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Top 10 Tips for z/OS Network Performance Monitoring with OMEGAMON

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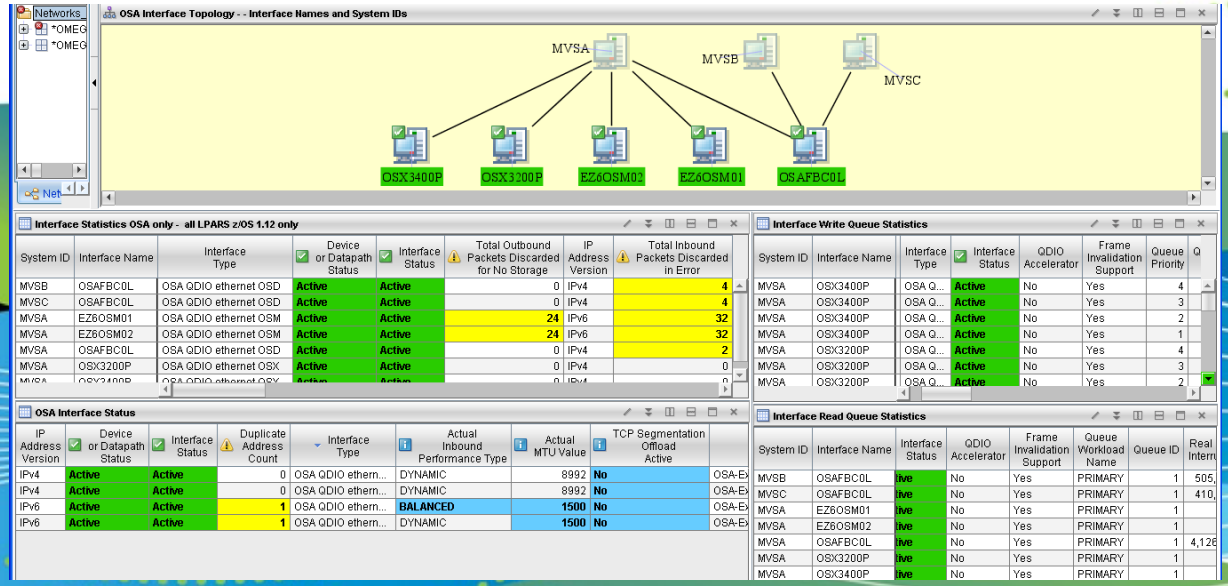
Session 10723



Agenda

- Overview of OMEGAMON for Mainframe Networks
- FP3 and z/OS 1.12

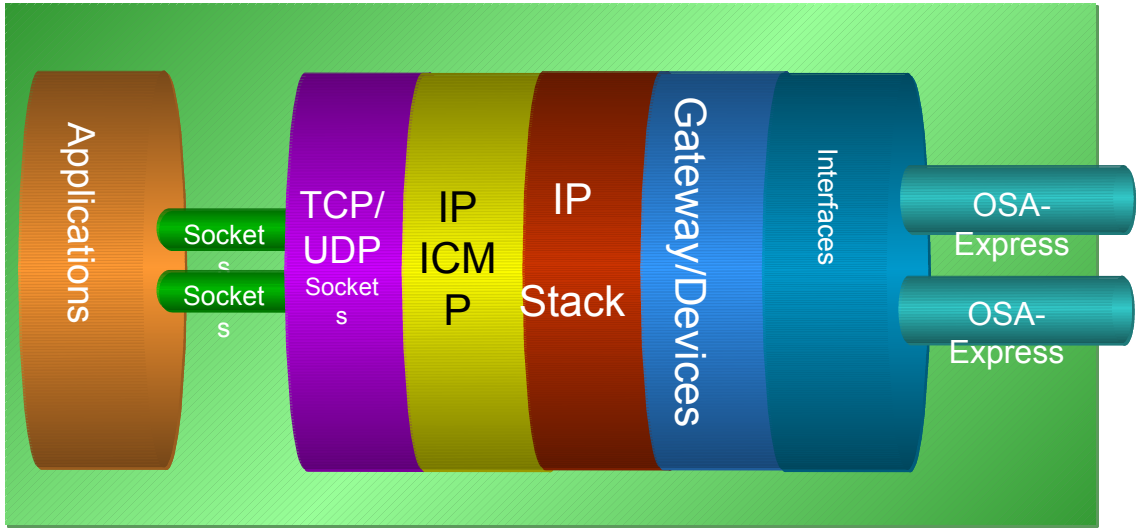
1. OSA Express and Interface status and utilization
2. Show all IP Stacks in one view
3. TCP/IP Connection backlog and rejections
4. High TCP/IP Connection response times
5. Zombie Connections
6. Single Application Focused Network Monitor
7. Bytes backing up on a connection
8. TN3270 Response time analysis
9. FTP Logon and transfer failures
10. EE and HPR performance issues

- This presentation will highlight best practices from customers who use OMEGAMON XE for Mainframe Network to monitor their z/OS Networking environment.

- Some of these best practices will include hundreds of new metrics that came in with OMEGAMON MFN FP3 and new interface details from IBM Communications Server for z/OS 1.12

- I created a custom DE Navigator view to highlight the best practices discusses in this presentation (Available on OPAL Network_Extended)

Overview



- Solutions that Monitors IBM z/OS Network performance
- **IBM OMEGAMON XE for Mainframe Networks V4R2**
  - Performance monitoring
  - FP3 added hundreds of new metrics, see slide at the end for details
- **IBM NetView for z/OS V6R1**
  - TEP Feeds
  - DVIPA – Extensive monitoring
  - TCP/IP Connection awareness
    - Inactive Connections with termination code
  - Real Time Packet and OSA Traces with on the fly analysis

z/OS Network Performance Data Collection Points

OMEGAMON XE for Mainframe Networks

NLDM API | TCP/IP NMI | VTAM API | SNMP

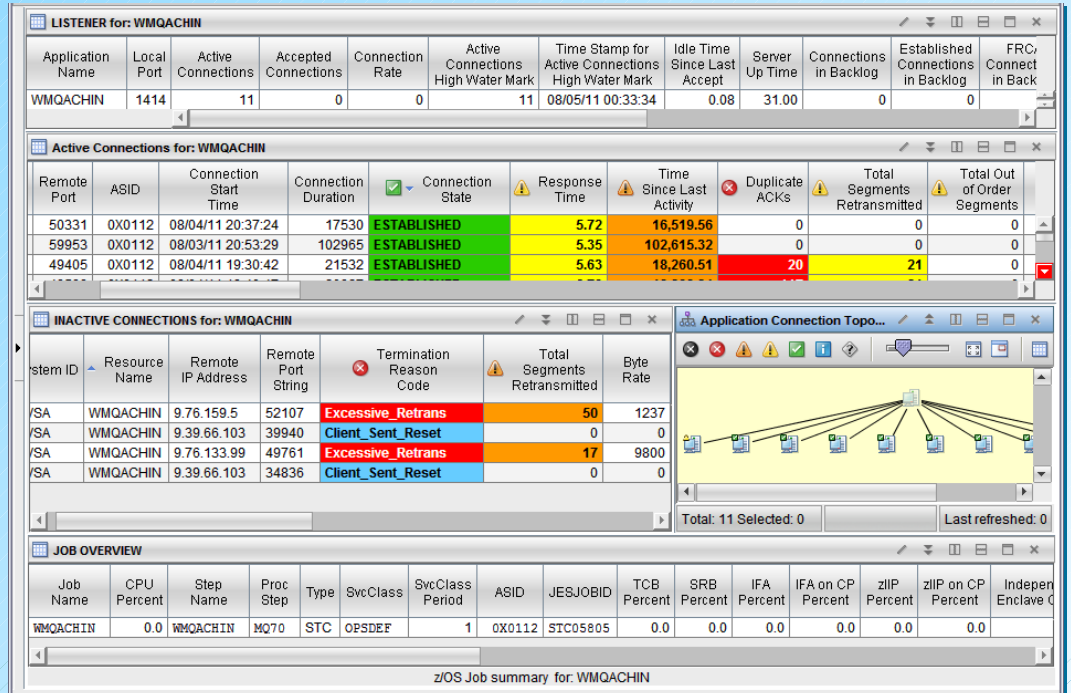
z/OS Communications Server

- **Collected using the TCP/IP NMI:**
  - Applications, Connections, TCP/IP Memory Statistics, IPSec
  - FTP Sessions and Transfers, TN3270 Server Sessions, Interfaces (z/OS 1.12)
- Collected using the VTAM API:
  - VTAM Summary, CSM Buffer Pools
  - Enterprise Extender (EE), High Performance Routing (HPR)
- Collected using SNMP:
  - Interfaces (z/OS 1.11 or before)
  - OSA
- Collected using the "Session Awareness and trace" API:
  - SNA Session Awareness and Trace

✓Move from SNMP and NETSTAT COMMANDS to the NMI API
✓Less overhead
✓Scalable

Tivoli Enterprise Portal (TEP) Highlights

- **Common user interface**
  - Manage z/OS system and distributed resources - single user interface.
  - Displays real time and historical ,and alerts at the same time
  - All customization and admin through the same interface
  - Define thresholds and generate events
- **Out of the box Best Practices**
  - Workspaces
  - Situations - Problem Signatures and Expert Advice (ALERTS)
- **Create your own views and situations**
  - To match responsibility and skill level

