

# Discovering OMEGAMON

**Volume 7**

**Enhanced 3270 and TEP User Interfaces**

**OMEGAMON XE for Mainframe Networks v5.1.1**

*Lab Exercises*



**IBM**

# An IBM Proof of Technology

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Catalog Number

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# Enhanced 3270 User Interface OMEGAMON for MFN Scenario Walk through

## 1.1 Introduction

This lab exercise will demonstrate how to logon, navigate, and use some of the primary features of the OMEGAMON Mainframe Networks V5.1 enhanced 3270 user interface. In this lab the user will perform a series of scenarios focused on the following:

- Customize PCOM for MFN LAB
- Enterprise Application Health
- Enterprise Application TCP Listeners and Connections
- Connection Details
- Enterprise Connections Health
- Networking Commands
- OSA Express
- TN3270

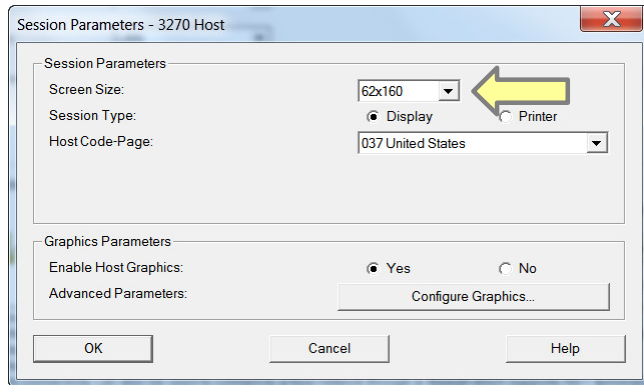
## 1.2 Enhanced 3270 User Interface PCOM Setup

Customer Feedback confirms that there is a dramatic usability improvement by leveraging the largest 3270 screen size and enabling 3270 mouse navigation. The following instructions will take you through the IBM PCOM Customization for both.

### 1.2.1 Setting up 62x160 Screen size in PCOM

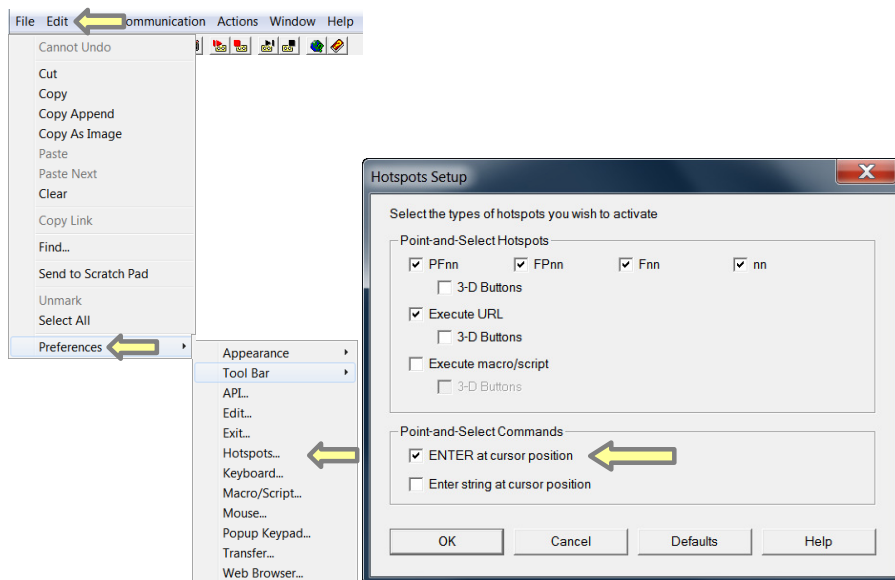
Select Communications then Configure.

Then Select 62x160 on Screen Size Pull down. (PCOM V6 or Later)



### 1.2.2 Setting up Mouse hotspot in PCOM

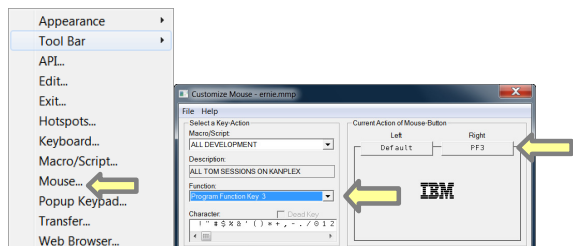
Select Edit Then Preferences then Hotspots.. Then select ENTER at cursor position on Hotspot Setup



### 1.2.3 Customize right mouse click as PF3

Select Edit Then Preferences then Mouse... Then select PF3 on pull down and select right mouse button.

Now with both hotspot and PF3 customized you drill down with the left mouse click and return to the previous panel with the right mouse click.



### 1.2.4 62x160 Screen size

Double left mouse click anything in white for the default drill down, sort, scrolling, maximize, restore, close window. After Drilling down, a single right mouse click returns to previous panel.

File Edit View Tools Options Help 12/30/2012 12:23:37

Command ==> KOBSTART Enterprise Summary Auto Update : Off  
Plex ID :  
Sys ID :

All Active Sysplexes

Columns 2 to 9 of 9	Rows 1 to 1 of 1																		
<table border="1"> <thead> <tr> <th>ΔSysplex Name</th> <th>ΔAverage %CPU Percent</th> <th>Highest LPAR Name</th> <th>ΔHighest %LPAR CPU%</th> <th>ΔPercent LPAR %MSU Capacity</th> <th>LPAR Group Name</th> <th>LPAR Group Capacity Limit</th> <th>Group LPAR MSU Limit</th> <th>ΔAverage Unused %Group MSUs</th> </tr> </thead> <tbody> <tr> <td>_ESYSPLX</td> <td>3</td> <td>ESYSMVS2</td> <td>3</td> <td>0.2</td> <td>N/A</td> <td>Unavailable</td> <td>Unavailable</td> <td>0</td> </tr> </tbody> </table>	ΔSysplex Name	ΔAverage %CPU Percent	Highest LPAR Name	ΔHighest %LPAR CPU%	ΔPercent LPAR %MSU Capacity	LPAR Group Name	LPAR Group Capacity Limit	Group LPAR MSU Limit	ΔAverage Unused %Group MSUs	_ESYSPLX	3	ESYSMVS2	3	0.2	N/A	Unavailable	Unavailable	0	
ΔSysplex Name	ΔAverage %CPU Percent	Highest LPAR Name	ΔHighest %LPAR CPU%	ΔPercent LPAR %MSU Capacity	LPAR Group Name	LPAR Group Capacity Limit	Group LPAR MSU Limit	ΔAverage Unused %Group MSUs											
_ESYSPLX	3	ESYSMVS2	3	0.2	N/A	Unavailable	Unavailable	0											

All Active CICSplexes

Columns 2 to 12 of 13	Rows 1 to 3 of 3																																																
<table border="1"> <thead> <tr> <th>ΔCICSplex Name</th> <th>ΔNumber of %Regions</th> <th>ΔTransaction %Rate</th> <th>ΔCPU %Utilization</th> <th>Any SOS Regions</th> <th>SOS Region</th> <th>ΔWorst %Performance Index</th> <th>Worst Service Class Name</th> <th>ΔEnqueue %Waits</th> <th>ΔBuffer %Waits</th> <th>ΔCurrent %String Waits</th> <th>ΔI/O %Rate</th> </tr> </thead> <tbody> <tr> <td>- CICSDAK1</td> <td>6</td> <td>0/n</td> <td>0.0%</td> <td>No</td> <td>n/a</td> <td>0.00%</td> <td>n/a</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>- CICSPLX1</td> <td>9</td> <td>0/n</td> <td>0.0%</td> <td>No</td> <td>n/a</td> <td>0.00%</td> <td>n/a</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>- OMEGPLEX</td> <td>8</td> <td>5/n</td> <td>0.0%</td> <td>No</td> <td>n/a</td> <td>0.00%</td> <td>n/a</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>	ΔCICSplex Name	ΔNumber of %Regions	ΔTransaction %Rate	ΔCPU %Utilization	Any SOS Regions	SOS Region	ΔWorst %Performance Index	Worst Service Class Name	ΔEnqueue %Waits	ΔBuffer %Waits	ΔCurrent %String Waits	ΔI/O %Rate	- CICSDAK1	6	0/n	0.0%	No	n/a	0.00%	n/a	0	0	0	0	- CICSPLX1	9	0/n	0.0%	No	n/a	0.00%	n/a	0	0	0	0	- OMEGPLEX	8	5/n	0.0%	No	n/a	0.00%	n/a	0	0	0	0	
ΔCICSplex Name	ΔNumber of %Regions	ΔTransaction %Rate	ΔCPU %Utilization	Any SOS Regions	SOS Region	ΔWorst %Performance Index	Worst Service Class Name	ΔEnqueue %Waits	ΔBuffer %Waits	ΔCurrent %String Waits	ΔI/O %Rate																																						
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- OMEGPLEX	8	5/n	0.0%	No	n/a	0.00%	n/a	0	0	0	0																																						

All Active DB2 Subsystems

Columns 3 to 12 of 23	Rows 1 to 7 of 7																																																																																																
<table border="1"> <thead> <tr> <th>ΔDB2 ID</th> <th>ΔMVS %System ID</th> <th>Lock Conflict</th> <th>Lock Escalation</th> <th>Lock Escalation</th> <th>Lock Escalation</th> <th>DDF Receive Rate</th> <th>DDF Send Rate</th> <th>EDM Utilization</th> <th>In Doubt Threads</th> <th>Database Wait Percent</th> <th>Threads Waiting On Limit</th> </tr> </thead> <tbody> <tr> <td>- DSHT</td> <td>MVSE</td> <td>0</td> <td>0</td> <td>0</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0.0</td> <td>0</td> <td>0.0</td> <td>0</td> </tr> <tr> <td>- DSNC</td> <td>MVSE</td> <td>0</td> <td>0</td> <td>0</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0.0</td> <td>0</td> <td>0.0</td> <td>0</td> </tr> <tr> <td>- DSNB</td> <td>MVSE</td> <td>0</td> <td>0</td> <td>0</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0.0</td> <td>0</td> <td>0.0</td> <td>0</td> </tr> <tr> <td>- DSNA</td> <td>MVSE</td> <td>0</td> <td>0</td> <td>0</td> <td>0.00</td> <td>62964</td> <td>52810</td> <td>0.4</td> <td>0</td> <td>0.0</td> <td>0</td> </tr> <tr> <td>- DB15</td> <td>MVSE</td> <td>0</td> <td>0</td> <td>0</td> <td>0.00</td> <td>19</td> <td>1738</td> <td>0.0</td> <td>0</td> <td>0.0</td> <td>0</td> </tr> <tr> <td>- DB11</td> <td>MVSE</td> <td>0</td> <td>0</td> <td>0</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0.0</td> <td>0</td> <td>0.0</td> <td>0</td> </tr> <tr> <td>- DB10</td> <td>MVSE</td> <td>0</td> <td>0</td> <td>0</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0.0</td> <td>0</td> <td>0.0</td> <td>0</td> </tr> </tbody> </table>	ΔDB2 ID	ΔMVS %System ID	Lock Conflict	Lock Escalation	Lock Escalation	Lock Escalation	DDF Receive Rate	DDF Send Rate	EDM Utilization	In Doubt Threads	Database Wait Percent	Threads Waiting On Limit	- DSHT	MVSE	0	0	0	0.00	0	0	0.0	0	0.0	0	- DSNC	MVSE	0	0	0	0.00	0	0	0.0	0	0.0	0	- DSNB	MVSE	0	0	0	0.00	0	0	0.0	0	0.0	0	- DSNA	MVSE	0	0	0	0.00	62964	52810	0.4	0	0.0	0	- DB15	MVSE	0	0	0	0.00	19	1738	0.0	0	0.0	0	- DB11	MVSE	0	0	0	0.00	0	0	0.0	0	0.0	0	- DB10	MVSE	0	0	0	0.00	0	0	0.0	0	0.0	0	
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- DSNA	MVSE	0	0	0	0.00	62964	52810	0.4	0	0.0	0																																																																																						
- DB15	MVSE	0	0	0	0.00	19	1738	0.0	0	0.0	0																																																																																						
- DB11	MVSE	0	0	0	0.00	0	0	0.0	0	0.0	0																																																																																						
- DB10	MVSE	0	0	0	0.00	0	0	0.0	0	0.0	0																																																																																						

