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NetView for z/OS V6.1: Needles in the Haystacks and Other Fun Chores Made Easy

Larry Green
IBM

August 8, 2011
Session Number 9241

Related Sessions

- Wednesday, August 10, 1:30, Session 9917
  - "Top 10 Tips for Performance Monitoring with OMEGAMON (Ernie Gilman (IBM))"
- Thursday, August 11, 9:30 Session 9914
  - "Canzlog in NetView for z/OS 6.1: User Experience" (Dale Carter (Bank of America) and Tom Howe (IBM))
- Thursday, August 11, 11:00, Session 9918
  - "Revise, Acquire, Automate: NetView for z/OS V6.1's Edit Language" (Tom Howe (IBM))
- Thursday, August 11, 4:30, Session 9666
  - "Beyond Disaster Recovery: Taking Your Enterprise from High Availability to Continuous Availability" (Karen Durward (IBM))

Agenda

- Timeline
- Smart Packet Collection
- Packet Trace on the fly
- Expanded Log Browse
- NetView Web Application
- Enterprise Integration
- Serviceability
- GDPS Active/Active

Timeline

- NetView for z/OS V6.1
  - Generally available: May 27, 2011

- NetView for z/OS V5.1 and V5.2
  - End of Support announced: February 1, 2011
  - Effective: March 31, 2012

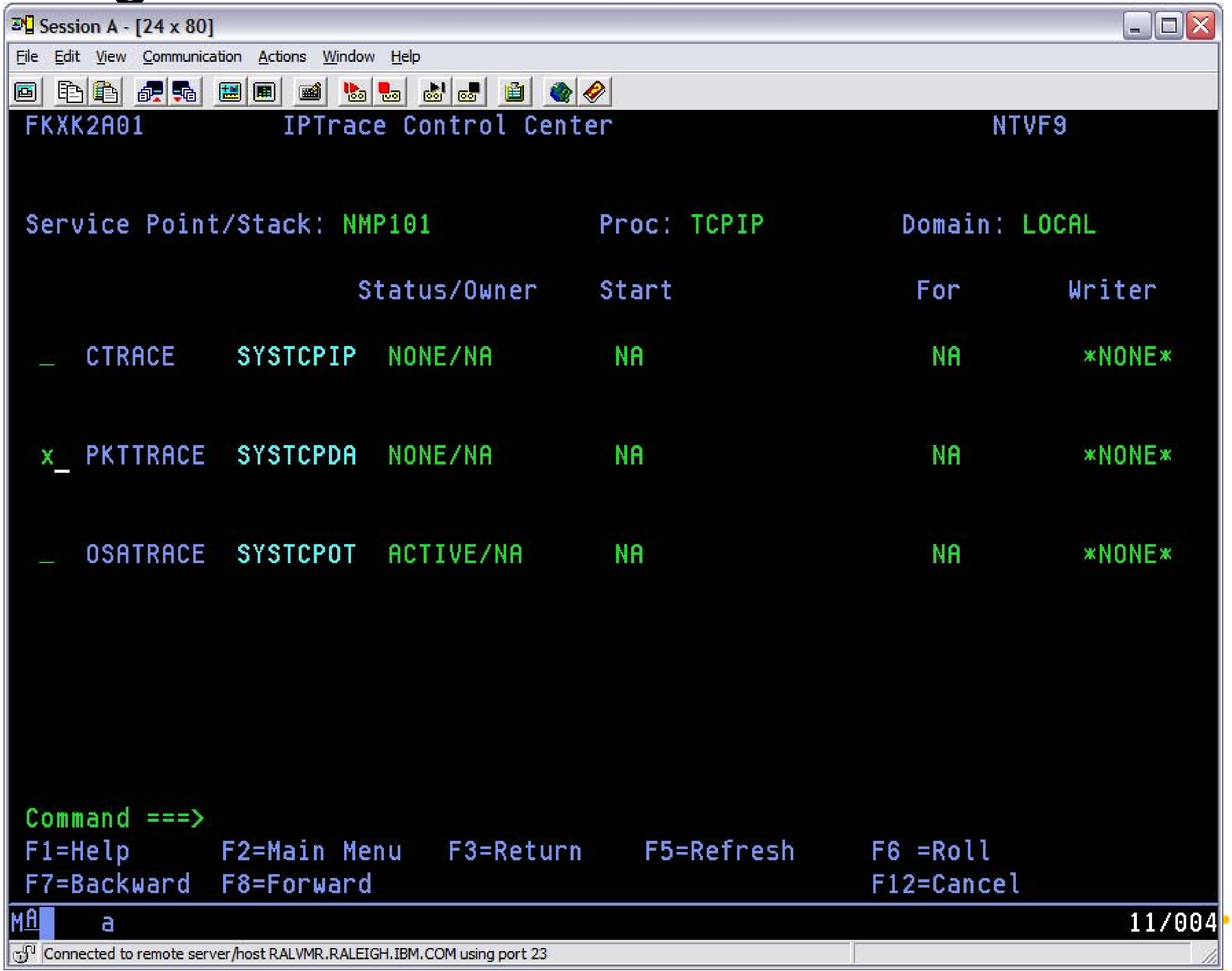
Agenda

- Timeline
- Smart Packet Collection
- Packet Trace on the fly
- Expanded Log Browse
- NetView Web Application
- Enterprise Integration
- Serviceability
- GDPS Active/Active

Smart Packet Collection

- Analyze packet trace data to allow for easier problem determination

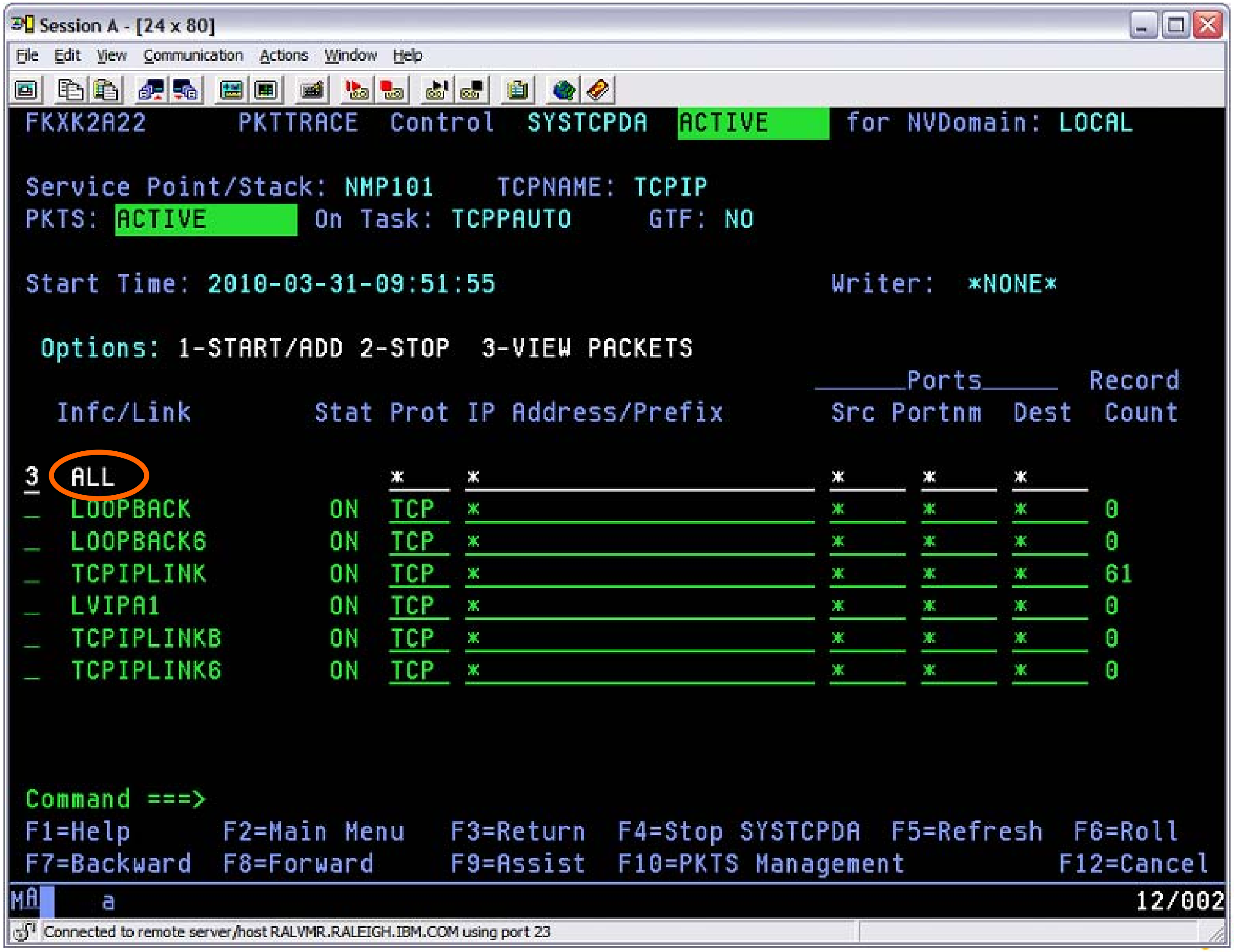
Getting Started


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
FKXK2A01         IPTrace Control Center                          NTVF9


Service Point/Stack: NMP101            Proc: TCPIP          Domain: LOCAL

                      Status/Owner     Start                 For        Writer

   _  CTRACE    SYSTCPIP  NONE/NA        NA                    NA         *NONE*


   x_ PKTTRACE  SYSTCPDA  NONE/NA        NA                    NA         *NONE*


   _  OSATRACE  SYSTCPOT  ACTIVE/NA      NA                    NA         *NONE*







Command ===>
F1=Help      F2=Main Menu   F3=Return    F5=Refresh    F6 =Roll
F7=Backward  F8=Forward                                F12=Cancel
MA      a                                                          11/004
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Select what to collect



```
 FKXK2A22      PKTTRACE  Control  SYSTCPDA  ACTIVE     for  NVDomain: LOCAL

 Service Point/Stack: NMP101     TCPNAME: TCPIP
 PKTS: ACTIVE       On Task: TCPPAUTO     GTF: NO

 Start Time: 2010-03-31-09:51:55                    Writer:  *NONE*

  Options: 1-START/ADD 2-STOP  3-VIEW PACKETS
                                                    _____Ports_____   Record
   Infc/Link          Stat Prot IP Address/Prefix   Src Portnm  Dest  Count

 3  ALL                    *    *                   *     *     *
 _  LOOPBACK          ON   TCP  *                   *     *     *     0
 _  LOOPBACK6         ON   TCP  *                   *     *     *     0
 _  TCPIPLINK         ON   TCP  *                   *     *     *     61
 _  LVIPA1            ON   TCP  *                   *     *     *     0
 _  TCPIPLINKB        ON   TCP  *                   *     *     *     0
 _  TCPIPLINK6        ON   TCP  *                   *     *     *     0



 Command ===>
 F1=Help      F2=Main Menu   F3=Return  F4=Stop SYSTCPDA  F5=Refresh  F6=Roll
 F7=Backward  F8=Forward     F9=Assist  F10=PKTS Management          F12=Cancel
MA     a                                                                 12/002
```

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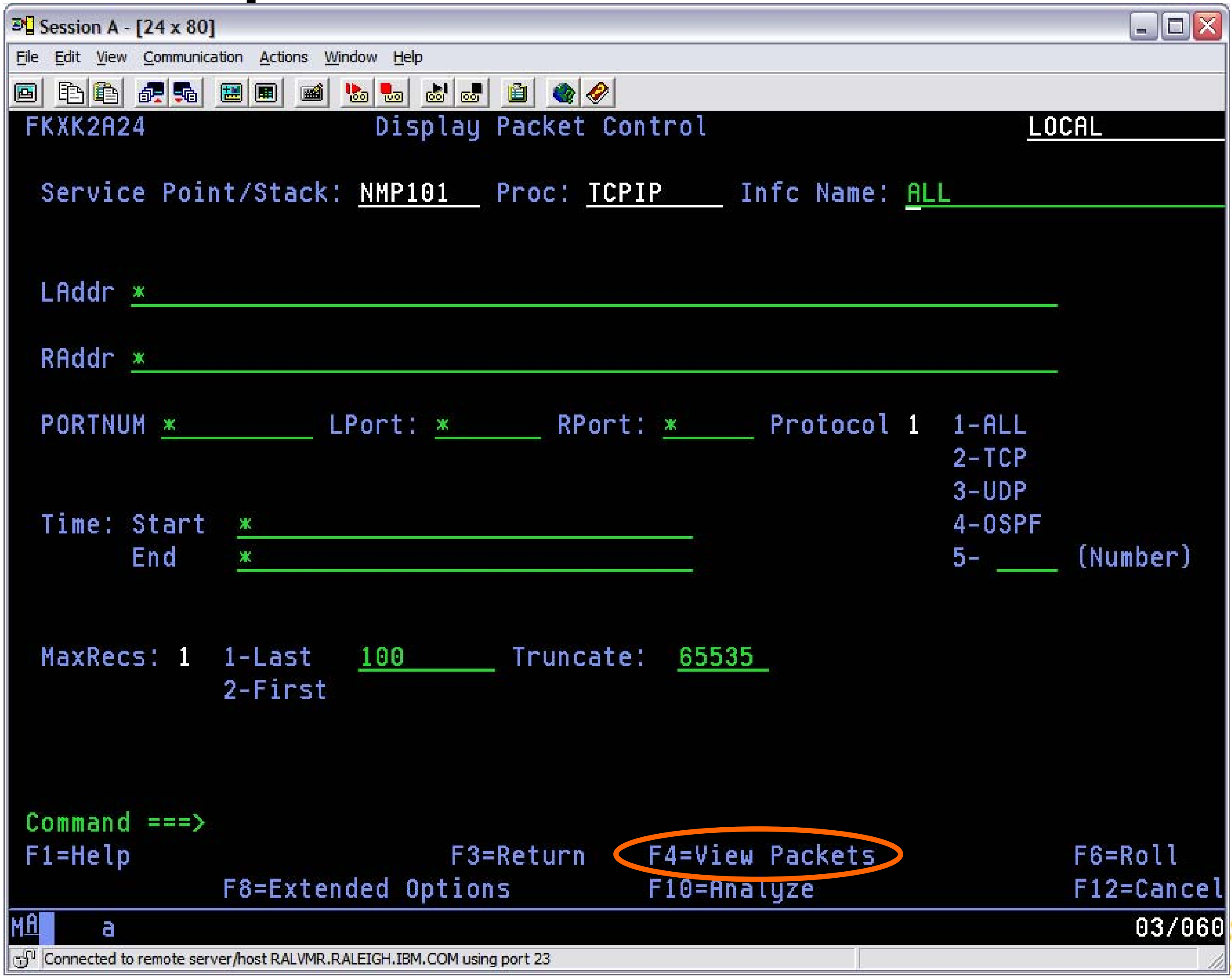
Set filter options