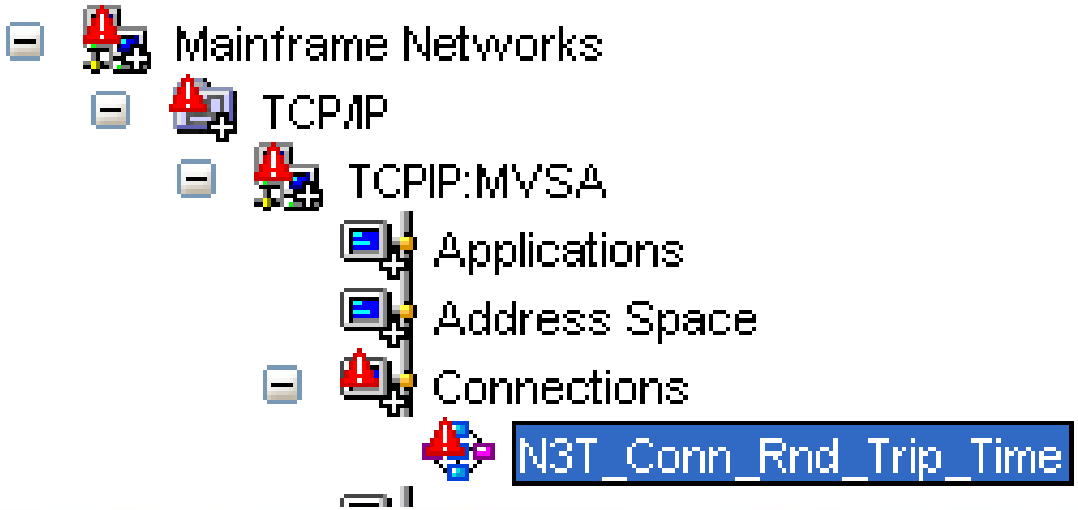


View Thresholds
Highlight metrics in a table you are viewing

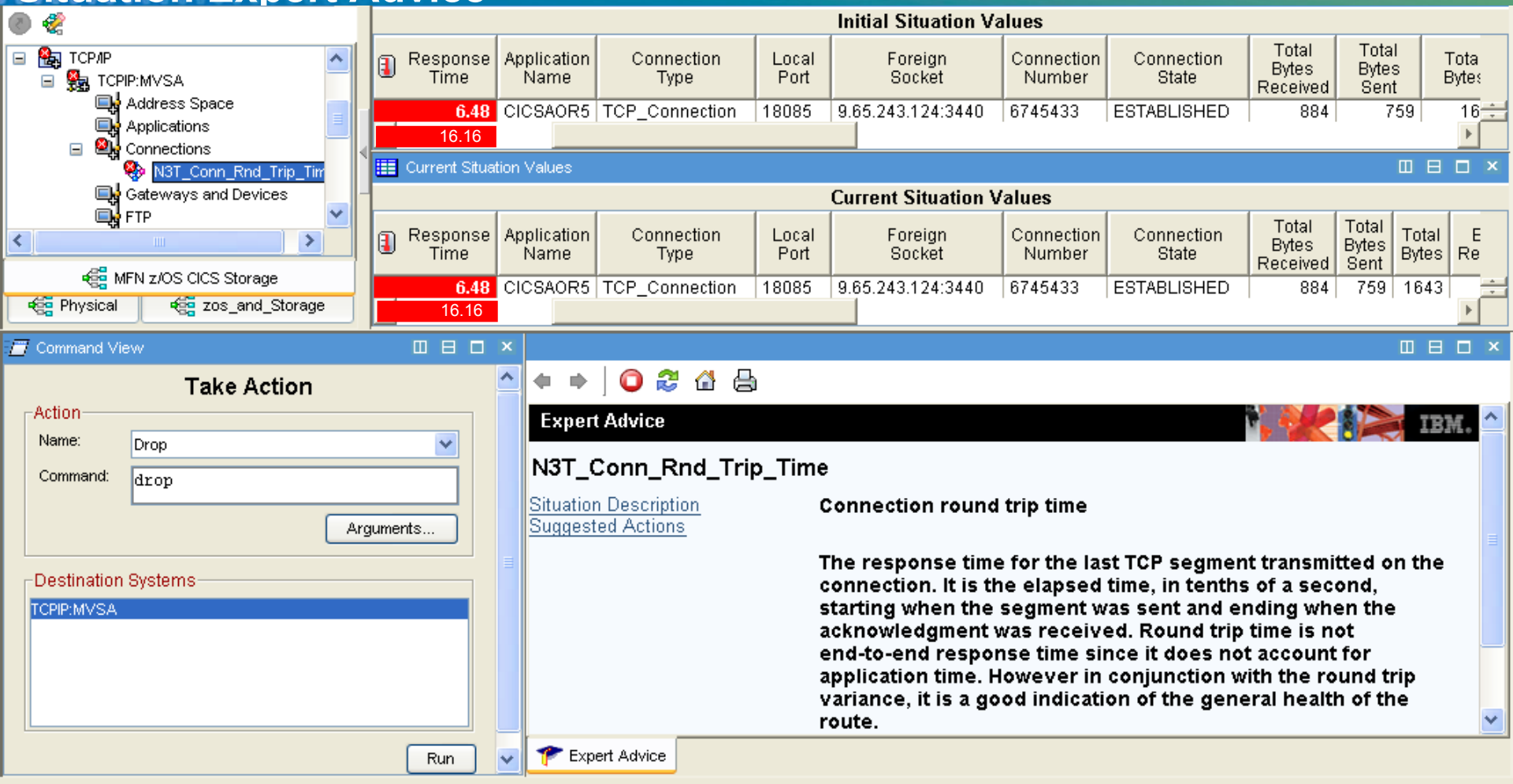
Response Time	Origin Node	System ID
15.19	TCPIP:MVSA	MVSA
5.67	TCPIP:MVSA	MVSA

Response Time GE 5.00

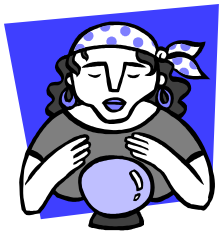
Situations
Notification, though the TEP or OMNIBUS or even an email



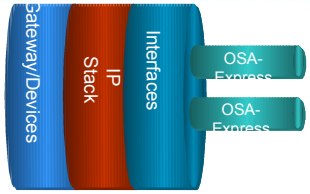
Situation Expert Advice



- **Initial Situation Values:** Captures metrics at timed triggers
- **Current Situation Values:** Compare current metrics with initial metrics
- **Expert Advice:** Provides suggested actions
- **Take Action:** Issue commands from TEP
- **Reflex Automation:** Automatically issue commands
- **Event Forwarding:** Can forwards alerts to OMNIBUS



OSA-Express and Interfaces



- Interface Status
  - (Enhancement with z/OS 1.12)
- Situation on OSA Interface Status.
- Alert of OSA Interface down.
- Check Microcode level
- Adjust MTU size to reduce fragmentation
- zEnterprise – Monitor new OSA types
- Previously hidden outbound prioritie queues (z/OS 1.12+)

Out of Box Expert Advice

Interfaces

- Device Inactive
- High bandwidth Utilization
- No traffic
- QDIO is Accelerating Bytes
- Max Staging queue depth
- DLC Read deferrals
- DLC Read Exhausted

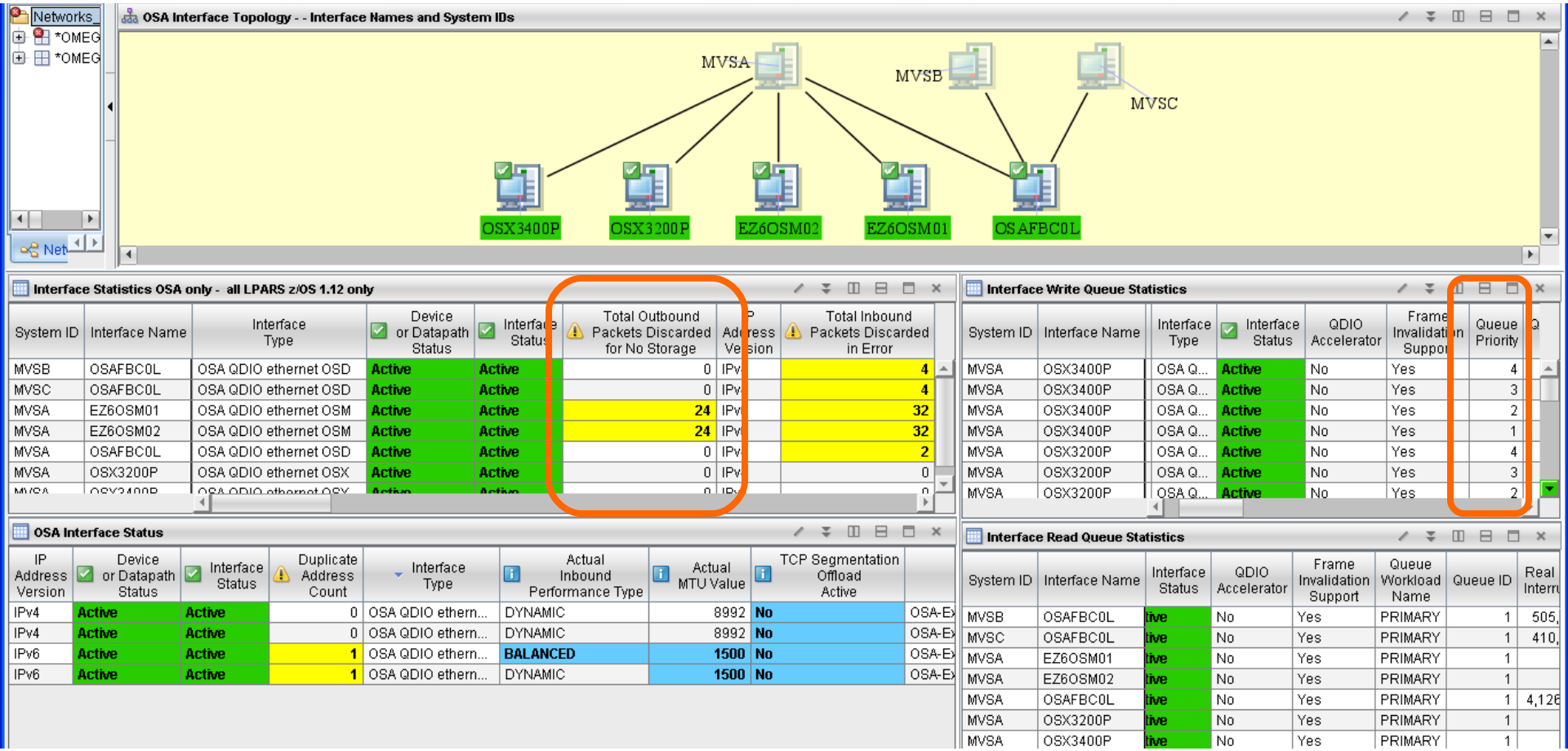
Out of Box Expert Advice

OSA Express

- High BUS Utilization
- Channel utilization
- Missed packets
- Not Stored Frames

Next a customized OSA WORKSPACE

Tip#1 Tuning OSA-Express

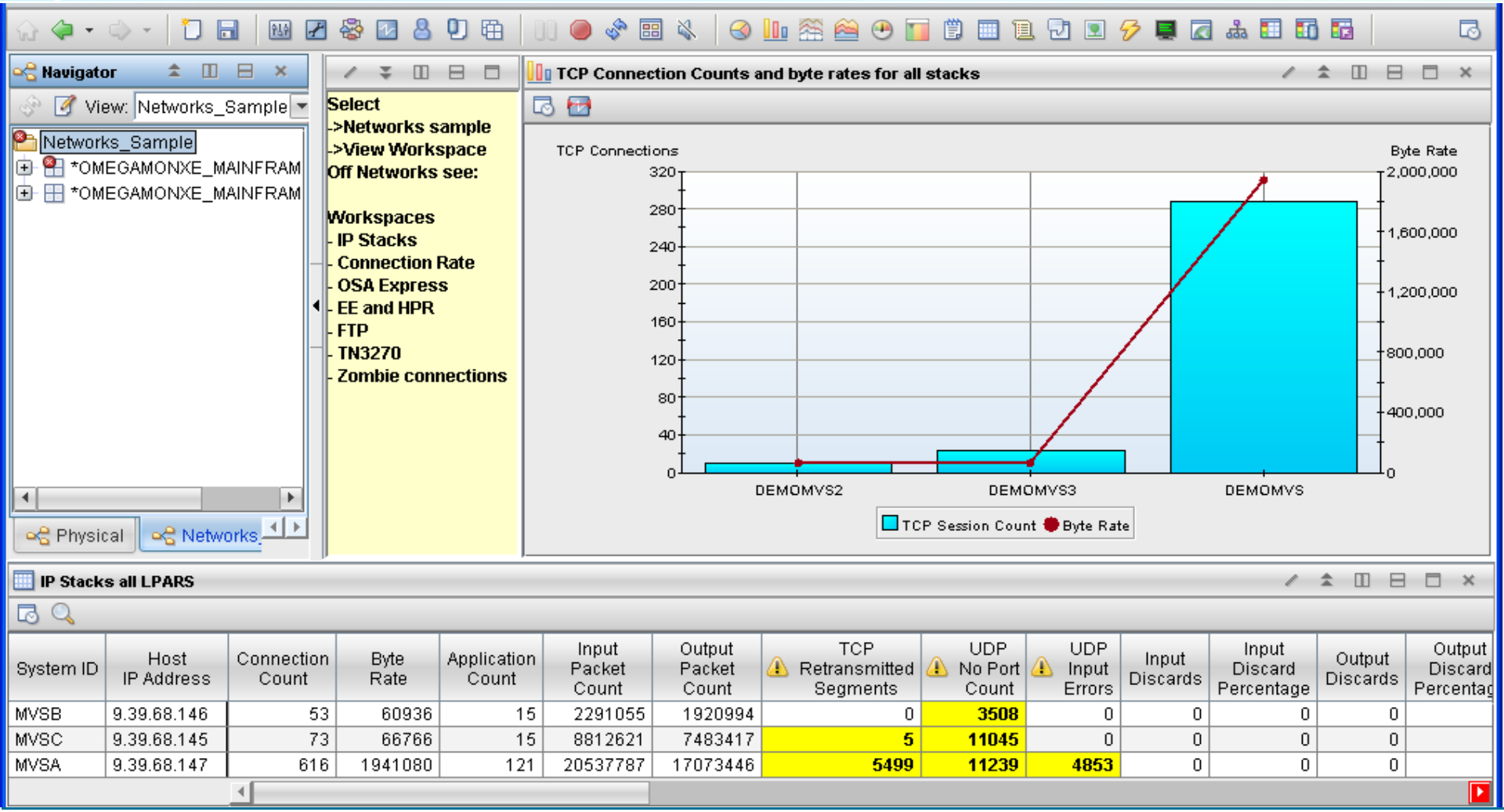


Examples for areas for tuning

- **Discards due to no Storage**
- **Outbound Queue Priorities**
- **MTU Sizes**
- **Duplicate Address Count**