Monitored IMS Subsystems

No Data

WebSphere MQ Queue Manager Status

Columns 2 to 5 of 5	Rows 1 to 5 of 5																														
<table border="1"> <thead> <tr> <th>ΔQMGr %Name</th> <th>Host Name</th> <th>ΔQMGr %Status</th> <th>Channel Initiator</th> <th>Command Server</th> </tr> </thead> <tbody> <tr> <td>- BMF1</td> <td>MVSE</td> <td>Stopped</td> <td>Stopped</td> <td>Stopped</td> </tr> <tr> <td>- BMF0</td> <td>MVSE</td> <td>Stopped</td> <td>Stopped</td> <td>Stopped</td> </tr> <tr> <td>- WMQT</td> <td>MVSE</td> <td>Running</td> <td>Running</td> <td>Waiting</td> </tr> <tr> <td>- WMQB</td> <td>MVSE</td> <td>Running</td> <td>Running</td> <td>Waiting</td> </tr> <tr> <td>- WMQA</td> <td>MVSE</td> <td>Running</td> <td>Running</td> <td>Waiting</td> </tr> </tbody> </table>	ΔQMGr %Name	Host Name	ΔQMGr %Status	Channel Initiator	Command Server	- BMF1	MVSE	Stopped	Stopped	Stopped	- BMF0	MVSE	Stopped	Stopped	Stopped	- WMQT	MVSE	Running	Running	Waiting	- WMQB	MVSE	Running	Running	Waiting	- WMQA	MVSE	Running	Running	Waiting	
ΔQMGr %Name	Host Name	ΔQMGr %Status	Channel Initiator	Command Server																											
- BMF1	MVSE	Stopped	Stopped	Stopped																											
- BMF0	MVSE	Stopped	Stopped	Stopped																											
- WMQT	MVSE	Running	Running	Waiting																											
- WMQB	MVSE	Running	Running	Waiting																											
- WMQA	MVSE	Running	Running	Waiting																											

Storage SMSplex Overview

Columns 2 to 9 of 18	Rows 1 to 1 of 1																		
<table border="1"> <thead> <tr> <th>ΔSYSplex Name</th> <th>High Volume</th> <th>High Volume</th> <th>HSM Max Entry</th> <th>HSM Max Element</th> <th>HSM Oldest</th> <th>Storage Grp Low</th> <th>Storage Grp Low</th> <th>+Low Track Manage</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	ΔSYSplex Name	High Volume	High Volume	HSM Max Entry	HSM Max Element	HSM Oldest	Storage Grp Low	Storage Grp Low	+Low Track Manage										
ΔSYSplex Name	High Volume	High Volume	HSM Max Entry	HSM Max Element	HSM Oldest	Storage Grp Low	Storage Grp Low	+Low Track Manage											

Sunday December 30 2012 MORE

## 1.3 OMEGAMON for Mainframe Networks Scenario Setup

### 1.3.1 Close all subpanels except “Network Health for Applications”



### 1.3.2 Initial Default panel for OMEGAMON for Mainframe Networks

This view displays applications across the enterprise (all LPARs) that may be impacted by networking issues. They meet any of the following criteria:

- Percent out of order segments  $\geq 5\%$
- Total out of order segments  $> 15$
- Connections in backlog  $\geq 10$
- Total backlog connections rejected  $> 10$
- Percent segments retransmitted  $\geq 3$

Enterprise Summary													
Network Health For Applications													
ΔSystem ID	ΔJob Name	Δ% Segs OutOfOrder	ΔTot Segs OutOfOrder	ΔConn in Backlog	Backlog Rejected	ΔTot Backlog Rejected	Δ% Segs Retrans	ΔTot Segs Retrans	ΔIdle Time	ΔConn Count	Active Conns	ΔHighest Conns	ΔTransm Byte R
— MVSE	RD4ZRSE9	0	0	0	0	0	0	276	0.00	6	0	1	1.0K
— MVSE	CICSAOR2	0	0	0	0	0	0	58	124.41	14	11	17	0
— MVSE	IBMSMV32	0	0	0	0	0	0	80	102.82	9	7	9	0
— MVSE	TN3270A	0	0	0	0	0	0	716	0.08	3	1	14	51
— MVSE	DSNTD1ST	0	0	0	0	0	0	59	33.03	4	0	9	234
— MVSE	CICSAOR5	0	0	0	0	15	0	0	6.02	6	0	2	0
— MVSE	IMSBCON	0	0	0	0	0	0	17	124.41	2	0	11	0
— MVSE	IMSDCON	0	0	0	0	0	0	58	124.42	3	0	16	0
— MVSE	DSNCD1ST	0	0	0	0	0	0	56	99.38	2	0	1	0
— MVSE	CICSAOR8	0	0	0	0	11	0	14	7.81	4	0	1	0
— MVSE	RD4ZRSE	0	0	0	0	0	0	11	5.58	1	0	1	0
— MVSE	WEBSRV	0	0	0	0	0	0	33	0.07	1	0	2	0
— MVSE	TN3270	0	0	0	0	0	0	619	3.75	3	0	12	0
— MVSE	DSNBD1ST	0	0	0	0	0	0	69	5.04	2	0	19	0
— MVSE	DB1SD1ST	0	0	0	0	0	0	679	46.19	3	0	13	0
— MVSE	BLZBFA3	0	0	0	0	0	0	50	124.41	1	0	0	0
— MVSE	BLZBFA1	0	0	0	0	0	0	12	101.91	1	0	4	0

Place your mouse over the title of some errors and hit PF1 for a more detail explanation of the fields.

**Help for % Segs OutOfOrder**  
 The percentage of segments received that did not contain the next expected sequence number during the most recent time interval.

**Help for Tot Backlog Rejected**  
 The total number of connections rejected because the backlog limit was exceeded before the listener was able to accept the waiting connections. z/OS Communications Server rejects a new connection when the number of connections waiting to be accepted exceeds the backlog limit for a listener. The format is an unsigned integer.

**Help for Tot Segs OutOfOrder**  
 The total number of TCP data segments received that did not contain the next expected sequence number on all connections for this application that existed at the end of the most recent time interval. The format is an integer.

## 1.4 Navigate to Enterprise Application Health



### 1.4.1 Select Enterprise Application Health

Displays the following information for applications throughout your enterprise:

- Applications summary
- Applications with percent out-of-order segments  $\geq 5\%$  or total out-of-order segments  $\geq 15\%$
- Applications with connections in backlog  $\geq 10$  OR total backlog connections rejected  $> 10$
- Applications with percent segments retransmitted  $> 3\%$  OR total segments retransmitted  $> 10$

Command ==> \_\_\_\_\_  
KN3TAPO

Enterprise Applications Health								
Applications Summary								
Columns 3 to 14 of 24								
System ID	Job Name	Idle Time	Conn Count	Active Conns	Highest Conns	Conn in Backlog	Backlog Rejected	Delta
MVSE	CXEGDSST	48.56	40	18	18	0	0	
MVSE	CXEGC5	362.15	27	5	6	0	0	
MVSE	CXEG15	362.15	26	5	5	0	0	
MVSE	CXEGD5	410.04	25	4	4	0	0	
MVSE	CXEGDF	361.93	21	9	9	0	0	

Percent Out of Order Segments OR Total Out of								
Connections in Backlog OR Total Backlog Conne								
Columns 3 to 13 of 15								
System ID	Job Name	Conn in Backlog	Tot Backlog Rejected	Backlog Rejected	Backlog Rejected Time Stamp	Conn Count	Delta	Conn Count
MVSE	CICSA0R5	0	15	0	12/12/09 11:13:00	6		
MVSE	CICSHA0R8	0	11	0	12/12/20 23:22:35	4		

Percent Segments Retransmit OR Total Segment								
Columns 3 to 13 of 13								
System ID	Job Name	% Segs Retrans	Tot Segs Retrans	Segs Retrans	Retrans Rate	Conn Count	Active Conns	Ac Co
MVSE	RD4ZRSE9	0	276	0	0	6	0	
MVSE	CICSA0R2	0	58	0	0	14	11	
MVSE	IBMSMV32	0	60	0	0	9	7	
MVSE	TN3270A	0	716	0	0	3	1	
MVSE	DSNTDIST	0	59	0	0	4	0	

Double click on an entry such as **Connections in Backlog** or **Total Backlog Connections Rejected**.



### 1.4.2 Drill down to Application Details

Point mouse to highlighted field and hit PF1 for help to get a description of the field.

File Edit View Tools Options Help 12/30/2012 14:20:42  
 Command ==> Application Details for CICS/AORS  
 KN3TAPD TCP STC : TCPIP SMF ID : MVSE Auto Update : Off

**Connection Statistics**

Conn Count	6	Active Conns	0
Conn Rate	0	Highest Conns	2
Accepted Conns	0	Date for Highest Conns	12/12/28
Conn in Backlog	0	Time for Highest Conn	10:59:51
Backlog Rejected	0	Tot Backlog Rejected	15
Idle Time	51.33	Backlog Rejected Date	12/12/09
Time Since Last Activity	0.0003	Backlog Rejected Time	11:13:00
Server Up Time	51.47	Sysplex Name	DEMOPLX
Application Type	Unknown		

**Throughput Rates and Percents**

Retrans Rate	0	Byte Rate	0
Receive Byte Rate	0	Transmit Byte Rate	0
Receive Segment Rate	0	Transmit Segment Rate	0
Segment Rate	0	% Segs OutOfOrder	0
% Segs Retrans	0		

**Throughput Statistics**

Total Bytes Received	3.8K	Total Bytes Sent	5.7K
Total Bytes	9.6K	Bytes Sent or Received	0
Bytes Received	0	Bytes Sent	0
Tot Segs Received	30	Tot Segs Sent	21
Total Segments	51	Segments Sent or Received	0
Segments Received	0	Segments Sent	0
Segments OutOfOrder	0	Tot Segs OutOfOrder	0
Segs Retrans	0	Tot Segs Retrans	0

**Datagram Statistics**

Receive Datagram Rate	0	Transmit Datagram Rate	0
Datagram Rate	0	Total Datagrams	0
Total Datagrams Received	0	Total Datagrams Sent	0
Datagrams Received	0	Datagrams Sent	0
Datagrams Sent or Received	0	Datagrams Queued	0
Datagrams Discarded	0	Queued Datagram Bytes	0
% Datagrams Discarded	0		

### 1.4.3 TN3270 Connections

Go back to the default Network Health for Applications view and shift right to see the total segment re-transmissions.

File Edit View Tools Options Help 01/03/2013 19:11:45  
 Command ==> Enterprise Summary  
 KOBSTART Plex ID : Sys ID : Auto Update : Off

**Network Health for Applications**

Columns 7 to 12 of 21 Rows 1 to 7 of 7

ΔSystem ▽ID	ΔJob ▽Name	ΔTot Backlog ▽Rejected	Δ% Segs ▽Retrans	▽Tot Segs Retrans	ΔIdle ▽Time	ΔConn ▽Count	Active Conns
L MVSE	TN3270A	0	0	238	0.09	7	6
— MVSE	DSNTDIST	0	0	172	0.32	7	3
— MVSE	TN3270	0	0	99	0.16	5	2
— MVSE	DB1SDIST	0	0	37	3.86	3	0
— MVSE	BBOS003	0	0	21	0.00	12	1
— MVSE	BBOS003S	0	0	13	0.00	46	0
— MVSE	DB1IDIST	0	0	12	0.00	5	1

Now enter L for TN3270A to view the Listeners.

