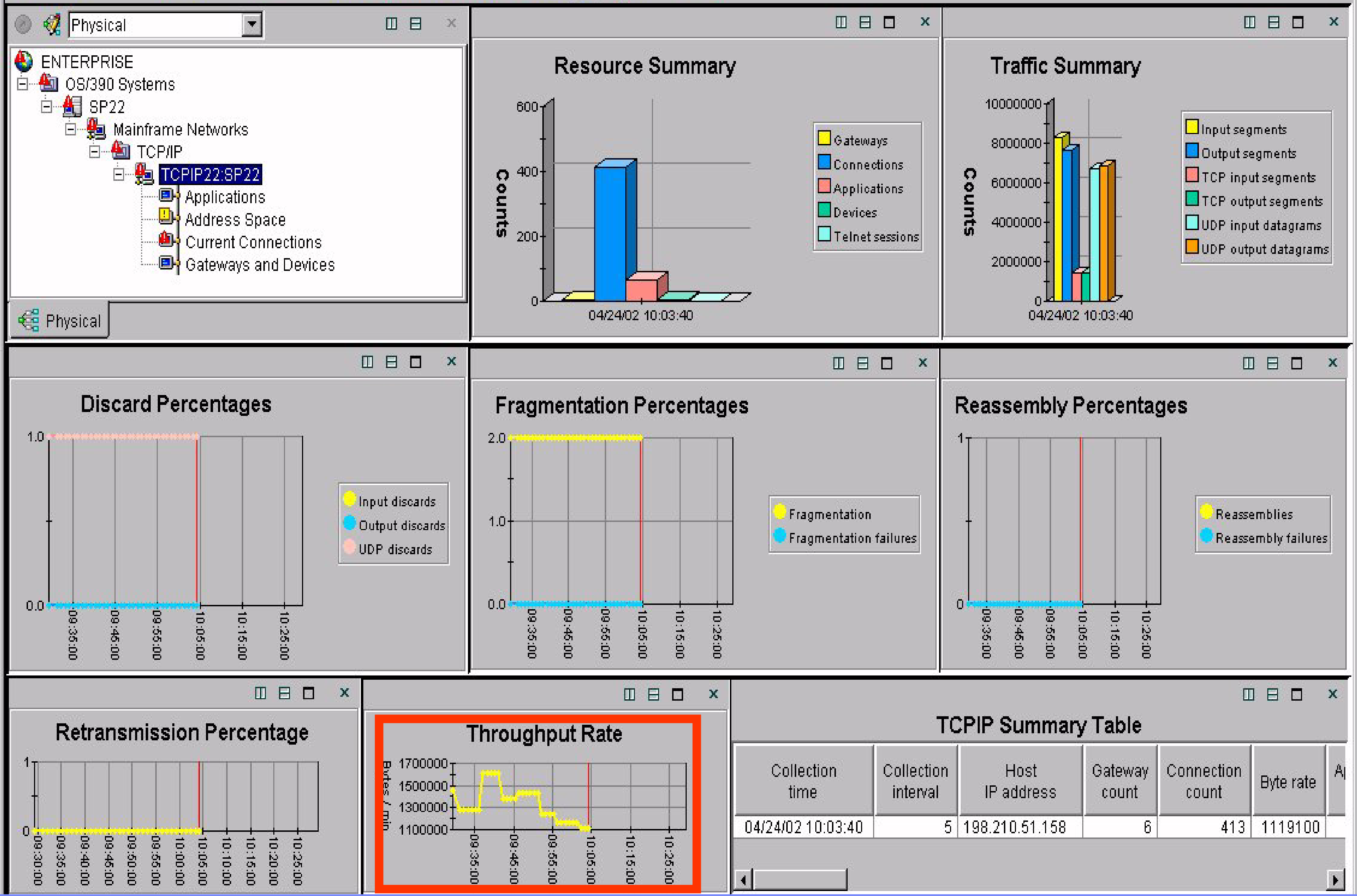
# z/OS TCP/IP Stack


Appls
TCP/IP z/OS Stack
Storage Buffer Pools
Channel Processor
Network
Clients Servers
z/OS

Why is my TCP/IP stack running so slow?

- **Statistics by Stack**
- **Receive and Transmit rates**
- **Segment Errors**
- **Out of order errors**

# Detect Intermittent Problems



Physical

- ENTERPRISE
  - OS/390 Systems
    - SP22
      - Mainframe Networks
        - TCP/IP
          - TCPIP22:SP22
            - Applications
            - Address Space
            - Current Connections
            - Gateways and Devices

Physical

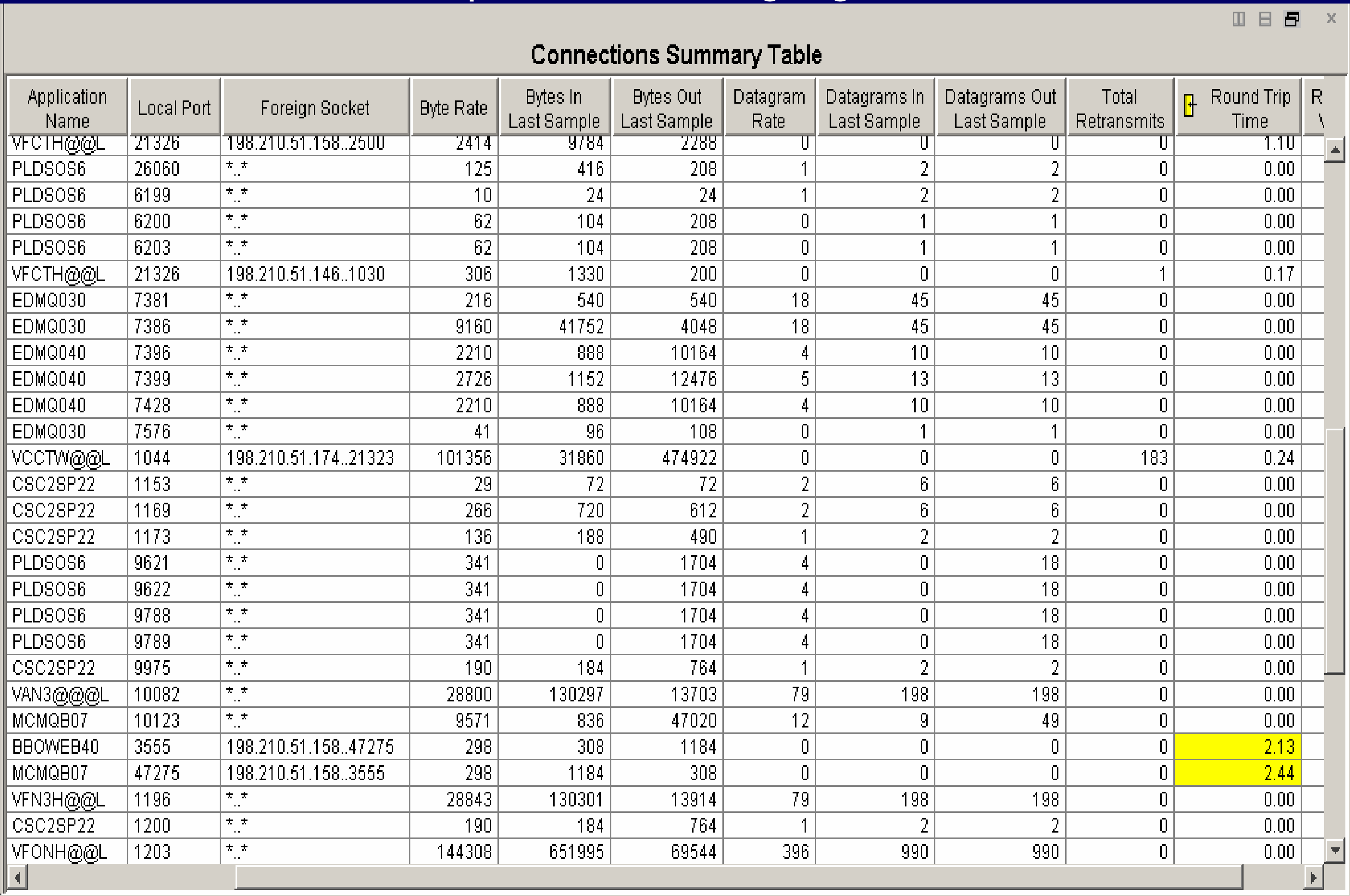
Resource Summary
Counts
600
400
200
0
04/24/02 10:03:40
Gateways
Connections
Applications
Devices
Telnet sessions
Traffic Summary
Counts
10000000
8000000
6000000
4000000
2000000
0
04/24/02 10:03:40
Input segments
Output segments
TCP input segments
TCP output segments
UDP input datagrams
UDP output datagrams
Discard Percentages
1.0
0.0
09:35:00
09:45:00
09:55:00
10:05:00
10:15:00
10:25:00
Input discards
Output discards
UDP discards
Fragmentation Percentages
2.0
1.0
0.0
09:35:00
09:45:00
09:55:00
10:05:00
10:15:00
10:25:00
Fragmentation
Fragmentation failures
Reassembly Percentages
1
0
09:35:00
09:45:00
09:55:00
10:05:00
10:15:00
10:25:00
Reassemblies
Reassembly failures
Retransmission Percentage
1
0
09:30:00
09:35:00
09:40:00
09:45:00
09:50:00
09:55:00
10:00:00
10:05:00
10:10:00
10:15:00
10:20:00
10:25:00
Throughput Rate
Bytes / min
1700000
1500000
1300000
1100000
09:35:00
09:45:00
09:55:00
10:05:00
10:15:00
10:25:00

TCPIP Summary Table

| Collection time | Collection interval | Host IP address | Gateway count | Connection count | Byte rate |
|---|---|---|---|---|---|
| 04/24/02 10:03:40 | 5 | 198.210.51.158 | 6 | 413 | 1119100 |

Historical Trend Data

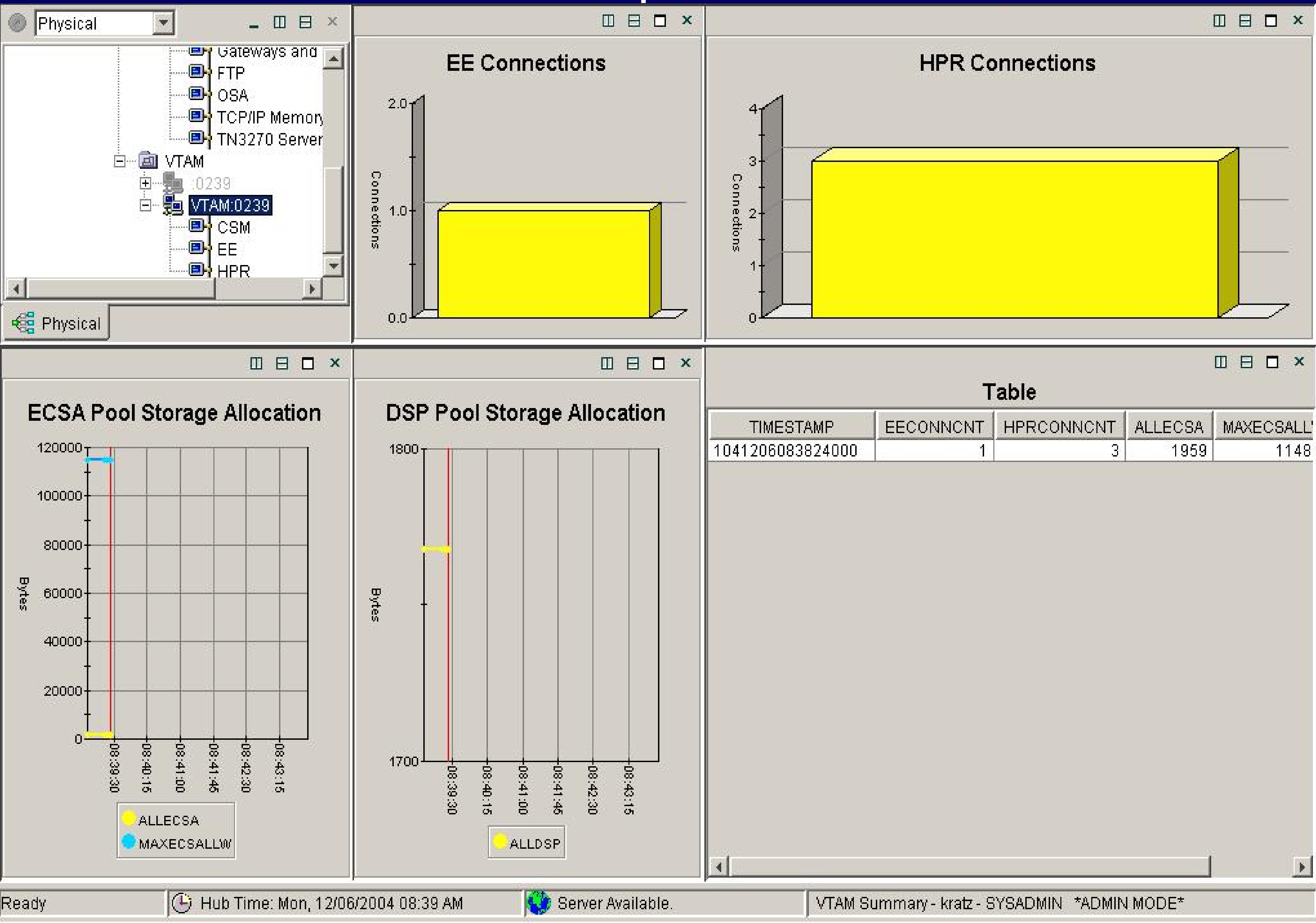
# Erratic Response Time Highlighted



## Connections Summary Table

| Application Name | Local Port | Foreign Socket | Byte Rate | Bytes In Last Sample | Bytes Out Last Sample | Datagram Rate | Datagrams In Last Sample | Datagrams Out Last Sample | Total Retransmits | Round Trip Time |
|---|---|---|---|---|---|---|---|---|---|---|
| VFCTH@@L | 21326 | 198.210.51.158..2500 | 2414 | 9784 | 2288 | 0 | 0 | 0 | 0 | 1.10 |
| PLDSOS6 | 26060 | *..* | 125 | 416 | 208 | 1 | 2 | 2 | 0 | 0.00 |
| PLDSOS6 | 6199 | *..* | 10 | 24 | 24 | 1 | 2 | 2 | 0 | 0.00 |
| PLDSOS6 | 6200 | *..* | 62 | 104 | 208 | 0 | 1 | 1 | 0 | 0.00 |
| PLDSOS6 | 6203 | *..* | 62 | 104 | 208 | 0 | 1 | 1 | 0 | 0.00 |
| VFCTH@@L | 21326 | 198.210.51.146..1030 | 306 | 1330 | 200 | 0 | 0 | 0 | 1 | 0.17 |
| EDMQ030 | 7381 | *..* | 216 | 540 | 540 | 18 | 45 | 45 | 0 | 0.00 |
| EDMQ030 | 7386 | *..* | 9160 | 41752 | 4048 | 18 | 45 | 45 | 0 | 0.00 |
| EDMQ040 | 7396 | *..* | 2210 | 888 | 10164 | 4 | 10 | 10 | 0 | 0.00 |
| EDMQ040 | 7399 | *..* | 2726 | 1152 | 12476 | 5 | 13 | 13 | 0 | 0.00 |
| EDMQ040 | 7428 | *..* | 2210 | 888 | 10164 | 4 | 10 | 10 | 0 | 0.00 |
| EDMQ030 | 7576 | *..* | 41 | 96 | 108 | 0 | 1 | 1 | 0 | 0.00 |
| VCCTW@@L | 1044 | 198.210.51.174..21323 | 101356 | 31860 | 474922 | 0 | 0 | 0 | 183 | 0.24 |
| CSC2SP22 | 1153 | *..* | 29 | 72 | 72 | 2 | 6 | 6 | 0 | 0.00 |
| CSC2SP22 | 1169 | *..* | 266 | 720 | 612 | 2 | 6 | 6 | 0 | 0.00 |
| CSC2SP22 | 1173 | *..* | 136 | 188 | 490 | 1 | 2 | 2 | 0 | 0.00 |
| PLDSOS6 | 9621 | *..* | 341 | 0 | 1704 | 4 | 0 | 18 | 0 | 0.00 |
| PLDSOS6 | 9622 | *..* | 341 | 0 | 1704 | 4 | 0 | 18 | 0 | 0.00 |
| PLDSOS6 | 9788 | *..* | 341 | 0 | 1704 | 4 | 0 | 18 | 0 | 0.00 |
| PLDSOS6 | 9789 | *..* | 341 | 0 | 1704 | 4 | 0 | 18 | 0 | 0.00 |
| CSC2SP22 | 9975 | *..* | 190 | 184 | 764 | 1 | 2 | 2 | 0 | 0.00 |
| VAN3@@@L | 10082 | *..* | 28800 | 130297 | 13703 | 79 | 198 | 198 | 0 | 0.00 |
| MCMQB07 | 10123 | *..* | 9571 | 836 | 47020 | 12 | 9 | 49 | 0 | 0.00 |
| BBOWEB40 | 3555 | 198.210.51.158..47275 | 298 | 308 | 1184 | 0 | 0 | 0 | 0 | 2.13 |
| MCMQB07 | 47275 | 198.210.51.158..3555 | 298 | 1184 | 308 | 0 | 0 | 0 | 0 | 2.44 |
| VFN3H@@L | 1196 | *..* | 28843 | 130301 | 13914 | 79 | 198 | 198 | 0 | 0.00 |
| CSC2SP22 | 1200 | *..* | 190 | 184 | 764 | 1 | 2 | 2 | 0 | 0.00 |
| VFONH@@L | 1203 | *..* | 144308 | 651995 | 69544 | 396 | 990 | 990 | 0 | 0.00 |