Next, Monitoring Multiple IP Stacks

Tip#2 Look for Errors IP Stacks



System ID	Host IP Address	Connection Count	Byte Rate	Application Count	Input Packet Count	Output Packet Count	TCP Retransmitted Segments	UDP No Port Count	UDP Input Errors	Input Discards	Input Discard Percentage	Output Discards	Output Discard Percentag
MVSB	9.39.68.146	53	60936	15	2291055	1920994	0	**3508**	0	0	0	0	
MVSC	9.39.68.145	73	66766	15	8812621	7483417	**5**	**11045**	0	0	0	0	
MVSA	9.39.68.147	616	1941080	121	20537787	17073446	**5499**	**11239**	**4853**	0	0	0	

- **Number of Connections**
- **Retransmitted Segments**
- **UDP No port Count and input errors**
- **Monitor DVIPA from NetView**

Out of Box Expert Advice

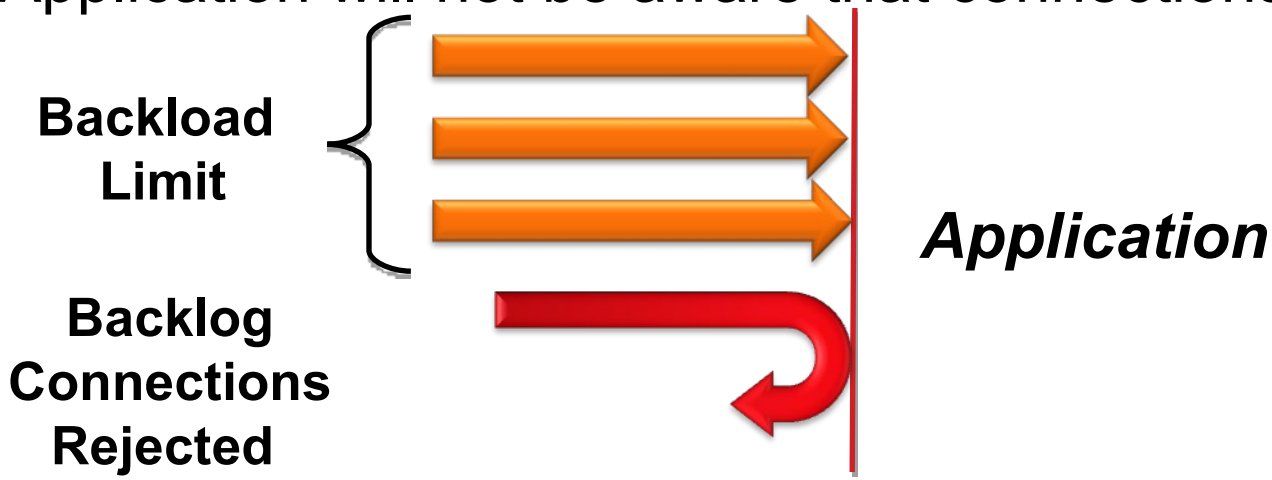
IP Stack

- Input Discards
- Output Discards

Next a Connection Backlogs

Exceeding Backlog Connection Limit

Application will not be aware that connections are being rejected



Out of Box Expert Advice

Application problems

- Backlog Connections Rejected
- Connections backlogged
- Not Accepting Connections
- Rejecting new connections

Tip#3 Monitor Connection Backlog Rejections

Listeners with Connections in Backlog or Rejected

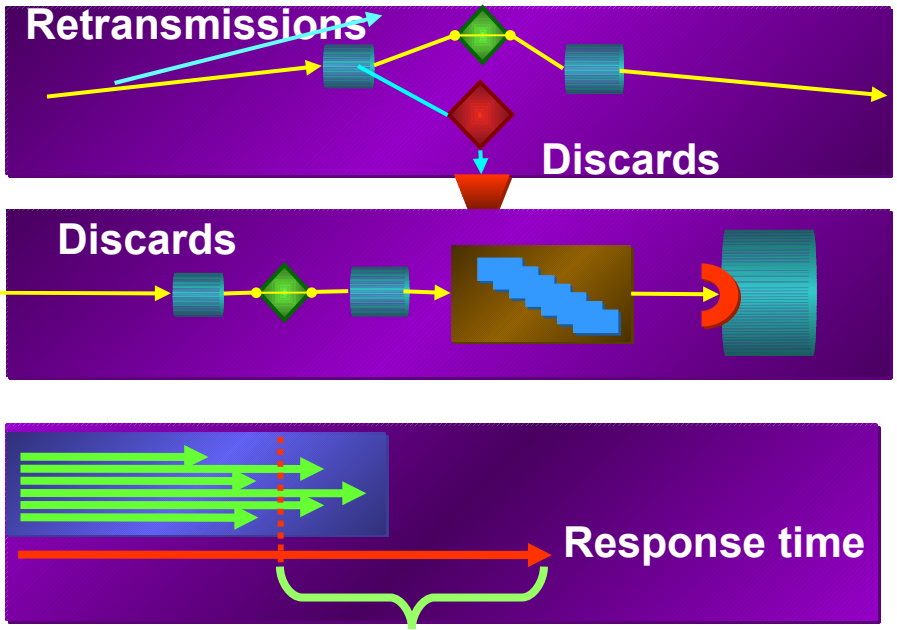
System ID	Application Name	Local Port	Connections in Backlog	Backlog Limit	Backlog Connections Rejected	Total Backlog Connections Rejected	Backlog Connections Rejected Time Stamp
MVSB	PORTMAP1	111	0	2	0	6	08/18/11 14:54:40
MVSB	DB2SDIST	5446	5	10	0	0	
MVSC	PORTMAP1	111	0	2	0	6	08/18/11 14:11:03
MVSA	CXEGDSST	1920	0	10	0	7	08/20/11 10:05:35
MVSA	PORTMAP1	111	0	2	0	6	08/18/11 14:35:27

Maximum connection requests Queued

Connections Queued Exceeded Backlog Limit

- **Increase Backlog Limit (TCPIP profile or in Application)**
- **Stagger automatic logons, if possible.**

TCP/IP Connections Response times



Response time Variance

Out of Box Expert Advice

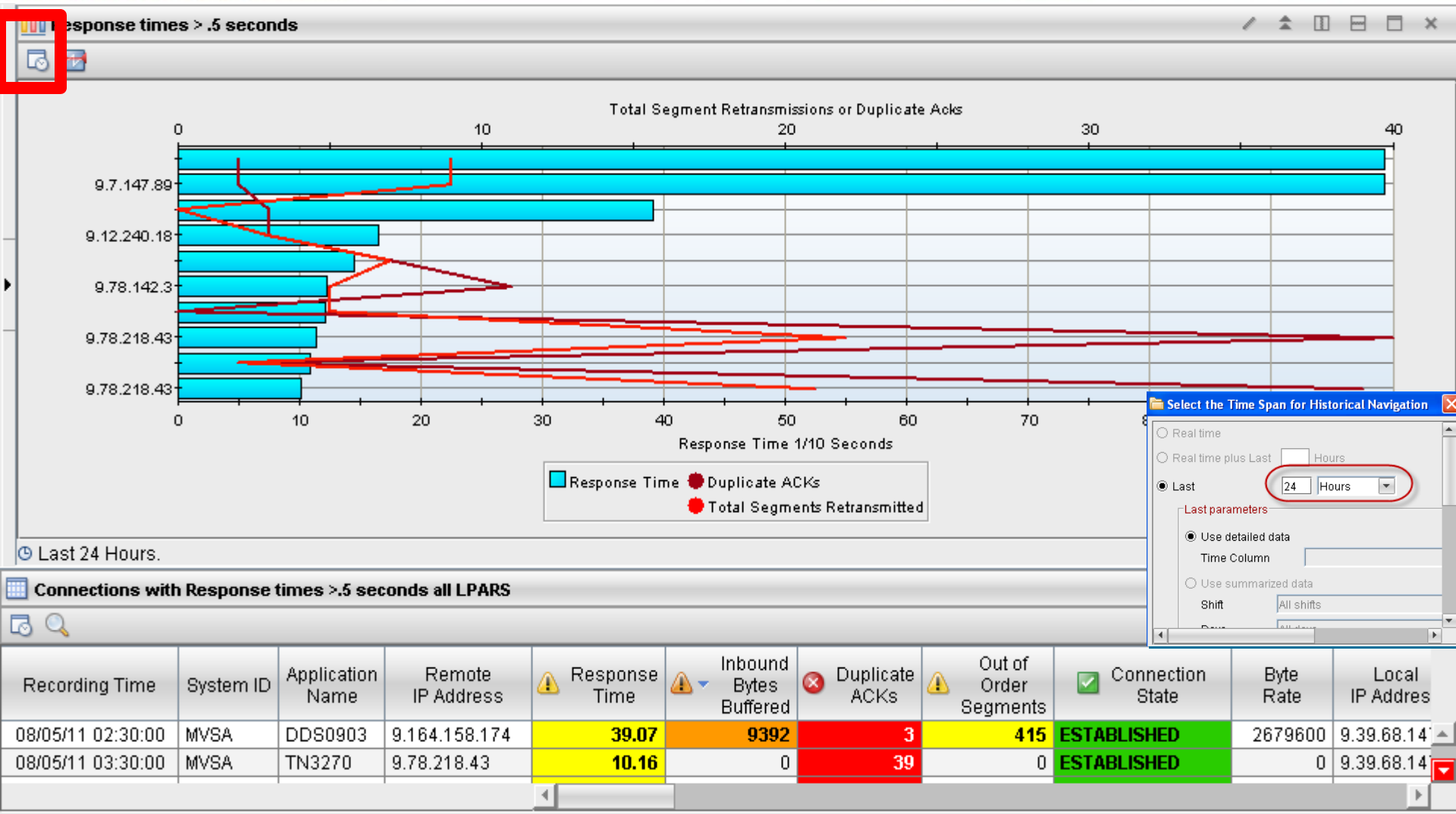
Connections

- Retransmissions
- Discards
- Out of order segments
- Round trip time
- Round trip time variance

Retransmissions, discards and out of order segments

Next : Visualization correlation of response time issues

Tip#4 Correlate Response Times with Errors



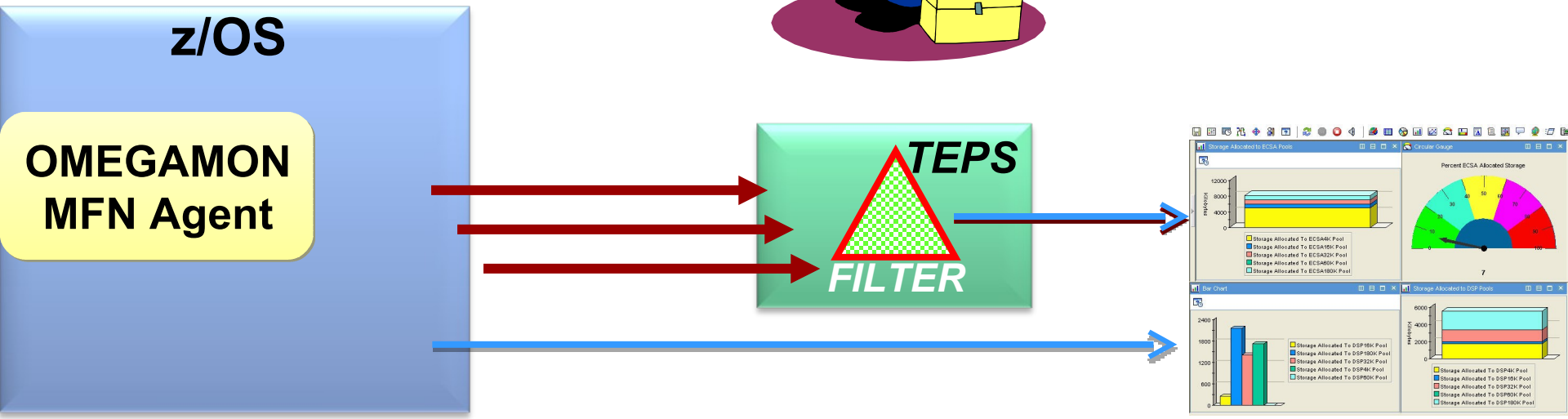
Connections with Response times >.5 seconds all LPARS

Recording Time	System ID	Application Name	Remote IP Address	Response Time	Inbound Bytes Buffered	Duplicate ACKs	Out of Order Segments	Connection State	Byte Rate	Local IP Addres
08/05/11 02:30:00	MVSA	DDS0903	9.164.158.174	39.07	9392	3	415	ESTABLISHED	2679600	9.39.68.14
08/05/11 03:30:00	MVSA	TN3270	9.78.218.43	10.16	0	39	0	ESTABLISHED	0	9.39.68.14

Last 24 Hours.