## 1.5 Enterprise Application TCP Listeners and Connections

File Edit View Tools Options Help 01/03/2013 19:13:28 Auto Update : Off  
 Command ==> KN3TCLS Application TCP Listeners and Connections TCP STC : TCP/IP  
 SMF ID : MVSE

Connections Summary for TN3270A

Columns 3 to 7 of 22 Rows 1 to 5 of 5

Remote IP Address	Local Port	Connection VState	% Segs Retrans	Tot Segs Retrans	% Segs OutOfOrder	+Tot Segs OutOfOrder
98.212.129.192	1022	ESTABLISHED	9	11	0	0
32.97.110.56	1022	ESTABLISHED	0	0	0	0
32.97.110.51	1022	ESTABLISHED	0	0	0	0
173.74.203.65	1022	ESTABLISHED	0	0	0	0
24.210.143.153	1022	ESTABLISHED	0	0	0	0

TCP Listeners Summary for TN3270A

Columns 3 to 7 of 23 Rows 1 to 1 of 1

Local VIP Address	Local VPort	Conn in VBacklog	Backlog VRejected	Tot Backlog VRejected	Idle VTime	% Active VConns
::	1022	0	0	0	0.15	50

Shift right to view the LU name to see which one is yours.

Select your connection to see details. (Double mouse click or S and Enter)

File Edit View Tools Options Help 01/03/2013 19:15:59 Auto Update : Off  
 Command ==> KN3TCLS Application TCP Listeners and Connections TCP STC : TCP/IP  
 SMF ID : MVSE

Connections Summary for TN3270A

Columns 19 to 22 of 22 Rows 1 to 5 of 5

Remote IP Address	Local Port	Remote Port	Local IP Address	Telnet LU Name	Hex Conn Number
98.212.129.192	1022	55588	192.84.47.60	TCP00098	001220AB
32.97.110.56	1022	37881	192.84.47.60	TCP00097	0011FB88
32.97.110.51	1022	29137	192.84.47.60	TCP00007	0012BE4D
173.74.203.65	1022	51448	192.84.47.60	TCP00087	0010892F
24.210.143.153	1022	62876	192.84.47.60	TCP00008	001313DD

TCP Listeners Summary for TN3270A

Columns 3 to 7 of 23 Rows 1 to 1 of 1

Local VIP Address	Local VPort	Conn in VBacklog	Backlog VRejected	Tot Backlog VRejected	Idle VTime	% Active VConns
::	1022	0	0	0	0.15	50

50 Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/port TCP00098 and port 1022

## 1.6 Connection Details

```

File Edit View Tools Options Help 01/03/2013 19:16:40 Auto Update : Off
Command ==> TCP STC : TCPIP
KN3TCPD SMF ID : MVSE
Connection Details

[Status and Response Time]
Connection State..... ESTABLIS Connection Start Date..... 13/01/03
Last Activity..... 37.840s Connection Start Time..... 17:20:43
Response Time..... 0.97 Conn Duration..... 1h 55m
Response Time Variance..... 1.19

[Retransmissions and Out of Order Segments]
Retransmission Rate..... 0 % Segs Retrans..... 0
Segs Retrans..... 0 Tot Segs Retrans..... 11
Segments OutOfOrder..... 0 Tot Segs OutOfOrder..... 0
% Segs OutOfOrder..... 0 Duplicate ACKs..... 36

[Statistics]
Bytes Received..... 1.4K Bytes Sent..... 18.0K
Bytes Sent or Received..... 19.5K Total Bytes..... 2.1M
Tot Bytes Received..... 164.3K Tot Bytes Sent..... 2.0M
Receive Byte Rate..... 1.4K Transmit Byte Rate..... 18.0K
Byte Rate..... 19.5K Segment Rate..... 33
Receive Segment Rate..... 13 Transmit Segment Rate..... 20
Segments Received..... 13 Segments Sent..... 20
Segments Sent or Received..... 33 Total Segments..... 3.7K
Total Segments Received..... 1.4K Total Segments Sent..... 2.3K
In Bytes Buffered..... 0 Out Bytes Buffered..... 0
In Queued Data Date..... 00/00/00 Out Queued Data Date..... 00/00/00
In Queued Data Time..... 00:00:00 Out Queued Data Time..... 00:00:00
Inbound Interface Name..... Outbound Interface Name..... OSAGL

[Window Size]
Congestion Window Size..... 5805 Local Window Size Freq..... 0
Send Window..... 65724 Remote Window Size Freq..... 0
Maximum Send Window Size..... 66528

[Configuration]
Local IP Address..... 192.84.4 Local Port..... 1022
Remote IP Address..... 98.212.1 Remote Port..... 55588
Application Name..... TN3270A DVIPA..... No
Open Type..... Passive Sysplex Cluster Conn Type.....
ASID..... 00AC Hex Conn Number..... 001220AB
APPLDATA..... EZBTNSRV Server Resource ID..... 00000033
Receive Buffer Size..... 65535 Send Buffer Size..... 65535
Maximum Segment Size..... 1200 Slow Start Threshold..... 4353
Ancillary Inbound Queue..... No

[Security]
AT-TLS Policy Status..... Off AT-TLS Status..... Not Secu
Negotiated SSL Protocol..... Unsecure SSL Session Type..... SSL Not
Negotiated Cipher..... Partner User ID.....

[TN3270]
Telnet Appl Name..... XES10BAP Telnet LU Name..... TCP00098
Telnet Session Type..... TN3270E TN3270 Client User ID.....
TN3270 Logmode Name..... D4C32XX3

```

Things to look for are:

- **Status and Response time:** Notice the Response time. If this is high then the cause can be seen in other sections on this panel. Hit F1 over Response time Variance.
- **Retransmissions and out of order segments:** These are indicators that can indicate the cause of performance issues.
- **Window size:** Window Size Freq > 0 can indicate severe congestion or resource issues at the end point
- **Statistics window:** Notice the outbound interface name. Maybe the connection is not going over the OSA you thought it was because of a DVIPA issue. This can change during the connection.

# 1.7 Enterprise Connections Health

PF3 or right mouse click to get to previous panel.

Then Enter **E** for **Enterprise Network Workspaces** list

Then Enter **C** for **Enterprise Connections Health** Workspace

```

KN3ENTMNM Enterprise Network Workspaces
Select one of the following, then press ENTER
C- 1. L Enter to display TCP Listeners Overview
   2. C Enter to display Connections Health
   3. N Enter to display TN3270 Servers Overview
   4. I Enter to display Interfaces Overview
   5. O Enter to display OSA Interfaces Overview
   6. H Enter to display Hipersocket Interfaces Overview
   7. P Enter to display OSA Express Ports Overview
   8. B Enter to display OSA Express Channels Overview
   9. T Enter to display TCPIP Stack Performance Overview
  10. M Enter to display Memory and CSM Storage Overview
  11. R Command and Response Log
  
```

The screenshot shows the Enterprise Connections Health workspace with three data windows:

- Time Since Last Activity > 10 Minutes:** A table with columns for System ID, Job Name, Local Port, Remote IP Address, Last Activity, Connection State, Total Segments Retransmitted, and Total Out of Order. The last activity column shows values like 21d 05h, 19d 13h, etc.
- Connection State Not Equal to Established:** A table with columns for System ID, Job Name, Local Port, Remote IP Address, Connection State, Connection Start Time, and Connection Duration. The Connection State column shows 'CLOSE WAIT' for three entries.
- Inbound or Outbound Bytes Buffered:** A table with columns for System ID, Job Name, Local Port, Remote IP Address, In Bytes Buffered, Out Bytes Buffered, and In Queued Data Time Stamp. The In Bytes Buffered column shows values of 84 for three entries.

We see three windows. The first one indicates connections with no activity in longer than 10 minutes. The second window indicates Connections not in Established state. And the 3<sup>rd</sup> window indicates connections with bytes being buffered in CSM storage.

## 1.7.1 Connection State not equal to Established

Connections in **CLOSE WAIT** for hours or days can eventually prevent new connections from starting. This can be caused by applications failing to cleanup connections correctly. You can drop these “zombie” connections by issuing Drop command right from here.

The screenshot shows the Enterprise Connections Health workspace with the Connection State Not Equal to Established window. A red box highlights the 'Drop' button in the top right corner of the window. The table below shows connections in a 'CLOSE WAIT' state.

System ID	Job Name	Local Port	Conn Duration	Last Activity	Local IP Address	Remote Port	Hex Conn Number
MVSE	RD4ZRSE9	57701	18d 00h	17d 22h	192.84.47.60	6715	00330C5E
MVSE	RD4ZRSE2	60649	6d 15h	17d 14h	192.84.47.60	6715	00D04BA0
MVSE	RD4ZRSE9	41779	18d 00h	17d 22h	192.84.47.60	6715	0032CA90

## 1.7.2 Inbound or Outbound Bytes buffered

Bytes buffered can be caused by networking issues or the endpoint not being able to keep up. These are buffered in CSM storage. Shift right or drill down into one of these sessions to see why bytes are backing up. It turns out some of these are in Close Wait. Bytes backed up will not freed up until the connection is dropped. If this Panel is missing then none of the connections meet this condition.

Enterprise Connections Health

Time Since Last Activity > 10 Minutes

System ID	Job Name	Local Port	Remote IP Address	Last Activity	Connection State	Tot Segs Retrans	+Tot S OutOf
MVSE	CICSAR1	3090	204.146.27.23	21d 05h	ESTABLISHED	0	0
MVSE	IBMSMV00	9994	102.248.183.1	19d 13h	ESTABLISHED	10	0
MVSE	IBMSMV000	9994	99.108.104.246	19d 00h	ESTABLISHED	0	0
MVSE	IBMSMV0000	9994	99.108.104.246	18d 17h	ESTABLISHED	0	0
MVSE	IBMSMV00000	9994	99.108.104.246	18d 12h	ESTABLISHED	0	0
MVSE	CICSAD000	8822	102.248.183.1	18d 02h	ESTABLISHED	0	0
MVSE	CICSAD0000	8822	102.248.183.1	18d 02h	ESTABLISHED	0	0
MVSE	CICSAD00000	8822	102.248.183.1	18d 02h	ESTABLISHED	0	0

Connection State Not Equal to Established

System ID	Job Name	Local Port	Remote IP Address	Connection State	Connection Start Time	Conn Duratio
MVSE	RD4NRR000	57701	102.84.47.60	CLOSE WAIT	12/12/12 15:06:00	18d 0
MVSE	RD4NRR0000	60649	102.84.47.60	CLOSE WAIT	12/12/12 14:07:00	18d 1
MVSE	RD4NRR00000	41779	102.84.47.60	CLOSE WAIT	12/12/12 14:07:00	18d 1

Inbound or Outbound Bytes Buffered

System ID	Job Name	Local Port	Remote IP Address	In Bytes Buffered	Out Bytes Buffered	In Queued Data Time Stamp
MVSE	RD4NRR000	57701	102.84.47.60	84	0	12/12/12 16:43:06
MVSE	RD4NRR0000	60649	102.84.47.60	84	0	12/12/12 08:43:07
MVSE	RD4NRR00000	41779	102.84.47.60	84	0	12/12/12 17:03:06

Sunday December 30 2012

## 1.8 Networking Commands

To issue commands Enter ! On the start of the connection for a list of commands, or at the start of the row, just enter **P** for Ping, **T** for Tracerte, **N** for NSLOOKUP and **D** for Drop. If you have problems, your userid may not be authorized in RACF to issue these commands.