# New VTAM Workspace


Physical
Gateways and
FTP
OSA
TCP/IP Memory
TN3270 Server
VTAM
:0239
VTAM:0239
CSM
EE
HPR
Physical
EE Connections
Connections
2.0
1.0
0.0
HPR Connections
Connections
4
3
2
1
0
ECSA Pool Storage Allocation
Bytes
120000
100000
80000
60000
40000
20000
0
08:39:30
08:40:15
08:41:00
08:41:45
08:42:30
08:43:15
ALLECSA
MAXECSALLW
DSP Pool Storage Allocation
Bytes
1800
1700
08:39:30
08:40:15
08:41:00
08:41:45
08:42:30
08:43:15
ALLDSP
Table

| TIMESTAMP | EECONNCNT | HPRCONNCNT | ALLECSA | MAXECSALL |
|---|---|---|---|---|
| 1041206083824000 | 1 | 3 | 1959 | 1148 |

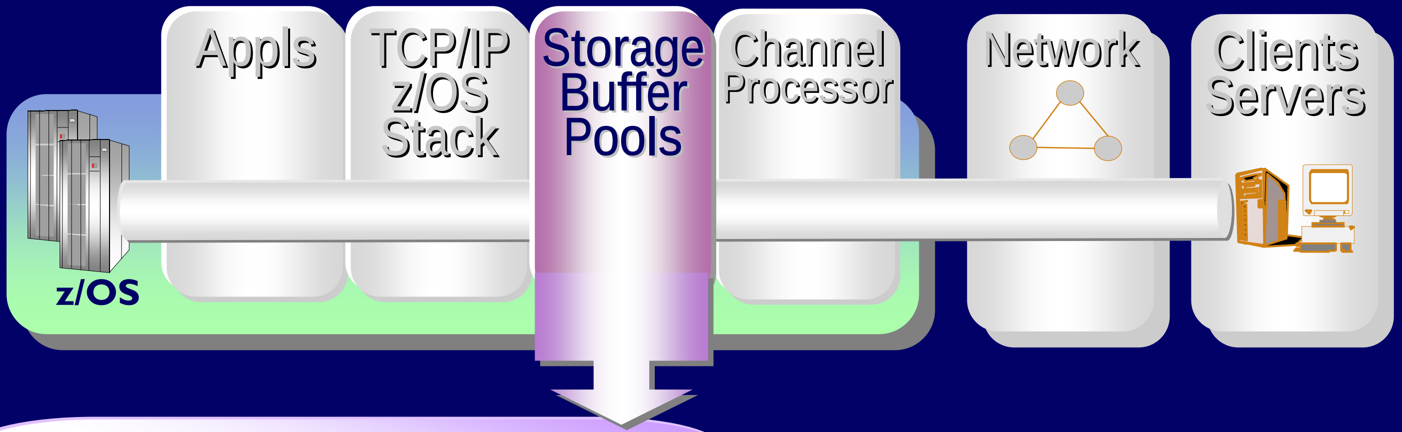
Ready

Hub Time: Mon, 12/06/2004 08:39 AM

Server Available.

VTAM Summary - kratz - SYSADMIN *ADMIN MODE*

# Storage and Buffer Pools


z/OS
Appls
TCP/IP z/OS Stack
Storage Buffer Pools
Channel Processor
Network
Clients Servers

Is TCP/IP data backing up into my z/OS?

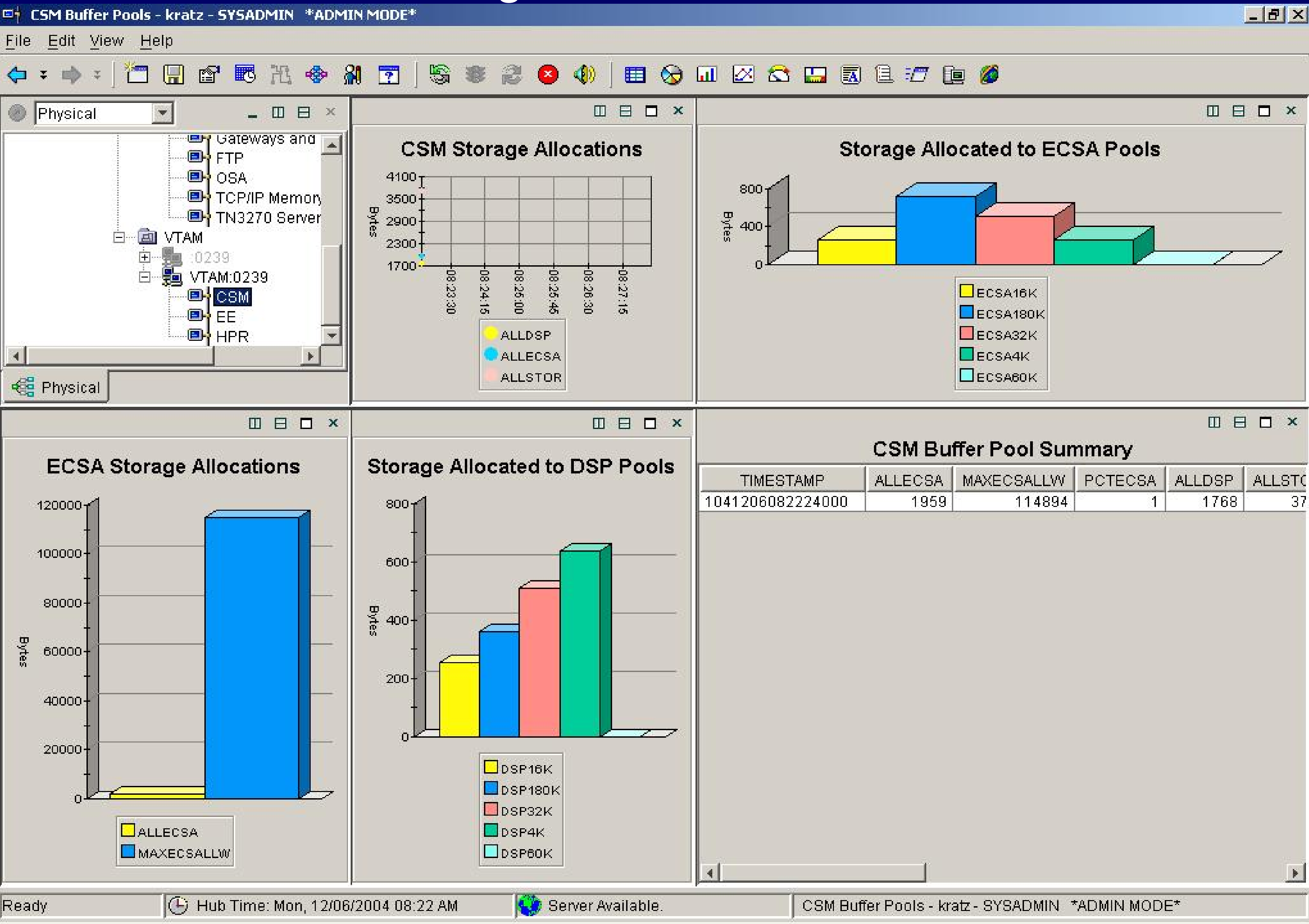
**CSM**

**DSP**

**ECSA**

**VTAM Buffers**

# VTAM Storage

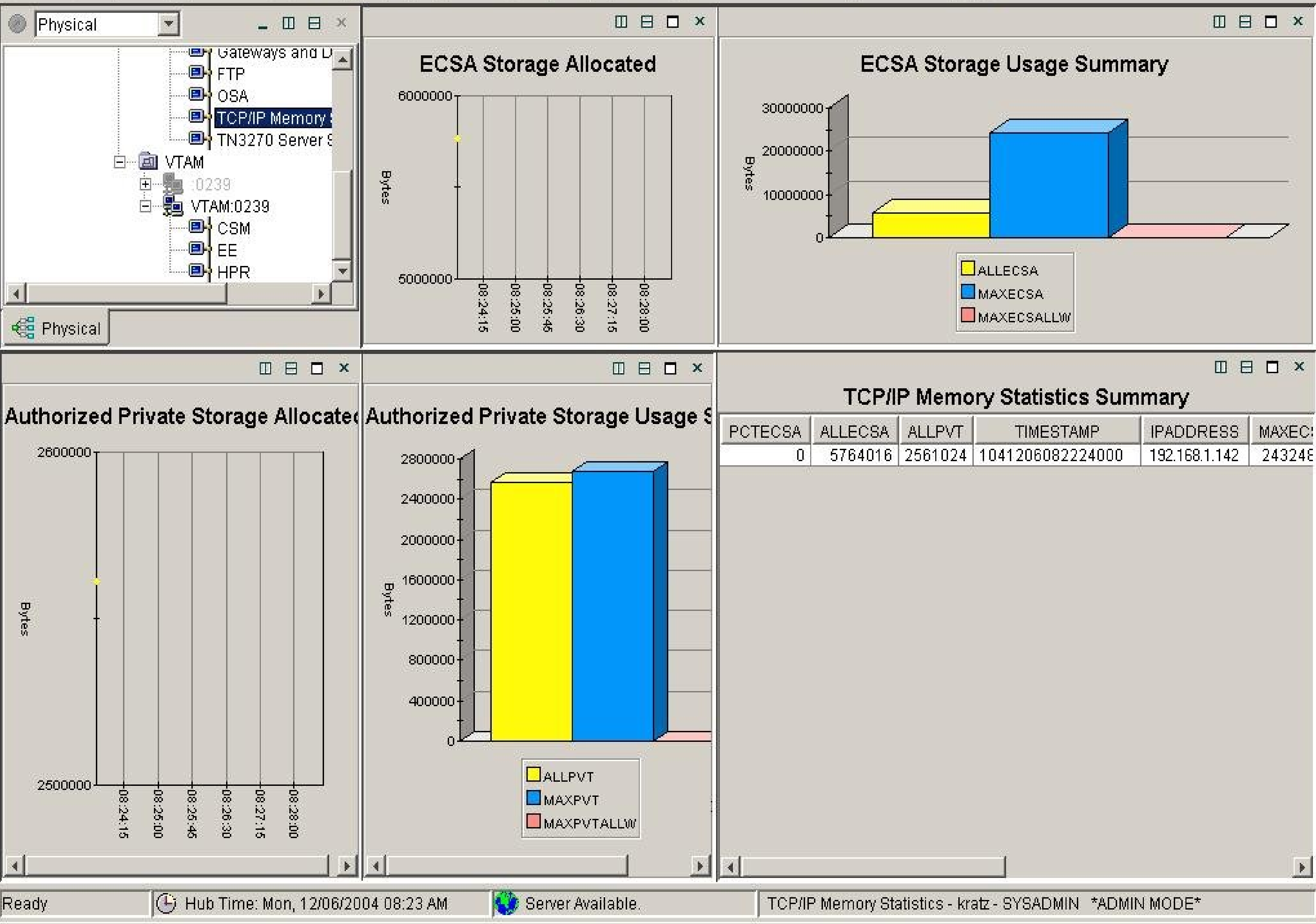

CSM Buffer Pools - kratz - SYSADMIN *ADMIN MODE*
File
Edit
View
Help
Physical
Gateways and
FTP
OSA
TCP/IP Memory
TN3270 Server
VTAM
:0239
VTAM:0239
CSM
EE
HPR
Physical
CSM Storage Allocations
Bytes
4100
3500
2900
2300
1700
08:23:30
08:24:15
08:25:00
08:25:45
08:26:30
08:27:15
ALLDSP
ALLECSA
ALLSTOR
Storage Allocated to ECSA Pools
Bytes
800
400
0
ECSA16K
ECSA180K
ECSA32K
ECSA4K
ECSA60K
ECSA Storage Allocations
Bytes
120000
100000
80000
60000
40000
20000
0
ALLECSA
MAXECSALLW
Storage Allocated to DSP Pools
Bytes
800
600
400
200
0
DSP16K
DSP180K
DSP32K
DSP4K
DSP60K

**CSM Buffer Pool Summary**

| TIMESTAMP | ALLECSA | MAXECSALLW | PCTECSA | ALLDSP | ALLSTC |
|---|---|---|---|---|---|
| 1041206082224000 | 1959 | 114894 | 1 | 1768 | 37 |

Ready | Hub Time: Mon, 12/06/2004 08:22 AM | Server Available. | CSM Buffer Pools - kratz - SYSADMIN *ADMIN MODE*

# TCP/IP Memory

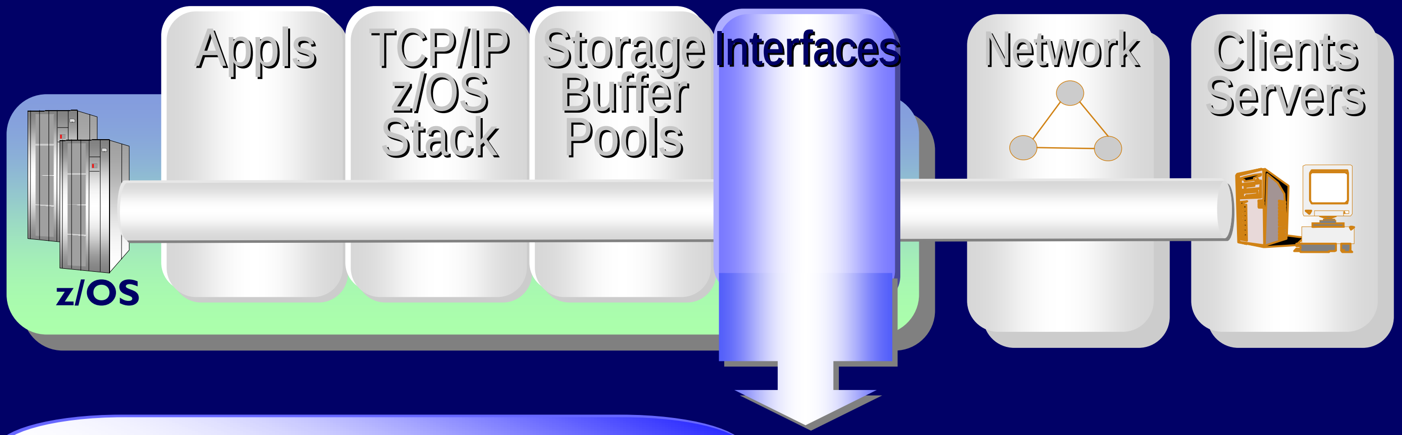

Physical
Gateways and D
FTP
OSA
TCP/IP Memory
TN3270 Server S
VTAM
:0239
VTAM:0239
CSM
EE
HPR
Physical
ECSA Storage Allocated
6000000
5000000
Bytes
08:24:15
08:25:00
08:25:45
08:26:30
08:27:15
08:28:00
ECSA Storage Usage Summary
30000000
20000000
10000000
0
Bytes
ALLECSA
MAXECSA
MAXECSALLW
Authorized Private Storage Allocatec
2600000
2500000
Bytes
08:24:15
08:25:00
08:25:45
08:26:30
08:27:15
08:28:00
Authorized Private Storage Usage S
2800000
2400000
2000000
1600000
1200000
800000
400000
0
Bytes
ALLPVT
MAXPVT
MAXPVTALLW

**TCP/IP Memory Statistics Summary**

| PCTECSA | ALLECSA | ALLPVT | TIMESTAMP | IPADDRESS | MAXEC |
|---|---|---|---|---|---|
| 0 | 5764016 | 2561024 | 1041206082224000 | 192.168.1.142 | 24324 |