- See if poor response time correlates with any errors.
- Duplicate ACKs, out of Order Segments, Segments Retransmitted
- Turn on history to see when problems are occurring

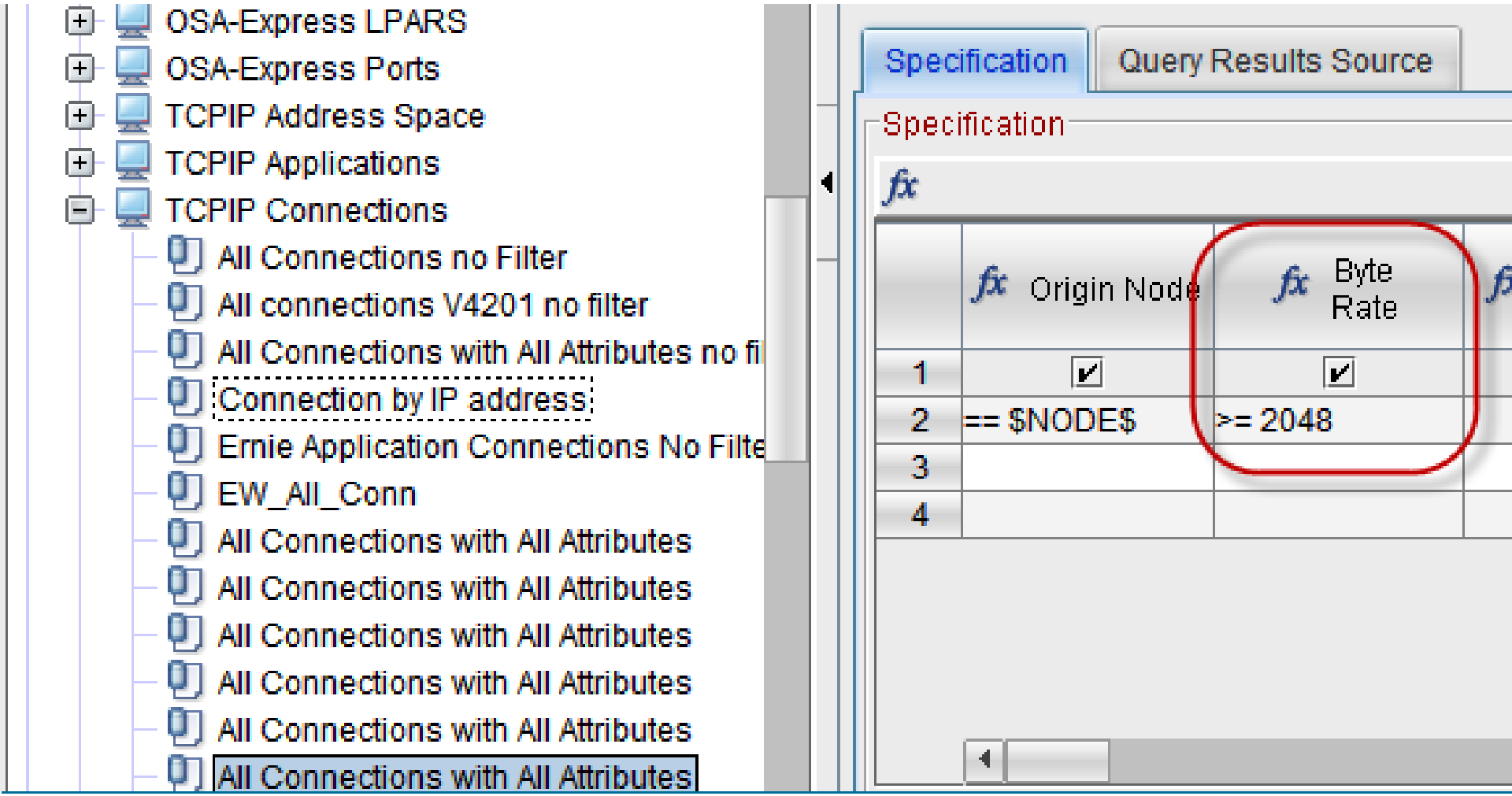
Filter Data from all z/OS LPARS



- *Filter can be at TEPS Server or z/OS Agent*
- *Filtered Query is dynamically pushed to z/OS Agents*
- *Performance gain is dramatic and immediate*

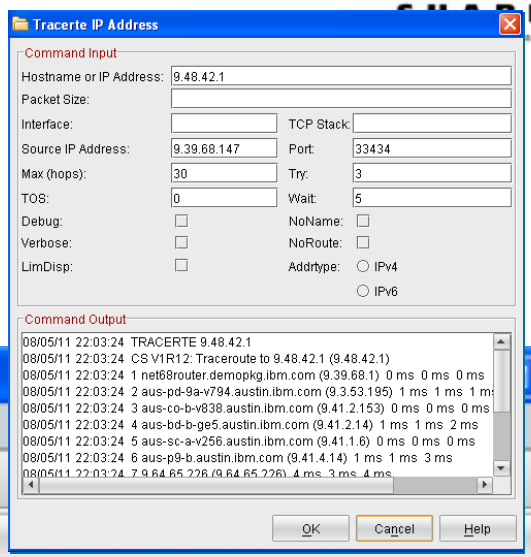
Where are my Connections?

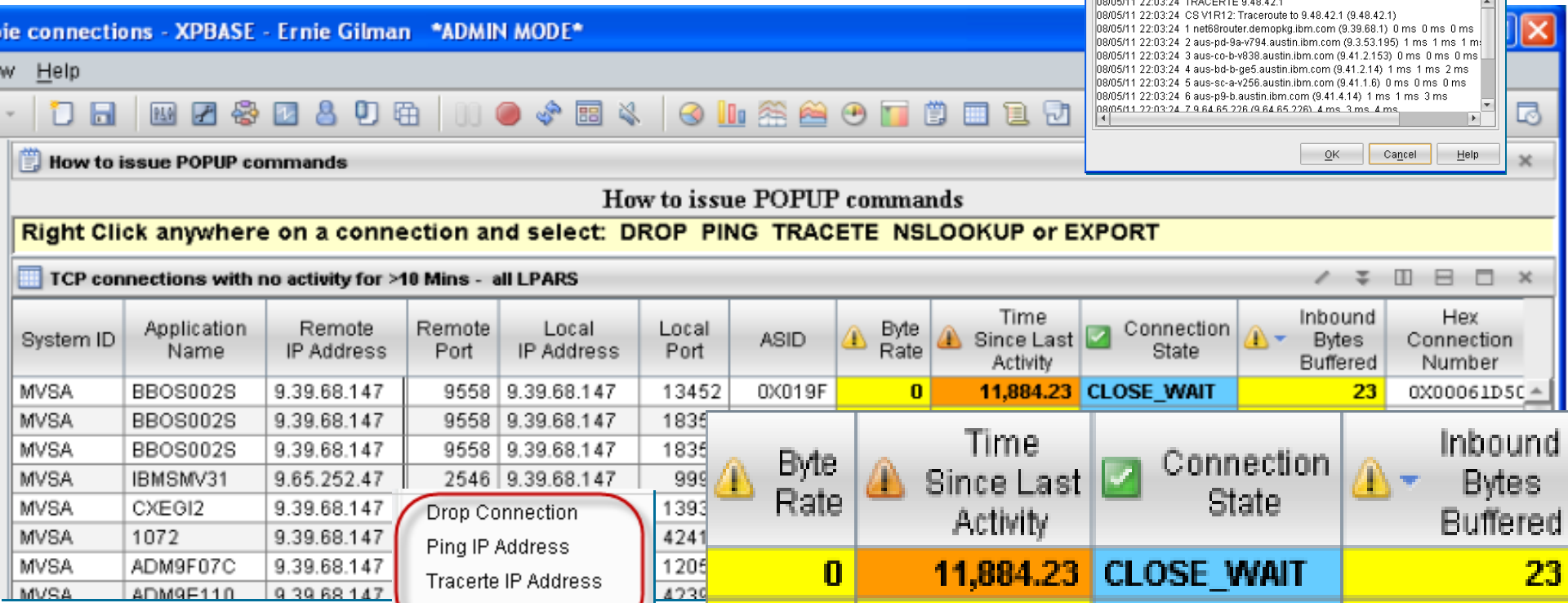
- OMEGAMON for MFN default filters can hide problems
- It is simple is to override these filters.



Tip#5 zombie connections

- Connection that do not get dropped
- Connections could start to backlog
- Connections with no traffic for a long time
- Connection may be hung(not established)

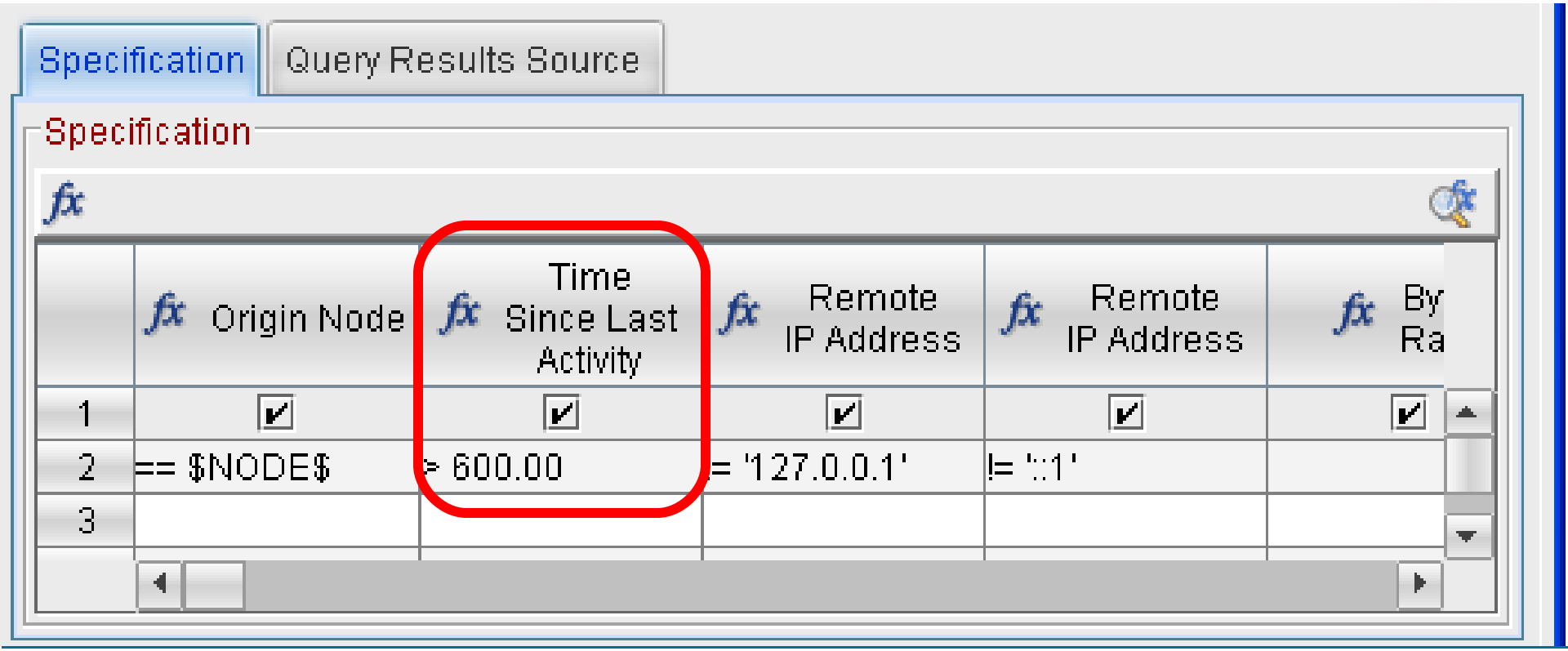




Byte Rate	Time Since Last Activity	Connection State	Inbound Bytes Buffered
0	11,884.23	CLOSE_WAIT	23
0	700.34	CLOSE_WAIT	23
0	700.34	CLOSE_WAIT	23
0	17,322.36	ESTABLISHED	0