Session A - [24 x 80]
File
Edit
View
Communication
Actions
Window
Help

```
FKXK2A24                 Display Packet Control                       LOCAL

 Service Point/Stack: NMP101    Proc: TCPIP     Infc Name: ALL


 LAddr *

 RAddr *

 PORTNUM *          LPort: *       RPort: *       Protocol 1   1-ALL
                                                               2-TCP
                                                               3-UDP
 Time: Start  *                                                4-OSPF
       End    *                                                5-     (Number)


 MaxRecs: 1  1-Last   100       Truncate:  65535
             2-First




Command ===>
F1=Help                      F3=Return    F4=View Packets            F6=Roll
             F8=Extended Options          F10=Analyze                F12=Cancel
MA     a                                                              03/060
```

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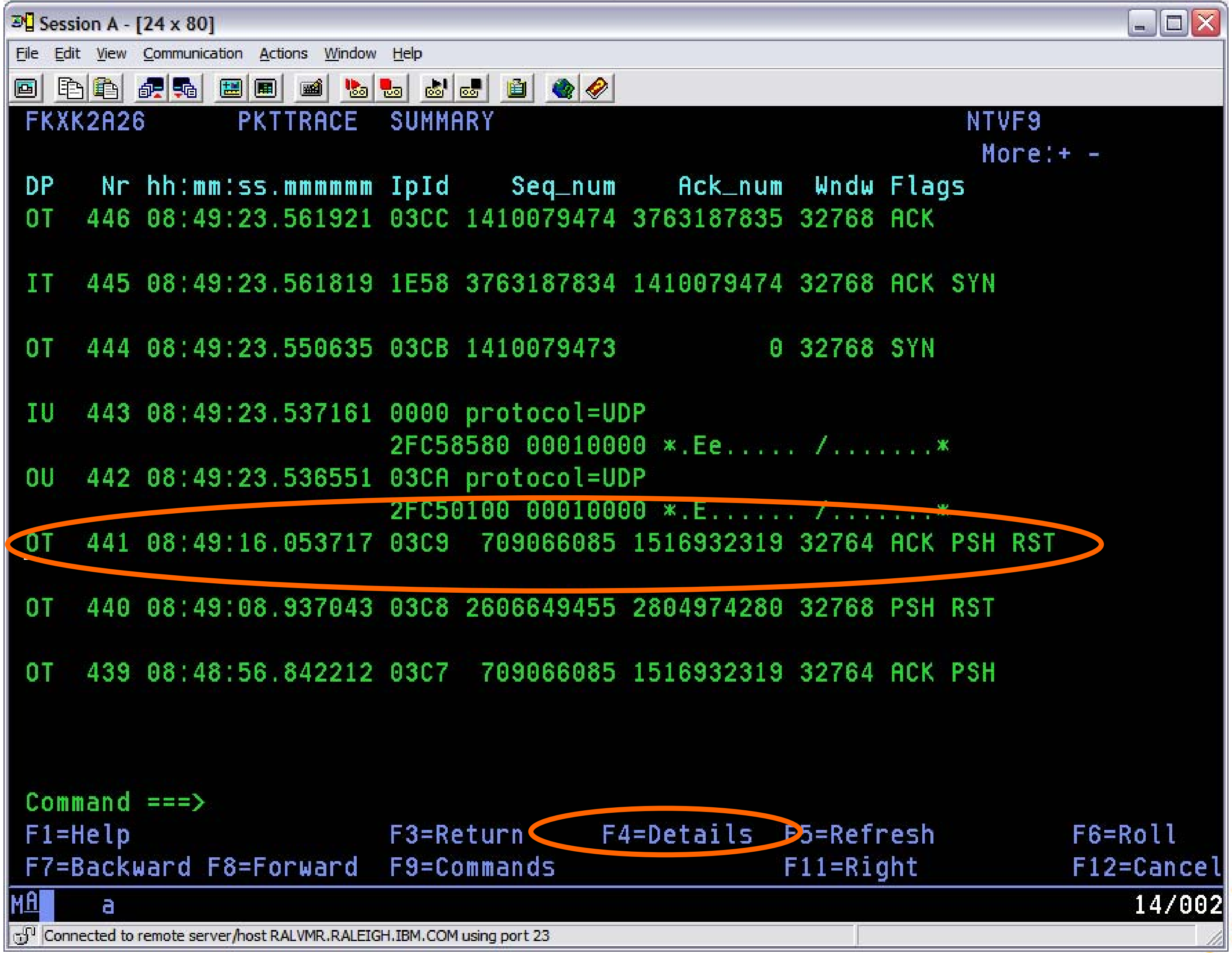
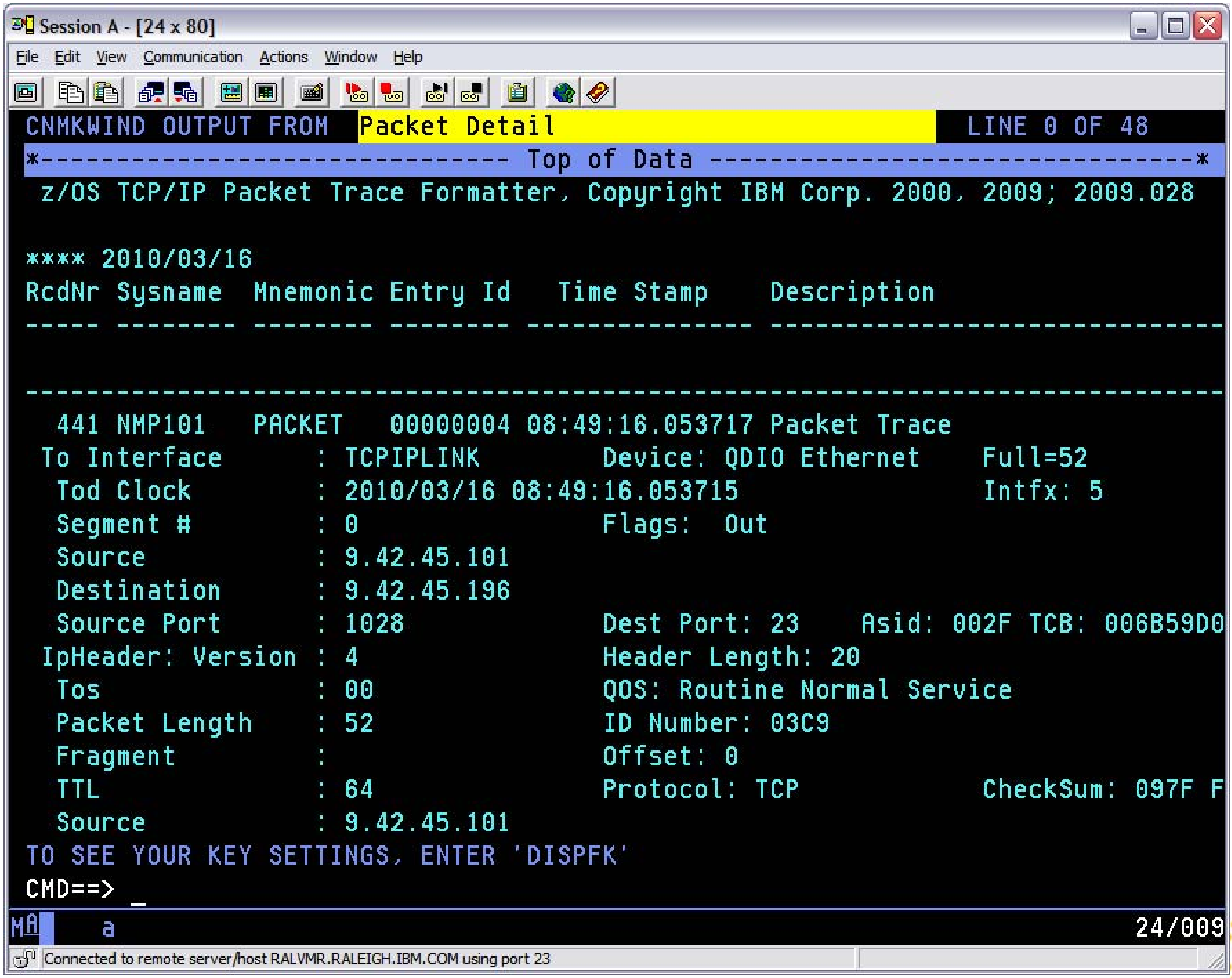
List of packets meeting filter criteria


Session A - [24 x 80]
File Edit View Communication Actions Window Help
MA a 14/002
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

```
FKXK2A26      PKTTRACE  SUMMARY                               NTVF9
                                                               More:+ -
DP   Nr hh:mm:ss.mmmmmm IpId    Seq_num    Ack_num  Wndw Flags
OT  446 08:49:23.561921 03CC 1410079474 3763187835 32768 ACK

IT  445 08:49:23.561819 1E58 3763187834 1410079474 32768 ACK SYN

OT  444 08:49:23.550635 03CB 1410079473          0 32768 SYN

IU  443 08:49:23.537161 0000 protocol=UDP
                        2FC58580 00010000 *.Ee..... /.......*
OU  442 08:49:23.536551 03CA protocol=UDP
                        2FC50100 00010000 *.E...... /.......*
OT  441 08:49:16.053717 03C9  709066085 1516932319 32764 ACK PSH RST

OT  440 08:49:08.937043 03C8 2606649455 2804974280 32768 PSH RST

OT  439 08:48:56.842212 03C7  709066085 1516932319 32764 ACK PSH



Command ===>
F1=Help                 F3=Return     F4=Details  F5=Refresh         F6=Roll
F7=Backward F8=Forward  F9=Commands               F11=Right          F12=Cancel
```

Packet detail



```
CNMKWIND OUTPUT FROM Packet Detail                    LINE 0 OF 48
*------------------------------- Top of Data -------------------------------*
 z/OS TCP/IP Packet Trace Formatter, Copyright IBM Corp. 2000, 2009; 2009.028

**** 2010/03/16
RcdNr Sysname  Mnemonic Entry Id   Time Stamp     Description
----- -------- -------- -------- --------------- -------------------------------


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

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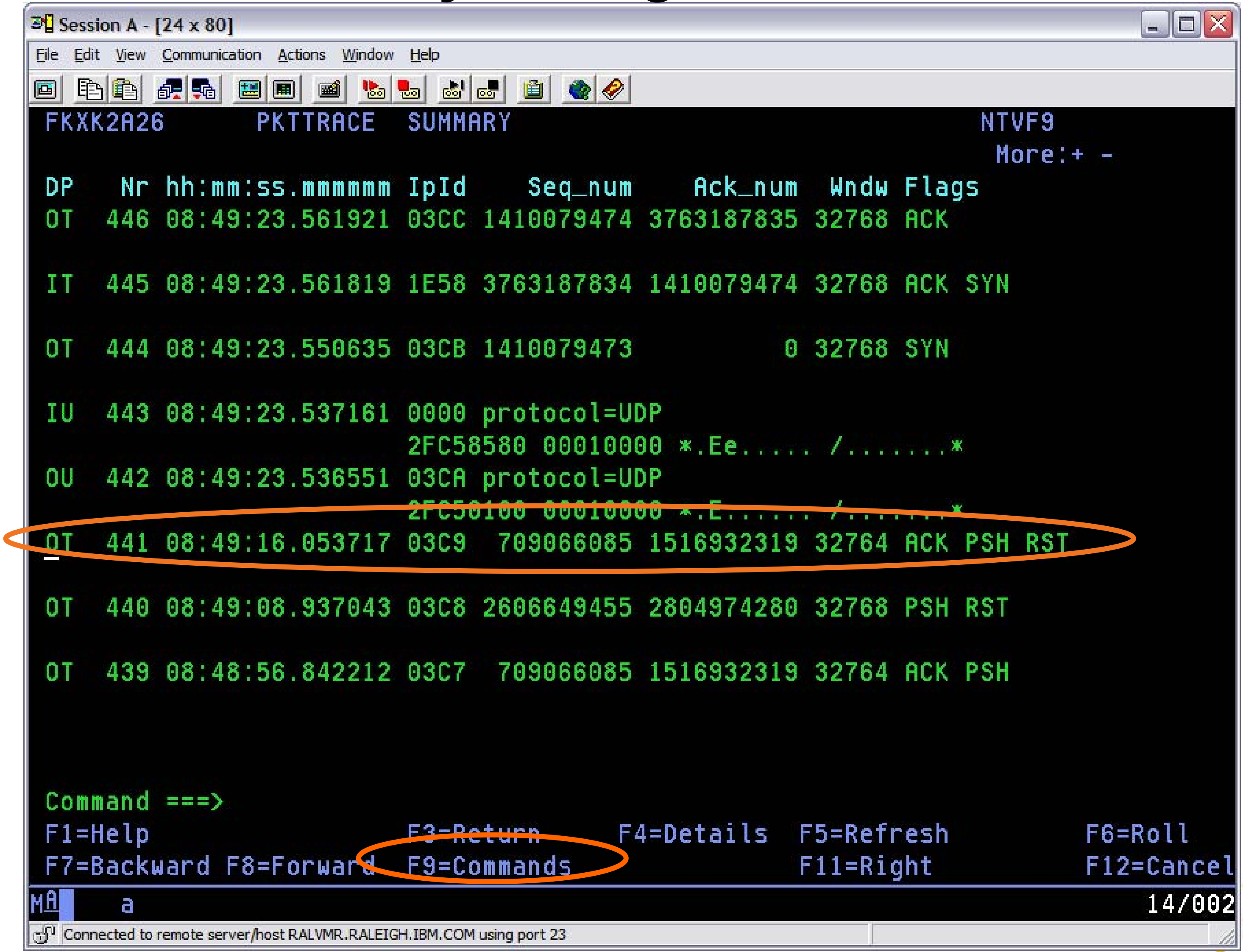
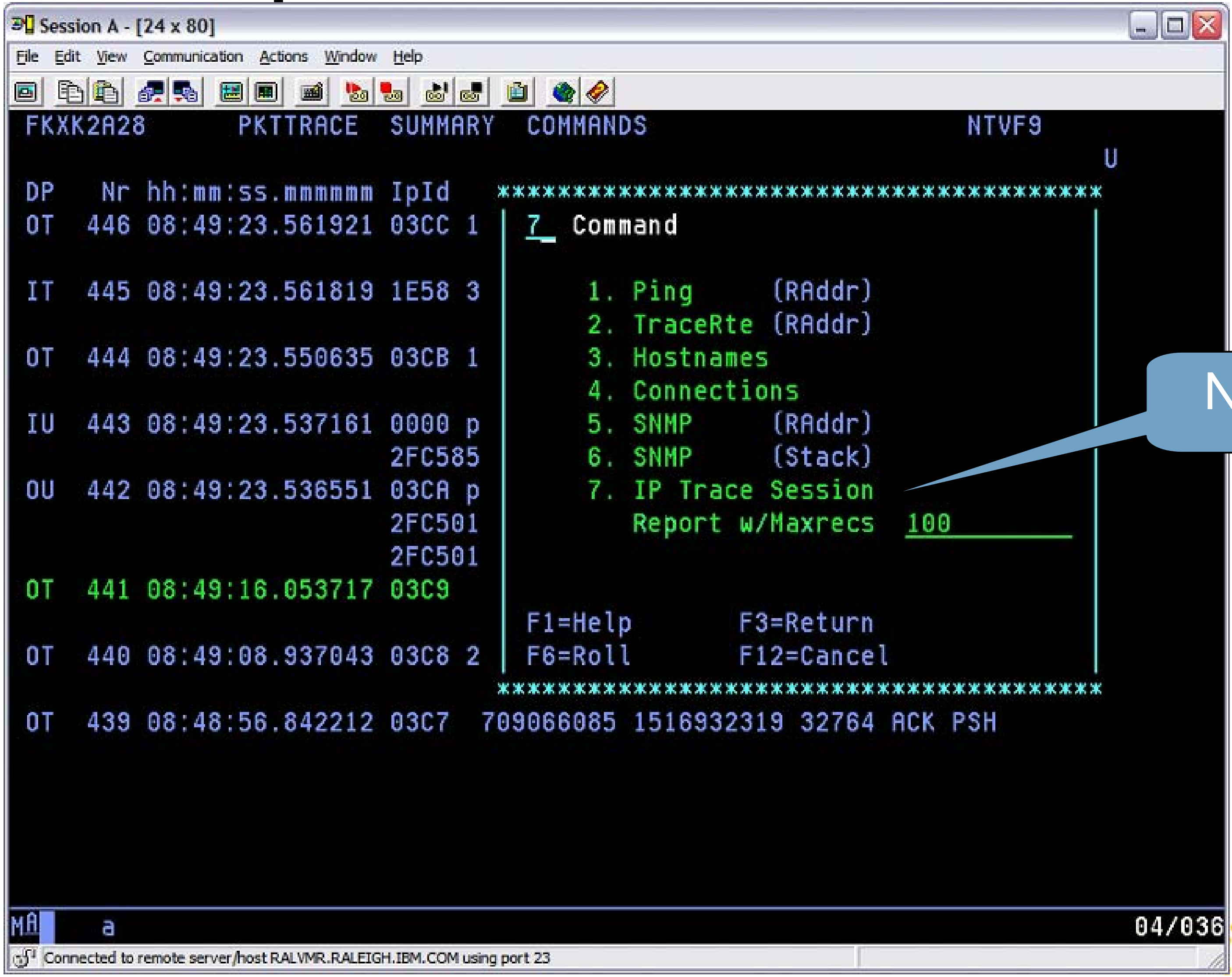
Back to summary listing