The IP address might be outside a firewall. You can try one of these commands on the local LPAR IP address. You can locate it by finding the **local IP address** on a connections view on the previous exercise.

```

Options Menu
Select an option and then press ENTER
1. I - Take Action on Connection
2. D - Drop Connection
3. N - NSLOOKUP IP Address
4. P - Ping IP Address
5. T - Tracerte IP Address

KN3ACTD Drop Connection
Pr KN3ACTN NSLookup IP Address
Co Pre KN3ACTP Ping IP Address
Su Dom KN3ACTT Tracerte IP Address
Job Ser Press E
RE Port
Ent Hostnam
Lo Source
Z Interfa
Del Addrtyp
  1. I
  2. I

KN3ACTT Tracerte IP Address
Press ENTER to continue
Hostname/IP Address: 204.146.27.23
Source IP Address :
Interface: Packet Size: 256 Port: 33434
TCP Stack: Max(hops): 30 Try: 3 TOS: 0 Wait: 5
Enter "/" to select option Addrtype
  1. IPv4
  2. IPv6
  Debug
  Verbose
  LimDisp
  NoName
  NoRoute
  
```

### 1.8.1 Ping Results:

KN3CRTS Command and Response Log SMF ID : MVSE					
Command Log					
Columns 1 to 6 of 7		Rows 1 to 1 of 1			
Command Timestamp	Command	Return Code	Response Message	User ID	Jobname
13/03/14 11:47:30	ping 192.84.47.	0	KN3A001I PROCESSING C0	MS519	TCPIP
Command Response					
Columns 1 to 2 of 2		Rows 1 to 6 of 6			
Command Timestamp	+Command Output				
13/03/14 11:47:30	CS V1R13: Pinging host 192.84.47.60				
13/03/14 11:47:30	Ping #1 response took 0.000 seconds.				
13/03/14 11:47:30	Ping #2 response took 0.000 seconds.				
13/03/14 11:47:30	Ping #3 response took 0.000 seconds.				
13/03/14 11:47:30	Ping #4 response took 0.000 seconds.				
13/03/14 11:47:30	Ping #5 response took 0.000 seconds.				

### 1.8.2 Trace route Results:

Command Timestamp	+Command Output
13/03/14 11:51:07	CS V1R13: Traceroute to 192.84.47.60 (192.84.47.60)
13/03/14 11:51:07	1 zservers.demos.ibm.com (192.84.47.60) 0 ms 0 ms 0 ms

### 1.8.3 NSLookup Results:

13/03/14 11:48:44	EZB3170I Server: p505d-x001.demos.ibm.com
13/03/14 11:48:44	EZB3172I Address: 192.84.45.3
13/03/14 11:48:44	EZB3170I Name: zservers.demos.ibm.com
13/03/14 11:48:44	EZB3172I Address: 192.84.47.60

## 1.9 OSA Express Interfaces

PF3 or right mouse click to get to previous panel. Then E Then O

Interface attributes come from Communications Server where the OSA Express Ports and Channel attributes comes directly from OSA-Express through SNMP. We will focus on the interface because with z/OS 1.12 or later, we see significantly more metrics.

```

Options Menu
Select an option and then press ENTER
E _1. E Enterprise Network Workspaces
  2. L TCP
  3. S Ap
  4. M En
  5. P En

KN3ENTMN Enterprise Network Workspaces
Select one of the following, then press ENTER
0_
1. A Enterprise Application Health
2. L Enterprise TCP Listeners Overview
3. C Enterprise Connections Health
4. N Enterprise TN3270 Servers Overview
5. I Enterprise Interfaces Overview
6. O Enterprise OSA Interfaces Overview
7. H Enterprise HiperSocket Interfaces Overview
8. P Enterprise OSA Express Ports Overview
9. B Enterprise OSA Express Channels Overview
10. T Enterprise TCPIP Stack Performance Overview
11. M Enterprise Memory and CSM Storage Overview
12. R Command and Response Log
  
```

The screenshot displays the 'Enterprise OSA Interfaces Overview' panel with several data tables. Red boxes highlight specific areas of interest:

- OSA Interface Statistics:** A table with columns for System ID, Interface Name, Bandwidth Util, Bytes Recv or Xmitd, % Packets in Error, % In Pkts in Error, % Out Pkts in Error, and % Pac Disca. The % In Pkts in Error column is highlighted with a red box.
- OSA Interface Status:** A table with columns for System ID, Interface Name, Interface Status, Actual MTU, Device or Datapath, Duplicate Addr Count, Actual Perf Type, and +Rou MTU. The Duplicate Addr Count column is highlighted with a red box.
- OSA Interface Write Queue Statistics:** A table with columns for System ID, Interface Name, Queue Priority, Max Staging Queue Depth, Used VSBALs, Max Active VSBALs, Avg Active VSBALs, and ASBALs Per S. The Queue Priority column is highlighted with a red box.
- OSA Interface Read Queue Statistics:** A table with columns for System ID, Interface Name, Queue ID, Reads Exhausted, Read Deferrals, Tot Read Deferrals, Used VSBALs, and % Packets Accelerat.

OSA issue like high utilization or other errors can be found here. Notice any errors such as % **packets** in error and inactive OSA Interfaces. Also notice that we now see the 4 OSA outbound queue priorities.

Further details on OSA Express can be found through the **Ports** and **channels** selections off the **enterprise Network Workspaces** selection. Return to previous panel then Enter (E then P or B)

Some OSA Performance issues can be as a result of being at the wrong microcode levels. See if you can locate it in the **OSA Express Channel** summary.

File Edit View Tools Options Help 01/05/2013 19:00:08 Auto Update : Off  
Command ==> TCP STC : \*  
KN3TCHO Enterprise OSA Express Channels Overview SMF ID : \*

OSA Express Channels Summary

Columns 8 to 12 of 22 Rows 1 to 1 of 1

System ID	Chan Num	PCI Util %/ Hour	Channel Type	Device or Port Name	Port Count	Micro Code Level
MVSE	04	0	osaIntraensembleData	IUTXP004	1	0D3C



## 1.10 Enterprise TN3270 Session Connections

From the initial MFN panel you can Enter (**E** then **N**) or / and then **N** or 4.

```

KN3ENTMN Enterprise Network Workspaces
Select one of the following, then press ENTER
N 1. A Enterprise Application Health
   2. L Enterprise TCP Listeners Overview
   3. C Enterprise Connections Health
   4. N Enterprise TN3270 Servers Overview
   5. I Enterprise Interfaces Overview
   6. O Enterprise OSA Interfaces Overview
   7. H Enterprise HyperSocket Interfaces Overview
   8. P Enterprise OSA Express Ports Overview
   9. B Enterprise OSA Express Channels Overview
  10. T Enterprise TCPIP Stack Performance Overview
  11. M Enterprise Memory and CSM Storage Overview
  12. R Command and Response Log
  
```

### 1.10.1 TN3270 Server Sessions

Displays the following data for all TN3270 server connections for a TN3270 listener port on a TCP/IP stack:

- TN3270 server session connections summary. Both Active and recently inactive sessions.
- TN3270 server sessionless connections summary

The screenshot shows a window titled "TN3270 Server Connections for Port 1022" with a menu bar (File, Edit, View, Tools, Options, Help) and a timestamp of 01/03/2013 16:59:34. The window contains two panes. The top pane is titled "TN3270 Server Session Connections Summary" and displays a table with the following data:

Remote IP Address	ΔAvg Tot Resp Time	Avg IP Resp Time	Avg SNA Resp Time	Avg Trans Count	Tot Trans Detected	ΔSSL VStatus
24.210.143.150	0.000s	0.000s	0.000s	0	0	SERVER
56.42.129.245	0.000s	0.000s	0.000s	0	0	SERVER
32.97.110.57	0.000s	0.000s	0.000s	0	0	SERVER
173.74.203.65	0.000s	0.000s	0.000s	0	0	SERVER
208.102.218.65	0.000s	0.000s	0.000s	0	0	SERVER
56.42.129.245	0.000s	0.000s	0.000s	0	0	SERVER
129.33.1.37	0.000s	0.000s	0.000s	0	0	SERVER
98.212.129.1	0.000s	0.000s	0.000s	0	0	Unknown
173.74.203.65	0.000s	0.000s	0.000s	0	0	Unknown

The bottom pane is titled "TN3270 Server Sessionless Connections Summary" and shows "No Data".

High **IP Response Times** can indicate networking issues.

Drill down into the TCP/IP connections and look for issues there.

For High **SNA response times**, look to the application or end point issues.

If you shift right, you will see the **session end times** for recently ended sessions. Active sessions will show all zeros.

File Edit View Tools Options Help 01/03/2013 17:07:05

Command ==> TN3270 Server Connections for Port 1022

KN3TNAS2

Auto Update : Off  
 TCP STC : TCPIP  
 SMF ID : MVSE

TN3270 Server Session Connections Summary

Columns 6 to 9 of 19 Rows 1 to 10 of 10

Remote IP Address	Tot Trans Detected	SSL Status	Session Start	Session End
24.210.143.153	0	SERVER AUTH	13/01/03 14:47:00	13/01/03 16:55:22
66.42.123.246	0	SERVER AUTH	13/01/03 15:27:06	13/01/03 16:55:22
32.97.110.57	0	SERVER AUTH	13/01/03 14:24:53	13/01/03 15:53:01
173.74.203.65	0	SERVER AUTH	13/01/03 14:30:15	13/01/03 15:53:44
208.102.218.57	0	SERVER AUTH	13/01/03 14:55:22	13/01/03 15:41:22
66.42.123.246	0	SERVER AUTH	13/01/03 14:05:52	13/01/03 15:21:41
129.33.1.37	0	SERVER AUTH	13/01/03 14:20:35	13/01/03 15:03:41
32.97.110.56	0	Unknown	13/01/03 17:04:54	00/00/00 00:00:00
98.212.129.192	0	Unknown	13/01/03 16:35:42	00/00/00 00:00:00
173.74.203.65	0	Unknown	13/01/03 15:51:18	00/00/00 00:00:00

TN3270 Server Sessionless Connections Summary No Data

Drill down (S or double mouse click) on the first column of one of the sessions to see the TN3270 connection details. TN3270 sliding window performance details.



## 1.12 FTP (New with V5.1.1)

FTP will only show FTPs using the Communications Server for z/OS FTP Server. Others like SFTP and Connect:Direct will only show up in the connections views.

```
KN3ENTMN Enterprise Network Workspaces
Select one of the following, then press ENTER
F_ 1. A Enterprise Application Health
    2. L Enterprise TCP Listeners Overview
    3. C Enterprise Connections Health
    4. N Enterprise TN3270 Servers Overview
    5. I Enterprise Interfaces Overview
    6. O Enterprise OSA Interfaces Overview
    7. H Enterprise HiperSockets Interfaces Overview
    8. P Enterprise OSA Express Ports Overview
    9. B Enterprise OSA Express Channels Overview
   10. T Enterprise TCPIP Stack Performance Overview
   11. M Enterprise Memory and CSM Storage Overview
   12. F Enterprise FTP Sessions Overview
   13. G Enterprise FTP Transfers Overview
   14. R Command and Response Log
   15. V Enterprise VTAM Workspaces
```

### 1.12.1 FTP Sessions

FTP data is collected when a new session or transfer is opened or when an existing session or transfer is closed. Information on completed FTPs is kept depending on the FTP Data Display Interval, which defaults to 2 hours but can be set up to 24 hours, which is recommended in most environments. This history is dedicated to FTP and does not use the persistent datastore datasets. FTP history longer than 24 hours can be saved in the TDW and viewed through the TEP.

FTP Logon failures can be especially helpful for common errors such as expired passwords or invalid user IDs. If there is a FTP Session Failure, further information could be found in the connection views.