Ready | Hub Time: Mon, 12/06/2004 08:23 AM | Server Available. | TCP/IP Memory Statistics - kratz - SYSADMIN *ADMIN MODE*

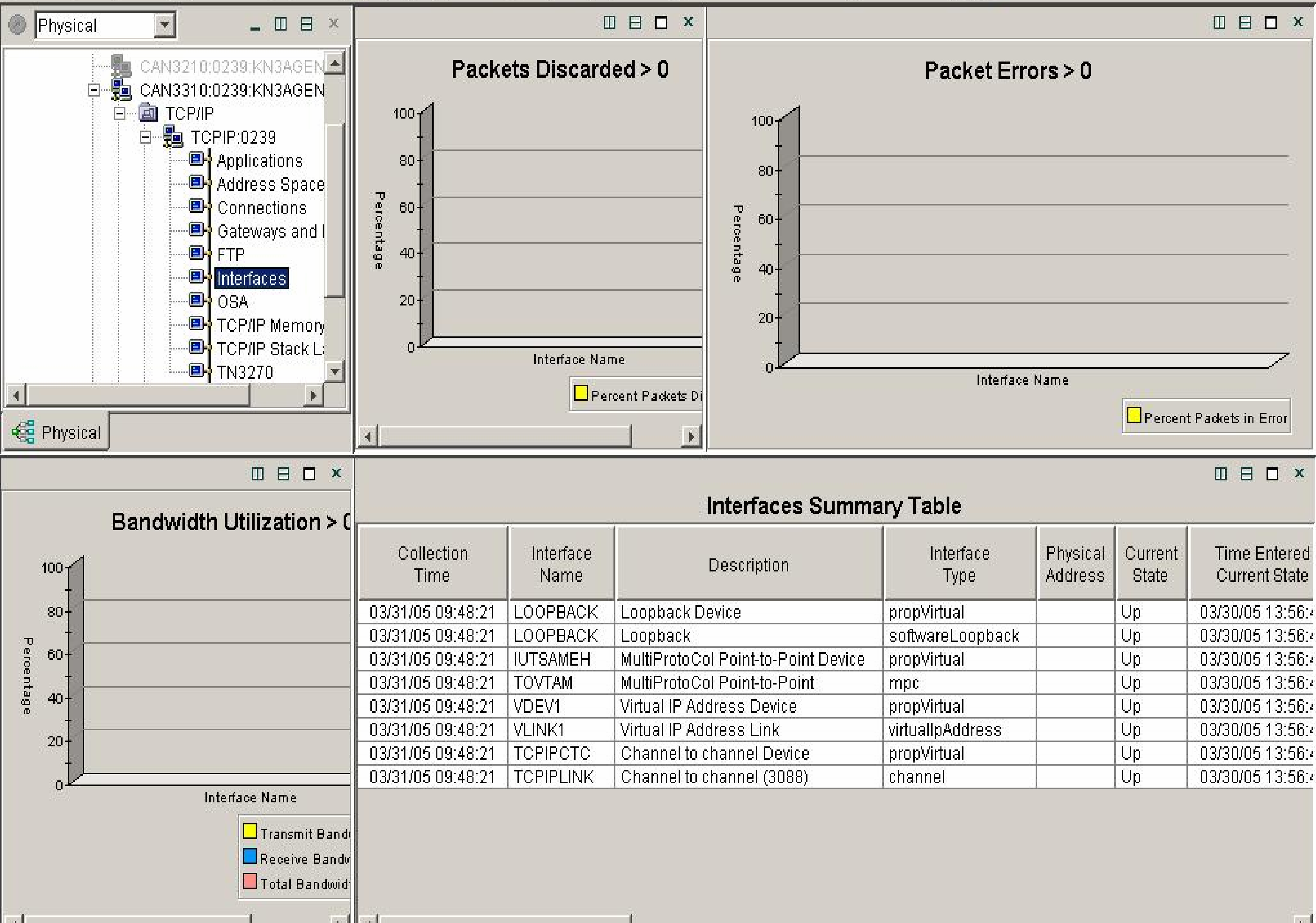
# zSeries Interfaces


z/OS
Appls
TCP/IP z/OS Stack
Storage Buffer Pools
Interfaces
Network
Clients Servers

What is the performance of my channels?

- Current Status
- MTU
- Transmission Rates
- Bandwidth utilization
- Error Rates

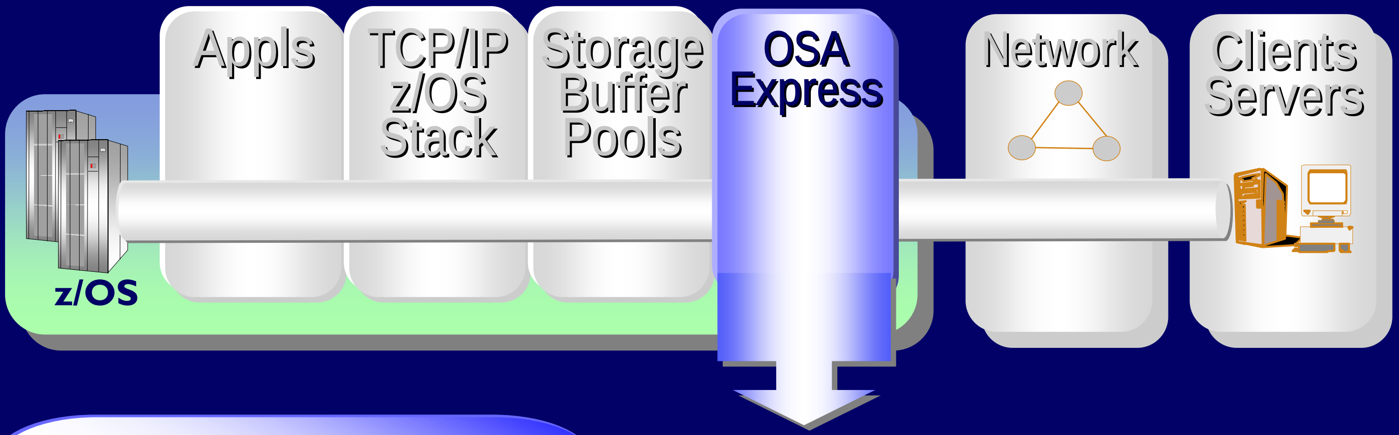
# Interfaces


Physical
CAN3210:0239:KN3AGEN
CAN3310:0239:KN3AGEN
TCP/IP
TCPIP:0239
Applications
Address Space
Connections
Gateways and I
FTP
Interfaces
OSA
TCP/IP Memory
TCP/IP Stack L
TN3270
Physical
Packets Discarded > 0
100
80
60
40
20
0
Percentage
Interface Name
Percent Packets Di
Packet Errors > 0
100
80
60
40
20
0
Percentage
Interface Name
Percent Packets in Error
Bandwidth Utilization > 0
100
80
60
40
20
0
Percentage
Interface Name
Transmit Band
Receive Bandv
Total Bandwid

Interfaces Summary Table

| Collection Time | Interface Name | Description | Interface Type | Physical Address | Current State | Time Entered Current State |
|---|---|---|---|---|---|---|
| 03/31/05 09:48:21 | LOOPBACK | Loopback Device | propVirtual | | Up | 03/30/05 13:56: |
| 03/31/05 09:48:21 | LOOPBACK | Loopback | softwareLoopback | | Up | 03/30/05 13:56: |
| 03/31/05 09:48:21 | IUTSAMEH | MultiProtoCol Point-to-Point Device | propVirtual | | Up | 03/30/05 13:56: |
| 03/31/05 09:48:21 | TOVTAM | MultiProtoCol Point-to-Point | mpc | | Up | 03/30/05 13:56: |
| 03/31/05 09:48:21 | VDEV1 | Virtual IP Address Device | propVirtual | | Up | 03/30/05 13:56: |
| 03/31/05 09:48:21 | VLINK1 | Virtual IP Address Link | virtualIpAddress | | Up | 03/30/05 13:56: |
| 03/31/05 09:48:21 | TCPIPCTC | Channel to channel Device | propVirtual | | Up | 03/30/05 13:56: |
| 03/31/05 09:48:21 | TCPIPLINK | Channel to channel (3088) | channel | | Up | 03/30/05 13:56: |

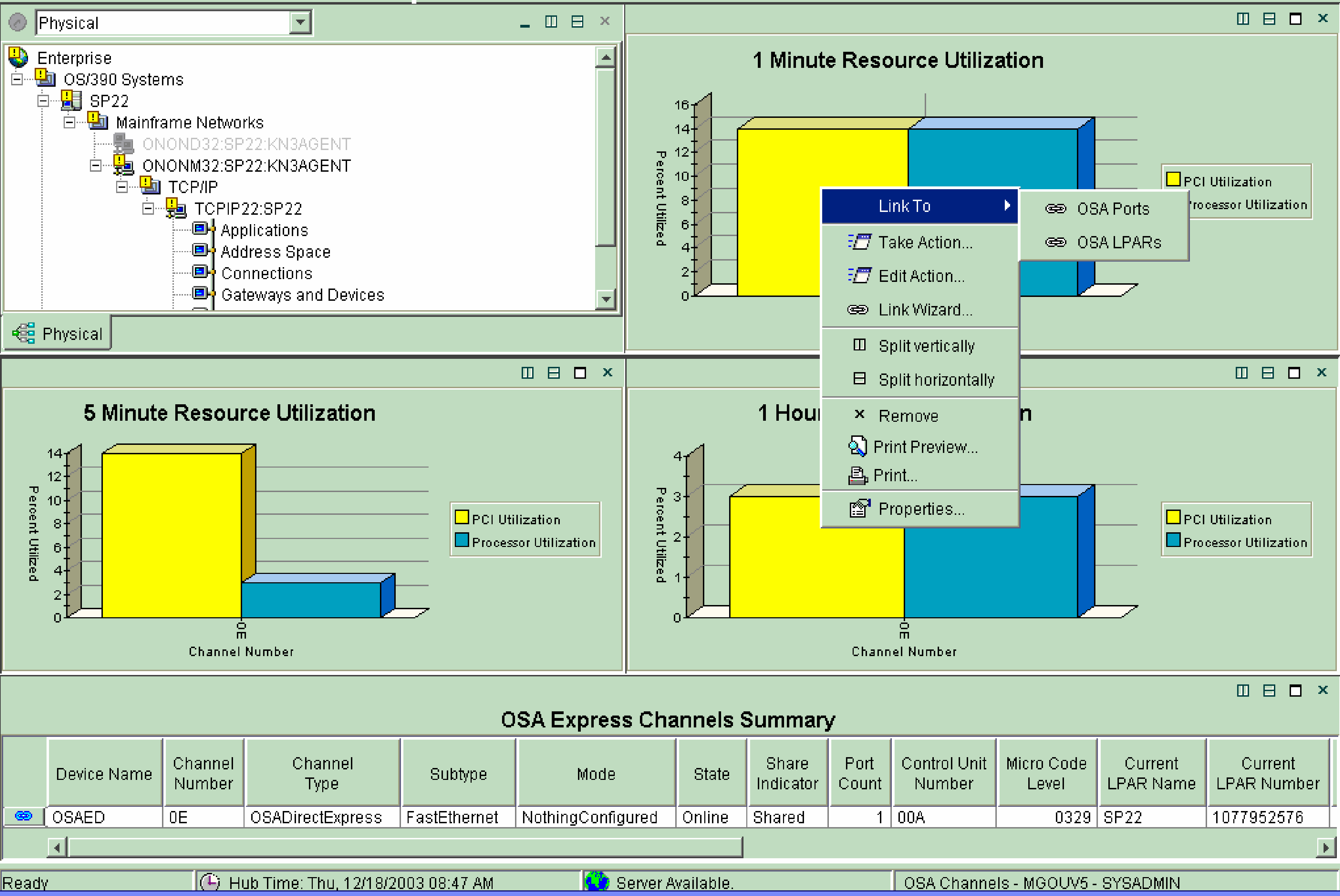
# OSA Express Adapter


Appls
TCP/IP z/OS Stack
Storage Buffer Pools
OSA Express
Network
Clients Servers
z/OS

What is my OSA Express adapter utilization

- Utilization
- Transmission Rates
- Mac address
- Channel ID
- Port Name
- Adapter capacity

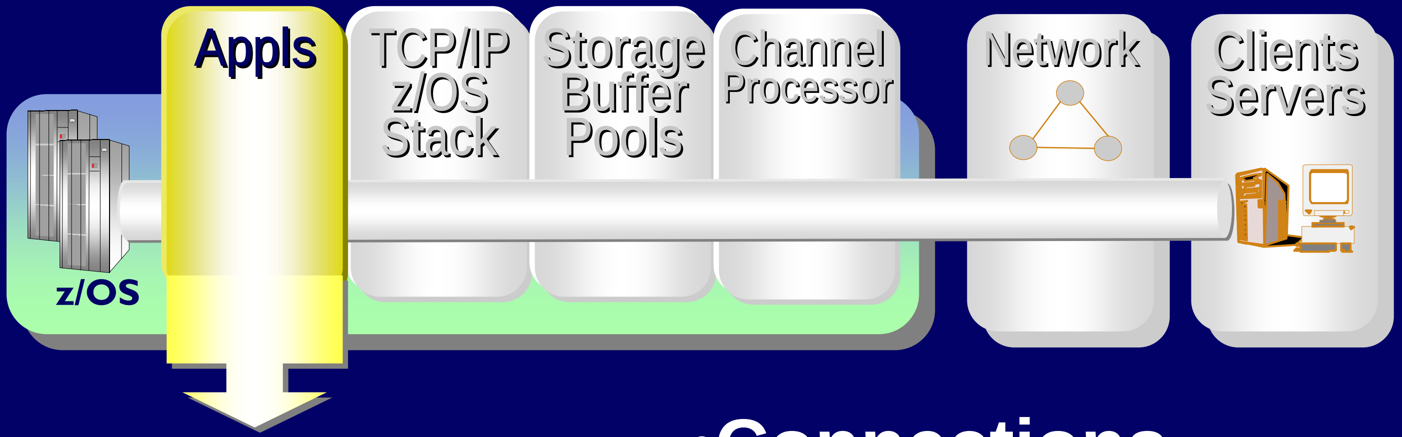
# OSA Express Performance

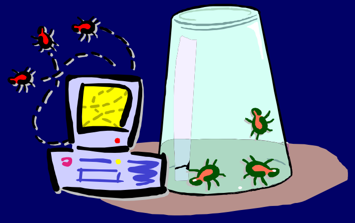

Physical
Enterprise
OS/390 Systems
SP22
Mainframe Networks
ONOND32:SP22:KN3AGENT
ONONM32:SP22:KN3AGENT
TCP/IP
TCPIP22:SP22
Applications
Address Space
Connections
Gateways and Devices
Physical
1 Minute Resource Utilization
Percent Utilized
0
2
4
6
8
10
12
14
16
PCI Utilization
Processor Utilization
Link To
Take Action...
Edit Action...
Link Wizard...
Split vertically
Split horizontally
Remove
Print Preview...
Print...
Properties...
OSA Ports
OSA LPARs
5 Minute Resource Utilization
Percent Utilized
0
2
4
6
8
10
12
14
0E
Channel Number
PCI Utilization
Processor Utilization
1 Hour
Percent Utilized
0
1
2
3
4
0E
Channel Number
PCI Utilization
Processor Utilization
OSA Express Channels Summary
Ready
Hub Time: Thu, 12/18/2003 08:47 AM
Server Available.
OSA Channels - MGOUV5 - SYSADMIN

**OSA Express Channels Summary**

| | Device Name | Channel Number | Channel Type | Subtype | Mode | State | Share Indicator | Port Count | Control Unit Number | Micro Code Level | Current LPAR Name | Current LPAR Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OSAED | 0E | OSADirectExpress | FastEthernet | NothingConfigured | Online | Shared | 1 | 00A | 0329 | SP22 | 1077952576 |