```
FKXK2A26      PKTTRACE  SUMMARY                               NTVF9
                                                               More:+ -
DP   Nr hh:mm:ss.mmmmmm IpId    Seq_num    Ack_num  Wndw Flags
OT  446 08:49:23.561921 03CC 1410079474 3763187835 32768 ACK

IT  445 08:49:23.561819 1E58 3763187834 1410079474 32768 ACK SYN

OT  444 08:49:23.550635 03CB 1410079473          0 32768 SYN

IU  443 08:49:23.537161 0000 protocol=UDP
                        2FC58580 00010000 *.Ee..... /.......*
OU  442 08:49:23.536551 03CA protocol=UDP
                        2FC50100 00010000 *.E...... /.......*
OT  441 08:49:16.053717 03C9  709066085 1516932319 32764 ACK PSH RST

OT  440 08:49:08.937043 03C8 2606649455 2804974280 32768 PSH RST

OT  439 08:48:56.842212 03C7  709066085 1516932319 32764 ACK PSH



Command ===>
F1=Help                 F3=Return     F4=Details  F5=Refresh         F6=Roll
F7=Backward F8=Forward  F9=Commands               F11=Right          F12=Cancel
MA     a                                                              14/002
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Session Report

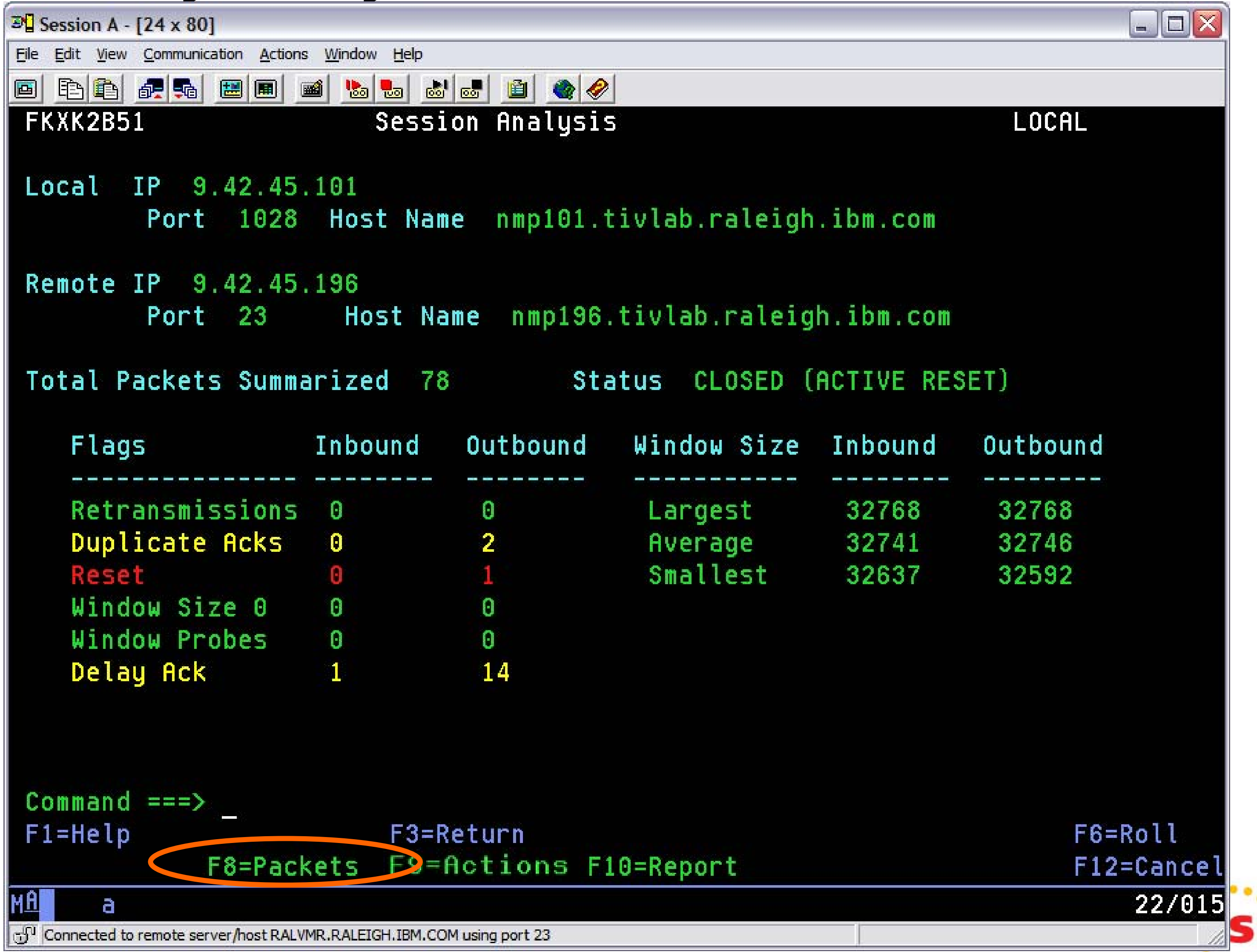


```
FKXK2A28      PKTTRACE  SUMMARY  COMMANDS                     NTVF9
                                                                       U
DP   Nr hh:mm:ss.mmmmmm IpId   ****************************************
OT  446 08:49:23.561921 03CC 1 | 7_ Command                            |
                               |                                       |
IT  445 08:49:23.561819 1E58 3 |     1. Ping     (RAddr)               |
                               |     2. TraceRte (RAddr)               |
OT  444 08:49:23.550635 03CB 1 |     3. Hostnames                      |
                               |     4. Connections                    |
IU  443 08:49:23.537161 0000 p |     5. SNMP     (RAddr)               |
                        2FC585 |     6. SNMP     (Stack)               |
OU  442 08:49:23.536551 03CA p |     7. IP Trace Session               |
                        2FC501 |        Report w/Maxrecs  100__________|
                        2FC501 |                                       |
OT  441 08:49:16.053717 03C9   |                                       |
                               | F1=Help       F3=Return               |
OT  440 08:49:08.937043 03C8 2 | F6=Roll       F12=Cancel              |
                               ****************************************
OT  439 08:48:56.842212 03C7  709066085 1516932319 32764 ACK PSH









MA     a                                                          04/036
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

New

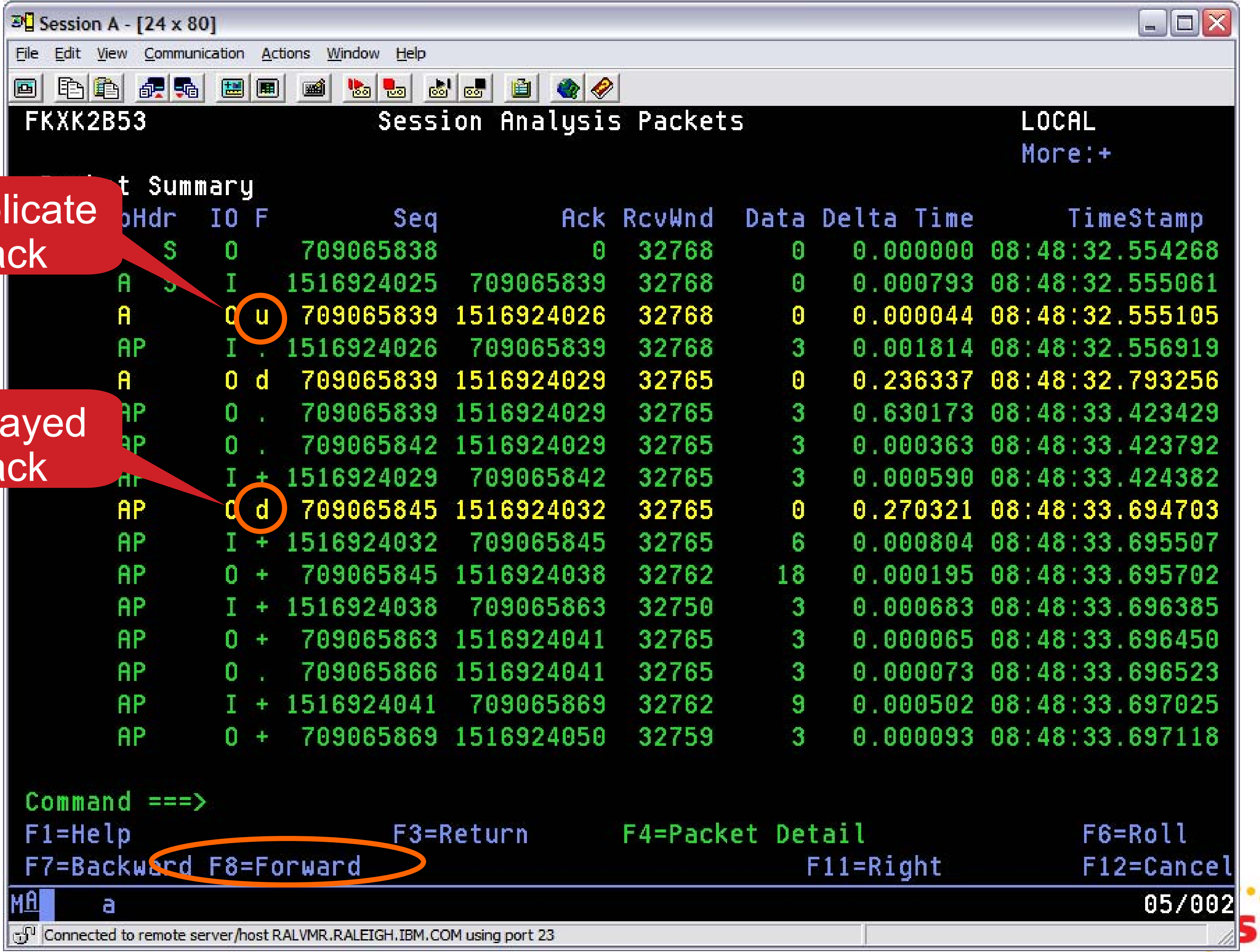
Summary analysis for that session



```
FKXK2B51                  Session Analysis                          LOCAL

Local  IP  9.42.45.101
        Port  1028  Host Name  nmp101.tivlab.raleigh.ibm.com

Remote IP  9.42.45.196
        Port  23     Host Name  nmp196.tivlab.raleigh.ibm.com

Total Packets Summarized  78        Status  CLOSED (ACTIVE RESET)

   Flags          Inbound   Outbound   Window Size  Inbound   Outbound
   --------------- --------  --------   -----------  --------  --------
   Retransmissions  0         0          Largest      32768     32768
   Duplicate Acks   0         2          Average      32741     32746
   Reset            0         1          Smallest     32637     32592
   Window Size 0    0         0
   Window Probes    0         0
   Delay Ack        1         14



Command ===> _
F1=Help                 F3=Return                                F6=Roll
             F8=Packets  F9=Actions F10=Report                   F12=Cancel
MA      a                                                          22/015
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Individual packets for the session