Enterprise FTP Sessions Overview							
FTP Sessions Summary							
ΔSystem VID	ΔJob VName	ΔRemote VIP Address	ΔTransfer VCount	ΔByte VCount	ΔSession VStart	+Session End	
- MVSE	MS519	24.161.86.175	0	0	13/11/04 19:49:46	13/11/0	
- MVSE	MS519	24.161.86.175	0	0	13/11/04 19:29:07	13/11/0	
- MVSE	MS519	24.161.86.175	4	311.8K	13/11/04 19:19:29	13/11/0	

FTP Login Failures Summary			
ΔSystem VID	ΔJob VName	ΔRemote VIP Address	+Login Failure Reason Description
- MVSE	FTPD8	204.146.27.25	User ID is unknown
- MVSE	FTPD7	204.146.27.25	User ID is unknown
- MVSE	FTPD9	204.146.27.25	User ID is unknown
- MVSE	FTPD6	204.146.27.25	User ID is unknown

FTP Session Failures Summary			
ΔSystem VID	ΔJob VName	ΔRemote VIP Address	ΔSession End Reason Description
- MVSE	MS519	24.161.86.175	Client closed control connection unexpectedly
- MVSE	PLS	99.156.166.184	Socket or network error
- MVSE	PLS	99.156.166.184	Socket or network error
- MVSE	PLS	99.156.166.184	Socket or network error
- MVSE	FTPD8	204.146.27.25	Socket or network error
- MVSE	FTPD7	204.146.27.25	Socket or network error
- MVSE	FTPD6	204.146.27.25	Socket or network error
- MVSE	FTPD5	204.146.27.25	Socket or network error
- MVSE	FTPD9	204.146.27.25	Socket or network error
- MVSE	FTPD7	204.146.27.25	Socket or network error
- MVSE	FTPD6	204.146.27.25	Socket or network error
- MVSE	FTPD7	204.146.27.25	Client closed control connection unexpectedly
- MVSE	FTPD6	204.146.27.25	Socket or network error

### 1.12.2 FTP Transfers

From the FTP Session Summary window you can drill down to see the FTP Transfers for that session

```

Options Menu
Select an option and then press ENTER
F - ! Take Action on Connection
N - NSLOOKUP IP Address
P - Ping IP Address
T - Tracerte IP Address
E Enterprise Network Workspaces
F FTP Transfers for Session
S FTP Session Details
A Application Details
  
```

FTP Transfers Summary						
ΔDataset Name	ΔPDS Member VName	ΔTransmission VStart Time	ΔTransmission VEnd Time	ΔTransmission VDuration		
S	CANDLET.XEGA.ESYSMVS	DEMOJOB3	13/11/04 19:26:59	13/11/04 19:26:59	0.000s	
-	CANDLET.XEGA.ESYSMVS	DEMOJOB4	13/11/04 19:26:30	13/11/04 19:26:30	0.000s	
-	CANDLET.XEGA.ESYSMVS	DB2LOCK	13/11/04 19:26:02	13/11/04 19:26:02	0.010s	
-	CANDLET.XEGA.ESYSMVS	DEMOJOB	13/11/04 19:24:02	13/11/04 19:24:02	0.000s	

FTP transfer Details shows information such as the size of the FTP, how long it took, userid and dataset names.

Command ==> KN3FTPD		FTP Transfer Details		TCP STC : TCPIP SMF ID : MVSE
<b>IP Addresses and Ports</b>				
Columns 1 to 4 of 4		Rows 1 to 1 of 1		
Local IP Address	Local Port	Remote IP Address	Remote Port	
192.84.47.60	20	24.161.86.175	55886	
<b>Transmission</b>				
Transmission Start Date.....	13/11/04	Transmission End Date.....	13/11/04	
Transmission Start Time.....	19:26:59	Transmission End Time.....	19:26:59	
Transmission Duration.....	0.000s	Transmission Mode.....	Stream	
Bytes Xmitd.....	78.3K	Role.....	Server	
<b>User ID and Command</b>				
Job Name.....	MS519	Client User ID.....	Requeste	
Last Reply to Client.....	250	Last Reply to Client Desc.....	MS519	
User ID on Server.....	MS519	User ID on Server Ext.....	FTPDI000	
Command.....	RETRIEVE	Server Logging Session ID.....		
<b>Dataset</b>				
Data Set Name.....	CANDLET.	New Data Set Name.....	Partitio	
Data Type.....	ASCII	Data Set Type.....	SEQ	
Data Structure.....	File	File Type.....		
PDS Member Name.....	DEMOJOB3	New PDS Member Name.....		
<b>Security</b>				
Security Mechanism.....	None	Session Protect Level.....	None	
Login Method.....	Password	Transfer Protect Level.....	None	
Security Protocol Level.....		Cipher Specification.....		

## 1.13 VTAM HPR (New with V5.1.1)

FTP will only show FTPs using the Communications Server for z/OS FTP Server. Others like SFTP and Connect:Direct will only show up in the connections views.

```

KN3ENTMN Enterprise Network Workspaces
Select one of the following, then press ENTER
V_ 1. A Enterprise Application Health
   2. L Enterprise TCP Listeners Overview
   3. C Enterprise Connections Health
   4. N Enterprise TN3270 Servers Overview
   5. I Enterprise Interfaces Overview
   6. O Enterprise OSA Interfaces Overview
   7. H Enterprise HiperSockets Interfaces Overview
   8. P Enterprise OSA Express Ports Overview
   9. B Enterprise OSA Express Channels Overview
  10. T Enterprise TCPIP Stack Performance Overview
  11. M Enterprise Memory and CSM Storage Overview
  12. F Enterprise FTP Sessions Overview
  13. G Enterprise FTP Transfers Overview
  14. R Command and Response Log
  15. V Enterprise VTAM Workspaces
  
```

### Select HPR Connections Overview

```

KN3ENTVT Enterprise VTAM Workspaces
Select one of the following, then press ENTER
H_ 1. A Enterprise Extender and HPR Health
   2. B Enterprise Extender Connections Overview
   3. H Enterprise HPR Connections Overview
   4. R Command and Response Log
   5. E Enterprise Network Workspaces
  
```

Command ==> \_\_\_\_\_ VTAM Update : \*  
 KN3HPR0 \_\_\_\_\_ SMF ID : \*

Enterprise HPR Connections Overview

HPR Connections Summary

Columns 3 to 8 of 19      Rows 1 to 5 of 5

System ID	Local RTP PU Name	ARB Mode	% Pkts Retrans	Unacknowledged Buffers	OutOfSequence Buffers	ΔSmoothed VRound Trip	+Actu Thro
S MVSE	CNR00003	Green	0	0	0	1000	
- MVSE	CNR00004	Green	0	0	0	1	
- MVSE	CNR00005	Green	0	0	0	6	
- MVSE	CNR00001	Green	0	0	0	5	
- MVSE	CNR00002	Green	0	0	0	3	

### Select to drill down to HPR details

KN3HPRD      HPR Connection Details      SMF ID : MVSE

ARB, Throughput and Response Time

ARB Mode	Green	Current ARB Threshold	37000
Minimum ARB Threshold	17000	Maximum ARB Threshold	37000
Initial Throughput Rate	1.5K	Actual Throughput Rate	0
Allowed Throughput Rate	1.5K	Compare Throughput Rate	1
Smoothed Round Trip Time	1000	Response Time Variance	500

Retransmissions, Out Of Sequence, and Unacknowledged

Pkts Retrans Rate	0	% Pkts Retrans	0
Pkts Retrans	0	OutOfSequence Buffers	0
Unacknowledged Buffers	0	Highest Unack Buffers Date	13/10/21
Highest Unack Buffers	1	Highest Unack Buffers Time	17:32:03

Path Switches, Sessions, and Links

Path Switches	0	Path Switch Date	00/00/00
Path Switch Trigger		Path Switch Time	00:00:00
Sessions	0	SNA Links Count	1

SNA Links

Columns 1 to 1 of 1      Rows 1 to 1 of 1

+SNA Links      Position 1 to 94 of 175

USIBMNR.NDCMVS

Byte and Packet Statistics

Bytes Received	0	Bytes Sent	0
Receive Byte Rate	0	Transmit Byte Rate	0
Packets Received	0	Packets Sent	0
Receive Packet Rate	0	Transmit Packet Rate	0
Packets Queued	0		

Configuration

Local CP Name	USIBMNR	Remote CP Name	USIBMNR
Local RTP PU Name	CNR00003	Class of Service Name	RSETUP
Alive Timer	180	Activation Date	13/10/21
Local TCID	2580cc46	Activation Time	17:32:03
Remote TCID	22b81e41	EE Connection ID	00000000

# TEP Walk through of the Enterprise\_Extended Navigator View

## 1.14 Introduction

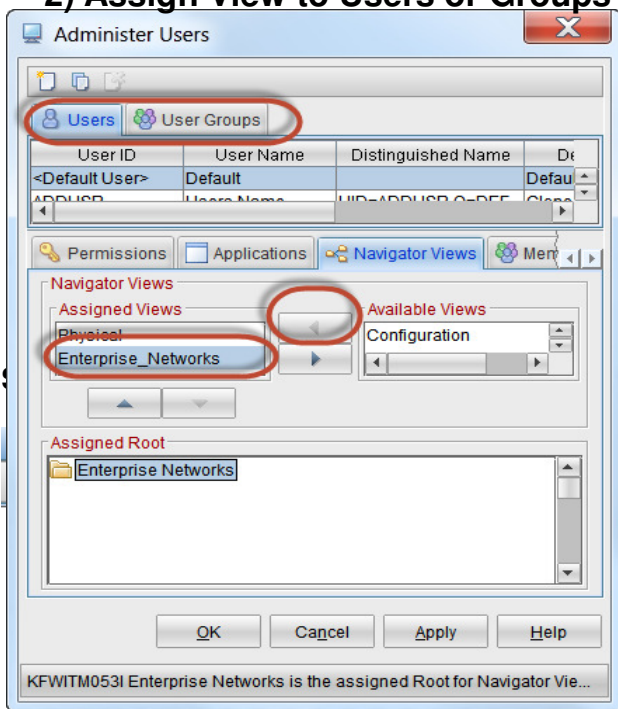
The Enterprise\_Networks Navigator View was created to simplify the monitoring of z/OS networks. Many of these workspaces were created from user experiences to identify and resolve specific network issues. This view provides a cross-LPAR, real-time view of the z/OS Communications Server network focused on specific application and networking issues. This set of workspaces moves away from LPAR-scope views to enterprise-wide views. These new workspaces eliminate many of the mouse clicks previously required to get to key issues, dramatically improving system availability with faster problem resolution through built-in problem solving scenarios. They also facilitate new enterprise-wide searches based on characteristics such as System ID, application name, IP address, FTP user ID, or data set name.

## 1.15 How to access the Enterprise\_Networks Navigator View

The new out of the Box Enterprise\_Networks Navigator View not assign to anyone to view. This procedure should not be necessary for this LAB and is only here for you to be familiar with the procedure.

1) Select Administer Users then

### 2) Assign View to Users or Groups



ew.



# 1.16 Enterprise Application Health (Default Workspace)

Displays a summary of applications, applications with percent out-of-order segments  $\geq 5\%$  or total out-of-order segments  $\geq 15\%$ , applications with connections in backlog  $\geq 10$  OR total backlog connections rejected  $> 10$ , and applications with percent segments retransmitted  $> 3\%$  OR total segments retransmitted  $> 10$  for applications throughout your enterprise. This workspace also displays 3 Top 5 application bar charts for total backlog connections rejected, total segments retransmitted, and total out of-order segments.

Enterprise Application Health - ext6lnx.demos.ibm.com - Ernie Gilman
Page: 1 of 2

Enterprise Networks Navigation

View: Enterprise\_Net

- Enterprise Connections Find
- Enterprise Connections Health
- Enterprise EE Connections Overview
- Enterprise FTP Sessions Find
- Enterprise FTP Sessions Overview
- Enterprise FTP Transfers Find
- Enterprise HPR Connections Overview
- Enterprise HiperSockets Interfaces Overview
- Enterprise Interfaces Overview
- Enterprise OMEGAMON for Mainframe Networks Health
- Enterprise OSA Interfaces Overview
- Enterprise OSA Express Channels Overview

Applications Summary

System ID	TCPIP STC Name	Application Name	Idle Time Since Last Accept	Connection Count	Active Connections	Active Connection High Water Mark	Connections in Backlog	Backlog Connections Rejected
MVSE	TCPIP	ADHCDB11	0.00	156	0	0	0	0
MVSE	TCPIP	CXEGDSST	0.08	44	21	24	0	0
MVSE	TCPIP	CXEGD5	10.73	26	4	9	0	0
MVSE	TCPIP	CXEGI2	15.16	24	17	19	0	0
MVSE	TCPIP	CXEGI5	15.16	23	4	6	0	0
MVSE	TCPIP	CXEGN3	15.16	23	4	7	0	0
MVSE	TCPIP	CXEGC5	15.06	23	4	7	0	0
MVSE	TCPIP	CXEGMC	15.06	22	4	7	0	0

Top 5 Applications - Total Backlog Connections Rejected

Connections in Backlog  $\geq 10$  OR Total Backlog Connections Rejected  $> 10$

System ID	TCPIP STC Name	Application Name	Connections in Backlog	Total Backlog Connections Rejected	Backlog Connections Rejected	Backlog Connections Rejected Time Stamp
MVSE	TCPIP	CICSAOR4	0	11	0	11/04/13 06:25:33
MVSE	TCPIP	CICSAOR8	0	33	0	11/02/13 21:20:21
MVSE	TCPIP	CICSAOR5	0	14	0	11/04/13 06:25:38