# Applications

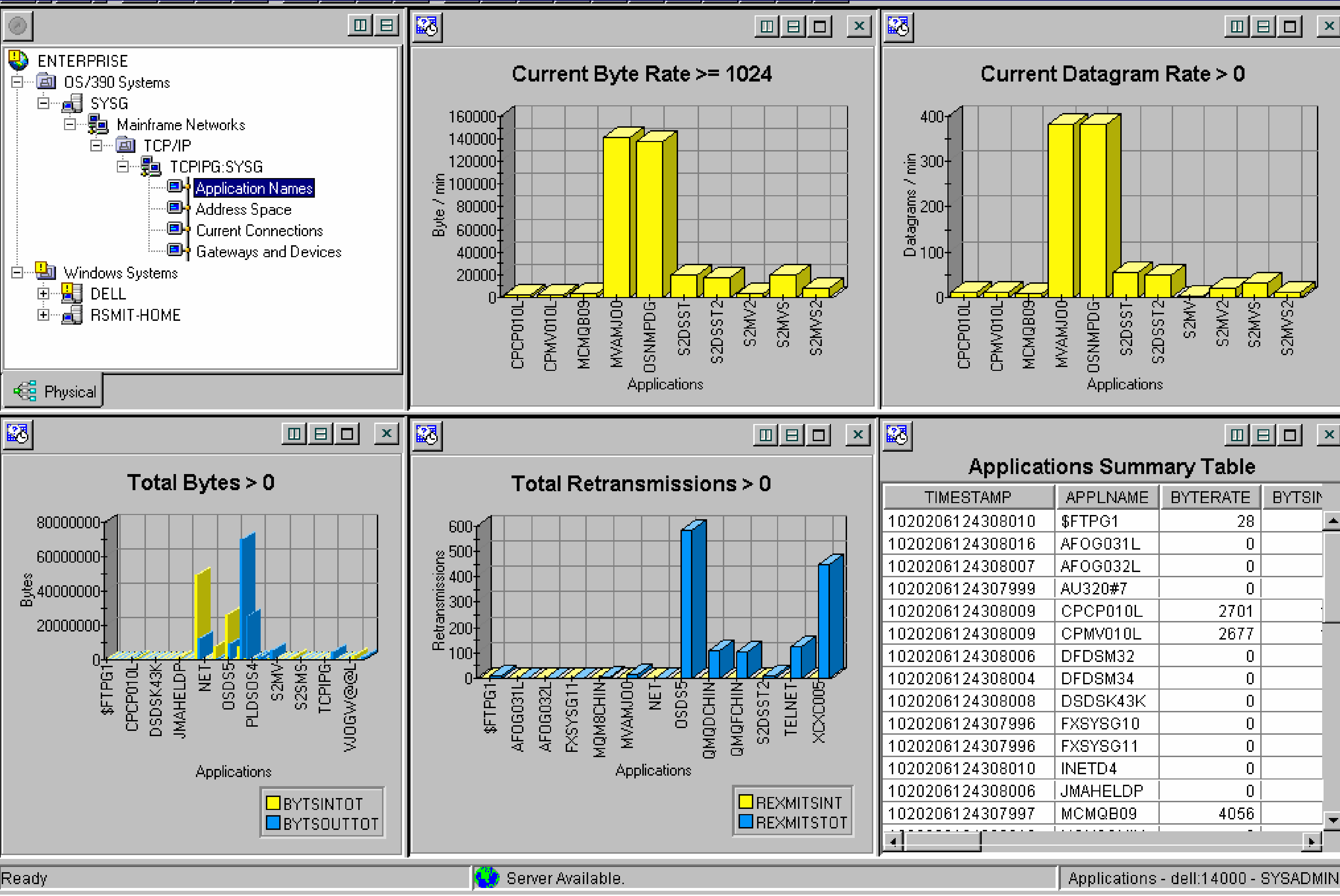

Appls
TCP/IP z/OS Stack
Storage Buffer Pools
Channel Processor
Network
Clients Servers
z/OS



What is wrong with my applications?

- Connections
  - State, Rate, Backlog, Rejections
- Last activity time
- Window Sizes
- Response Times
- Retransmissions
- Transmit / Receive Rates
- Out of order segments

# Applications TCP/IP Performance


ENTERPRISE
OS/390 Systems
SYSG
Mainframe Networks
TCP/IP
TCPIPG:SYSG
Application Names
Address Space
Current Connections
Gateways and Devices
Windows Systems
DELL
RSMIT-HOME
Physical
Current Byte Rate >= 1024
Byte / min
160000
140000
120000
100000
80000
60000
40000
20000
0
CPCP010L
CPMV010L
MCMQB09
MVAMJ00
OSNMPDG
S2DSST
S2DSST2
S2MV2
S2MVS
S2MVS2
Applications
Current Datagram Rate > 0
Datagrams / min
400
300
200
100
0
CPCP010L
CPMV010L
MCMQB09
MVAMJ00
OSNMPDG
S2DSST
S2DSST2
S2MV
S2MV2
S2MVS
S2MVS2
Applications
Total Bytes > 0
Bytes
80000000
60000000
40000000
20000000
0
$FTPG1
CPCP010L
DSDSK43K
JMAHELDP
NET
OSDS5
PLDSOS4
S2MV
S2SMS
TCPIPG
VJDGW@@L
Applications
BYTSINTOT
BYTSOUTTOT
Total Retransmissions > 0
Retransmissions
600
500
400
300
200
100
0
$FTPG1
AFOG031L
AFOG032L
FXSYSG11
MQM8CHIN
MVAMJ00
NET
OSDS5
QMQDCHIN
QMQFCHIN
S2DSST2
TELNET
XCXC005
Applications
REXMITSINT
REXMITSTOT

**Applications Summary Table**

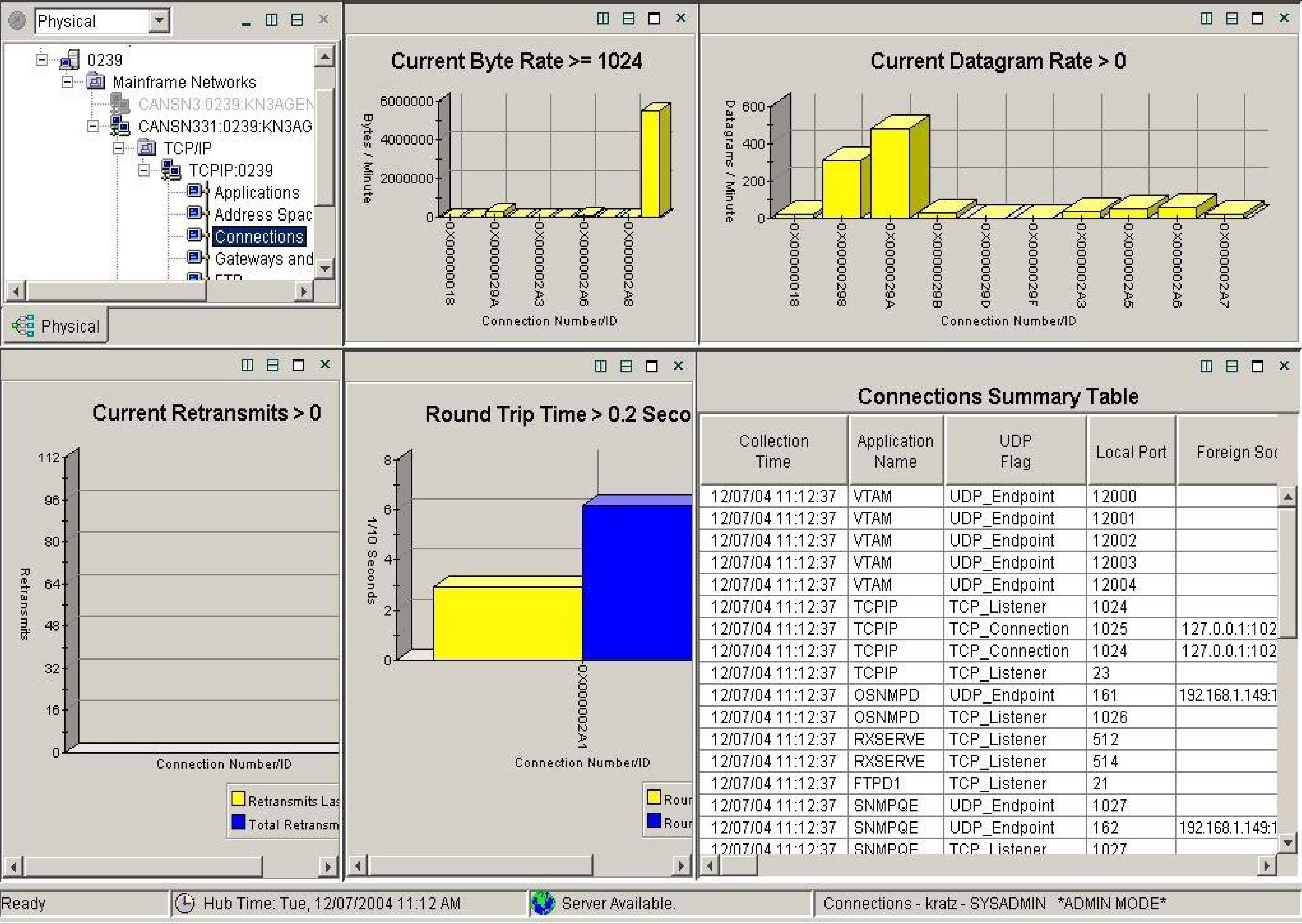
| TIMESTAMP | APPLNAME | BYTERATE | BYTSIN |
|---|---|---|---|
| 1020206124308010 | $FTPG1 | 28 | |
| 1020206124308016 | AFOG031L | 0 | |
| 1020206124308007 | AFOG032L | 0 | |
| 1020206124307999 | AU320#7 | 0 | |
| 1020206124308009 | CPCP010L | 2701 | |
| 1020206124308009 | CPMV010L | 2677 | |
| 1020206124308006 | DFDSM32 | 0 | |
| 1020206124308004 | DFDSM34 | 0 | |
| 1020206124308008 | DSDSK43K | 0 | |
| 1020206124307996 | FXSYSG10 | 0 | |
| 1020206124307996 | FXSYSG11 | 0 | |
| 1020206124308010 | INETD4 | 0 | |
| 1020206124308006 | JMAHELDP | 0 | |
| 1020206124307997 | MCMQB09 | 4056 | |

Ready

Server Available.

Applications - dell:14000 - SYSADMIN

# TCP/IP Connections

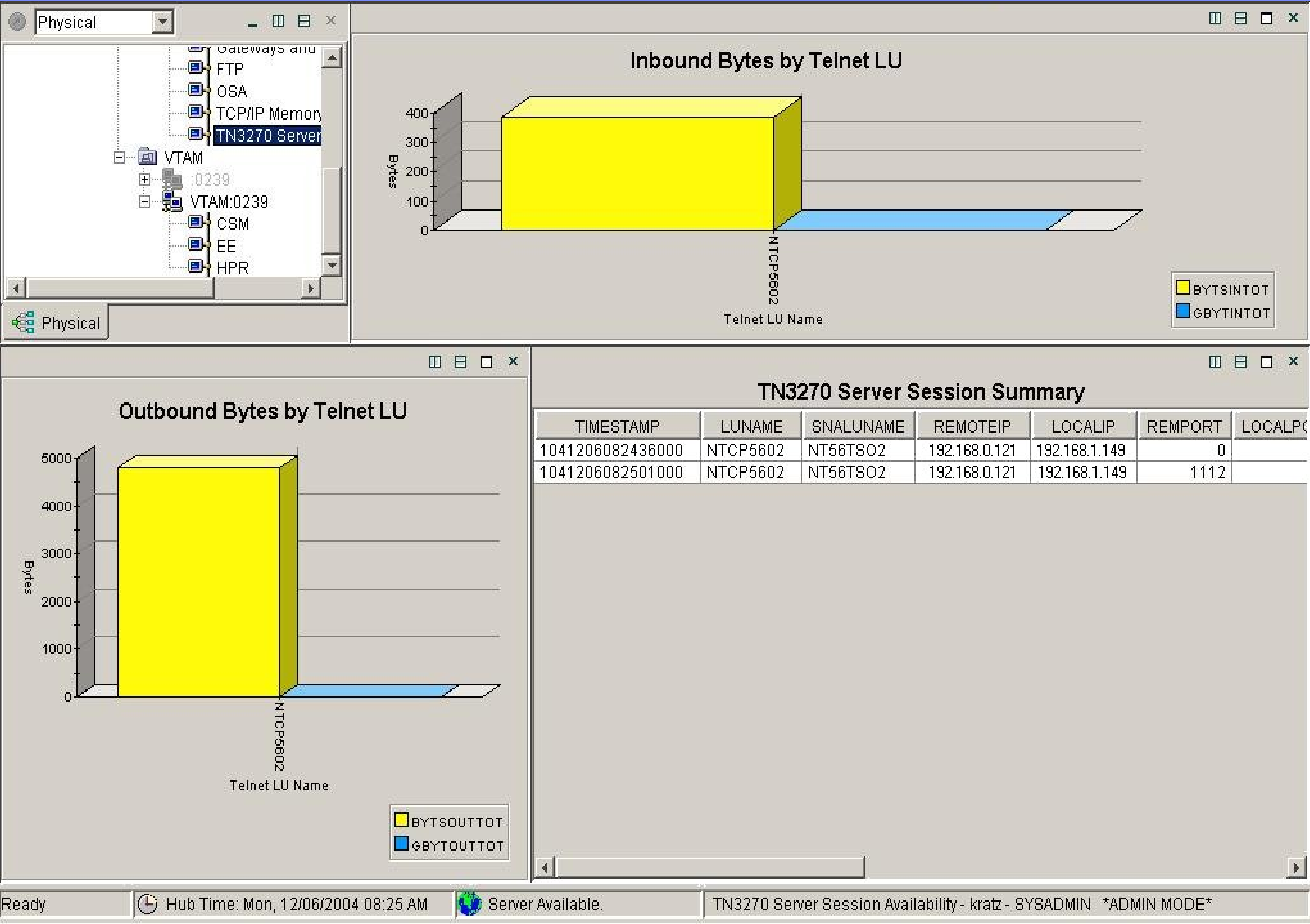

Physical
0239
Mainframe Networks
CANSN3:0239:KN3AGEN
CANSN331:0239:KN3AG
TCP/IP
TCPIP:0239
Applications
Address Spac
Connections
Gateways and
FTP
Physical
Current Byte Rate >= 1024
Bytes / Minute
6000000
4000000
2000000
0
0X00000018
0X0000029A
0X000002A3
0X000002A6
0X000002A8
Connection Number/ID
Current Datagram Rate > 0
Datagrams / Minute
600
400
200
0
0X00000018
0X00000298
0X0000029A
0X0000029B
0X0000029D
0X0000029F
0X000002A3
0X000002A5
0X000002A6
0X000002A7
Connection Number/ID
Current Retransmits > 0
Retransmits
112
96
80
64
48
32
16
0
Connection Number/ID
Retransmits Las
Total Retransm
Round Trip Time > 0.2 Seco
1/10 Seconds
8
6
4
2
0
0X000002A1
Connection Number/ID
Roun
Roun

**Connections Summary Table**

| Collection Time | Application Name | UDP Flag | Local Port | Foreign Soc |
|---|---|---|---|---|
| 12/07/04 11:12:37 | VTAM | UDP_Endpoint | 12000 | |
| 12/07/04 11:12:37 | VTAM | UDP_Endpoint | 12001 | |
| 12/07/04 11:12:37 | VTAM | UDP_Endpoint | 12002 | |
| 12/07/04 11:12:37 | VTAM | UDP_Endpoint | 12003 | |
| 12/07/04 11:12:37 | VTAM | UDP_Endpoint | 12004 | |
| 12/07/04 11:12:37 | TCPIP | TCP_Listener | 1024 | |
| 12/07/04 11:12:37 | TCPIP | TCP_Connection | 1025 | 127.0.0.1:102 |
| 12/07/04 11:12:37 | TCPIP | TCP_Connection | 1024 | 127.0.0.1:102 |
| 12/07/04 11:12:37 | TCPIP | TCP_Listener | 23 | |
| 12/07/04 11:12:37 | OSNMPD | UDP_Endpoint | 161 | 192.168.1.149:1 |
| 12/07/04 11:12:37 | OSNMPD | TCP_Listener | 1026 | |
| 12/07/04 11:12:37 | RXSERVE | TCP_Listener | 512 | |
| 12/07/04 11:12:37 | RXSERVE | TCP_Listener | 514 | |
| 12/07/04 11:12:37 | FTPD1 | TCP_Listener | 21 | |
| 12/07/04 11:12:37 | SNMPQE | UDP_Endpoint | 1027 | |
| 12/07/04 11:12:37 | SNMPQE | UDP_Endpoint | 162 | 192.168.1.149:1 |
| 12/07/04 11:12:37 | SNMPQE | TCP_Listener | 1027 | |

Ready | Hub Time: Tue, 12/07/2004 11:12 AM | Server Available. | Connections - kratz - SYSADMIN *ADMIN MODE*