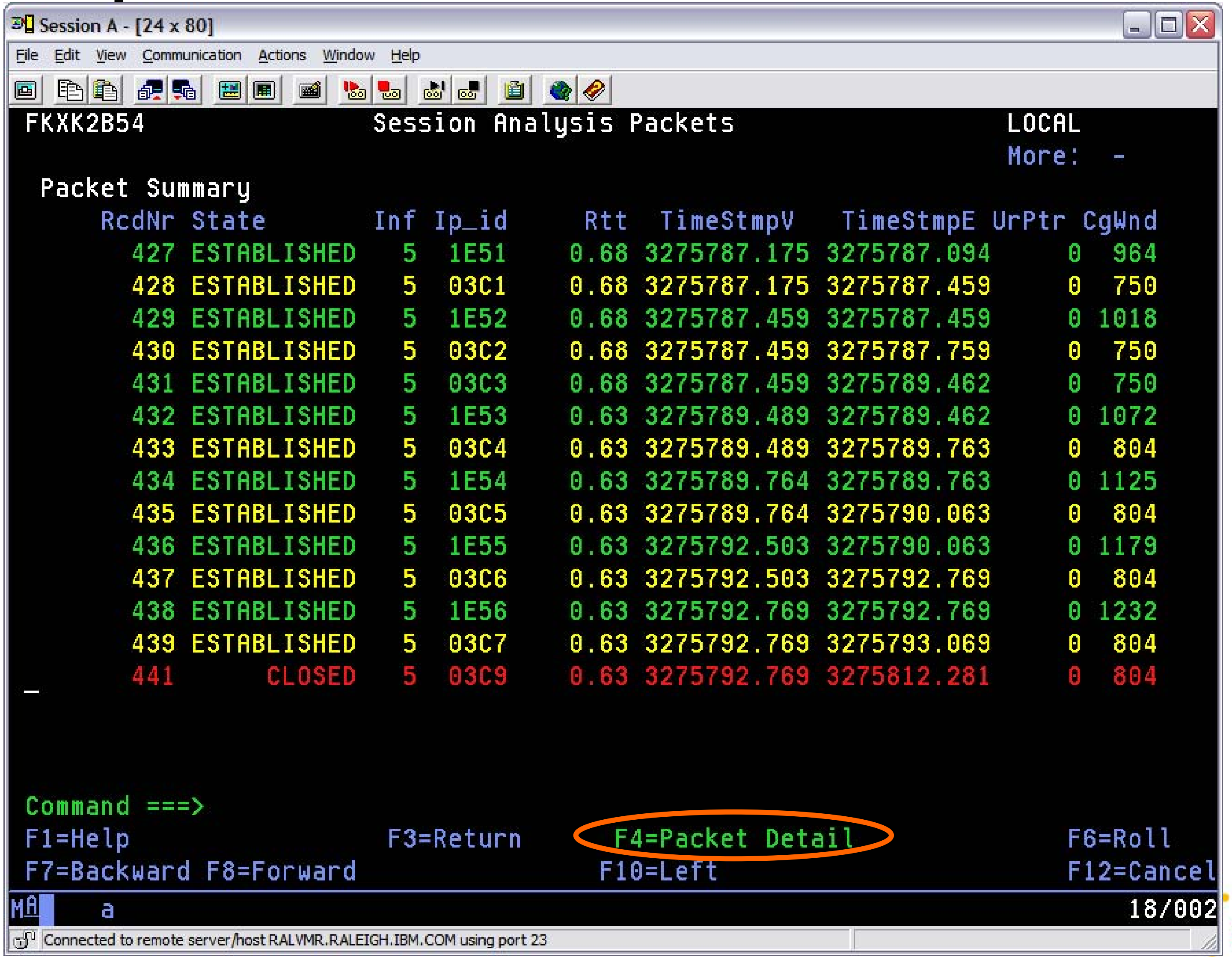


```
 FKXK2B53                 Session Analysis Packets                 LOCAL
                                                                   More:+
      t Summary
      pHdr  IO F       Seq        Ack RcvWnd  Data Delta Time     TimeStamp
         S   O   709065838          0  32768     0   0.000000 08:48:32.554268
      A  S   I  1516924025  709065839  32768     0   0.000793 08:48:32.555061
      A      O u 709065839 1516924026  32768     0   0.000044 08:48:32.555105
      AP     I . 1516924026  709065839  32768     3   0.001814 08:48:32.556919
      A      O d 709065839 1516924029  32765     0   0.236337 08:48:32.793256
      AP     O .  709065839 1516924029  32765     3   0.630173 08:48:33.423429
      AP     O .  709065842 1516924029  32765     3   0.000363 08:48:33.423792
      AP     I + 1516924029  709065842  32765     3   0.000590 08:48:33.424382
      AP     O d  709065845 1516924032  32765     0   0.270321 08:48:33.694703
      AP     I + 1516924032  709065845  32765     6   0.000804 08:48:33.695507
      AP     O +  709065845 1516924038  32762    18   0.000195 08:48:33.695702
      AP     I + 1516924038  709065863  32750     3   0.000683 08:48:33.696385
      AP     O +  709065863 1516924041  32765     3   0.000065 08:48:33.696450
      AP     O .  709065866 1516924041  32765     3   0.000073 08:48:33.696523
      AP     I + 1516924041  709065869  32762     9   0.000502 08:48:33.697025
      AP     O +  709065869 1516924050  32759     3   0.000093 08:48:33.697118

 Command ===>
 F1=Help            F3=Return       F4=Packet Detail             F6=Roll
 F7=Backward F8=Forward                         F11=Right        F12=Cancel
MA     a                                                            05/002
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23
```

duplicate ack

delayed ack

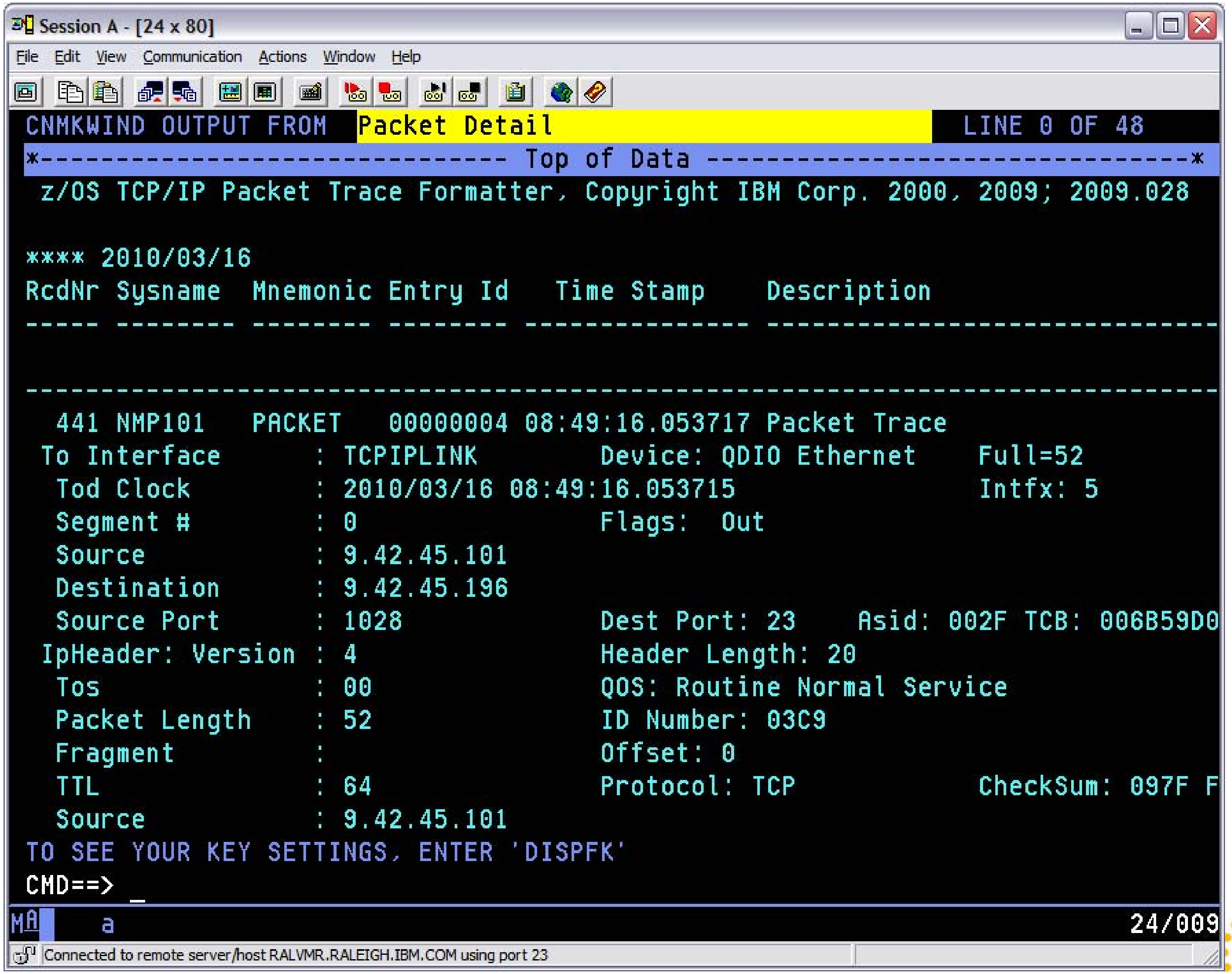
Go to packet details



```
FKXK2B54                Session Analysis Packets                        LOCAL
                                                                        More:   -
 Packet Summary
     RcdNr State          Inf Ip_id      Rtt   TimeStmpV    TimeStmpE UrPtr CgWnd
       427 ESTABLISHED      5  1E51     0.68 3275787.175 3275787.094     0   964
       428 ESTABLISHED      5  03C1     0.68 3275787.175 3275787.459     0   750
       429 ESTABLISHED      5  1E52     0.68 3275787.459 3275787.459     0  1018
       430 ESTABLISHED      5  03C2     0.68 3275787.459 3275787.759     0   750
       431 ESTABLISHED      5  03C3     0.68 3275787.459 3275789.462     0   750
       432 ESTABLISHED      5  1E53     0.63 3275789.489 3275789.462     0  1072
       433 ESTABLISHED      5  03C4     0.63 3275789.489 3275789.763     0   804
       434 ESTABLISHED      5  1E54     0.63 3275789.764 3275789.763     0  1125
       435 ESTABLISHED      5  03C5     0.63 3275789.764 3275790.063     0   804
       436 ESTABLISHED      5  1E55     0.63 3275792.503 3275790.063     0  1179
       437 ESTABLISHED      5  03C6     0.63 3275792.503 3275792.769     0   804
       438 ESTABLISHED      5  1E56     0.63 3275792.769 3275792.769     0  1232
       439 ESTABLISHED      5  03C7     0.63 3275792.769 3275793.069     0   804
       441      CLOSED      5  03C9     0.63 3275792.769 3275812.281     0   804
_



Command ===>
F1=Help                 F3=Return    F4=Packet Detail                   F6=Roll
F7=Backward F8=Forward               F10=Left                           F12=Cancel
MA     a                                                                   18/002
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

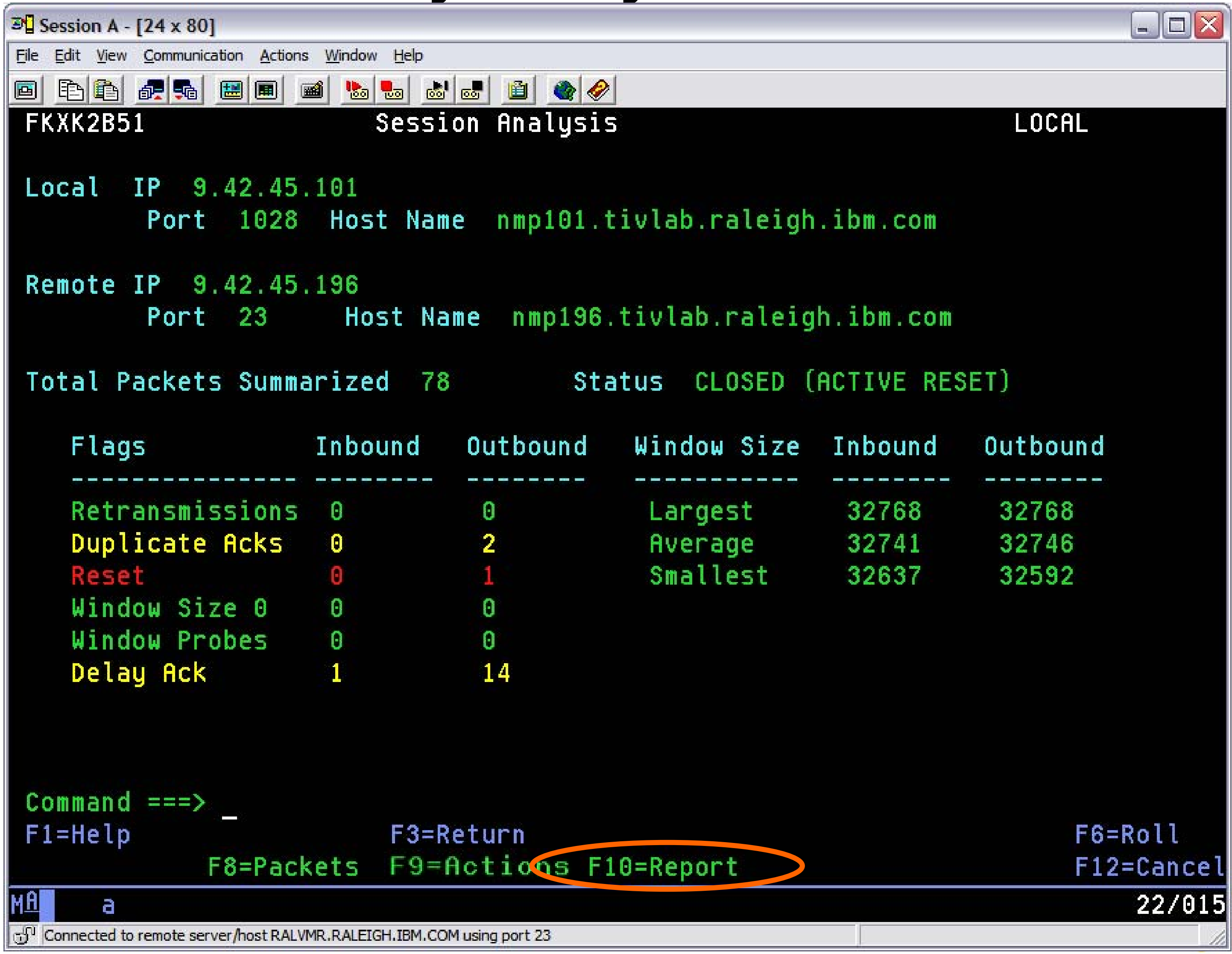
Packet Details



```
CNMKWIND OUTPUT FROM  Packet Detail                           LINE 0 OF 48
*------------------------------- Top of Data ---------------------------------*
 z/OS TCP/IP Packet Trace Formatter, Copyright IBM Corp. 2000, 2009; 2009.028

**** 2010/03/16
RcdNr Sysname  Mnemonic Entry Id   Time Stamp      Description
----- -------- -------- -------- --------------- ------------------------------

-------------------------------------------------------------------------------
  441 NMP101   PACKET   00000004 08:49:16.053717 Packet Trace
 To Interface      : TCPIPLINK        Device: QDIO Ethernet    Full=52
  Tod Clock        : 2010/03/16 08:49:16.053715                Intfx: 5
  Segment #        : 0                Flags:  Out
  Source           : 9.42.45.101
  Destination      : 9.42.45.196
  Source Port      : 1028             Dest Port: 23     Asid: 002F TCB: 006B59D0
 IpHeader: Version : 4                Header Length: 20
  Tos              : 00               QOS: Routine Normal Service
  Packet Length    : 52               ID Number: 03C9
  Fragment         :                  Offset: 0
  TTL              : 64               Protocol: TCP            CheckSum: 097F F
  Source           : 9.42.45.101
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