Top 5 Applications - Total Segments Retransmitted

Percent Segments Retransmit  $\geq 3$  OR Total Segments Retransmit  $> 10$

System ID	TCPIP STC Name	Application Name	Percent Segments Retransmitted	Total Segments Retransmitted	Segments Retransmitted	Retransmission Rate
MVSE	TCPIP	ADHCDB11	490	718481	250	250
MVSE	TCPIP	DB1SDIST	0	950	0	0

Top 5 Applications - Total Out of Order Segments

Percent Out of Order Segments  $\geq 5$  OR Total Out of Order Segments  $> 15$

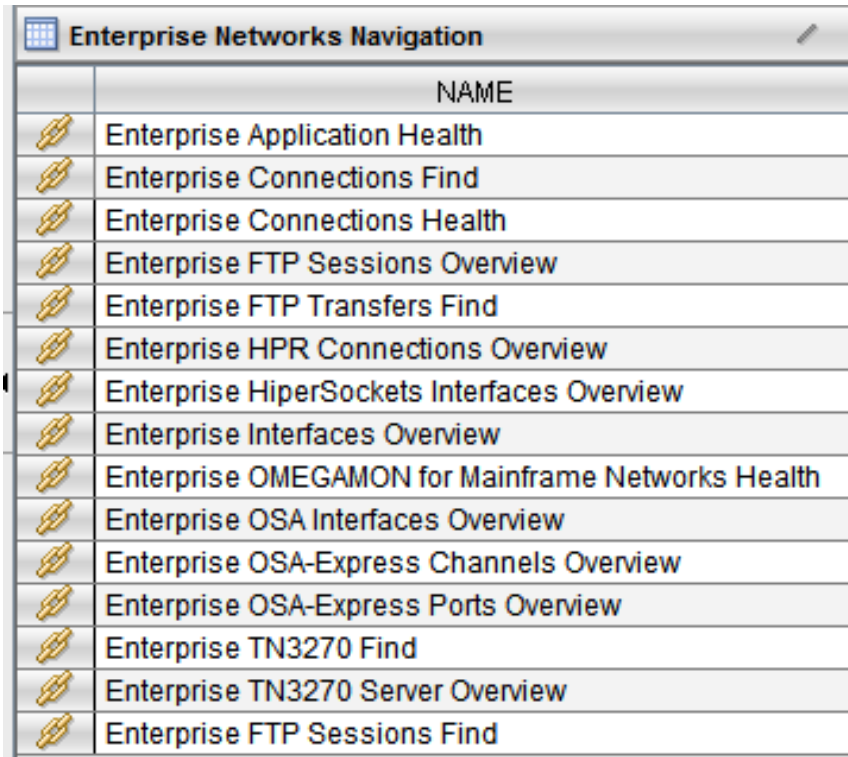
System ID	TCPIP STC Name	Application Name	Percent Out of Order Segments	Total Out of Order Segments	Out of Order Segments	Total Segments Sent	Total Segments Received	Total Segments
MVSE	TCPIP	CXEGDSST	0	61	0	1134083	1068484	2202567
















Hub Time: Mon, 11/04/2013 09:36 PM
Server Available
Enterprise Application Health - ext6lnx.demos.ibm.com - Ernie Gilman

# 1.17 New Enterprise\_Networks Navigation

The Enterprise Networks Navigation view is a scrollable list of workspaces available from the Enterprise\_Networks view. This view also includes Enterprise-level Find workspaces used to locate groups of like resources. The Enterprise Networks Navigation view is found in every Enterprise workspace immediately adjacent to the Navigator. To access one of the Enterprise Networks workspaces from the Enterprise Networks Navigation view, do the following:

1. Select the Link icon in the row adjacent to the name of the workspace you want to access.
2. Select the workspace.



	NAME
	Enterprise Application Health
	Enterprise Connections Find
	Enterprise Connections Health
	Enterprise FTP Sessions Overview
	Enterprise FTP Transfers Find
	Enterprise HPR Connections Overview
	Enterprise HiperSockets Interfaces Overview
	Enterprise Interfaces Overview
	Enterprise OMEGAMON for Mainframe Networks Health
	Enterprise OSA Interfaces Overview
	Enterprise OSA-Express Channels Overview
	Enterprise OSA-Express Ports Overview
	Enterprise TN3270 Find
	Enterprise TN3270 Server Overview
	Enterprise FTP Sessions Find

Left mouse click on link on view you want Then Select to go to view you want to go to.

# 1.18 Enterprise OSA Interfaces

Displays errors, statistics, configuration and status data for all OSA interfaces across the enterprise. Notice the four queue priorities in the write queue statistics. Traffic is going over the wrong priorities could cause performance issues during very high loads.(z/OS 1.12 or later)

The screenshot shows the 'Enterprise OSA Interfaces Overview' application. It features several panels:

- Enterprise Networks Navigation:** A tree view on the left showing the hierarchy of network components.
- OSA Interface Status Counts:** A 3D bar chart comparing 'Active' and 'Not Active' interface counts.
- OSA Interface Status Table:** A table listing interface details.
 

System ID	TCPIP STC Name	Interface Name	Interface Status	Device or Datapath Status	Actual MTU Value	Duplicate Address Count	Actual Inbound Performance Type	Routing MTU Size	TCP Segmentation Offload Active	Checksum Offload Active	Configured Inbound Performance Type	Interface Type	Interface ID
MVSE	TCPIP	EZ6OSM01	Not Active	Not Active	0	1		0	No	No	DYNAMIC	OSA_QDIO_ethernet_OSM	
MVSE	TCPIP	EZ6OSM02	Not Active	Not Active	0	1		0	No	No	DYNAMIC	OSA_QDIO_ethernet_OSM	
MVSE	TCPIP	OSAGL	Active	Active	8992	0	BALANCED	0	No	No	BALANCED	OSA_QDIO_ethernet OSD	
MVSE	TCPIP	OSX3200P	Active	Active	8992	0	DYNAMIC	0	No	Yes	DYNAMIC	OSA_QDIO_ethernet_OSX	
- OSA Interface Errors Table:**

Total Inbound Packets Discarded in Error	Total Outbound Packets Discarded in Error	Total Received Packets Discarded for No Storage	Total Outbound Packets Queued	Total Outbound Packets Discarded for No Storage	Interface Status
0	0	0	0	0	Not Active
0	0	0	0	0	Not Active
6243	0	0	0	0	Active
0	0	0	0	0	Active
- OSA Interface Statistics Table:**

Interface Name	Bandwidth Utilization	Bytes Received or Transmitted	Transmit Packet Rate	Receive Packet Rate	Bytes Received	Bytes Transmitted	Total Bytes Received or Transmitted
EZ6OSM01	0	0	0	0	0	0	0
EZ6OSM02	0	0	0	0	0	0	0
OSAGL	0	252,189	692	309	31,903	220,286	18,199,863,155
OSX3200P	0	82,206	105	124	12,580	69,626	5,306,300,483
- OSA Interface Read Queue Statistics Table:**


System ID	TCPIP STC Name	Interface Name	Queue ID	Reads Exhausted	Read Processing Deferrals	Total Read Processing Deferrals	Used SBALs	Percent Accelerated Packets
MVSE	TCPIP	OSAGL	1	0	0	0	17,801,280	0
MVSE	TCPIP	OSX3200P	1	0	0	0	868,927	0
- OSA Interface Write Queue Statistics Table:**

System ID	TCPIP STC Name	Interface Name	Queue Priority	Maximum Staging Queue Depth	Used SBALs	Maximum Active SBALs	Average Active SBALs	SBALs Per Siga
MVSE	TCPIP	OSAGL	1	0	0	0	0	0
MVSE	TCPIP	OSAGL	2	0	1,247	128	2	1
MVSE	TCPIP	OSAGL	3	0	176	128	2	1
MVSE	TCPIP	OSAGL	4	0	16,617,8...	128	1	1
MVSE	TCPIP	OSX3200P	1	0	0	0	0	0
MVSE	TCPIP	OSX3200P	2	0	0	0	0	0

To Find the Microcode Level of the OSA-Express, Drill down by selecting the link in any of the windows and select Interface Status. This will take you to the Interface Status in the physical view.

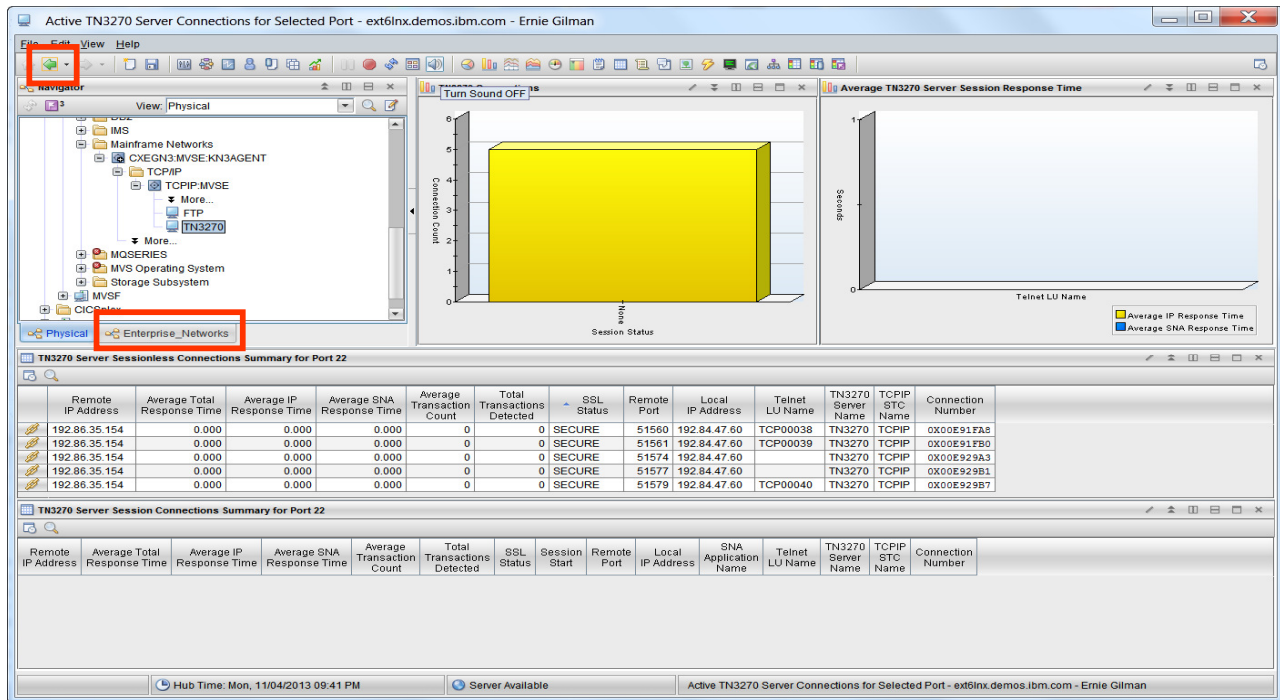
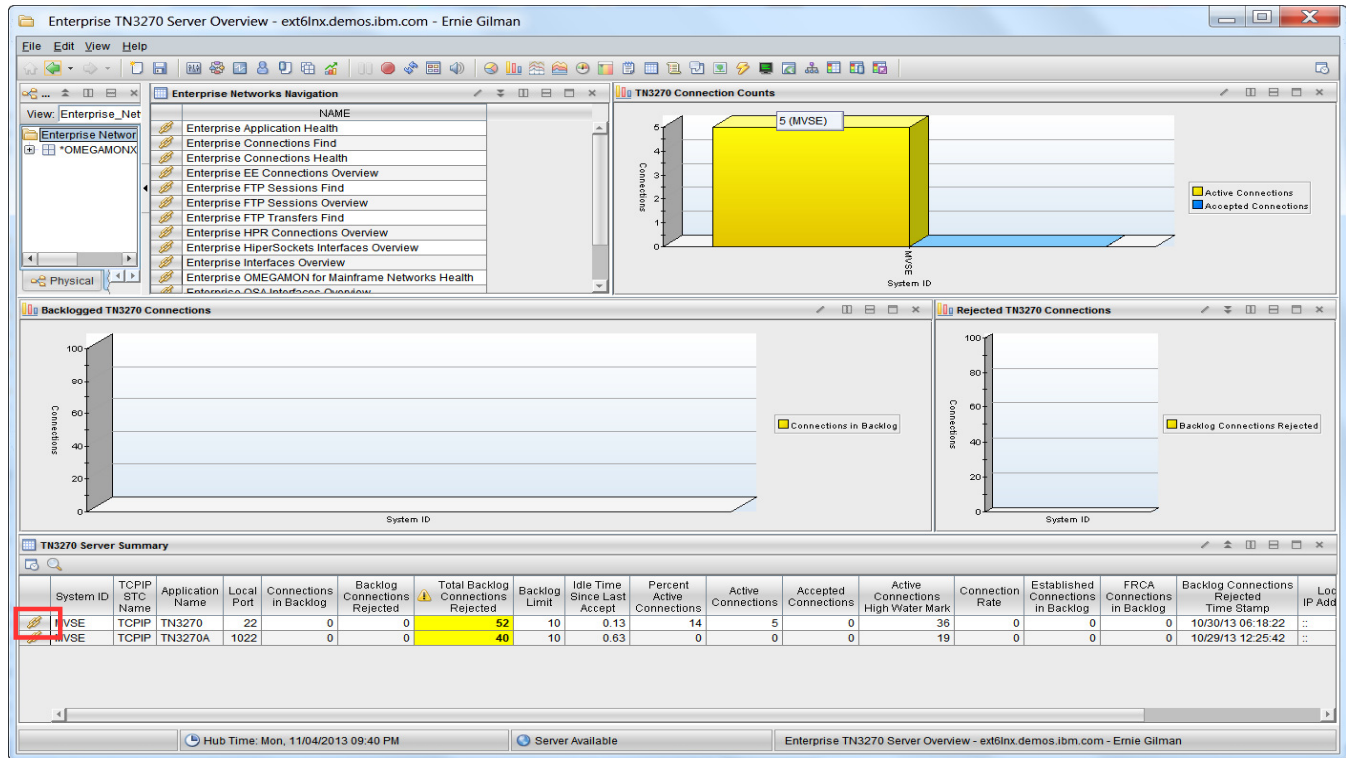
- DLC Read and Write Queue Statistics
- Interface Statistics
- Interface Status**
- Link Wizard...
- Link Anchor...