# TN3270


Physical
Gateways and
FTP
OSA
TCP/IP Memory
TN3270 Server
VTAM
:0239
VTAM:0239
CSM
EE
HPR
Physical

**Inbound Bytes by Telnet LU**

Bytes
400
300
200
100
0
NTCP5602
Telnet LU Name
BYTSINTOT
GBYTINTOT

**Outbound Bytes by Telnet LU**

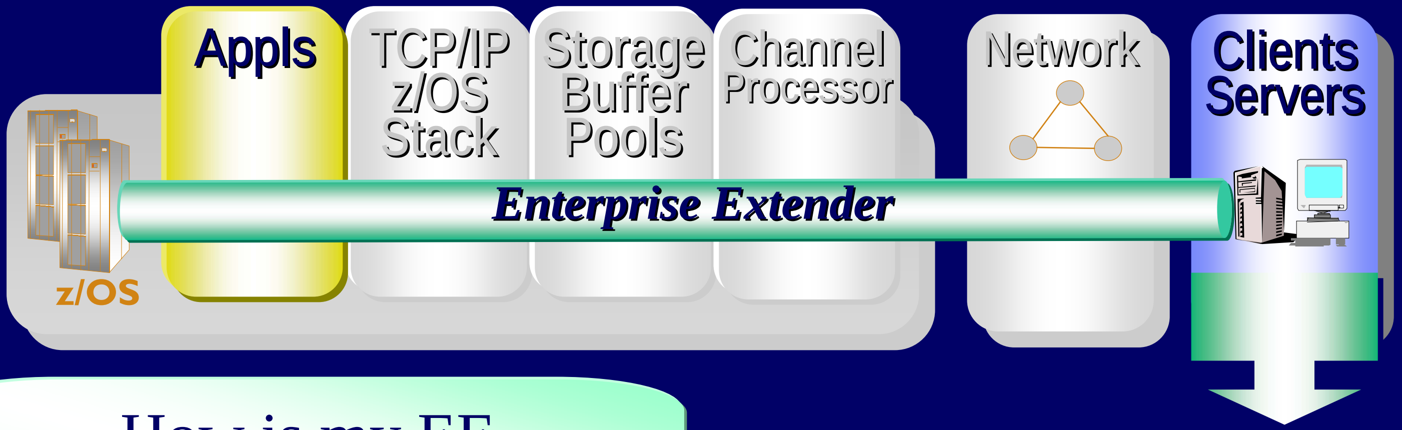
Bytes
5000
4000
3000
2000
1000
0
NTCP5602
Telnet LU Name
BYTSOUTTOT
GBYTOUTTOT

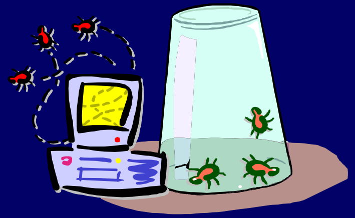
**TN3270 Server Session Summary**

| TIMESTAMP | LUNAME | SNALUNAME | REMOTEIP | LOCALIP | REMPORT | LOCALP |
|---|---|---|---|---|---|---|
| 1041206082436000 | NTCP5602 | NT56TSO2 | 192.168.0.121 | 192.168.1.149 | 0 | |
| 1041206082501000 | NTCP5602 | NT56TSO2 | 192.168.0.121 | 192.168.1.149 | 1112 | |

Ready | Hub Time: Mon, 12/06/2004 08:25 AM | Server Available. | TN3270 Server Session Availability - kratz - SYSADMIN *ADMIN MODE*

# Enterprise Extender Analysis

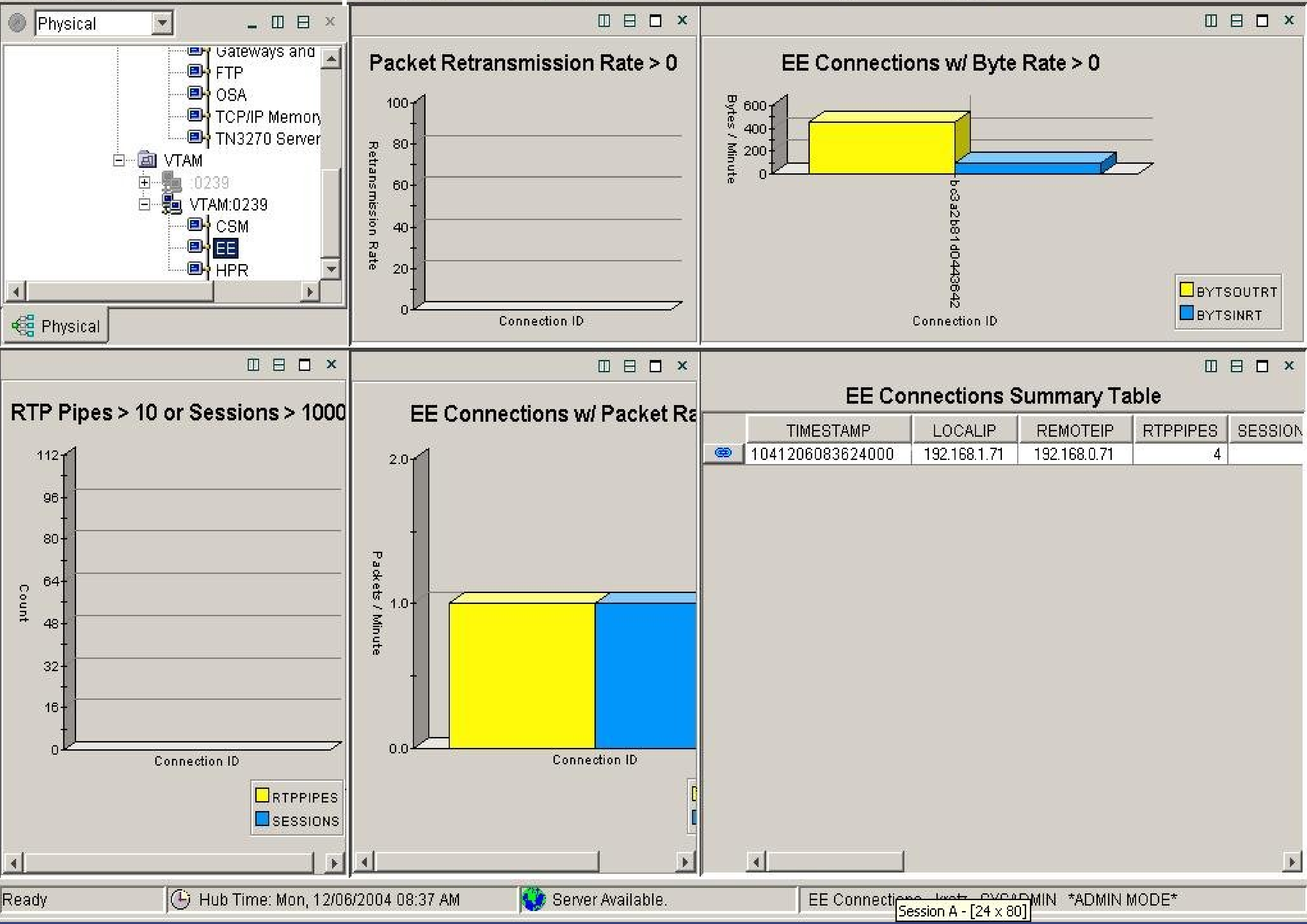

Appls
TCP/IP z/OS Stack
Storage Buffer Pools
Channel Processor
Network
Clients Servers
Enterprise Extender
z/OS



How is my EE performing?

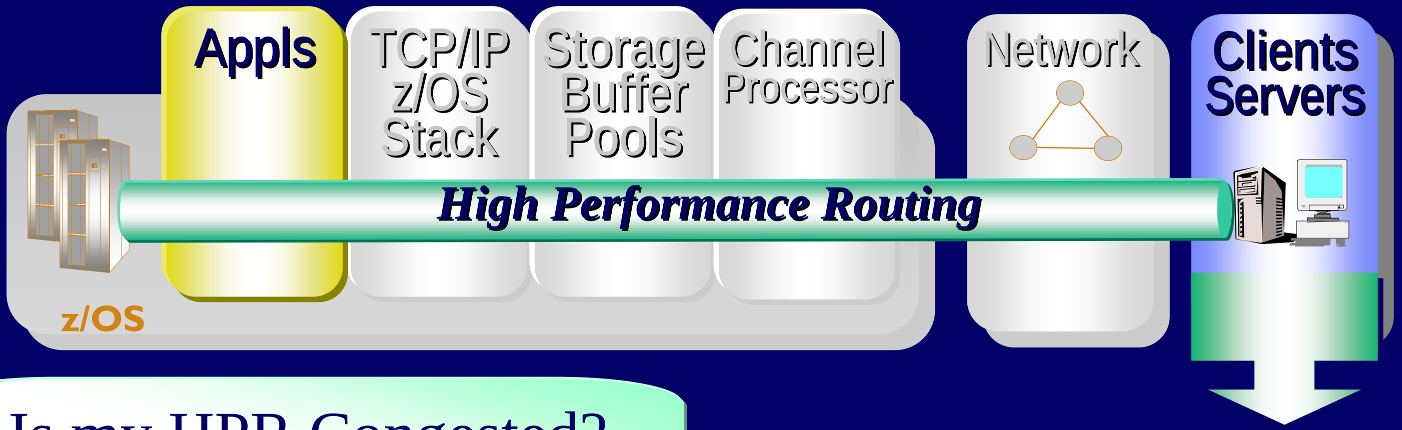
- EE Analysis
  - Throughput Rates
  - Retransmission Rates
  - RTP Pipes
  - Sessions
  - Drill down to Port Details
  - Type of Service (TOS)

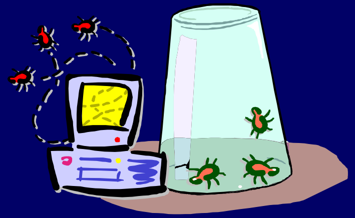
# Enterprise Extender


Physical
Gateways and
FTP
OSA
TCP/IP Memory
TN3270 Server
VTAM
:0239
VTAM:0239
CSM
EE
HPR
Physical
Packet Retransmission Rate > 0
100
80
60
40
20
0
Retransmission Rate
Connection ID
EE Connections w/ Byte Rate > 0
600
400
200
0
Bytes / Minute
bc3a2b81d0443642
Connection ID
BYTSOUTRT
BYTSINRT
RTP Pipes > 10 or Sessions > 1000
112
96
80
64
48
32
16
0
Count
Connection ID
RTPPIPES
SESSIONS
EE Connections w/ Packet Ra
2.0
1.0
0.0
Packets / Minute
Connection ID
EE Connections Summary Table
Ready
Hub Time: Mon, 12/06/2004 08:37 AM
Server Available.
EE Connecti
MIN *ADMIN MODE*
Session A - [24 x 80]

|  | TIMESTAMP | LOCALIP | REMOTEIP | RTPPIPES | SESSION |
|---|---|---|---|---|---|
|  | 1041206083624000 | 192.168.1.71 | 192.168.0.71 | 4 |  |

# High Performance Routing (HPR) Analysis

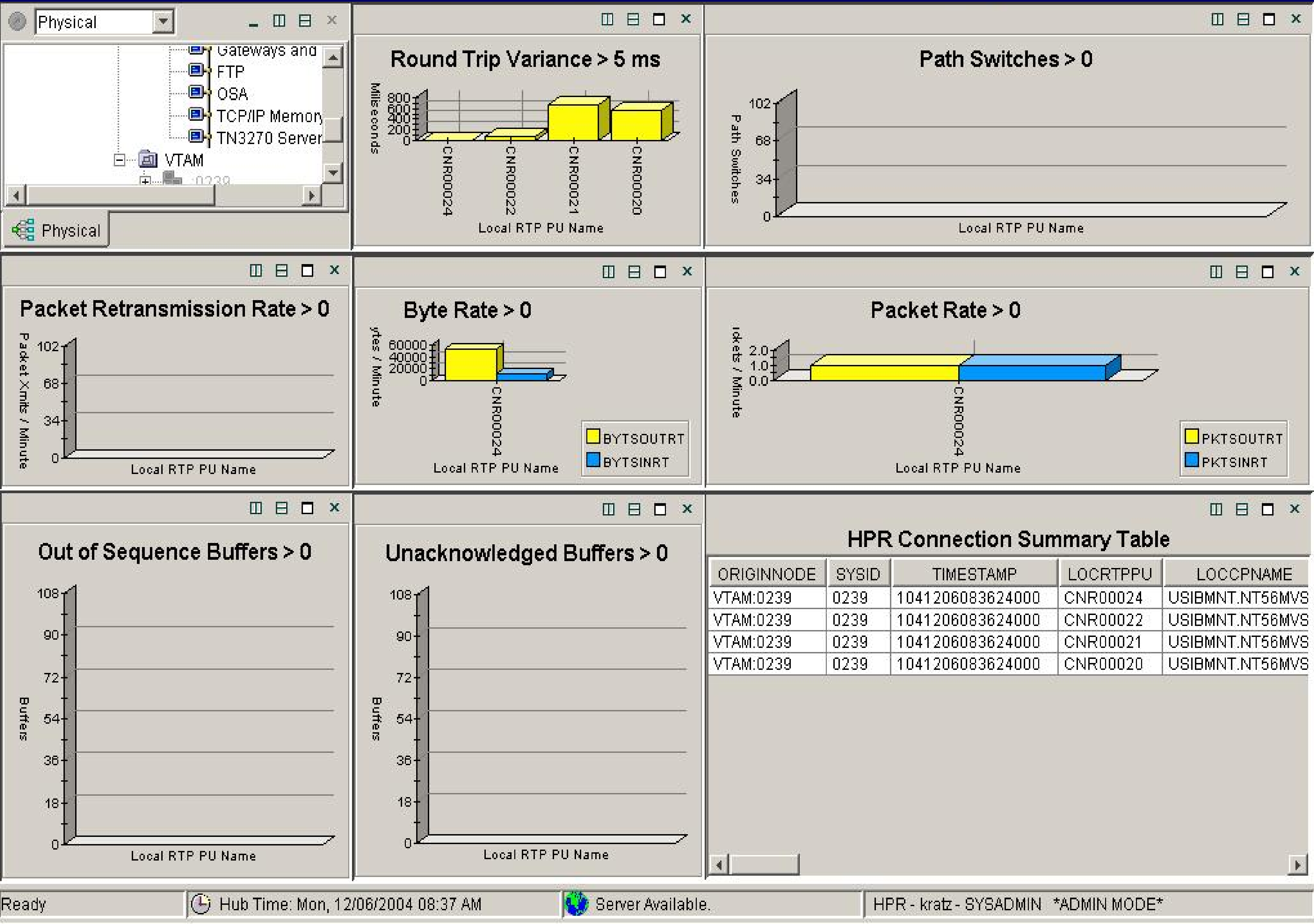

Appls
TCP/IP z/OS Stack
Storage Buffer Pools
Channel Processor
Network
Clients Servers
High Performance Routing
z/OS



Is my HPR Congested?