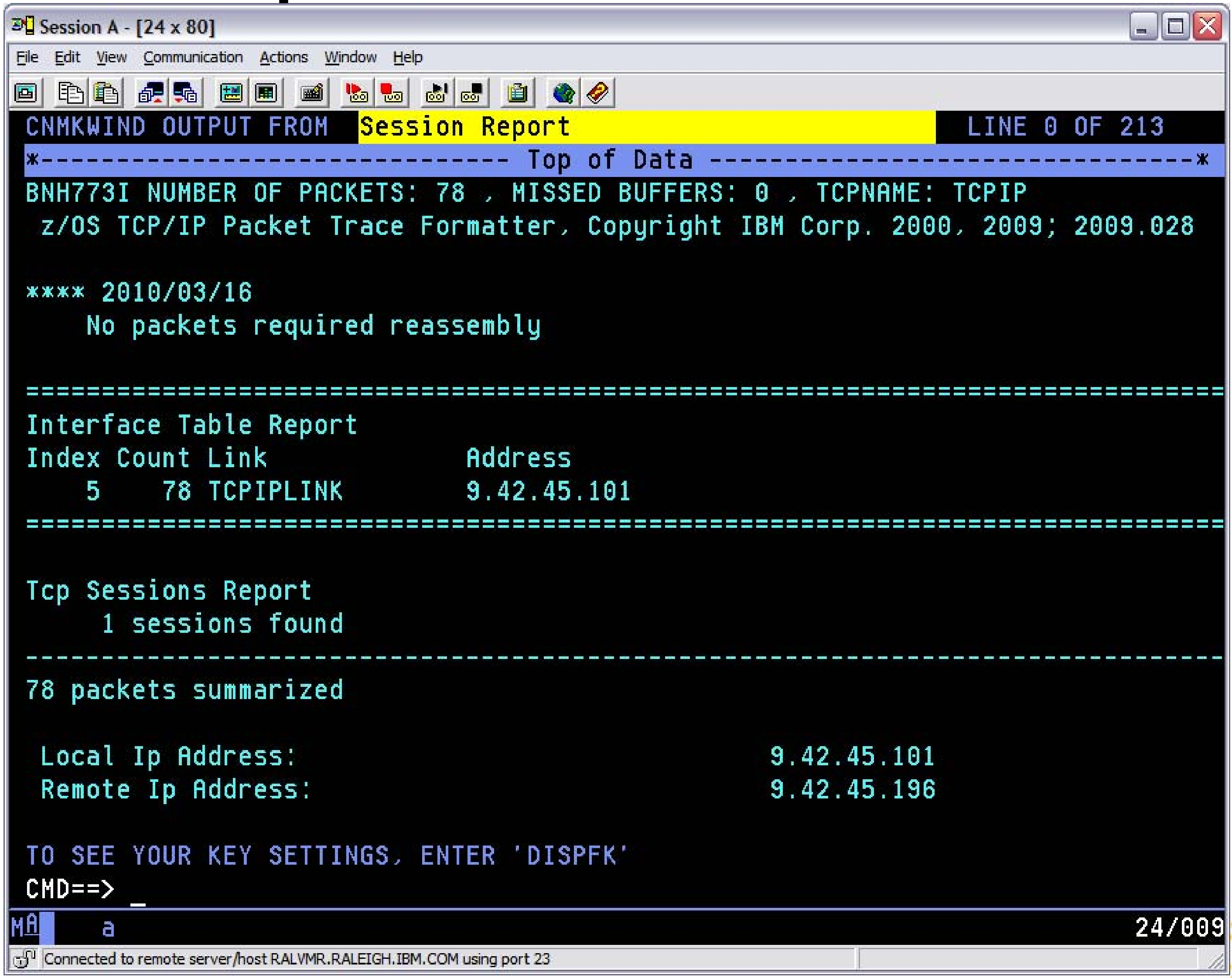
Back to Summary Analysis



```
FKXK2B51                 Session Analysis                          LOCAL

Local  IP  9.42.45.101
        Port  1028  Host Name  nmp101.tivlab.raleigh.ibm.com

Remote IP  9.42.45.196
        Port  23     Host Name  nmp196.tivlab.raleigh.ibm.com

Total Packets Summarized  78        Status  CLOSED (ACTIVE RESET)

   Flags           Inbound  Outbound   Window Size  Inbound  Outbound
   --------------- -------- --------   ----------- -------- --------
   Retransmissions  0         0         Largest      32768    32768
   Duplicate Acks   0         2         Average      32741    32746
   Reset            0         1         Smallest     32637    32592
   Window Size 0    0         0
   Window Probes    0         0
   Delay Ack        1         14



Command ===> _
F1=Help                F3=Return                                    F6=Roll
            F8=Packets F9=Actions F10=Report                        F12=Cancel
MA     a                                                            22/015
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

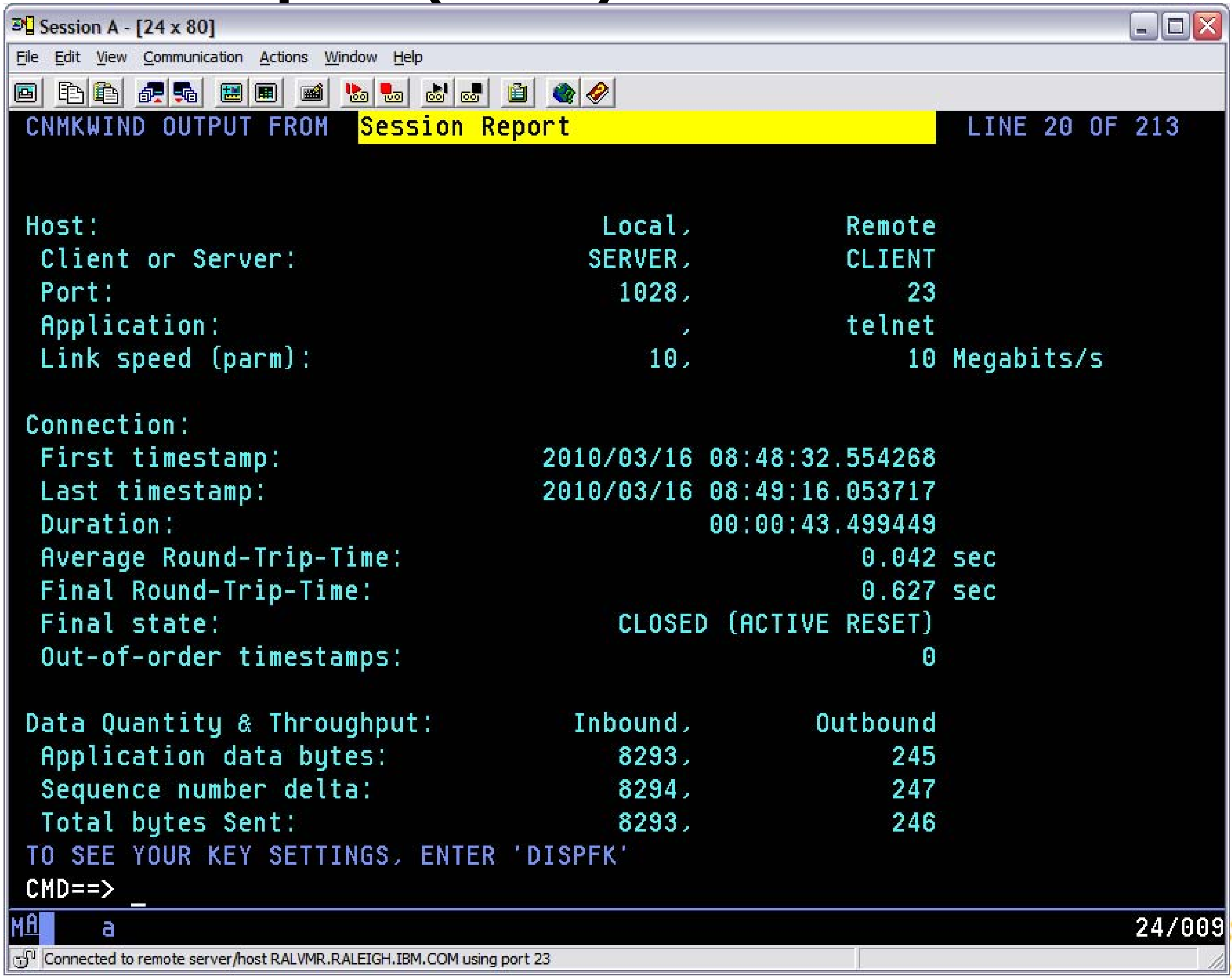
Session Report


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
CNMKWIND OUTPUT FROM Session Report                         LINE 0 OF 213
*------------------------------- Top of Data ----------------------------------*
BNH773I NUMBER OF PACKETS: 78 , MISSED BUFFERS: 0 , TCPNAME: TCPIP
 z/OS TCP/IP Packet Trace Formatter, Copyright IBM Corp. 2000, 2009; 2009.028

**** 2010/03/16
    No packets required reassembly

===============================================================================
Interface Table Report
Index Count Link             Address
    5    78 TCPIPLINK        9.42.45.101
===============================================================================


Tcp Sessions Report
     1 sessions found
------------------------------------------------------------------------------
78 packets summarized

 Local Ip Address:                                  9.42.45.101
 Remote Ip Address:                                 9.42.45.196

TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
MA    a                                                                  24/009
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Session Report (cont.)

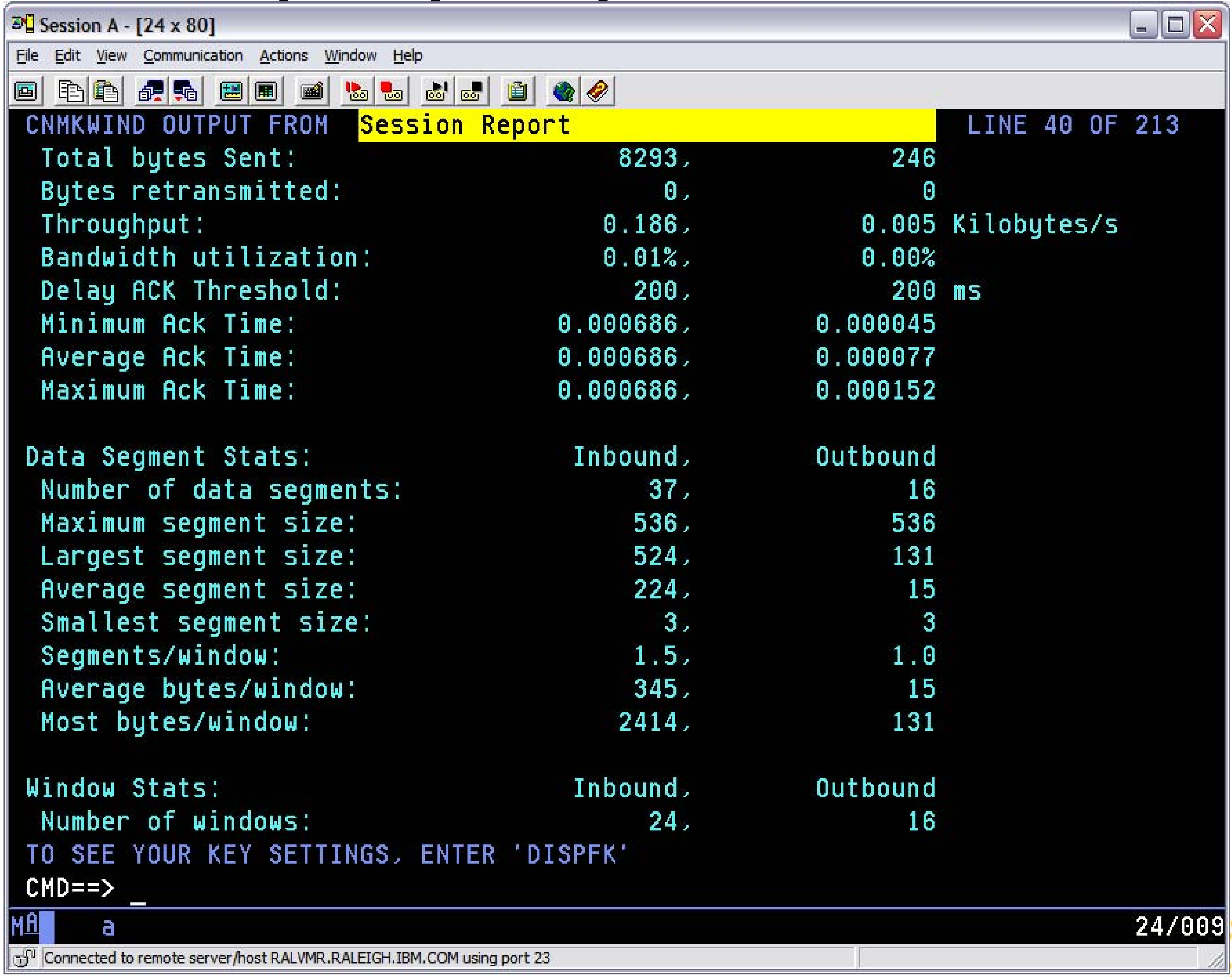


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
 CNMKWIND OUTPUT FROM  Session Report                       LINE 20 OF 213


 Host:                                      Local,          Remote
  Client or Server:                        SERVER,          CLIENT
  Port:                                      1028,              23
  Application:                                   ,          telnet
  Link speed (parm):                           10,              10 Megabits/s

 Connection:
  First timestamp:                      2010/03/16 08:48:32.554268
  Last timestamp:                       2010/03/16 08:49:16.053717
  Duration:                                        00:00:43.499449
  Average Round-Trip-Time:                                   0.042 sec
  Final Round-Trip-Time:                                     0.627 sec
  Final state:                               CLOSED (ACTIVE RESET)
  Out-of-order timestamps:                                       0

 Data Quantity & Throughput:              Inbound,        Outbound
  Application data bytes:                    8293,             245
  Sequence number delta:                     8294,             247
  Total bytes Sent:                          8293,             246
 TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
 CMD==> _
```