Slide the Interface Status Summary Table window over until you spot the OSA Code Level, which is also known and the Microcode level.

Interface Status Summary Table				
	Configured MTU Value	Actual MTU Value	Routing MTU Size	OSA Code Level
	0	8992	0	0X005F

# 1.19 Enterprise TN3270 Server Overview

Displays the current status of all TN3270 Server ports across the enterprise. Drill down takes you into the physical Navigator View to see the the active connections on the port you selected.



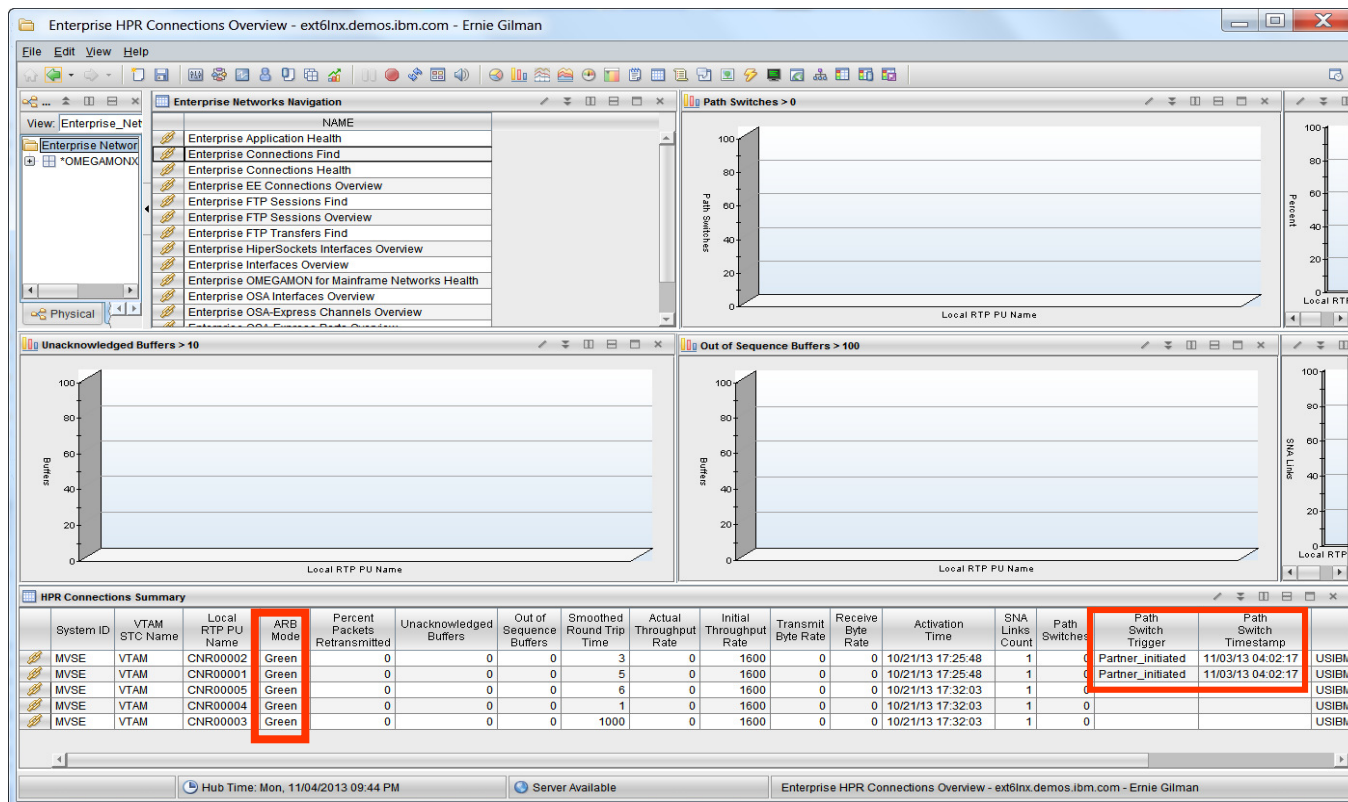
Now that we are in the Physical Navigator View, to Get back to The Enterprise\_Networks View, Select the Green back arrow or select Enterprise\_Networks Navigator Tab.

## 1.20 Enterprise HPR Connections Overview

Displays performance data for High-Performance Routing (HPR) Rapid Transfer Protocol (RTP) connections (pipes) when one endpoint of an HPR connection is located on a monitored z/OS system image.

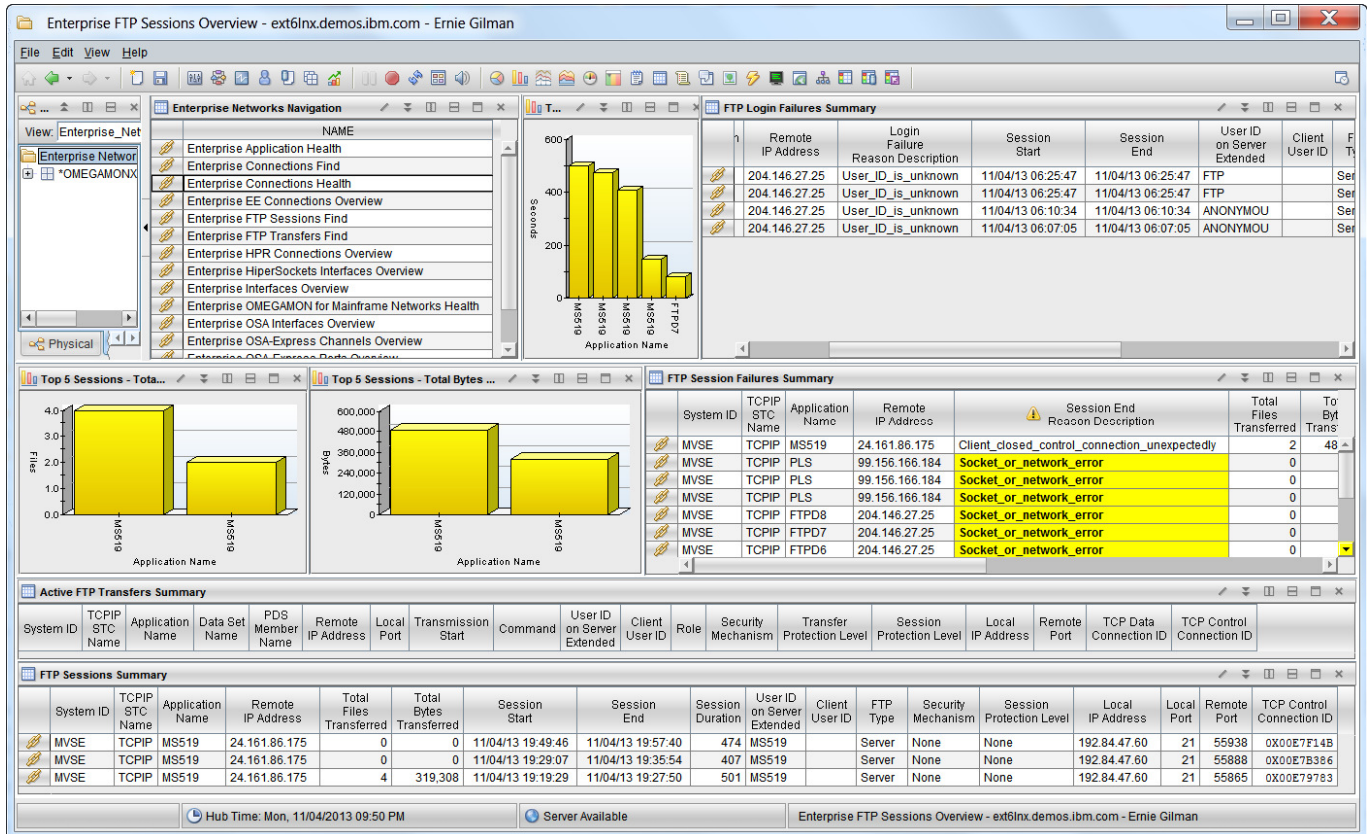
To identify the cause of performance issues look at error conditions such as Percent Packets Retransmitted, out of Sequence Buffers and a high number of path switches.. Persistent ARB Mode in Red could indicate an issue.

Drill down on the HPR Connection Summary link to see more details.



## 1.21 Enterprise FTP Sessions Overview

Displays all FTP sessions that were completed or became active within the display interval (24 Hours) across the enterprise. Active sessions that were established or closed prior to the display interval are not displayed.



Take notice of one of the FTP User ID. Next we will find all FTPs issued by that UserID during the last FTP Data Display Interval, which defaults to 2 hours but can be set up to 24 hours, which is recommended in most environments. This history is dedicated to FTP and does not use the persistent database datasets. FTP history longer than 24 hours can be saved in the TDW and can also be viewed through the TEP.

This interval is defined by the FTP Data Display Interval value that was set in ICAT on the Specify Component Configuration panel or the KN3\_TCP\_FTP\_DSPINTV PARMGEN parameter. The configured value can be modified while the monitoring agent is running using the DSPINTV parameter on the KN3FCCMD START FTP command. See the IBM Tivoli Monitoring for Mainframe Networks: Planning and Configuration Guide for more information.

To Confirm the FTP Data Display Interval. Select OMEGAMON for Mainframe Networks Health in the Enterprise Networks Navigation window. Then Locate the TCP Collection Window in the bottom window. You will see the number of hours the FTP and TN3270 data is kept.