- **HPR Analysis**
  - **Throughput Rates**
  - **Retransmission Rates**
  - **RTP Pipe congestion**
  - **Round trip time**
  - **Sessions, CPnames**
  - **Drill down to link Details**
  - **Class of Service**

# HPR Performance


Physical
Gateways and
FTP
OSA
TCP/IP Memory
TN3270 Server
VTAM
0239
Physical
Round Trip Variance > 5 ms
Milliseconds
800
600
400
200
0
CNR00024
CNR00022
CNR00021
CNR00020
Local RTP PU Name
Path Switches > 0
Path Switches
102
68
34
0
Local RTP PU Name
Packet Retransmission Rate > 0
Packet Xmits / Minute
102
68
34
0
Local RTP PU Name
Byte Rate > 0
ytes / Minute
60000
40000
20000
0
CNR00024
Local RTP PU Name
BYTSOUTRT
BYTSINRT
Packet Rate > 0
ickets / Minute
2.0
1.0
0.0
CNR00024
Local RTP PU Name
PKTSOUTRT
PKTSINRT
Out of Sequence Buffers > 0
Buffers
108
90
72
54
36
18
0
Local RTP PU Name
Unacknowledged Buffers > 0
Buffers
108
90
72
54
36
18
0
Local RTP PU Name

**HPR Connection Summary Table**

| ORIGINNODE | SYSID | TIMESTAMP | LOCRTPPU | LOCCPNAME |
|---|---|---|---|---|
| VTAM:0239 | 0239 | 1041206083624000 | CNR00024 | USIBMNT.NT56MVS |
| VTAM:0239 | 0239 | 1041206083624000 | CNR00022 | USIBMNT.NT56MVS |
| VTAM:0239 | 0239 | 1041206083624000 | CNR00021 | USIBMNT.NT56MVS |
| VTAM:0239 | 0239 | 1041206083624000 | CNR00020 | USIBMNT.NT56MVS |

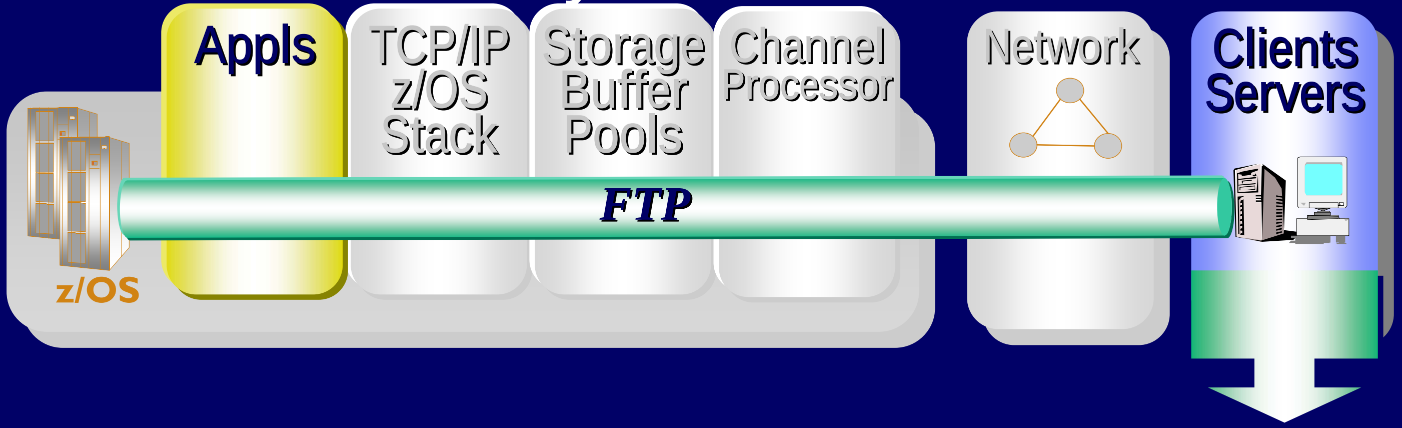
Ready

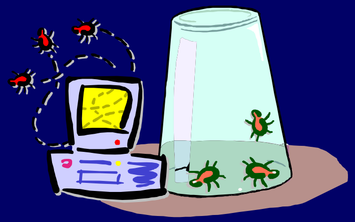
Hub Time: Mon, 12/06/2004 08:37 AM

Server Available.

HPR - kratz - SYSADMIN *ADMIN MODE*

# FTP Analysis


z/OS
Appls
TCP/IP z/OS Stack
Storage Buffer Pools
Channel Processor
Network
Clients Servers
FTP



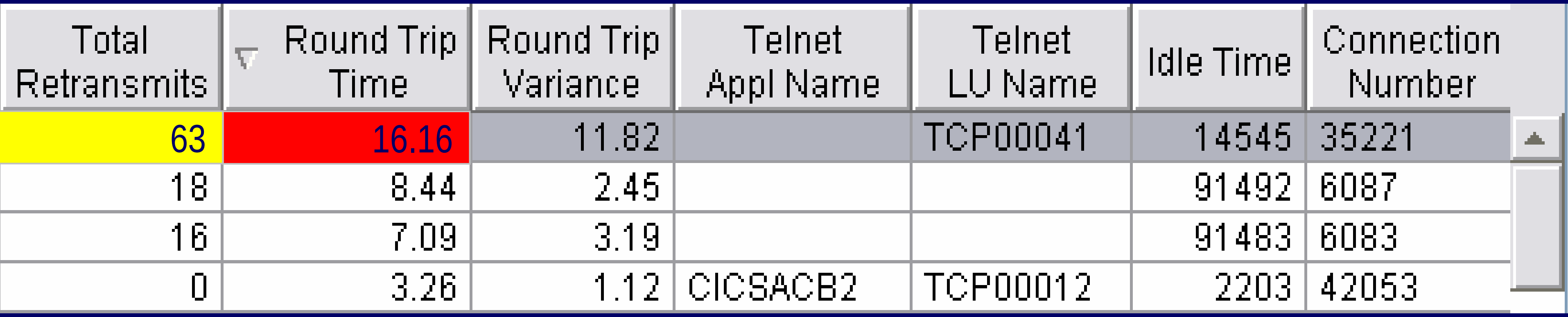
Who is doing large FTPs during 1st shift?

- FTP Analysis
  - Datasets names
  - By Bytes
  - By failures
  - Last command
  - Login Failure reason
  - Transmission Mode
  - By Application

# Managing FTPs

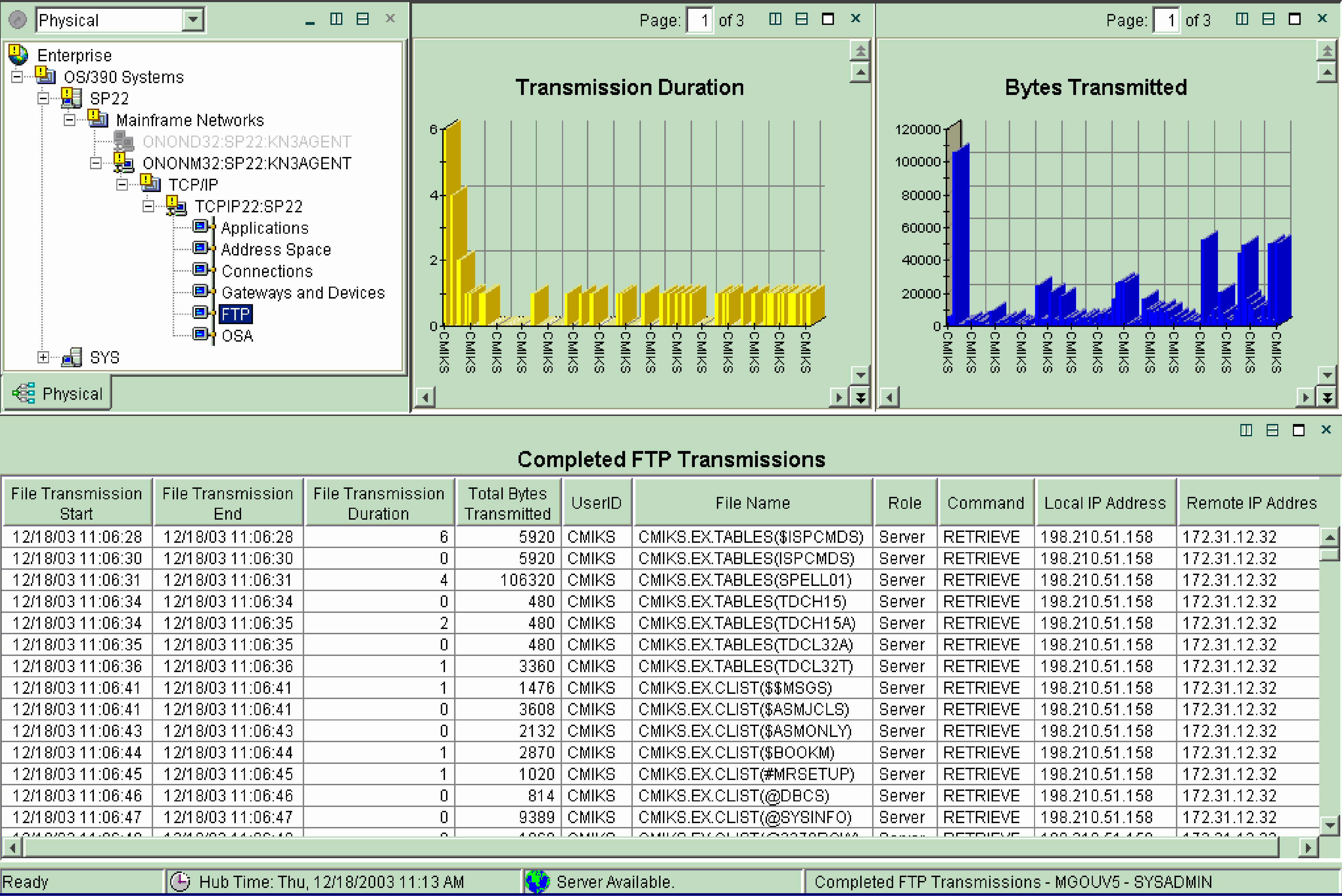
Why is my FTP performance so bad?

My Retransmissions are high!



| Total Retransmits | Round Trip Time | Round Trip Variance | Telnet Appl Name | Telnet LU Name | Idle Time | Connection Number |
|---|---|---|---|---|---|---|
| 63 | 16.16 | 11.82 | | TCP00041 | 14545 | 35221 |
| 18 | 8.44 | 2.45 | | | 91492 | 6087 |
| 16 | 7.09 | 3.19 | | | 91483 | 6083 |
| 0 | 3.26 | 1.12 | CICSACB2 | TCP00012 | 2203 | 42053 |

# Completed FTP Analysis


Physical
Enterprise
OS/390 Systems
SP22
Mainframe Networks
ONOND32:SP22:KN3AGENT
ONONM32:SP22:KN3AGENT
TCP/IP
TCPIP22:SP22
Applications
Address Space
Connections
Gateways and Devices
FTP
OSA
SYS
Physical
Page: 1 of 3
Transmission Duration
6
4
2
0
CMIKS
Page: 1 of 3
Bytes Transmitted
120000
100000
80000
60000
40000
20000
0
CMIKS

## Completed FTP Transmissions

| File Transmission Start | File Transmission End | File Transmission Duration | Total Bytes Transmitted | UserID | File Name | Role | Command | Local IP Address | Remote IP Addres |
|---|---|---|---|---|---|---|---|---|---|
| 12/18/03 11:06:28 | 12/18/03 11:06:28 | 6 | 5920 | CMIKS | CMIKS.EX.TABLES($ISPCMDS) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:30 | 12/18/03 11:06:30 | 0 | 5920 | CMIKS | CMIKS.EX.TABLES(ISPCMDS) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:31 | 12/18/03 11:06:31 | 4 | 106320 | CMIKS | CMIKS.EX.TABLES(SPELL01) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:34 | 12/18/03 11:06:34 | 0 | 480 | CMIKS | CMIKS.EX.TABLES(TDCH15) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:34 | 12/18/03 11:06:35 | 2 | 480 | CMIKS | CMIKS.EX.TABLES(TDCH15A) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:35 | 12/18/03 11:06:35 | 0 | 480 | CMIKS | CMIKS.EX.TABLES(TDCL32A) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:36 | 12/18/03 11:06:36 | 1 | 3360 | CMIKS | CMIKS.EX.TABLES(TDCL32T) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:41 | 12/18/03 11:06:41 | 1 | 1476 | CMIKS | CMIKS.EX.CLIST($$MSGS) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:41 | 12/18/03 11:06:41 | 0 | 3608 | CMIKS | CMIKS.EX.CLIST($ASMJCLS) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:43 | 12/18/03 11:06:43 | 0 | 2132 | CMIKS | CMIKS.EX.CLIST($ASMONLY) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:44 | 12/18/03 11:06:44 | 1 | 2870 | CMIKS | CMIKS.EX.CLIST($BOOKM) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:45 | 12/18/03 11:06:45 | 1 | 1020 | CMIKS | CMIKS.EX.CLIST(#MRSETUP) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:46 | 12/18/03 11:06:46 | 0 | 814 | CMIKS | CMIKS.EX.CLIST(@DBCS) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |
| 12/18/03 11:06:47 | 12/18/03 11:06:47 | 0 | 9389 | CMIKS | CMIKS.EX.CLIST(@SYSINFO) | Server | RETRIEVE | 198.210.51.158 | 172.31.12.32 |

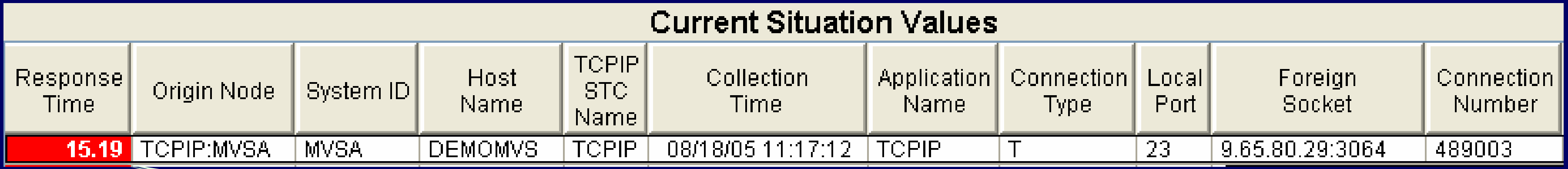
Ready

Hub Time: Thu, 12/18/2003 11:13 AM

Server Available.

Completed FTP Transmissions - MGOUV5 - SYSADMIN

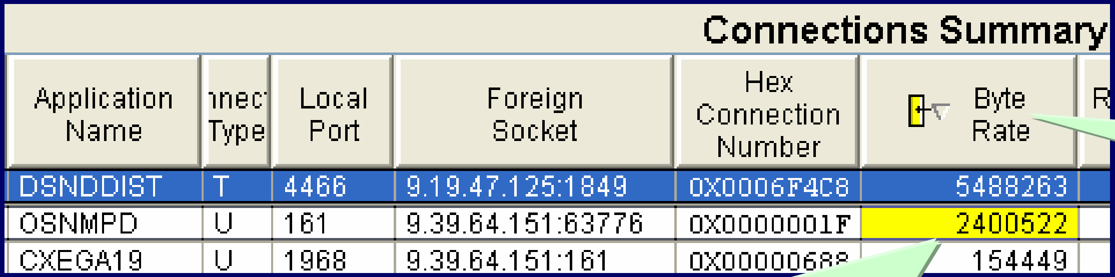
# Situations and Thresholds



**Current Situation Values**

| Response Time | Origin Node | System ID | Host Name | TCPIP STC Name | Collection Time | Application Name | Connection Type | Local Port | Foreign Socket | Connection Number |
|---|---|---|---|---|---|---|---|---|---|---|
| 15.19 | TCPIP:MVSA | MVSA | DEMOMVS | TCPIP | 08/18/05 11:17:12 | TCPIP | T | 23 | 9.65.80.29:3064 | 489003 |

OMEGAMON XE for Mainframe Networks provides:
67 Situations out-of-the-box.
16 of these situations are auto-started



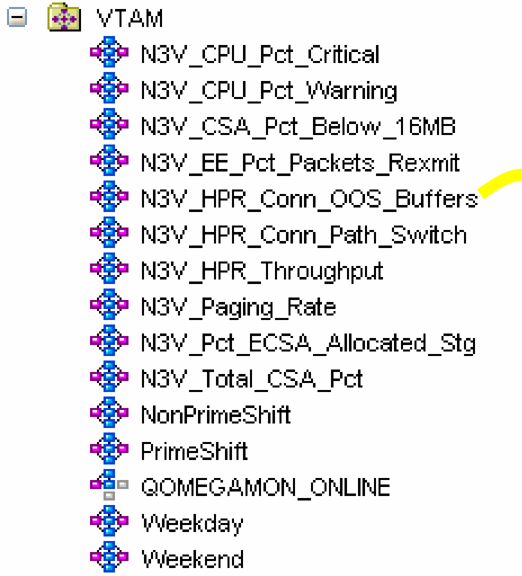
**Connections Summary**

| Application Name | nnect Type | Local Port | Foreign Socket | Hex Connection Number | Byte Rate | R |
|---|---|---|---|---|---|---|
| DSNDDIST | T | 4466 | 9.19.47.125:1849 | 0X0006F4C8 | 5488263 | |
| OSNMPD | U | 161 | 9.39.64.151:63776 | 0X0000001F | 2400522 | |
| CXEGA19 | U | 1968 | 9.39.64.151:161 | 0X0000068 | 154449 | |