MA   a   24/009
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

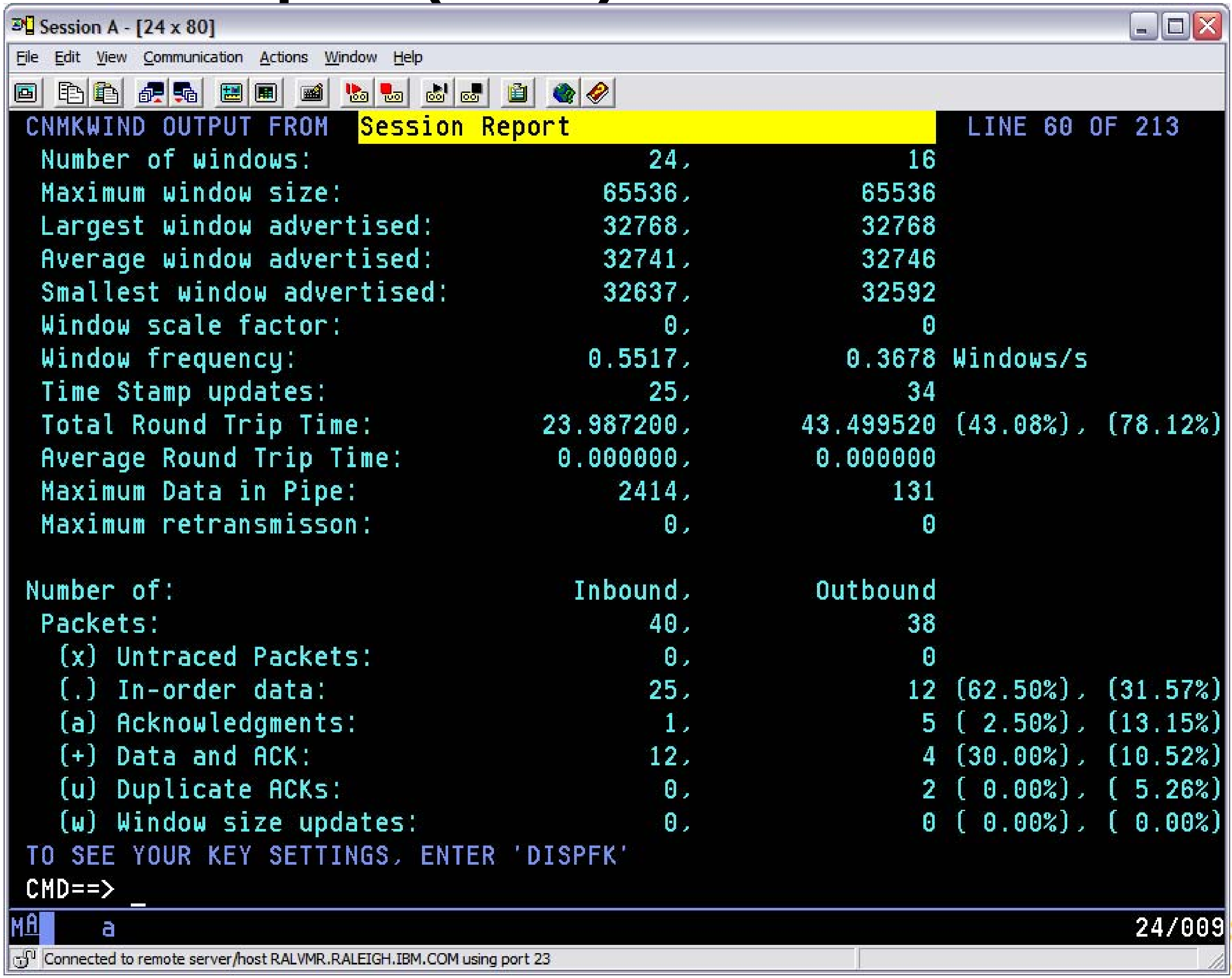
Session Report (cont.)



```
CNMKWIND OUTPUT FROM Session Report                            LINE 40 OF 213
 Total bytes Sent:                          8293,             246
 Bytes retransmitted:                          0,               0
 Throughput:                               0.186,           0.005 Kilobytes/s
 Bandwidth utilization:                    0.01%,           0.00%
 Delay ACK Threshold:                        200,             200 ms
 Minimum Ack Time:                      0.000686,        0.000045
 Average Ack Time:                      0.000686,        0.000077
 Maximum Ack Time:                      0.000686,        0.000152

Data Segment Stats:                      Inbound,        Outbound
 Number of data segments:                     37,              16
 Maximum segment size:                       536,             536
 Largest segment size:                       524,             131
 Average segment size:                       224,              15
 Smallest segment size:                        3,               3
 Segments/window:                            1.5,             1.0
 Average bytes/window:                       345,              15
 Most bytes/window:                         2414,             131

Window Stats:                            Inbound,        Outbound
 Number of windows:                           24,              16
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
MA     a                                                               24/009
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

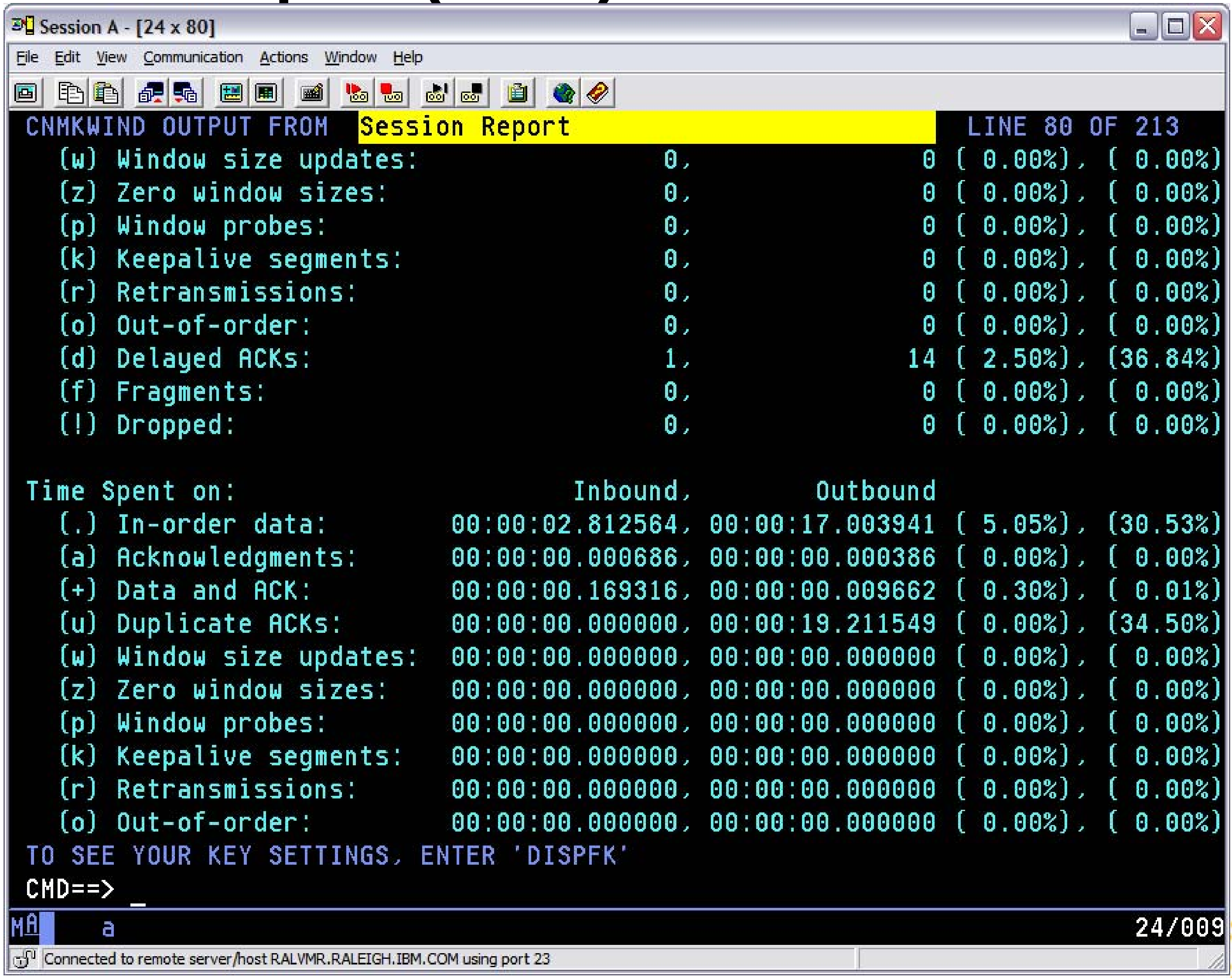
Session Report (cont.)



```
CNMKWIND OUTPUT FROM  Session Report                          LINE 60 OF 213
 Number of windows:                      24,              16
 Maximum window size:                 65536,           65536
 Largest window advertised:           32768,           32768
 Average window advertised:           32741,           32746
 Smallest window advertised:          32637,           32592
 Window scale factor:                     0,               0
 Window frequency:                   0.5517,          0.3678 Windows/s
 Time Stamp updates:                     25,              34
 Total Round Trip Time:           23.987200,       43.499520 (43.08%), (78.12%)
 Average Round Trip Time:          0.000000,        0.000000
 Maximum Data in Pipe:                 2414,             131
 Maximum retransmisson:                   0,               0

Number of:                          Inbound,        Outbound
 Packets:                                40,              38
  (x) Untraced Packets:                   0,               0
  (.) In-order data:                     25,              12 (62.50%), (31.57%)
  (a) Acknowledgments:                    1,               5 ( 2.50%), (13.15%)
  (+) Data and ACK:                      12,               4 (30.00%), (10.52%)
  (u) Duplicate ACKs:                     0,               2 ( 0.00%), ( 5.26%)
  (w) Window size updates:                0,               0 ( 0.00%), ( 0.00%)
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
MA     a                                                                  24/009
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

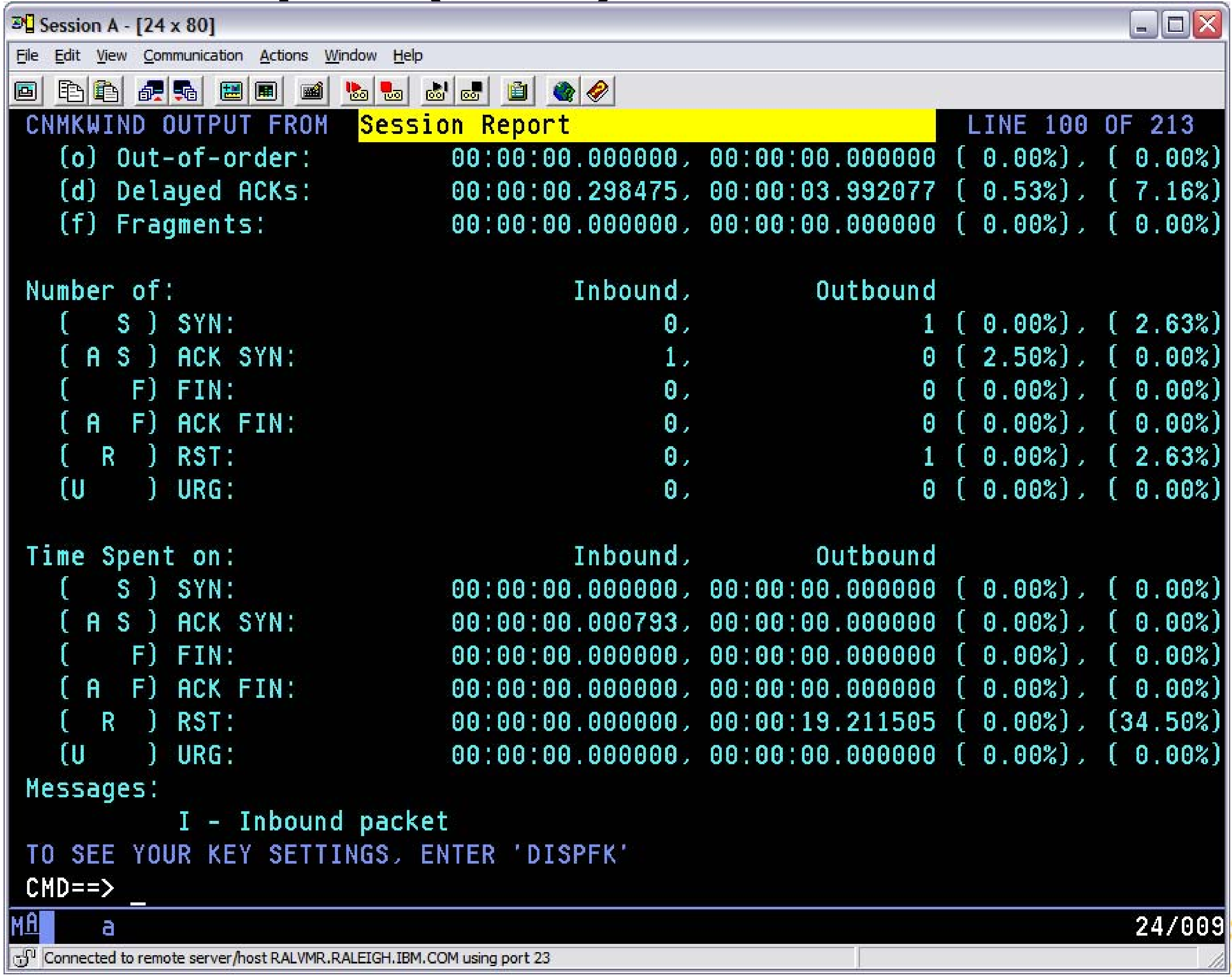
Session Report (cont.)



```
CNMKWIND OUTPUT FROM Session Report                              LINE 80 OF 213
  (w) Window size updates:                0,                0 ( 0.00%), ( 0.00%)
  (z) Zero window sizes:                  0,                0 ( 0.00%), ( 0.00%)
  (p) Window probes:                      0,                0 ( 0.00%), ( 0.00%)
  (k) Keepalive segments:                 0,                0 ( 0.00%), ( 0.00%)
  (r) Retransmissions:                    0,                0 ( 0.00%), ( 0.00%)
  (o) Out-of-order:                       0,                0 ( 0.00%), ( 0.00%)
  (d) Delayed ACKs:                       1,               14 ( 2.50%), (36.84%)
  (f) Fragments:                          0,                0 ( 0.00%), ( 0.00%)
  (!) Dropped:                            0,                0 ( 0.00%), ( 0.00%)

Time Spent on:                      Inbound,        Outbound
  (.) In-order data:        00:00:02.812564, 00:00:17.003941 ( 5.05%), (30.53%)
  (a) Acknowledgments:      00:00:00.000686, 00:00:00.000386 ( 0.00%), ( 0.00%)
  (+) Data and ACK:         00:00:00.169316, 00:00:00.009662 ( 0.30%), ( 0.01%)
  (u) Duplicate ACKs:       00:00:00.000000, 00:00:19.211549 ( 0.00%), (34.50%)
  (w) Window size updates:  00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
  (z) Zero window sizes:    00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
  (p) Window probes:        00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
  (k) Keepalive segments:   00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
  (r) Retransmissions:      00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
  (o) Out-of-order:         00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

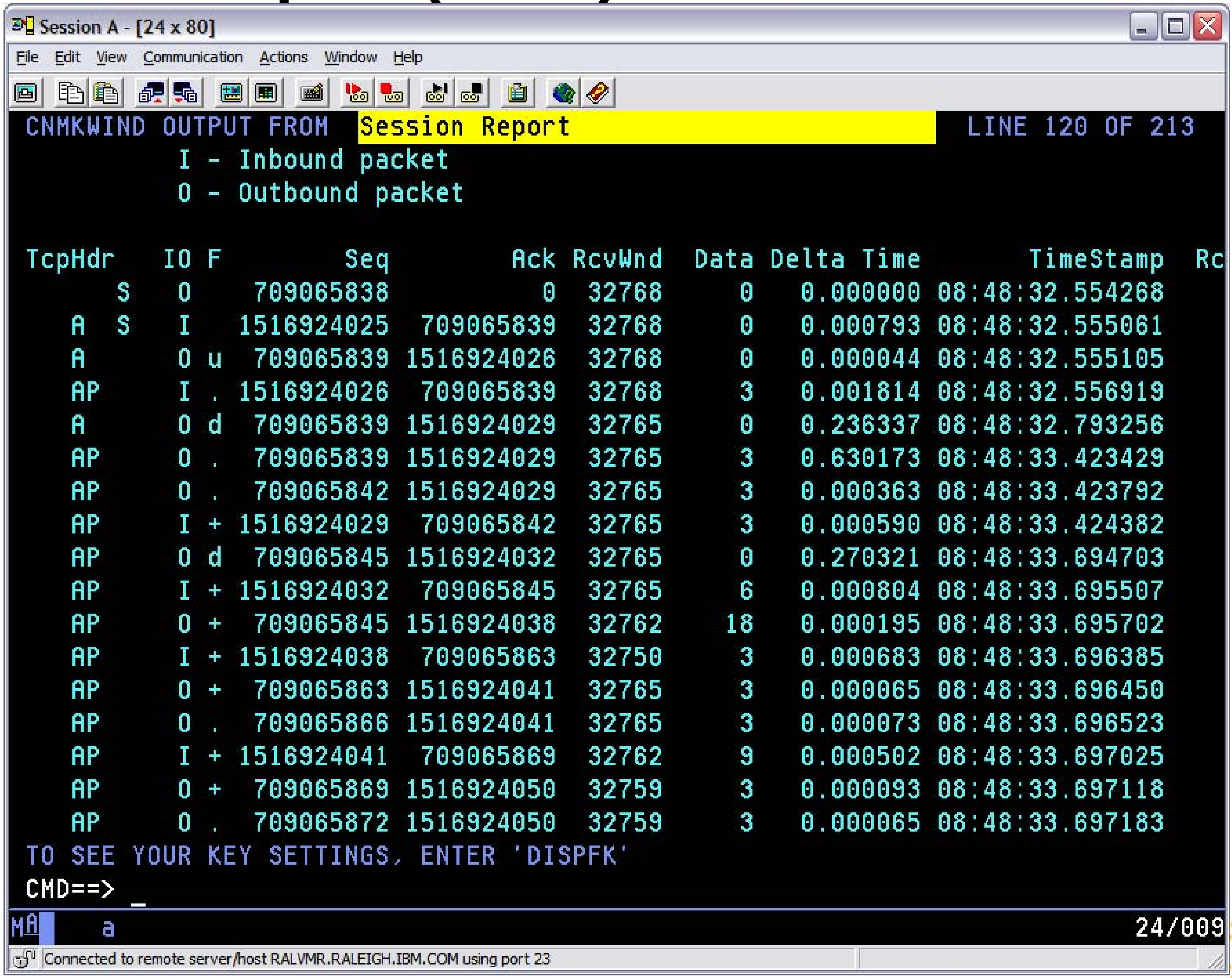
Session Report (cont.)