Next: Filter for zombies

How to create a filter in Query Editor



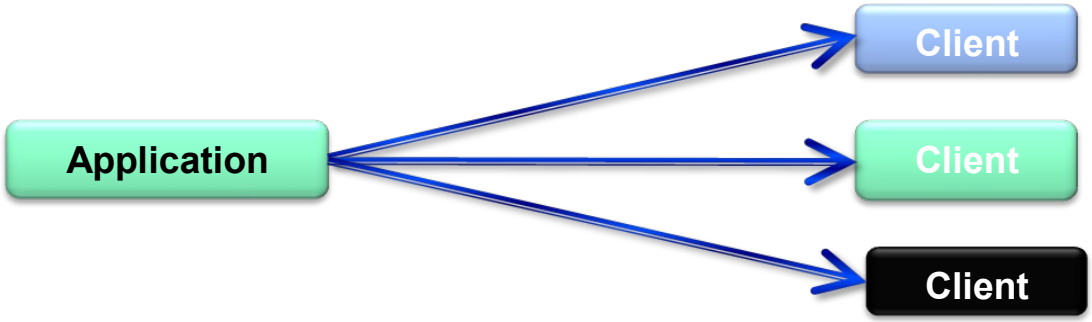
Connections with no activity for > 10 Mins (600 seconds)

Filter out addresses such as loopback

Filter will automatically be pushed out to the MFN Agents

Tip#6 Create Application Network Filtered Views

Examples:
- **Connect:Direct**
- **MQ**
- **CICS**
- **WebSphere**



Address Space
- CPU
- Storage
- Priority

Application Listener
- Connection Rejections
- Backlog limit
- Number of Connections
- Connection Rate

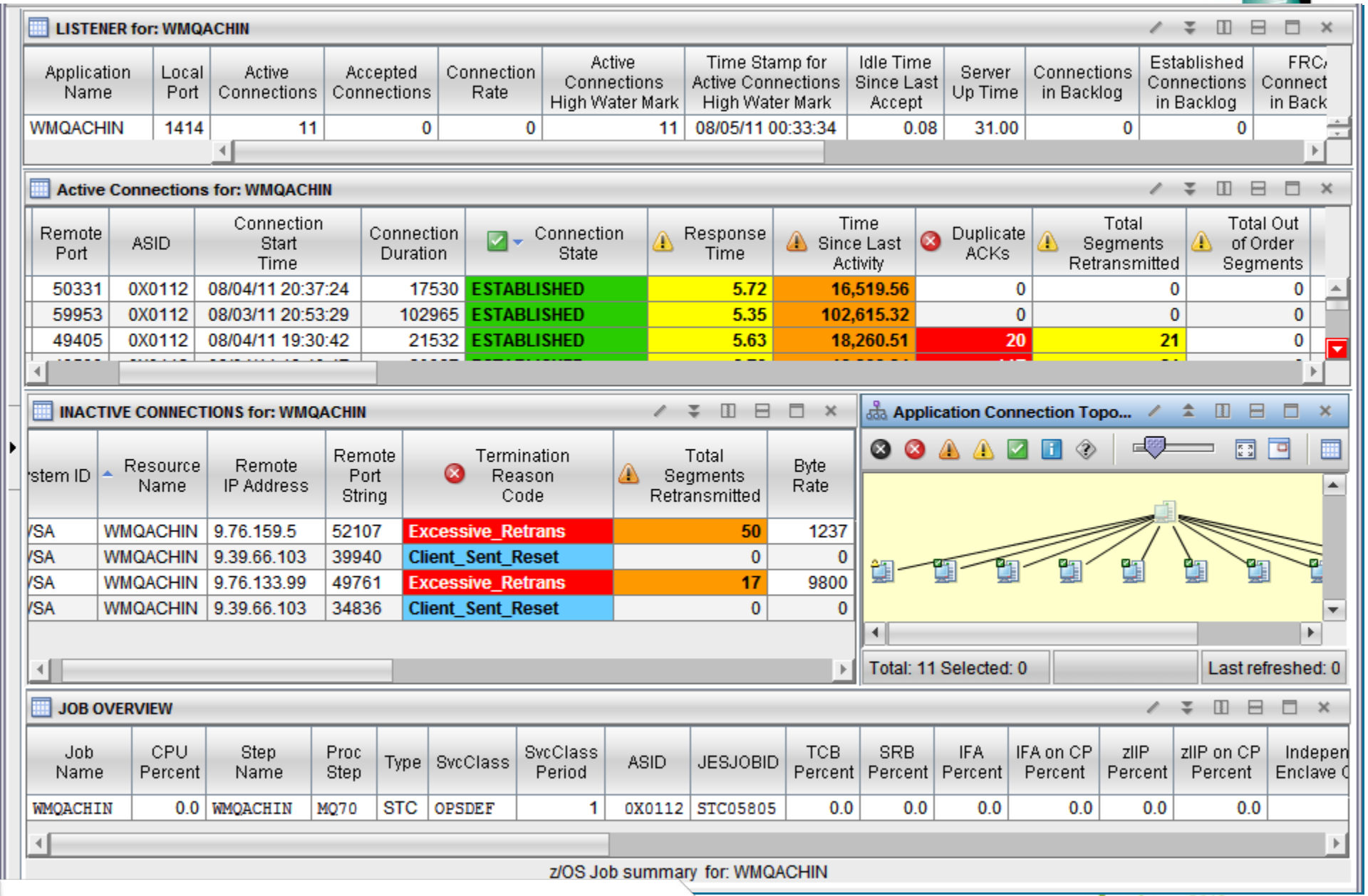
TCP/IP Connections
- Response times
- Buffers queued
- Connection hangs
- Congestion
  - Reset windows
  - Retries,
  - Out of order

- Listener and connection feeds from OMEGAMON MFN
- Inactive connections feeds from NetView for Termination reasons
- Address Space feeds from OMEGAMON on z/OS

Next: Create filtered view on application

Application Monitor View

Here is one filtered on MQ



LISTENER for: WMQACHIN

Application Name	Local Port	Active Connections	Accepted Connections	Connection Rate	Active Connections High Water Mark	Time Stamp for Active Connections High Water Mark	Idle Time Since Last Accept	Server Up Time	Connections in Backlog	Established Connections in Backlog	FRC Connect in Back
WMQACHIN	1414	11	0	0	11	08/05/11 00:33:34	0.08	31.00	0	0	

Active Connections for: WMQACHIN

Remote Port	ASID	Connection Start Time	Connection Duration	Connection State	Response Time	Time Since Last Activity	Duplicate ACKs	Total Segments Retransmitted	Total Out of Order Segments
50331	0X0112	08/04/11 20:37:24	17530	ESTABLISHED	5.72	16,519.56	0	0	0
59953	0X0112	08/03/11 20:53:29	102965	ESTABLISHED	5.35	102,615.32	0	0	0
49405	0X0112	08/04/11 19:30:42	21532	ESTABLISHED	5.63	18,260.51	20	21	0

INACTIVE CONNECTIONS for: WMQACHIN

stem ID	Resource Name	Remote IP Address	Remote Port String	Termination Reason Code	Total Segments Retransmitted	Byte Rate
/SA	WMQACHIN	9.76.159.5	52107	Excessive_Retrans	50	1237
/SA	WMQACHIN	9.39.66.103	39940	Client_Sent_Reset	0	0
/SA	WMQACHIN	9.76.133.99	49761	Excessive_Retrans	17	9800
/SA	WMQACHIN	9.39.66.103	34836	Client_Sent_Reset	0	0

Application Connection Topo...

Total: 11 Selected: 0 | Last refreshed: 0

JOB OVERVIEW

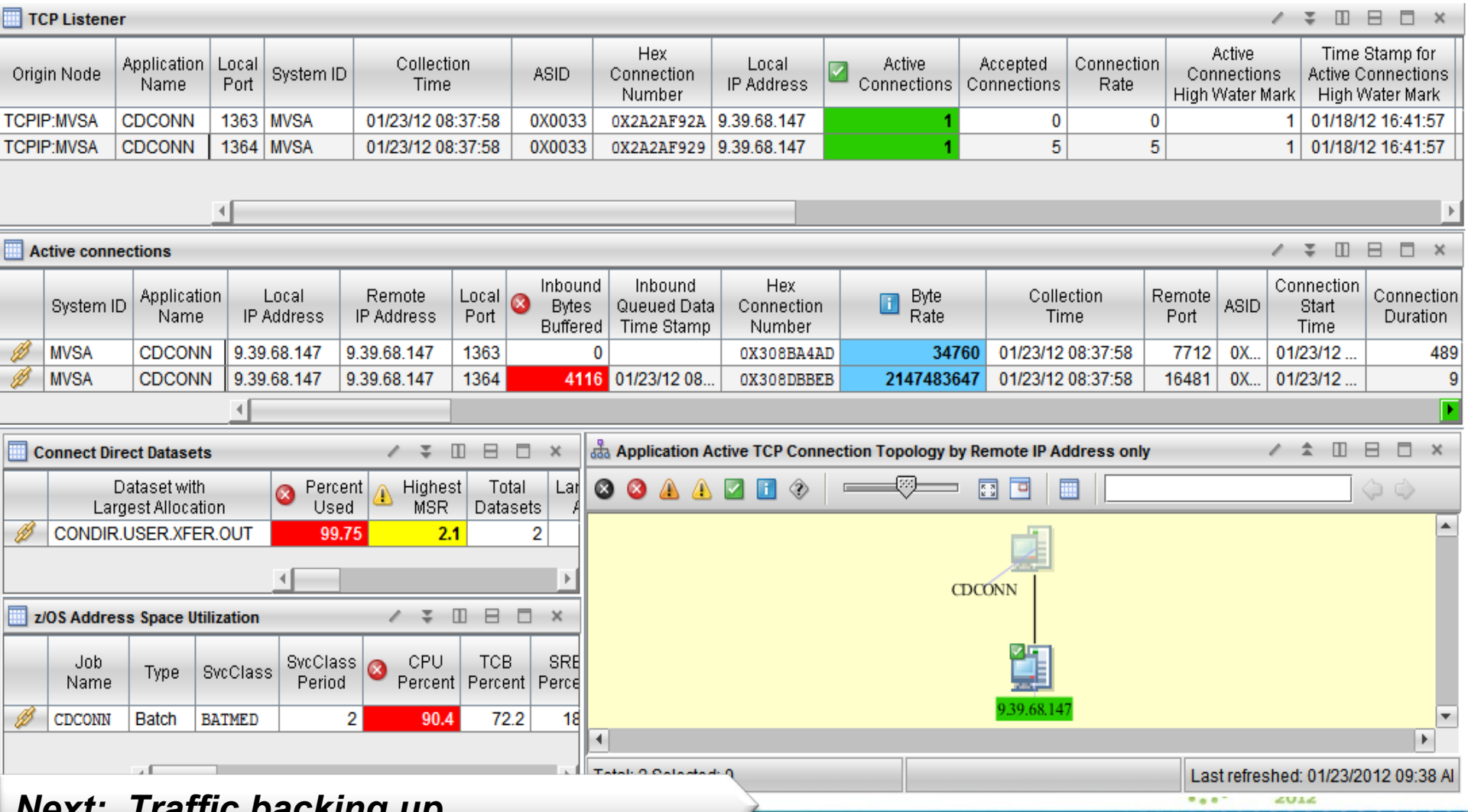
Job Name	CPU Percent	Step Name	Proc Step	Type	SvcClass	SvcClass Period	ASID	JESJOBID	TCB Percent	SRB Percent	IFA Percent	IFA on CP Percent	zIIP Percent	zIIP on CP Percent	Indepen Enclave C
WMQACHIN	0.0	WMQACHIN	MQ70	STC	OPSDEF	1	0X0112	STC05805	0.0	0.0	0.0	0.0	0.0	0.0	

z/OS Job summary for: WMQACHIN

Next: Monitoring Connect:Direct (NDM)

Monitoring Connect:Direct (NDM)

- We see the status of the C:D Listners (Default Ports 1363 & 1364)
- Notice we have bytes backing up for one of them
- Check the Dataset response time (MSR)
- C:D address space CPU utilization with drill down to the current WLM.