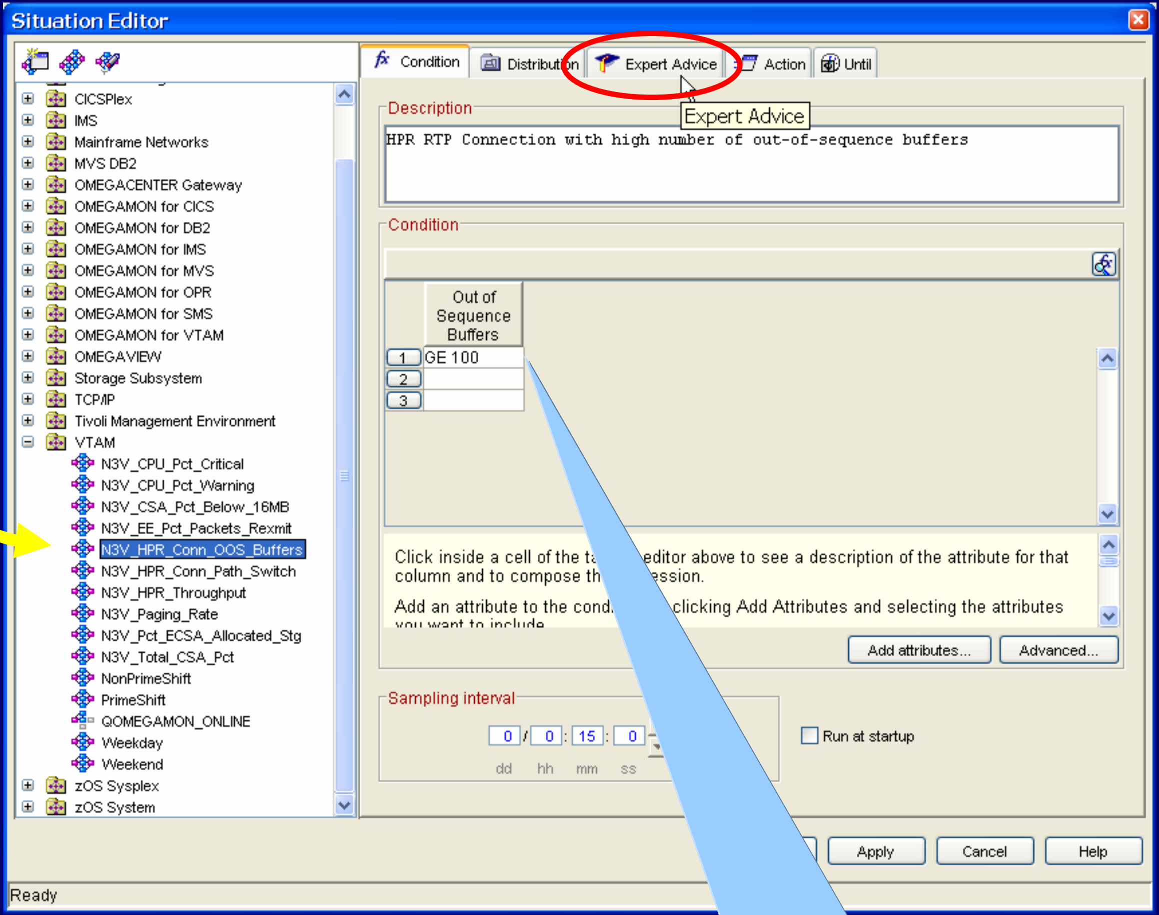
You can click on a column (attribute) and sort by High or low values

Out-of-the-box Threshold values are provided for most metrics (attributes). When the threshold is exceeded, the column that displays the metric gets an icon AND the resource is highlighted as Warning (Yellow) or Critical (Red).

# VTAM Situations



VTAM
- N3V_CPU_Pct_Critical
- N3V_CPU_Pct_Warning
- N3V_CSA_Pct_Below_16MB
- N3V_EE_Pct_Packets_Rexmit
- N3V_HPR_Conn_OOS_Buffers
- N3V_HPR_Conn_Path_Switch
- N3V_HPR_Throughput
- N3V_Paging_Rate
- N3V_Pct_ECSA_Allocated_Stg
- N3V_Total_CSA_Pct
- NonPrimeShift
- PrimeShift
- QOMEGAMON_ONLINE
- Weekday
- Weekend



Situation Editor
Condition
Distribution
Expert Advice
Action
Until
CICSPlex
IMS
Mainframe Networks
MVS DB2
OMEGACENTER Gateway
OMEGAMON for CICS
OMEGAMON for DB2
OMEGAMON for IMS
OMEGAMON for MVS
OMEGAMON for OPR
OMEGAMON for SMS
OMEGAMON for VTAM
OMEGAVIEW
Storage Subsystem
TCP/IP
Tivoli Management Environment
VTAM
N3V_CPU_Pct_Critical
N3V_CPU_Pct_Warning
N3V_CSA_Pct_Below_16MB
N3V_EE_Pct_Packets_Rexmit
N3V_HPR_Conn_OOS_Buffers
N3V_HPR_Conn_Path_Switch
N3V_HPR_Throughput
N3V_Paging_Rate
N3V_Pct_ECSA_Allocated_Stg
N3V_Total_CSA_Pct
NonPrimeShift
PrimeShift
QOMEGAMON_ONLINE
Weekday
Weekend
zOS Sysplex
zOS System
Add attributes...
Advanced...
Apply
Cancel
Help
Ready

Description: HPR RTP Connection with high number of out-of-sequence buffers

Condition:

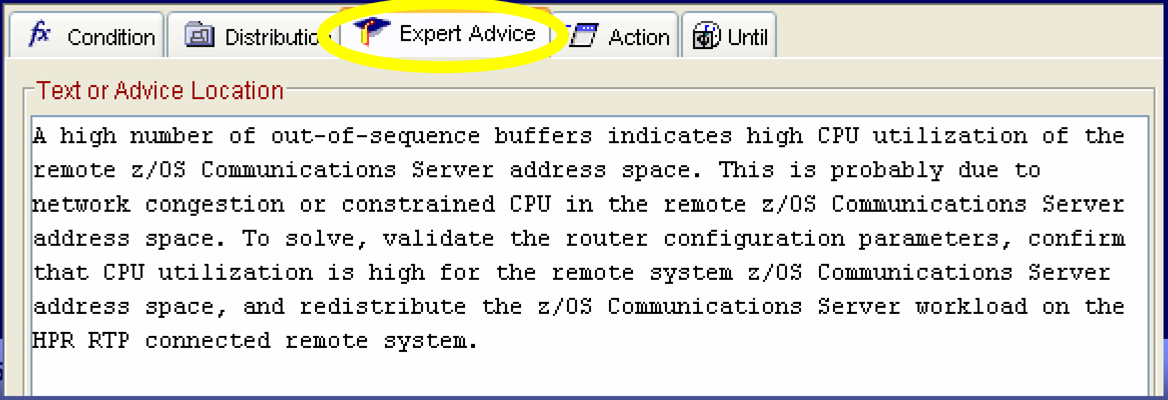
| | Out of Sequence Buffers |
|---|---|
| 1 | GE 100 |
| 2 | |
| 3 | |

Click inside a cell of the ta… editor above to see a description of the attribute for that column and to compose th… …ession.

Add an attribute to the cond… …clicking Add Attributes and selecting the attributes you want to include

Sampling interval: 0 / 0 : 15 : 0 (dd hh mm ss)

☐ Run at startup



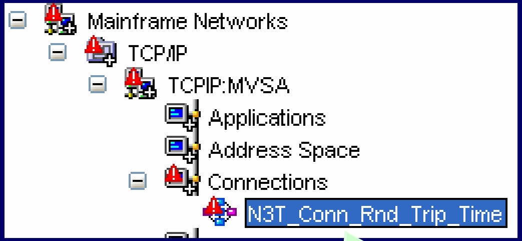
Condition
Distributio
Expert Advice
Action
Until

Text or Advice Location

A high number of out-of-sequence buffers indicates high CPU utilization of the remote z/OS Communications Server address space. This is probably due to network congestion or constrained CPU in the remote z/OS Communications Server address space. To solve, validate the router configuration parameters, confirm that CPU utilization is high for the remote system z/OS Communications Server address space, and redistribute the z/OS Communications Server workload on the HPR RTP connected remote system.

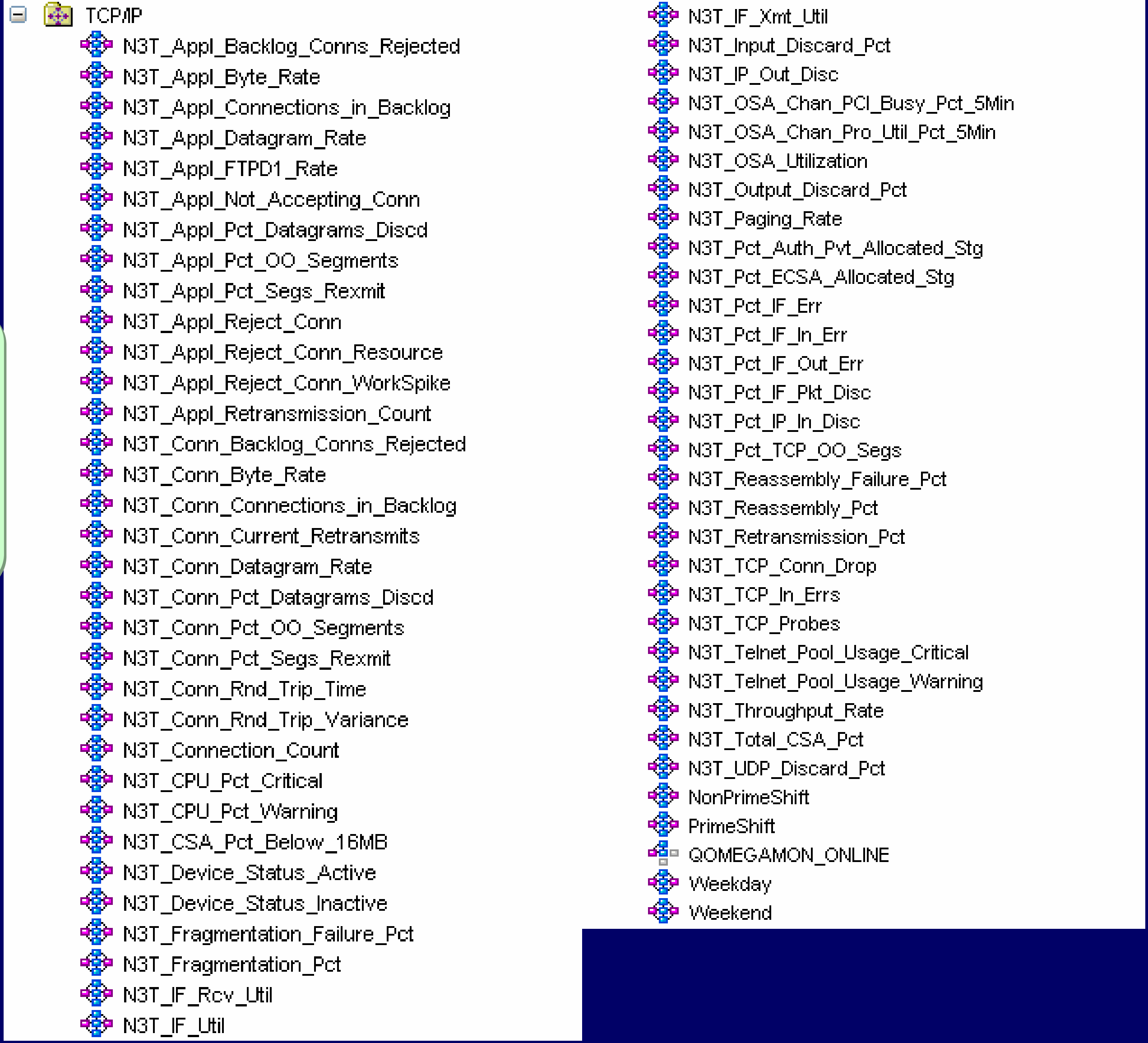
Point n' click to change threshold conditions.
If those conditions are met, an Event is created

# TCP/IP Situations

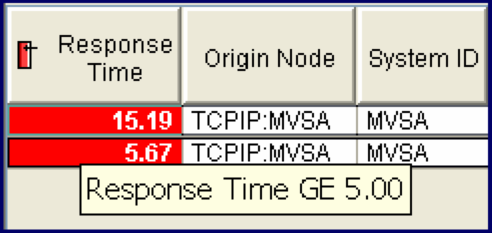


- Mainframe Networks
  - TCP/IP
    - TCPIP:MVSA
      - Applications
      - Address Space
      - Connections
        - N3T_Conn_Rnd_Trip_Time

OMEGAMON 101:
You can monitor Events (which are triggered by Situations meeting target conditions) from the Navigation Tree or the Event Console



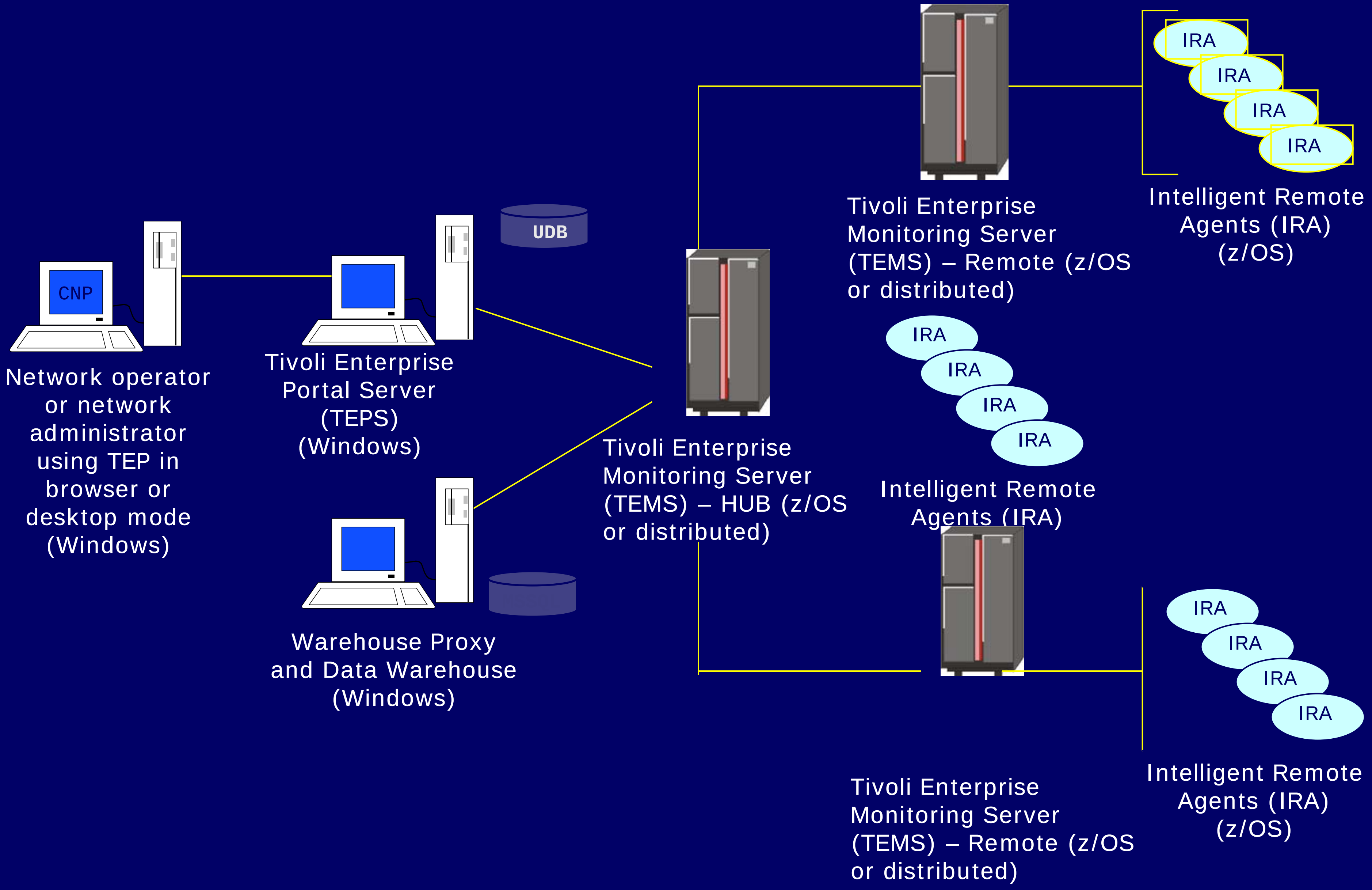
- TCP/IP
  - N3T_Appl_Backlog_Conns_Rejected
  - N3T_Appl_Byte_Rate
  - N3T_Appl_Connections_in_Backlog
  - N3T_Appl_Datagram_Rate
  - N3T_Appl_FTPD1_Rate
  - N3T_Appl_Not_Accepting_Conn
  - N3T_Appl_Pct_Datagrams_Discd
  - N3T_Appl_Pct_OO_Segments
  - N3T_Appl_Pct_Segs_Rexmit
  - N3T_Appl_Reject_Conn
  - N3T_Appl_Reject_Conn_Resource
  - N3T_Appl_Reject_Conn_WorkSpike
  - N3T_Appl_Retransmission_Count
  - N3T_Conn_Backlog_Conns_Rejected
  - N3T_Conn_Byte_Rate
  - N3T_Conn_Connections_in_Backlog
  - N3T_Conn_Current_Retransmits
  - N3T_Conn_Datagram_Rate
  - N3T_Conn_Pct_Datagrams_Discd
  - N3T_Conn_Pct_OO_Segments
  - N3T_Conn_Pct_Segs_Rexmit
  - N3T_Conn_Rnd_Trip_Time
  - N3T_Conn_Rnd_Trip_Variance
  - N3T_Connection_Count
  - N3T_CPU_Pct_Critical
  - N3T_CPU_Pct_Warning
  - N3T_CSA_Pct_Below_16MB
  - N3T_Device_Status_Active
  - N3T_Device_Status_Inactive
  - N3T_Fragmentation_Failure_Pct
  - N3T_Fragmentation_Pct
  - N3T_IF_Rcv_Util
  - N3T_IF_Util
  - N3T_IF_Xmt_Util
  - N3T_Input_Discard_Pct
  - N3T_IP_Out_Disc
  - N3T_OSA_Chan_PCI_Busy_Pct_5Min
  - N3T_OSA_Chan_Pro_Util_Pct_5Min
  - N3T_OSA_Utilization
  - N3T_Output_Discard_Pct
  - N3T_Paging_Rate
  - N3T_Pct_Auth_Pvt_Allocated_Stg
  - N3T_Pct_ECSA_Allocated_Stg
  - N3T_Pct_IF_Err
  - N3T_Pct_IF_In_Err
  - N3T_Pct_IF_Out_Err
  - N3T_Pct_IF_Pkt_Disc
  - N3T_Pct_IP_In_Disc
  - N3T_Pct_TCP_OO_Segs
  - N3T_Reassembly_Failure_Pct
  - N3T_Reassembly_Pct
  - N3T_Retransmission_Pct
  - N3T_TCP_Conn_Drop
  - N3T_TCP_In_Errs
  - N3T_TCP_Probes
  - N3T_Telnet_Pool_Usage_Critical
  - N3T_Telnet_Pool_Usage_Warning
  - N3T_Throughput_Rate
  - N3T_Total_CSA_Pct
  - N3T_UDP_Discard_Pct
  - NonPrimeShift
  - PrimeShift
  - QOMEGAMON_ONLINE
  - Weekday
  - Weekend