```
CNMKWIND OUTPUT FROM Session Report                           LINE 100 OF 213
  (o) Out-of-order:        00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
  (d) Delayed ACKs:        00:00:00.298475, 00:00:03.992077 ( 0.53%), ( 7.16%)
  (f) Fragments:           00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)

Number of:                         Inbound,        Outbound
  (   S ) SYN:                           0,               1 ( 0.00%), ( 2.63%)
  ( A S ) ACK SYN:                       1,               0 ( 2.50%), ( 0.00%)
  (    F) FIN:                           0,               0 ( 0.00%), ( 0.00%)
  ( A  F) ACK FIN:                       0,               0 ( 0.00%), ( 0.00%)
  (  R  ) RST:                           0,               1 ( 0.00%), ( 2.63%)
  (U    ) URG:                           0,               0 ( 0.00%), ( 0.00%)

Time Spent on:                     Inbound,        Outbound
  (   S ) SYN:             00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
  ( A S ) ACK SYN:         00:00:00.000793, 00:00:00.000000 ( 0.00%), ( 0.00%)
  (    F) FIN:             00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
  ( A  F) ACK FIN:         00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
  (  R  ) RST:             00:00:00.000000, 00:00:19.211505 ( 0.00%), (34.50%)
  (U    ) URG:             00:00:00.000000, 00:00:00.000000 ( 0.00%), ( 0.00%)
Messages:
          I - Inbound packet
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
MA     a                                                                 24/009
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

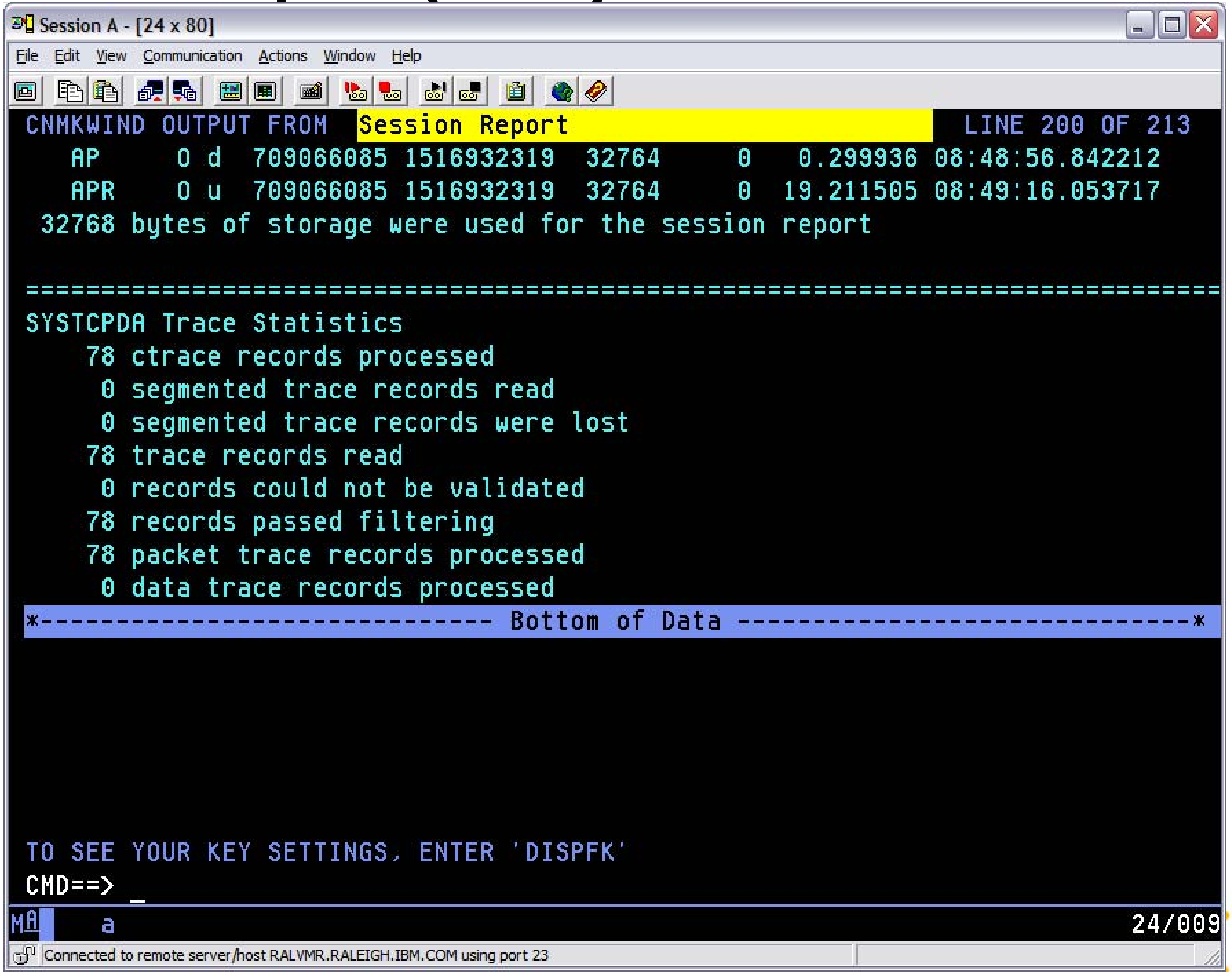
Session Report (cont.)



```
CNMKWIND OUTPUT FROM  Session Report                          LINE 120 OF 213
          I - Inbound packet
          O - Outbound packet

TcpHdr   IO F        Seq        Ack RcvWnd  Data Delta Time       TimeStamp  Rc
      S   O    709065838          0  32768     0   0.000000 08:48:32.554268
   A  S   I   1516924025  709065839  32768     0   0.000793 08:48:32.555061
   A      O u  709065839 1516924026  32768     0   0.000044 08:48:32.555105
   AP     I . 1516924026  709065839  32768     3   0.001814 08:48:32.556919
   A      O d  709065839 1516924029  32765     0   0.236337 08:48:32.793256
   AP     O .  709065839 1516924029  32765     3   0.630173 08:48:33.423429
   AP     O .  709065842 1516924029  32765     3   0.000363 08:48:33.423792
   AP     I + 1516924029  709065842  32765     3   0.000590 08:48:33.424382
   AP     O d  709065845 1516924032  32765     0   0.270321 08:48:33.694703
   AP     I + 1516924032  709065845  32765     6   0.000804 08:48:33.695507
   AP     O +  709065845 1516924038  32762    18   0.000195 08:48:33.695702
   AP     I + 1516924038  709065863  32750     3   0.000683 08:48:33.696385
   AP     O +  709065863 1516924041  32765     3   0.000065 08:48:33.696450
   AP     O .  709065866 1516924041  32765     3   0.000073 08:48:33.696523
   AP     I + 1516924041  709065869  32762     9   0.000502 08:48:33.697025
   AP     O +  709065869 1516924050  32759     3   0.000093 08:48:33.697118
   AP     O .  709065872 1516924050  32759     3   0.000065 08:48:33.697183
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

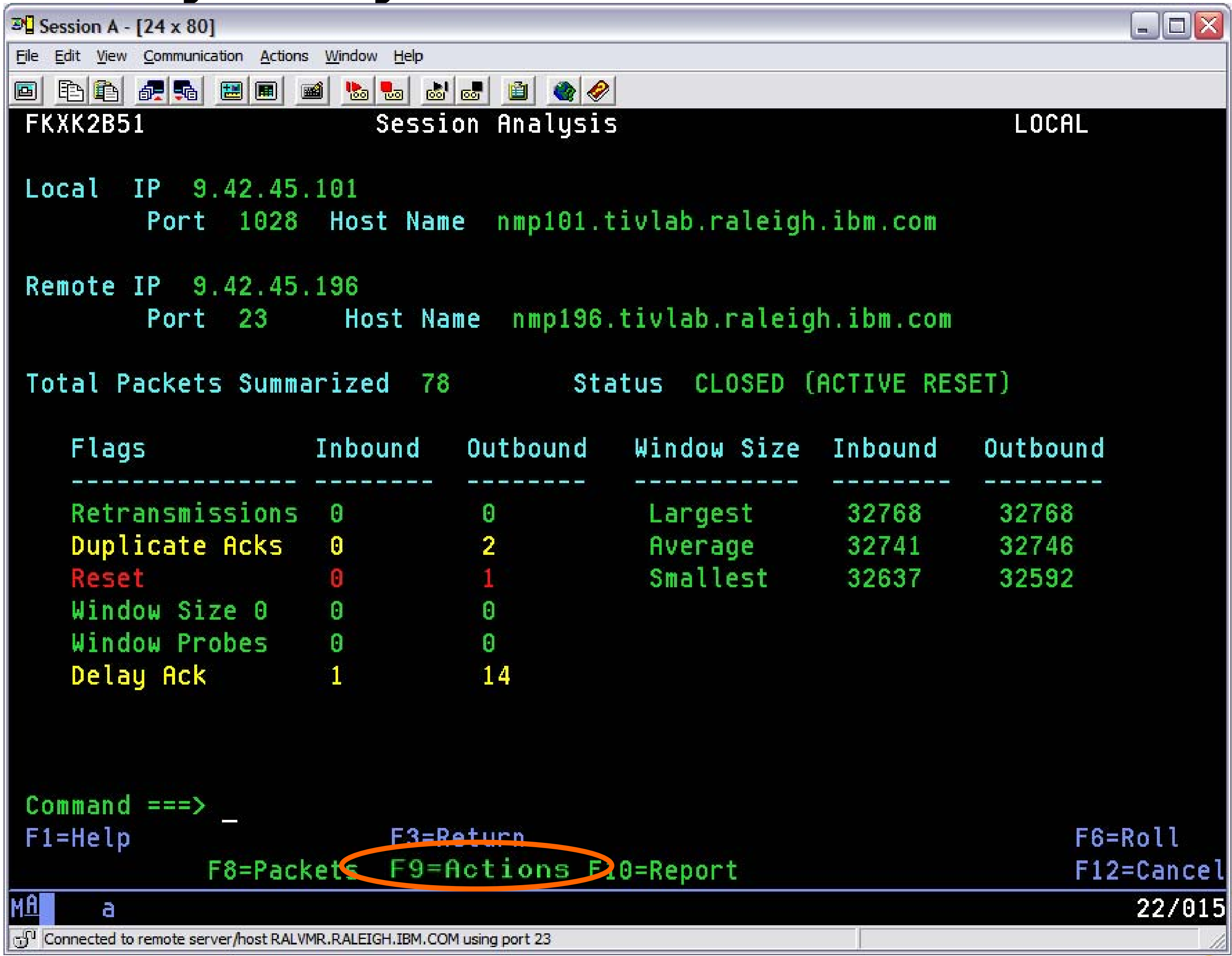
Session Report (cont.)