TCP Listener

Origin Node	Application Name	Local Port	System ID	Collection Time	ASID	Hex Connection Number	Local IP Address	Active Connections	Accepted Connections	Connection Rate	Active Connections High Water Mark	Time Stamp for Active Connections High Water Mark
TCPIP:MVSA	CDCONN	1363	MVSA	01/23/12 08:37:58	0X0033	0X2A2AF92A	9.39.68.147	1	0	0	1	01/18/12 16:41:57
TCPIP:MVSA	CDCONN	1364	MVSA	01/23/12 08:37:58	0X0033	0X2A2AF929	9.39.68.147	1	5	5	1	01/18/12 16:41:57

Active connections

System ID	Application Name	Local IP Address	Remote IP Address	Local Port	Inbound Bytes Buffered	Inbound Queued Data Time Stamp	Hex Connection Number	Byte Rate	Collection Time	Remote Port	ASID	Connection Start Time	Connection Duration
MVSA	CDCONN	9.39.68.147	9.39.68.147	1363	0		0X308BA4AD	34760	01/23/12 08:37:58	7712	0X...	01/23/12 ...	489
MVSA	CDCONN	9.39.68.147	9.39.68.147	1364	4116	01/23/12 08...	0X308DBBEB	2147483647	01/23/12 08:37:58	16481	0X...	01/23/12 ...	9

Connect Direct Datasets

Dataset with Largest Allocation	Percent Used	Highest MSR	Total Datasets
CONDIR.USER.XFER.OUT	99.75	2.1	2

z/OS Address Space Utilization

Job Name	Type	SvcClass	SvcClass Period	CPU Percent	TCB Percent
CDCONN	Batch	BATMED	2	90.4	72.2

Application Active TCP Connection Topology by Remote IP Address only

CDCONN

9.39.68.147

Last refreshed: 01/23/2012 09:38 AI

Next: Traffic backing up

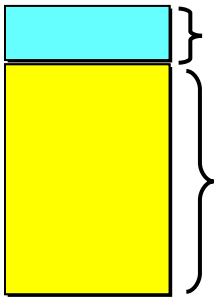
Bytes backing up for a connection

- Check connection status connections with bytes backing up inbound or outbound
- Notice some of these may be zombies connections.
- Remote endpoint unable to keep up.
- Ceck for Segment retransmissions .
- Backup can cause significant CSM storage usage Issues
- **Recommendations:**
- Create warning situations based on Bytes Buffered.
- Trigger Critical Situations if number of Bytes Buffered continues to increase
- In severe cases, consider automatically dropping the connection in Situation action tab.

Connections with Bytes Buffered

System ID	Application Name and Port	Inbound Bytes Buffered	Inbound Queued Data Time Stamp	Outbound Bytes Buffered	Outbound Queued Data Time Stamp	Byte Rate	Connection State	Remote IP Address	Remote Port	Time Since Last Activity	Percent Segments Retransmitted	Total Segments Retransmitted	Duplicate ACKs
MVSA	ADHCDS...	209621	09/16/11 08...	0		819	ESTABLISHED	9.39.66.103	16016	0.23	2	112	96
MVSA	RD4ZRS...	84	09/16/11 13...	0		0	CLOSE_WAIT	9.39.68.147	6715	41,976.91	0	0	1
MVSA	RD4ZRS...	84	09/08/11 05...	0		0	CLOSE_WAIT	9.39.68.147	6715	761,977.05	0	0	1
MVSA	RD4ZRS...	84	09/08/11 05...	0		0	CLOSE_WAIT	9.39.68.147	6715	761,977.05	0	0	1
MVSA	RD4ZRS...	84	09/16/11 15...	0		0	CLOSE_WAIT	9.39.68.147	6715	34,776.94	0	0	1
MVSA	RD4ZRS...	84	09/08/11 06...	0		0	CLOSE_WAIT	9.39.68.147	6715	759,577.01	0	0	1
MVSA	RD4ZRS...	84	09/08/11 06...	0		0	CLOSE_WAIT	9.39.68.147	6715	759,577.01	0	0	1

- **TN3270 Response time**
  - SNA time is application
  - IP time is the network
    - Drill down to TCP connection to see errors
  - Response time distribution by buckets
    - Sliding window buckets set in Comm Server
- TN3270 Server status from NetView



SNA Response Time
(Application issue)

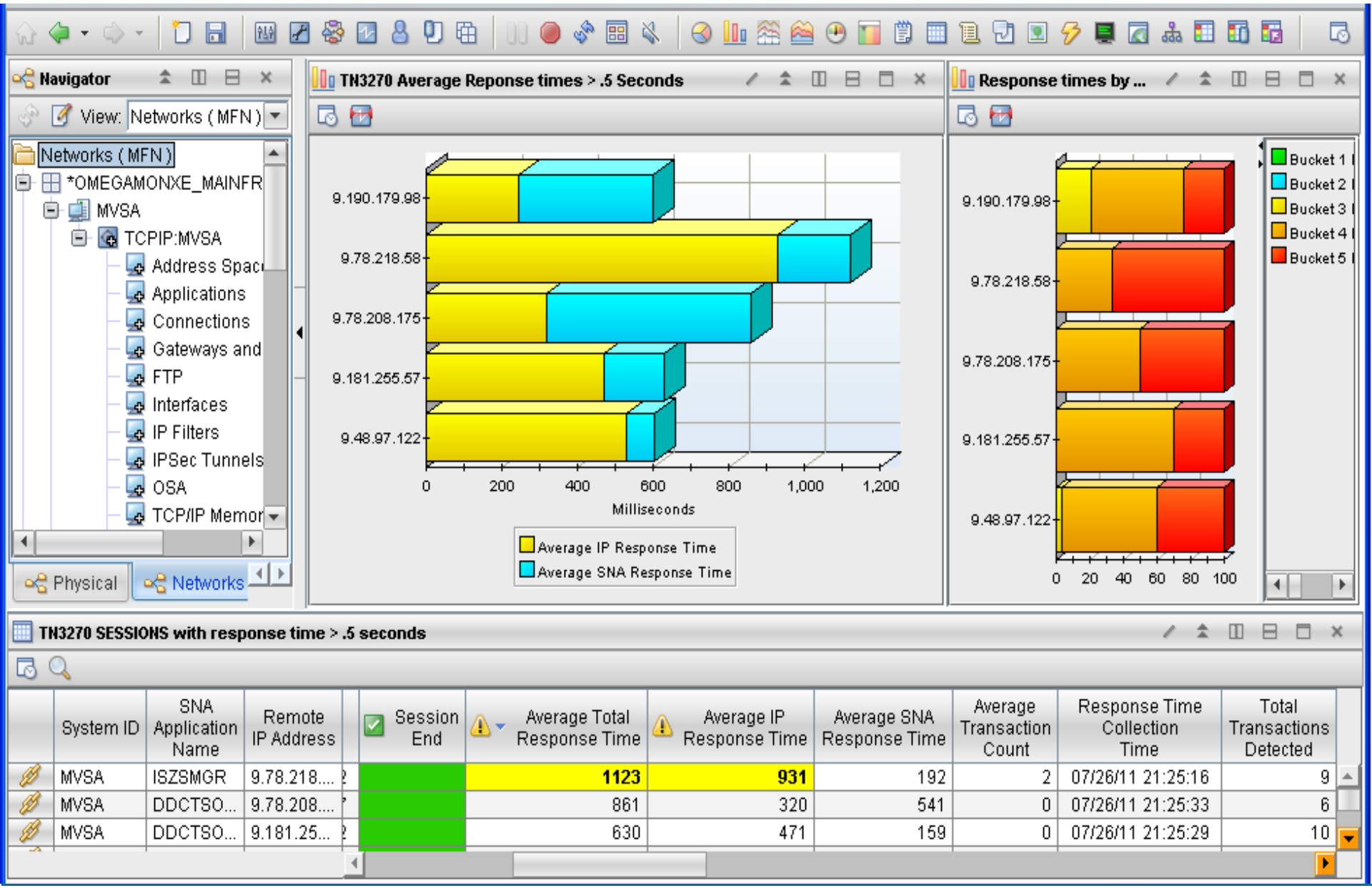
IP Response Time
Drill to connection

Out of Box Expert Advice

TN3270 Response times

- Average IP response times
- Average SNA response times
- Average total response times
- High number of long responses

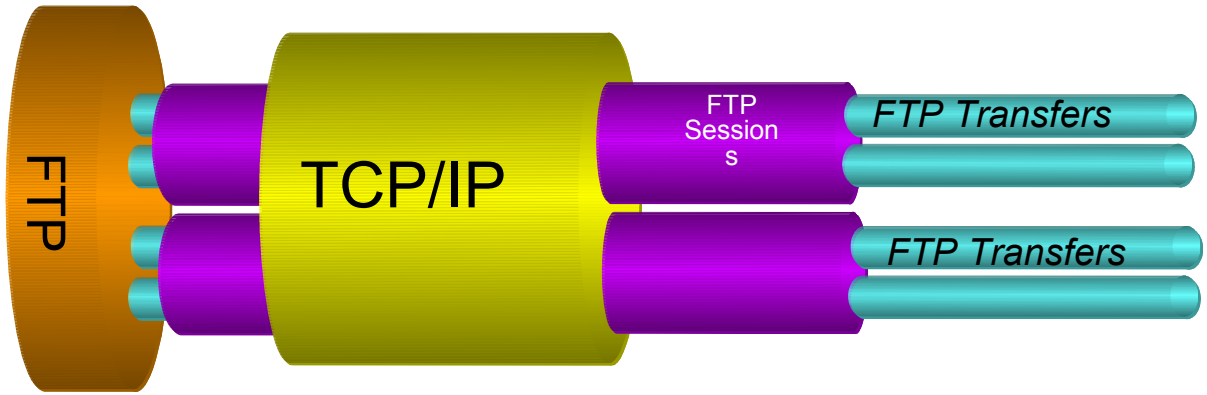
Tip#8 TN3270 High Response Time Exception View



System ID	SNA Application Name	Remote IP Address	Session End	Average Total Response Time	Average IP Response Time	Average SNA Response Time	Average Transaction Count	Response Time Collection Time	Total Transactions Detected
MVSA	ISZSMGR	9.78.218....		1123	931	192	2	07/26/11 21:25:16	9
MVSA	DDCTSO...	9.78.208....		861	320	541	0	07/26/11 21:25:33	6
MVSA	DDCTSO...	9.181.25...		630	471	159	0	07/26/11 21:25:29	10