FTP Data Display Interval  
24

## 1.22 Enterprise FTP Transfers FIND

Displays performance metrics for all FTP transfers matching search criteria specified by the end user. All active or completed FTP transfers captured within the configured FTP display interval that match the search criteria are displayed. Add \* at end for wildcard such as DIL\*. The finds are case sensitive. Try some other wildcard finds by userid or dataset name.

**Completed FTP Transmissions Chart Data:**

Application Name	Bytes Transferred	Transmission Duration (Seconds)
MS519	~100,000	~0.1
MS519	~100,000	~0.1
MS519	~100,000	~0.1
MS519	~100,000	~0.1
MS519	~100,000	~0.1
MS519	~480,000	~1.8

**Completed FTP Transfers Summary Table:**

System ID	TCP/IP STC Name	Application Name	Data Set Name	PDS Member Name	Remote IP Address	Transmission Start	Transmission End	Trans. Duration
MVSE	TCPIP	MS519	CANDLET.XEGA.ESYSMVS.SAMPLE.WORKLOAD	DEMOJOB	24.161.86.175	11/04/13 19:24:02	11/04/13 19:24:02	
MVSE	TCPIP	MS519	CANDLET.XEGA.ESYSMVS.SAMPLE.WORKLOAD	DB2LOCK	24.161.86.175	11/04/13 19:26:02	11/04/13 19:26:02	
MVSE	TCPIP	MS519	CANDLET.XEGA.ESYSMVS.SAMPLE.WORKLOAD	DEMOJOB4	24.161.86.175	11/04/13 19:26:30	11/04/13 19:26:30	
MVSE	TCPIP	MS519	CANDLET.XEGA.ESYSMVS.SAMPLE.WORKLOAD	DEMOJOB3	24.161.86.175	11/04/13 19:26:59	11/04/13 19:26:59	
MVSE	TCPIP	MS519	MS519.REXSDSF.TXT		24.161.86.175	11/04/13 19:30:19	11/04/13 19:30:19	
MVSE	TCPIP	MS519	MS519.PUTTY.EXE		24.161.86.175	11/04/13 19:31:13	11/04/13 19:31:14	



## 1.23 Enterprise Connections Find

Displays performance metrics for connections matching search criteria specified by the end user. Try all Connections on port 1920 on all LPARS. You can also try 19\*.



Enterprise Connections Find

At least one field must be specified as something other than ""

System ID \*

TCPIP STC Name \*

Remote IP Address \*

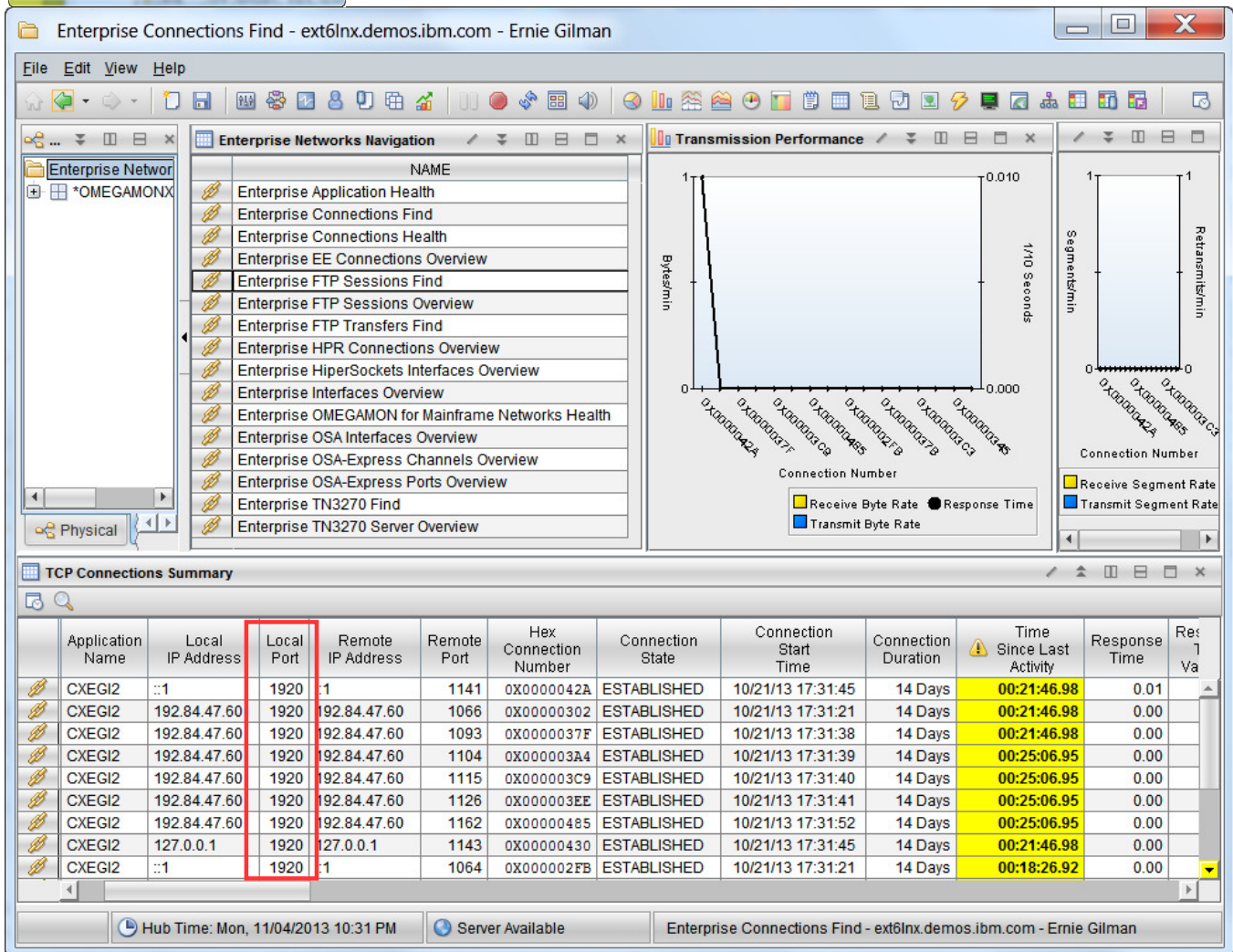
Local IP Address \*

Local Port **1920**

Application Name \*

Connection State \*

OK Cancel Help



Enterprise Connections Find - ext6lnx.demos.ibm.com - Ernie Gilman

File Edit View Help

Enterprise Networks Navigation

Enterprise Network

- \*OMEGAMONX

Physical

Transmission Performance

Enterprise Application Health

Enterprise Connections Find

Enterprise Connections Health

Enterprise EE Connections Overview

Enterprise FTP Sessions Find

Enterprise FTP Sessions Overview

Enterprise FTP Transfers Find

Enterprise HPR Connections Overview

Enterprise HiperSockets Interfaces Overview

Enterprise Interfaces Overview

Enterprise OMEGAMON for Mainframe Networks Health

Enterprise OSA Interfaces Overview

Enterprise OSA-Express Channels Overview

Enterprise OSA-Express Ports Overview

Enterprise TN3270 Find

Enterprise TN3270 Server Overview

TCP Connections Summary

	Application Name	Local IP Address	Local Port	Remote IP Address	Remote Port	Hex Connection Number	Connection State	Connection Start Time	Connection Duration	Time Since Last Activity	Response Time	Res: 1 Va
	CXEG12	::1	1920	::1	1141	0X0000042A	ESTABLISHED	10/21/13 17:31:45	14 Days	00:21:46.98	0.01	
	CXEG12	192.84.47.60	1920	192.84.47.60	1066	0X00000302	ESTABLISHED	10/21/13 17:31:21	14 Days	00:21:46.98	0.00	
	CXEG12	192.84.47.60	1920	192.84.47.60	1093	0X0000037F	ESTABLISHED	10/21/13 17:31:38	14 Days	00:21:46.98	0.00	
	CXEG12	192.84.47.60	1920	192.84.47.60	1104	0X000003A4	ESTABLISHED	10/21/13 17:31:39	14 Days	00:25:06.95	0.00	
	CXEG12	192.84.47.60	1920	192.84.47.60	1115	0X000003C9	ESTABLISHED	10/21/13 17:31:40	14 Days	00:25:06.95	0.00	
	CXEG12	192.84.47.60	1920	192.84.47.60	1126	0X000003EE	ESTABLISHED	10/21/13 17:31:41	14 Days	00:25:06.95	0.00	
	CXEG12	192.84.47.60	1920	192.84.47.60	1162	0X00000485	ESTABLISHED	10/21/13 17:31:52	14 Days	00:25:06.95	0.00	
	CXEG12	127.0.0.1	1920	127.0.0.1	1143	0X00000430	ESTABLISHED	10/21/13 17:31:45	14 Days	00:21:46.98	0.00	
	CXEG12	::1	1920	::1	1064	0X000002FB	ESTABLISHED	10/21/13 17:31:21	14 Days	00:18:26.92	0.00	

Hub Time: Mon, 11/04/2013 10:31 PM Server Available Enterprise Connections Find - ext6lnx.demos.ibm.com - Ernie Gilman

Notice information such as response times and any error conditions.

Try some other Find commands against IP addresses or Application Name with \* wildcard.

## 1.24 Enterprise TN3270 Find

Displays performance metrics for all TN3270 server connections matching search criteria specified by the end user. All TN3270 server connections captured within the configured TN3270 display interval that match the search criteria display regardless of the status of the session (Active, Completed or None). Notice Breakout of response time by SNA and IP.

Try to view all TN3270 connections with LU names Starting with TCP\* on all LPARs.

Enterprise TN3270 Find

At least one field must be specified as something other than ""

System ID \*

TCPIP STC Name \*

Remote IP Address \*

Local IP Address \*

Local Port \*

SNA Application Name \*

Telnet LU Name **TCPI\***

TN3270 Server Name \*

Logmode Name \*

OK Cancel Help

Enterprise TN3270 Find - ext6lnx.demos.ibm.com - Ernie Gilman

File Edit View Help

Enterprise Networks Navigation

View: Enterprise\_Net

- Enterprise Network
- \*OMEGAMONX

Physical

Throughput

Average Response Time

TN3270 Server Connections Summary

	System ID	TCPIP STC Name	SNA Application Name	Session Indicator	Average Total Response Time	Average IP Response Time	Average SNA Response Time	Average Transaction Count	Response Time Collection Time	Definite Responses Detected	Total Transactions Detected
	MVSE	TCPIP	XES1OBAP	Active	0.334	0.159	0.175	2	11/04/13 22:41:42	32	32
	MVSE	TCPIP	TSTTS005	Completed	0.131	0.070	0.061	16	11/04/13 21:01:40	6	6
	MVSE	TCPIP		Completed	0.000	0.000	0.000	0	11/04/13 21:59:27	0	0
	MVSE	TCPIP		Completed	0.000	0.000	0.000	0	11/04/13 22:00:57	0	0
	MVSE	TCPIP	TSTTS001	Completed	0.000	0.000	0.000	0		14	14
	MVSE	TCPIP		Completed	0.000	0.000	0.000	0	11/04/13 22:01:34	0	0
	MVSE	TCPIP	TSTTS001	Completed	0.000	0.000	0.000	0		5	5

Hub Time: Mon, 11/04/2013 10:43 PM Server Available Enterprise TN3270 Find - ext6lnx.demos.ibm.com - Ernie Gilman

**Congratulations.** You have now completed the OMEGAMON MFN V5.1 Lab!

Please feel free to ask your lab instructor for additional exercises.

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## Appendix C. Documentation Revision History

Date of Revision	Number	Completed by	Revision Log
12/27/12	V1	Ernie Gilman	Created and authored OMEGAMON MFN Lab Workbook
03/11/13	V2	Lih Wang	Edited
03/14/13	V2	Ernie Gilman	Edited for OMEGAMON POT 2 <sup>nd</sup> Edition publishing on iQWorks
11/07/13	v4	Ernie Gilman	Added V5.1.1 views and TEP Enterprise_Networks
01/06/2014	V4.1	Lih Wang	Edited for OMEGAMON POT 3 <sup>rd</sup> Edition publishing on iQWorks.
9/19/2014	V511	Lih Wang	Edited for Enterprise2014 Conference lab session. renamed file with matching product release number.







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