| Response Time | Origin Node | System ID |
|---|---|---|
| 15.19 | TCPIP:MVSA | MVSA |
| 5.67 | TCPIP:MVSA | MVSA |

Response Time GE 5.00

# OMEGAMON XE Environment



Network operator or network administrator using TEP in browser or desktop mode (Windows)

Tivoli Enterprise Portal Server (TEPS) (Windows)

Warehouse Proxy and Data Warehouse (Windows)

Tivoli Enterprise Monitoring Server (TEMS) – HUB (z/OS or distributed)

Tivoli Enterprise Monitoring Server (TEMS) – Remote (z/OS or distributed)

Intelligent Remote Agents (IRA) (z/OS)

Intelligent Remote Agents (IRA)

Tivoli Enterprise Monitoring Server (TEMS) – Remote (z/OS or distributed)

Intelligent Remote Agents (IRA) (z/OS)

# Terminology Moving Forward

As part of the ITM 6.1 effort, the Candle platform components have been renamed as follows:

| Candle Name | Tivoli Name |
|---|---|
| OMEGAMON Platform | Tivoli Monitoring Services |
| CandleNet Portal (CNP) | Tivoli Enterprise Portal (TEP) |
| CandleNet Portal Server (CNPS) | Tivoli Enterprise Portal Server (TEPS) |
| Candle Management Server (CMS) | Tivoli Enterprise Monitoring Server (TEMS) |

# OMEGAMON XE Platform Prerequisites

- **Candle Management Server**
  - z/OS, Windows (2000, XP Pro, 2003 Server), AIX, HP, Solaris
- **CandleNet Portal Server**
  - Recommended hardware –
    - Intel P4 server capable of running Windows 2003, XP Pro or 2003 Server and DB2 UDB 8.1
  - Windows 2000, XP Pro, 2003 Server
  - DB2 8.1 (recommended) **OR** Microsoft SQL Server version 7.0 or 2000 **OR** MSDE
  - Java 1.3.1_04 or higher
- **CandleNet Portal**
  - Recommended hardware –
    - Intel system capable of running Windows XP Pro or Windows 2000
  - Windows XP Professional Edition w/SP 1 (or higher) or Windows 2000 w/SP 3 (or higher)
    - **CNP Desktop Client**
      - requires Sun Java v1.3.1_04 thru v.1.4.2_07
        - (excluding the 1.4.0 and 1.4.1 versions)
    - **CNP Browser** Client requires Internet Explorer 6 (or higher)
      - with Java Plug-in (same Java release levels as above)
- **Warehouse Proxy and Candle Data Warehouse**
  - Recommended hardware –
    - Intel P4 server capable of running Windows 2003, XP Pro or 2003 Server and Microsoft SQL Server version 7.0 or 2000
  - Windows 2000, XP Pro, 2003 Server
  - Microsoft SQL Server version 7.0 or Microsoft SQL Server 2000 (with fix pack 3)

# OMEGAMON XE for Mainframe Networks 3.1 Prerequisites

- OMEGAMON XE for Mainframe Networks IRA
  - z/OS 1.4 (or higher).
  - maintenance on z/OS 1.4 and z/OS 1.5.
- OSA-Express adapters
  - Either OSA/SF or SNMP direct
    - Must be configured and running in order to collect OSA statistics.
  - The OSA-Express support has been modified to support the latest version of the OSA-Express MIB.  To support this MIB, the Licensed Internal Code (LIC) levels of the OSA-Express adapters must meet the following criteria:
  - OSA module on a z900 or z800 system
    - LIC version of 3.33 or higher installed
  - OSA module on a z990 processor
    - all LIC levels are supported.

# OMEGAMON XE for Mainframe Networks 3.1 Prerequisites

## Required maintenance on z/OS 1.4:

| APAR Number | Description |
|---|---|
| OA04394 | (VTAM) EE/HPR/CSM data collection |
| PQ77244 | (TCP/IP) TCP/IP stack enable network management interface APIs |
| PQ77633 | FTP client server records have invalid return code (see UQ80465) |
| PQ77837 | (TCP/IP) FTP enable network management interface APIs |
| PQ77838 | (TCP/IP) Config, Netstat, SNMP |
| PQ77840 | TCP/IP) IPCS enable network management interface APIs |
| PQ79583 | (TCP/IP) CPU missing from TCP/IP trace |
| PQ78753 | (TCP/IP) Correct FTP port & IP field information in SMF records |
| PQ74292 | SNMP getnext request error |
| PQ81716 | Telnet error in the date field for logon and logoff times |
| PQ83920 | Shareport not distributing connections evenly |
| PQ84072 | NETSTAT socket option displays incorrect information |
| PQ92481 | SNA collection exception CEE0374C Condition=CEE3204S |
| II13699 | Informational APAR on CD/390 API new function |

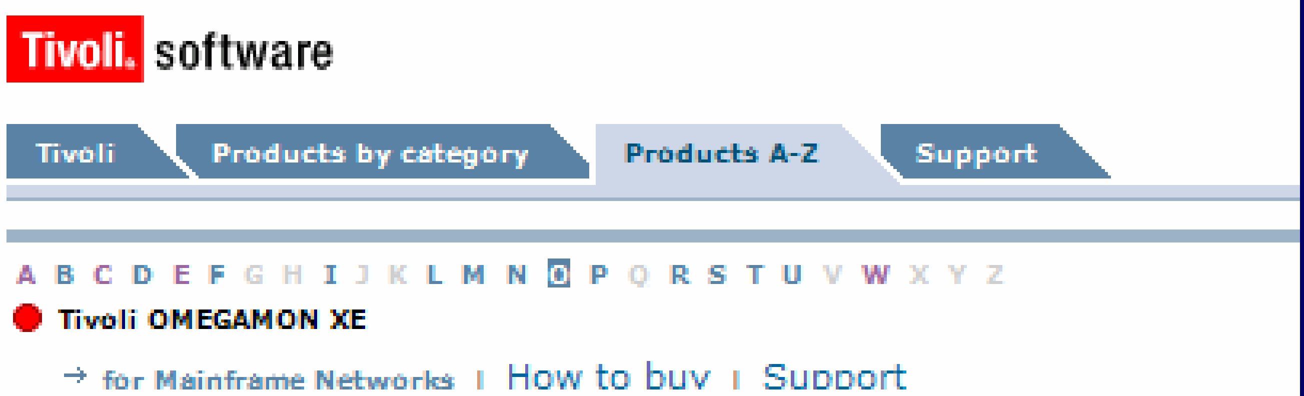
## Required maintenance on z/OS 1.5:

| APAR Number | Description |
|---|---|
| PQ78753 | Correct FTP port and IP field information in SMF records |
| PQ81716 | Telnet error in the date field for logon and logoff times |

# Where to go for more information

Product overviews, Manuals, Demos, and Support

http://www.ibm.com/software/tivoli/sw-atoz/index.html


Tivoli. software
Tivoli
Products by category
Products A-Z
Support
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Tivoli OMEGAMON XE
→ for Mainframe Networks | How to buy | Support

**White Paper**

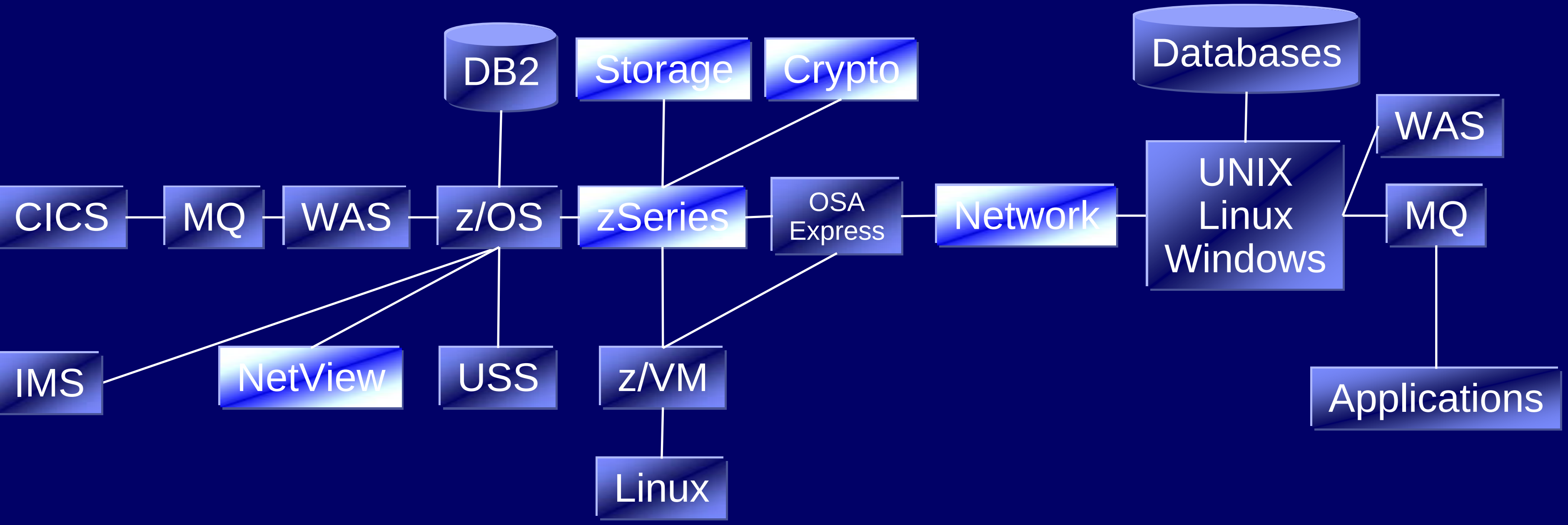
**NetView for z/OS V5.2: Integrated enterprise management with OMEGAMON**

http://www-306.ibm.com/software/tivoli/features/ccr2/ccr2-2005-11/product_updatesII.html

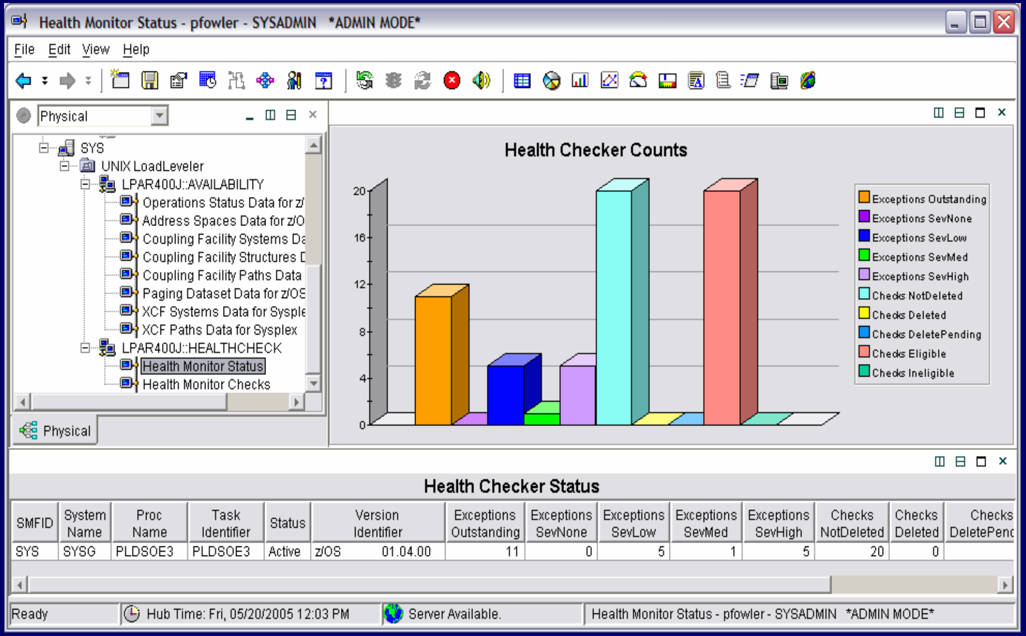
**Red Book OSA-Express Implementation Guide**

http://publib-b.boulder.ibm.com/abstracts/sg245948.html?Open

# OMEGAMON End-to-End



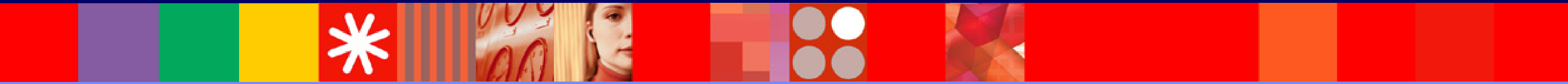
DB2
Storage
Crypto
Databases
WAS
CICS
MQ
WAS
z/OS
zSeries
OSA Express
Network
UNIX Linux Windows
MQ
IMS
NetView
USS
z/VM
Applications
Linux


Health Monitor Status - pfowler - SYSADMIN *ADMIN MODE*
File
Edit
View
Help
Physical
SYS
UNIX LoadLeveler
LPAR400J::AVAILABILITY
Operations Status Data for z/
Address Spaces Data for z/O
Coupling Facility Systems Da
Coupling Facility Structures D
Coupling Facility Paths Data
Paging Dataset Data for z/OS
XCF Systems Data for Sysple
XCF Paths Data for Sysplex
LPAR400J::HEALTHCHECK
Health Monitor Status
Health Monitor Checks
Physical
Health Checker Counts
20
16
12
8
4
0
Exceptions Outstanding
Exceptions SevNone
Exceptions SevLow
Exceptions SevMed
Exceptions SevHigh
Checks NotDeleted
Checks Deleted
Checks DeletePending
Checks Eligible
Checks Ineligible

Health Checker Status

| SMFID | System Name | Proc Name | Task Identifier | Status | Version Identifier | Exceptions Outstanding | Exceptions SevNone | Exceptions SevLow | Exceptions SevMed | Exceptions SevHigh | Checks NotDeleted | Checks Deleted | Checks DeletePenc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SYS | SYSG | PLDSOE3 | PLDSOE3 | Active | z/OS 01.04.00 | 11 | 0 | 5 | 1 | 5 | 20 | 0 | |

Ready | Hub Time: Fri, 05/20/2005 12:03 PM | Server Available. | Health Monitor Status - pfowler - SYSADMIN *ADMIN MODE*

# Thank You