Next: FTPs

Tip#9 FTP View of Logon and Transfer Problems



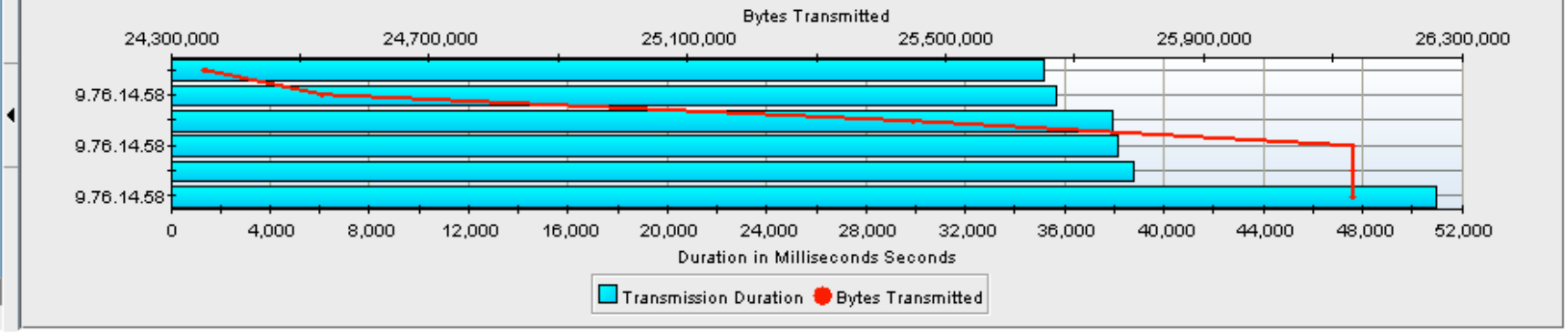
- FTP Session logon failure reason codes
- FTP Transfers, How long it took
- Drill down to connection for performance issues

User ID on Server	Session Start	Session End	Login Failure Reason Description
MS519	02/17/08 09:07:03	02/17/08 09:07:03	Password_not_valid
MS519	02/17/08 09:07:52		

User ID on Server	Last Reply to Client	Transmission Duration	Bytes Transmitted	Command	Last Reply to Client Description	Dataset Name
MS519	250	1140	1965120	RETRIEVE	Requested_file...	MS519.ELVIS...
MS519	250	490	429056	RETRIEVE	Requested_file...	MS519.ELVIS...
MS519	250	1140	1965120	RETRIEVE	Requested_file...	MS519.ELVIS...
MS519	250	500	429056	RETRIEVE	Requested_file...	MS519.ELVIS...
MS519	250	1160	1965120	RETRIEVE	Requested_file...	MS519.ELVIS...

FTPs - XPBASE - Ernie Gilman *ADMIN MODE*

File Edit View Help



FTP Transfers - Active

ote IP ort	Local IP Address	Local IP Port	User ID on Server	User ID on Server Extended	Client User ID	Role	Transmissi Start
35374	9.39.68.147	35399	NETOP2	NETOP2		Server	08/25/11 16:3

FTP session logon errors

System ID	Applicati n Name	Login Failure Reason Description	FTP Type	Remote IP Address	Remo Port
MVSA	FTPD2	Password_not_valid	Server	9.39.66.103	446
MVSA	FTPD8	Password_not_valid	Server	9.39.66.103	3448
MVSA	FTPD2	Password_not_valid	Server	9.39.66.103	3449

FTP Transfers - Conpleted at least 10,000 bytes 10 longe...

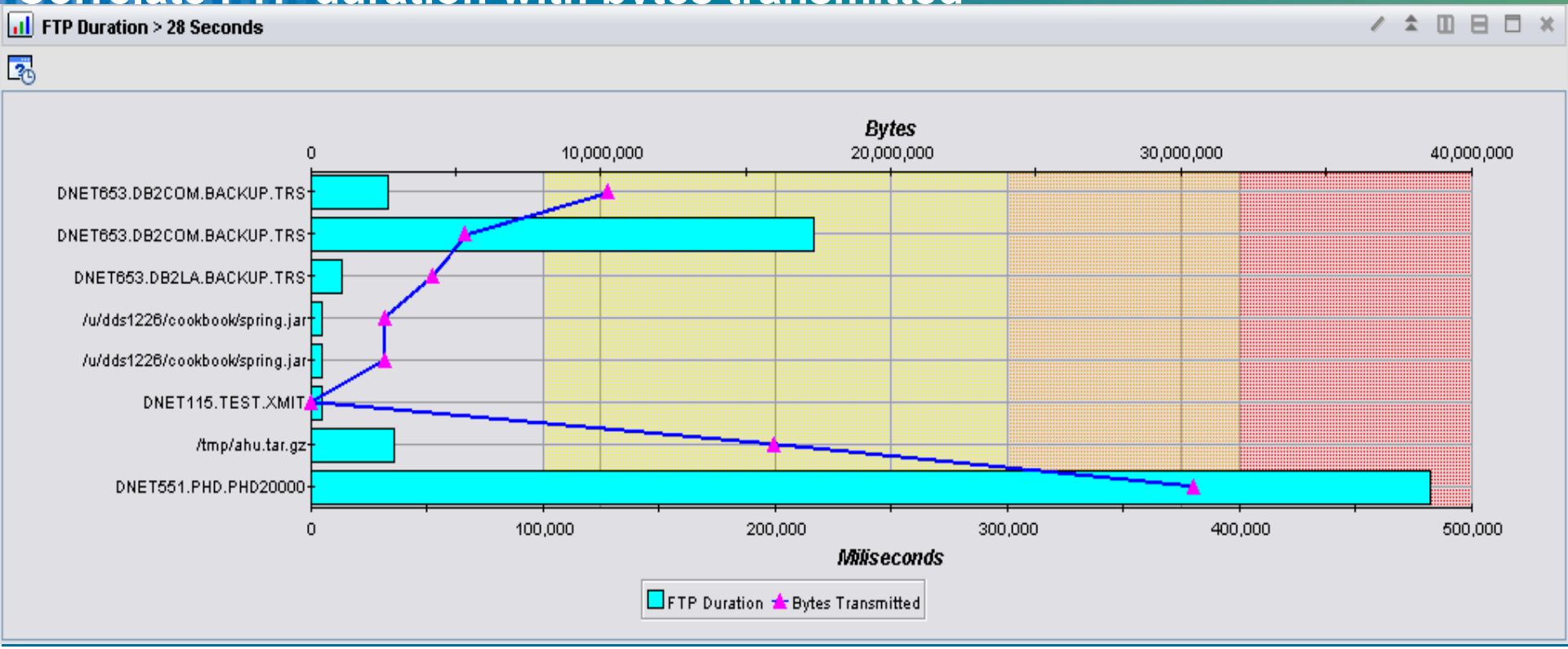
ame	Dataset Name	System ID	TCPIP STC Name	TCP Data Connection ID	Server Logging Session ID	C
	NETOP2.MUSIC.MP3	MVSA	TCPIP	0X097408A7	FTPD106226	
	NETOP2.MUSIC.MP3	MVSA	TCPIP	0X0971E6F5	FTPD106221	
	NETOP2.MUSIC.MP3	MVSA	TCPIP	0X09704554	FTPD106215	
	NETOP2.MUSIC.MP3	MVSA	TCPIP	0X0970241E	FTPD106215	

FTP Transfers - Conpleted in error

Last Reply to Client	Last Reply to Client Description	Transr Dur
226	Closing_data_connection_--_requested_file_action_successful	
226	Closing_data_connection_--_requested_file_action_successful	
451	Requested_action_aborted_--_local_error_in_processing	
451	Requested_action_aborted_--_local_error_in_processing	

Hub Time: Thu, 08/25/2011 04:37 PM | Server Available | FTPs - XPBASE - Ernie Gilman *ADMIN MODE*

Correlate FTP duration with bytes transmitted



Out of Box Expert Advice

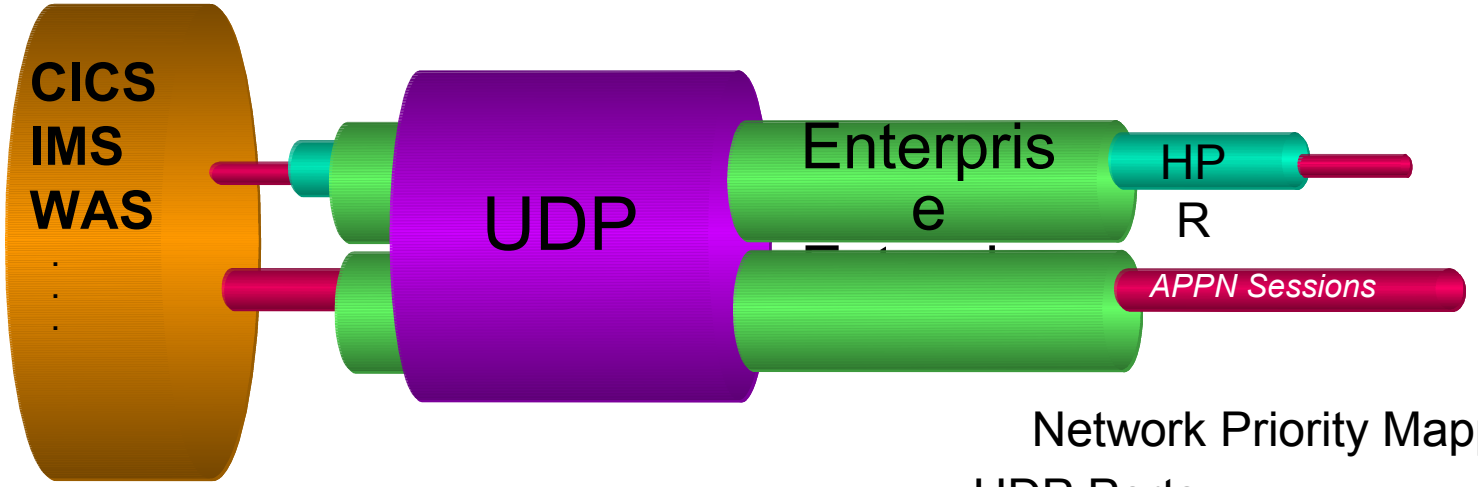
FTP Session Errors:

- Network or socket errors
- Error reply from server
- Invalid sequence from client
- Resource shortage (storage…)

FTP Transfer Errors

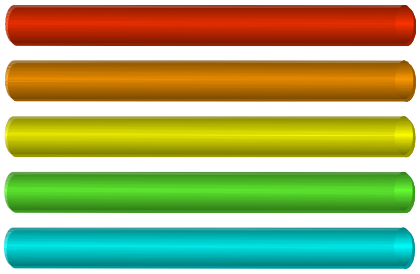
- File, system or network errors

Summary of Enterprise Extender and HPR



Network Priority Mappings

UDP Ports



SNA	Path Switch Timeout
LL2	(LIVTIME 10 Seconds)
Network	1 Minute
High	*TP(2)* 2 Minutes
Medium	*TP(1)* 3 Minutes
Low	*TP(0)* 8 Minutes

Expert Advice

HPR

- **Low initial throughput rate**
- **Path Switches**
- **ARB Mode Red, Persistent***

EE

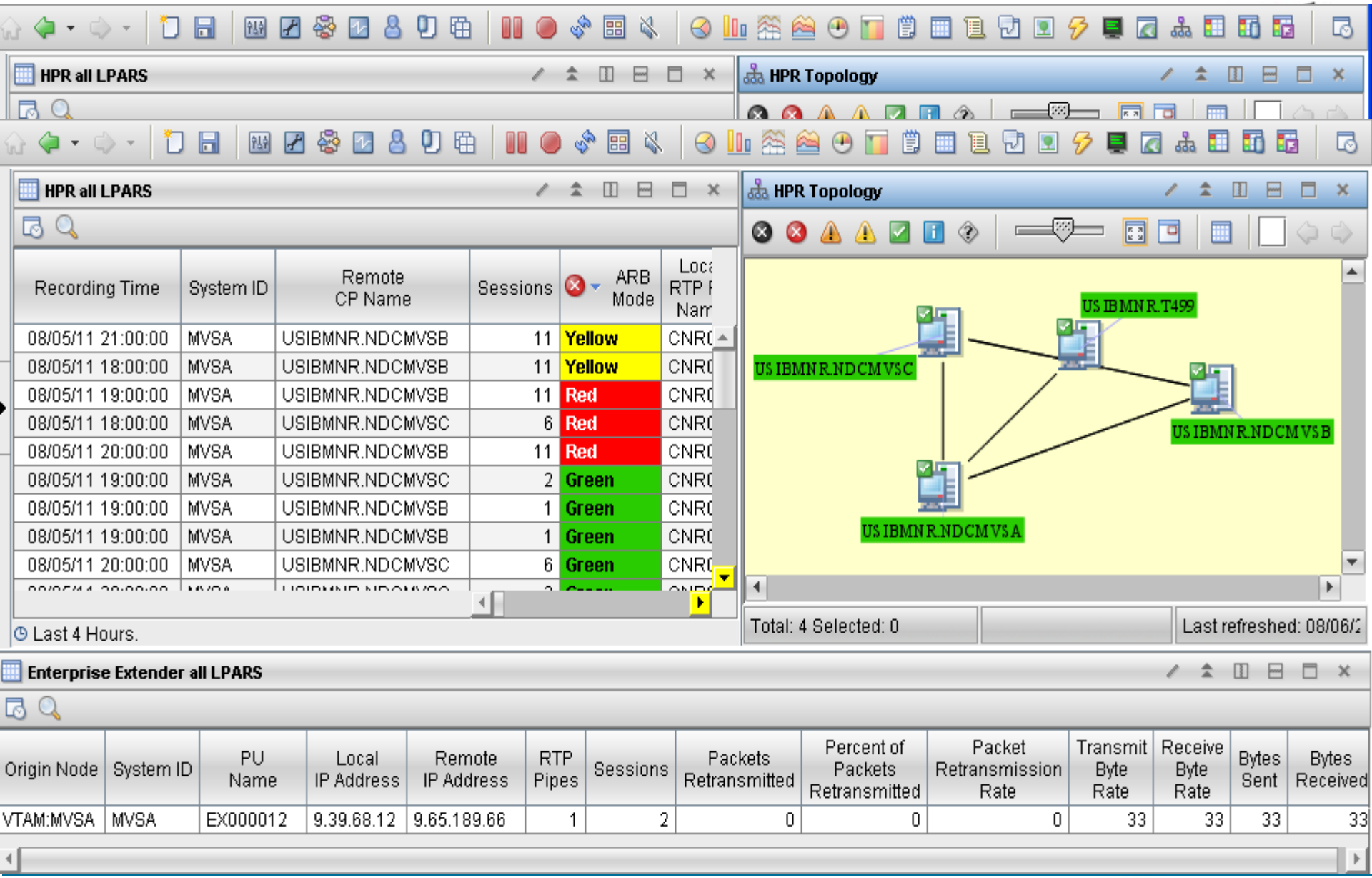
- **High retransmissions**
- **Out of Sequence buffers**

UDP

- **High Discard Rates**
- **Long Queues exceeding Queue Limit***

**Simple to create*

Tip#10 Show EE and HPR on one View for all LPARs



Recording Time	System ID	Remote CP Name	Sessions	ARB Mode	Loca RTP P Nam
08/05/11 21:00:00	MVSA	USIBMNR.NDCMVSB	11	Yellow	CNR0
08/05/11 18:00:00	MVSA	USIBMNR.NDCMVSB	11	Yellow	CNR0
08/05/11 19:00:00	MVSA	USIBMNR.NDCMVSB	11	Red	CNR0
08/05/11 18:00:00	MVSA	USIBMNR.NDCMVSC	6	Red	CNR0
08/05/11 20:00:00	MVSA	USIBMNR.NDCMVSB	11	Red	CNR0
08/05/11 19:00:00	MVSA	USIBMNR.NDCMVSC	2	Green	CNR0
08/05/11 19:00:00	MVSA	USIBMNR.NDCMVSB	1	Green	CNR0
08/05/11 19:00:00	MVSA	USIBMNR.NDCMVSB	1	Green	CNR0
08/05/11 20:00:00	MVSA	USIBMNR.NDCMVSC	6	Green	CNR0

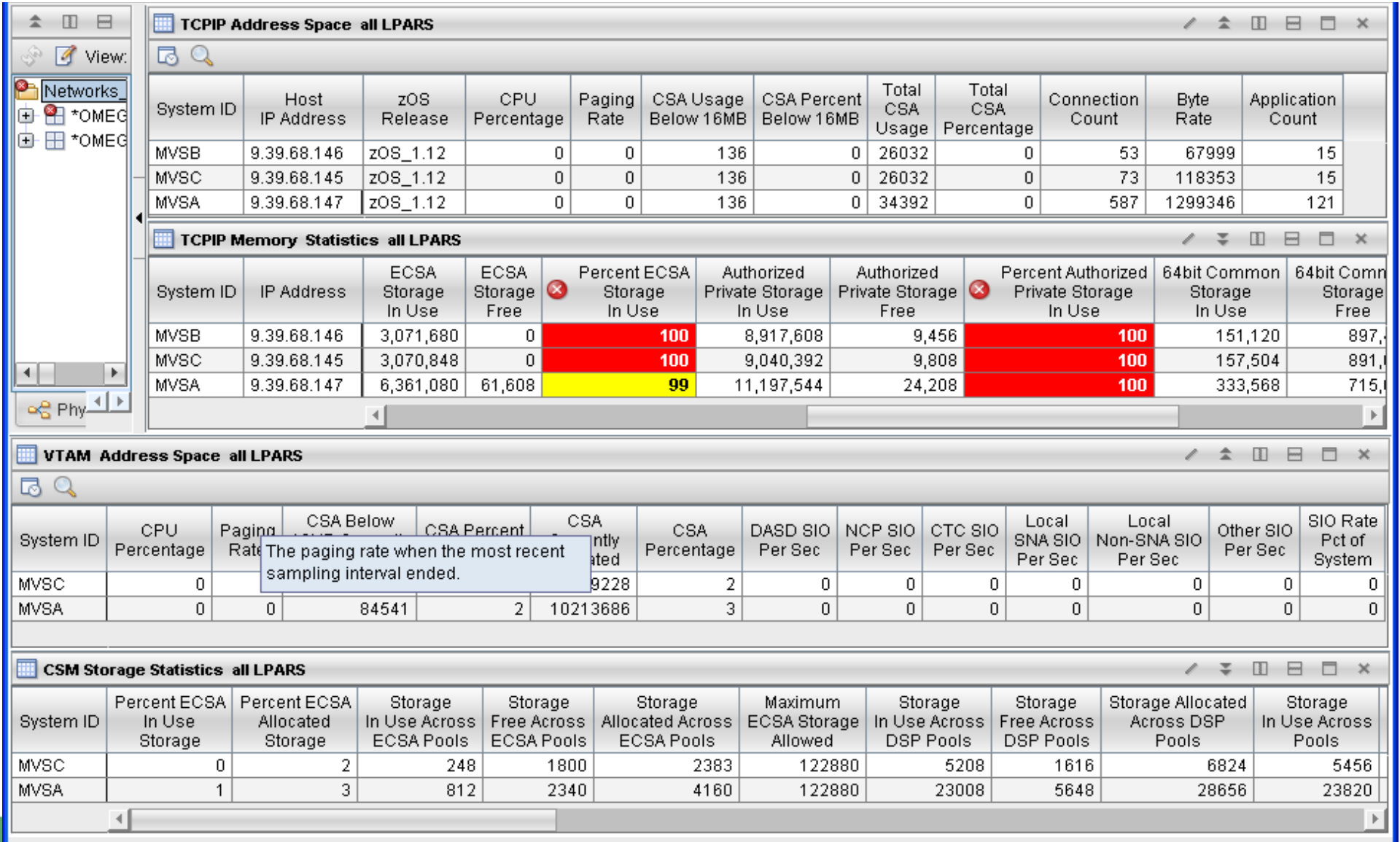
Origin Node	System ID	PU Name	Local IP Address	Remote IP Address	RTP Pipes	Sessions	Packets Retransmitted	Percent of Packets Retransmitted	Packet Retransmission Rate	Transmit Byte Rate	Receive Byte Rate	Bytes Sent	Bytes Received
VTAM:MVSA	MVSA	EX000012	9.39.68.12	9.65.189.66	1	2	0	0	0	33	33	33	33

TCP/IP and VTAM Address Spaces, Storage and Buffers

Out of Box Expert Advice

VTAM and TCP Address Space

- CSA%, ECSA %, CPU % , Paging Rate, and Buffer Pool shortage



TCPIP Address Space all LPARS

System ID	Host IP Address	zOS Release	CPU Percentage	Paging Rate	CSA Usage Below 16MB	CSA Percent Below 16MB	Total CSA Usage	Total CSA Percentage	Connection Count	Byte Rate	Application Count
MVSB	9.39.68.146	zOS_1.12	0	0	136	0	26032	0	53	67999	15
MVSC	9.39.68.145	zOS_1.12	0	0	136	0	26032	0	73	118353	15
MVSA	9.39.68.147	zOS_1.12	0	0	136	0	34392	0	587	1299346	121

TCPIP Memory Statistics all LPARS

System ID	IP Address	ECSA Storage In Use	ECSA Storage Free	Percent ECSA Storage In Use	Authorized Private Storage In Use	Authorized Private Storage Free	Percent Authorized Private Storage In Use	64bit Common Storage In Use	64bit Comm Storage Free
MVSB	9.39.68.146	3,071,680	0	100	8,917,608	9,456	100	151,120	897,
MVSC	9.39.68.145	3,070,848	0	100	9,040,392	9,808	100	157,504	891,
MVSA	9.39.68.147	6,361,080	61,608	99	11,197,544	24,208	100	333,568	715,

VTAM Address Space all LPARS

System ID	CPU Percentage	Paging Rate	CSA Below	CSA Percent	CSA ntly ated	CSA Percentage	DASD SIO Per Sec	NCP SIO Per Sec	CTC SIO Per Sec	Local SNA SIO Per Sec	Local Non-SNA SIO Per Sec	Other SIO Per Sec	SIO Rate Pct of System
MVSC	0				9228	2	0	0	0	0	0	0	0
MVSA	0	0	84541	2	10213686	3	0	0	0	0	0	0	0

The paging rate when the most recent sampling interval ended.

CSM Storage Statistics all LPARS

System ID	Percent ECSA In Use Storage	Percent ECSA Allocated Storage	Storage In Use Across ECSA Pools	Storage Free Across ECSA Pools	Storage Allocated Across ECSA Pools	Maximum ECSA Storage Allowed	Storage In Use Across DSP Pools	Storage Free Across DSP Pools	Storage Allocated Across DSP Pools	Storage In Use Across Pools
MVSC	0	2	248	1800	2383	122880	5208	1616	6824	5456
MVSA	1	3	812	2340	4160	122880	23008	5648	28656	23820

Agenda

- Overview of OMEGAMON for Mainframe Networks
- FP3 and z/OS 1.12

1. OSA Express and Interface status and utilization
2. Show all IP Stacks in one view
3. TCP/IP Connection backlog and rejections
4. High TCP/IP Connection response times
5. Zombie Connections
6. Single Application Focused Network Monitor
7. Bytes backing up on a connection
8. TN3270 Response time analysis
9. FTP Logon and transfer failures
10. EE and HPR performance issues

Additional Information:

- OMEGAMON Recommended Maintenance:
- https://www-304.ibm.com/support/docview.wss?uid=swg21290883
  - **OMEGAMON XE for MFN V4R2 Fix pack 3** 4.2.0.3-TIV-KN3-IF0001
  - **Matching PTFs** UA58835, UA59029, UA59138 , UA59709
  - **IBM Tivoli Monitoring V6.2.2 Fix Pack** 6.2.2-TIV-ITM-FP0005
  - OMEGAMON for DE licence
  - **Matching PTFs** UA60941, UA60942 ,UA60943, UA60944
  - Download **Network_Extended** DE Navigator View from OPAL
  - Watch Demo: http://www.youtube.com/watch?v=jVjonG6Zfrw

Pulse 2011 Session 1254: Solving Application and Network issues using IBM's OMEGAMON Mainframe Networks

by James T Sherpey II

Top 10 Tips for z/OS Network Performance Monitoring with OMEGAMON

Ernie Gilman
IBM

Session 10723