```
CNMKWIND OUTPUT FROM Session Report                      LINE 200 OF 213
   AP      0 d  709066085 1516932319  32764     0   0.299936 08:48:56.842212
   APR     0 u  709066085 1516932319  32764     0  19.211505 08:49:16.053717
 32768 bytes of storage were used for the session report

===============================================================================
SYSTCPDA Trace Statistics
    78 ctrace records processed
     0 segmented trace records read
     0 segmented trace records were lost
    78 trace records read
     0 records could not be validated
    78 records passed filtering
    78 packet trace records processed
     0 data trace records processed
*------------------------------ Bottom of Data ------------------------------*








TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
MA     a                                                                 24/009
```

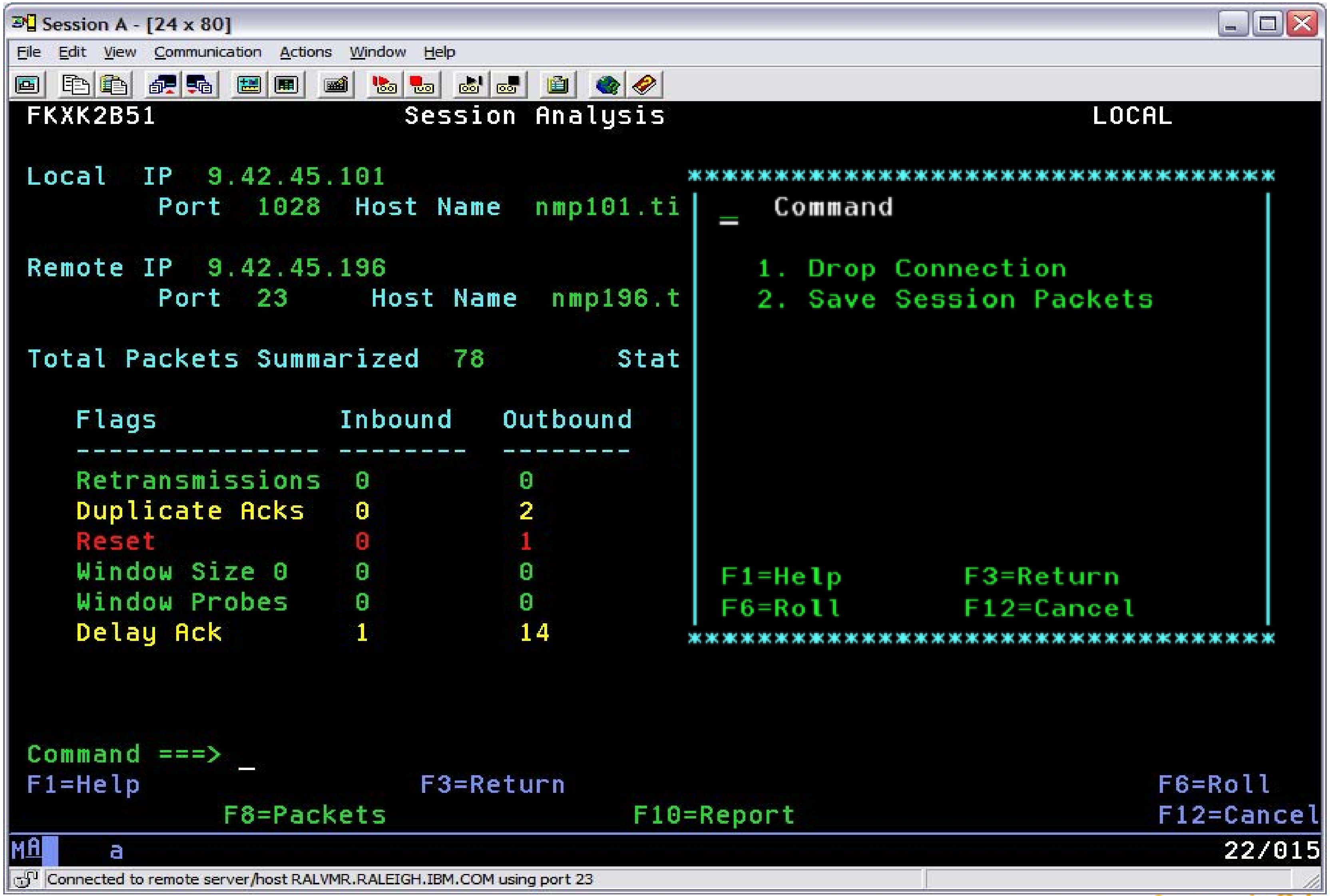
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Summary Analysis for that session



```
FKXK2B51                 Session Analysis                          LOCAL

Local   IP  9.42.45.101
        Port  1028  Host Name  nmp101.tivlab.raleigh.ibm.com

Remote IP  9.42.45.196
        Port  23     Host Name  nmp196.tivlab.raleigh.ibm.com

Total Packets Summarized  78        Status  CLOSED (ACTIVE RESET)

   Flags            Inbound   Outbound   Window Size  Inbound   Outbound
   ---------------  --------  --------   -----------  --------  --------
   Retransmissions  0         0           Largest      32768     32768
   Duplicate Acks   0         2           Average      32741     32746
   Reset            0         1           Smallest     32637     32592
   Window Size 0    0         0
   Window Probes    0         0
   Delay Ack        1         14




Command ===> _
F1=Help                  F3=Return                                F6=Roll
            F8=Packets   F9=Actions F10=Report                    F12=Cancel
MA     a                                                              22/015
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23
```

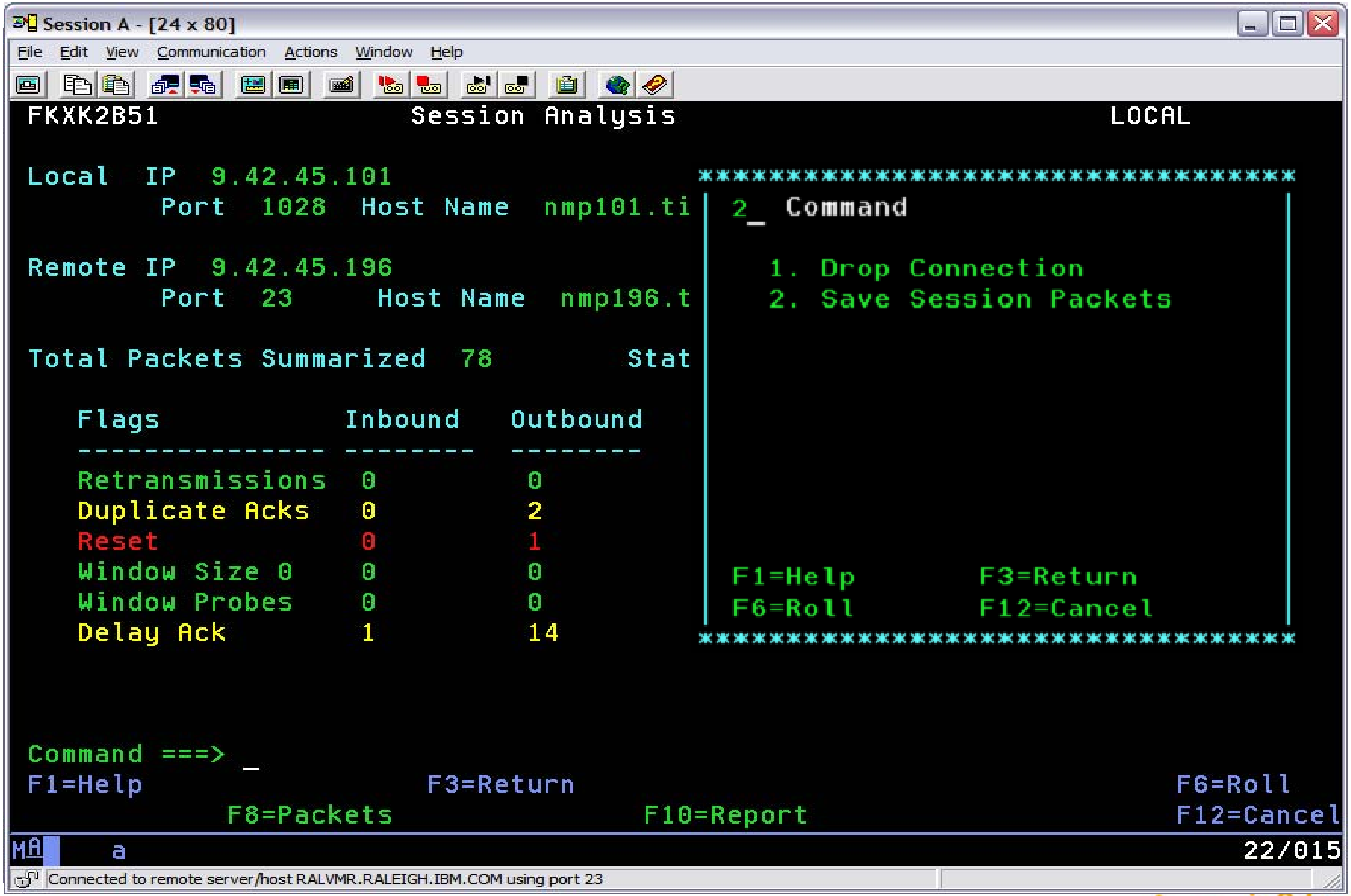
Commands Available for this Session


Session A - [24 x 80]
File
Edit
View
Communication
Actions
Window
Help

```
FKXK2B51                Session Analysis                           LOCAL

Local  IP   9.42.45.101                   *********************************
        Port   1028  Host Name   nmp101.ti |  _  Command                        |
                                           |                                    |
Remote IP   9.42.45.196                    |    1. Drop Connection             |
        Port   23     Host Name   nmp196.t |    2. Save Session Packets        |
                                           |                                    |
Total Packets Summarized  78         Stat  |                                    |
                                           |                                    |
   Flags            Inbound   Outbound     |                                    |
   ---------------  --------  --------     |                                    |
   Retransmissions  0         0            |                                    |
   Duplicate Acks   0         2            |                                    |
   Reset            0         1            |                                    |
   Window Size 0    0         0            |  F1=Help        F3=Return          |
   Window Probes    0         0            |  F6=Roll        F12=Cancel         |
   Delay Ack        1         14          *********************************



Command ===> _
F1=Help                 F3=Return                                      F6=Roll
            F8=Packets                F10=Report                       F12=Cancel
MA     a                                                               22/015
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

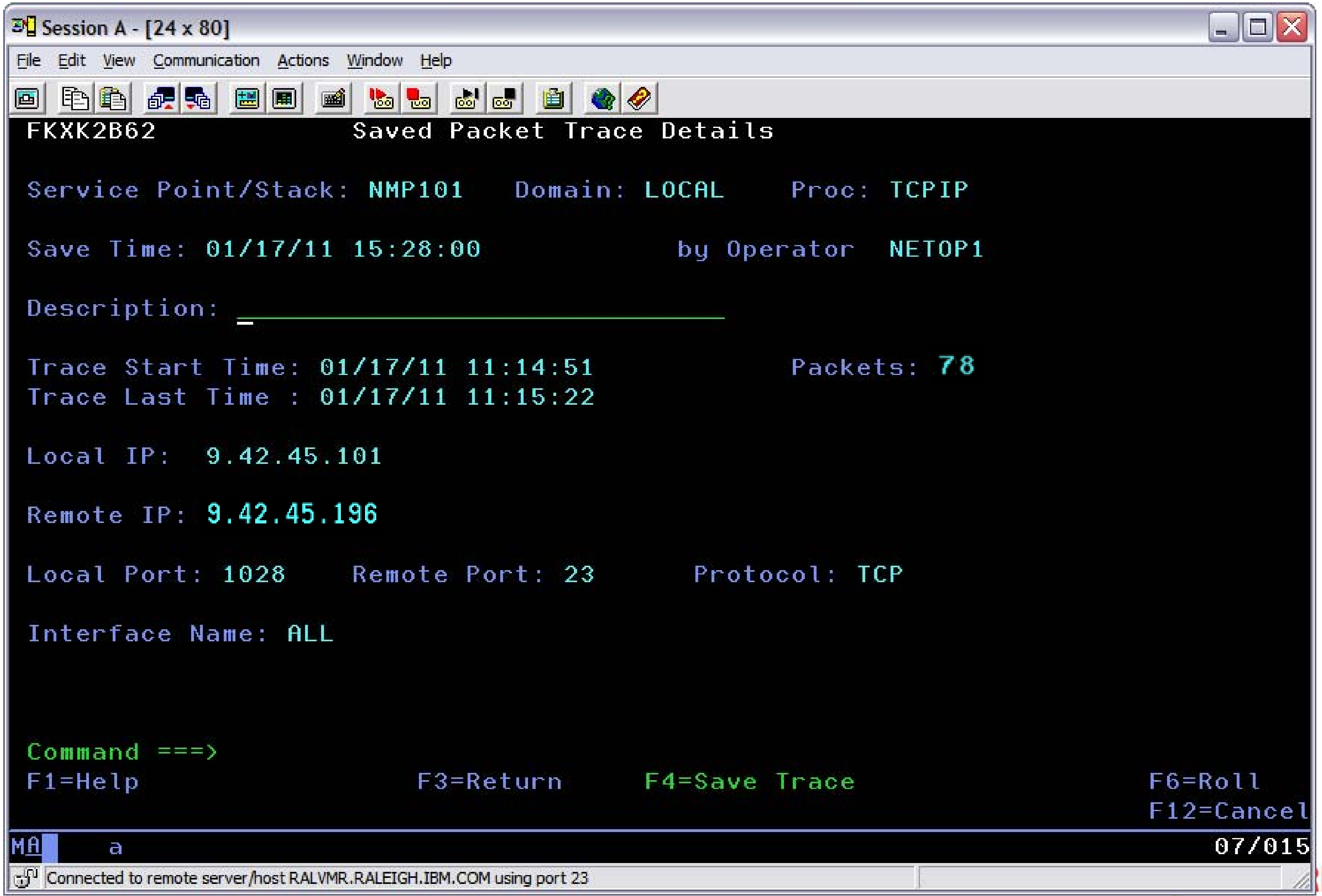
Save Session Packets


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
FKXK2B51               Session Analysis                          LOCAL

Local  IP  9.42.45.101                  *************************************
        Port  1028  Host Name  nmp101.ti| 2_  Command                       |
                                        |                                   |
Remote IP  9.42.45.196                  |    1. Drop Connection             |
        Port  23      Host Name  nmp196.t|    2. Save Session Packets        |
                                        |                                   |
Total Packets Summarized  78        Stat|                                   |
                                        |                                   |
   Flags           Inbound   Outbound   |                                   |
   --------------- --------  --------   |                                   |
   Retransmissions  0         0         |                                   |
   Duplicate Acks   0         2         |                                   |
   Reset            0         1         |                                   |
   Window Size 0    0         0         | F1=Help        F3=Return          |
   Window Probes    0         0         | F6=Roll        F12=Cancel         |
   Delay Ack        1         14        *************************************



Command ===> _
F1=Help                 F3=Return                                    F6=Roll
            F8=Packets               F10=Report                      F12=Cancel
MA     a                                                                22/015
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

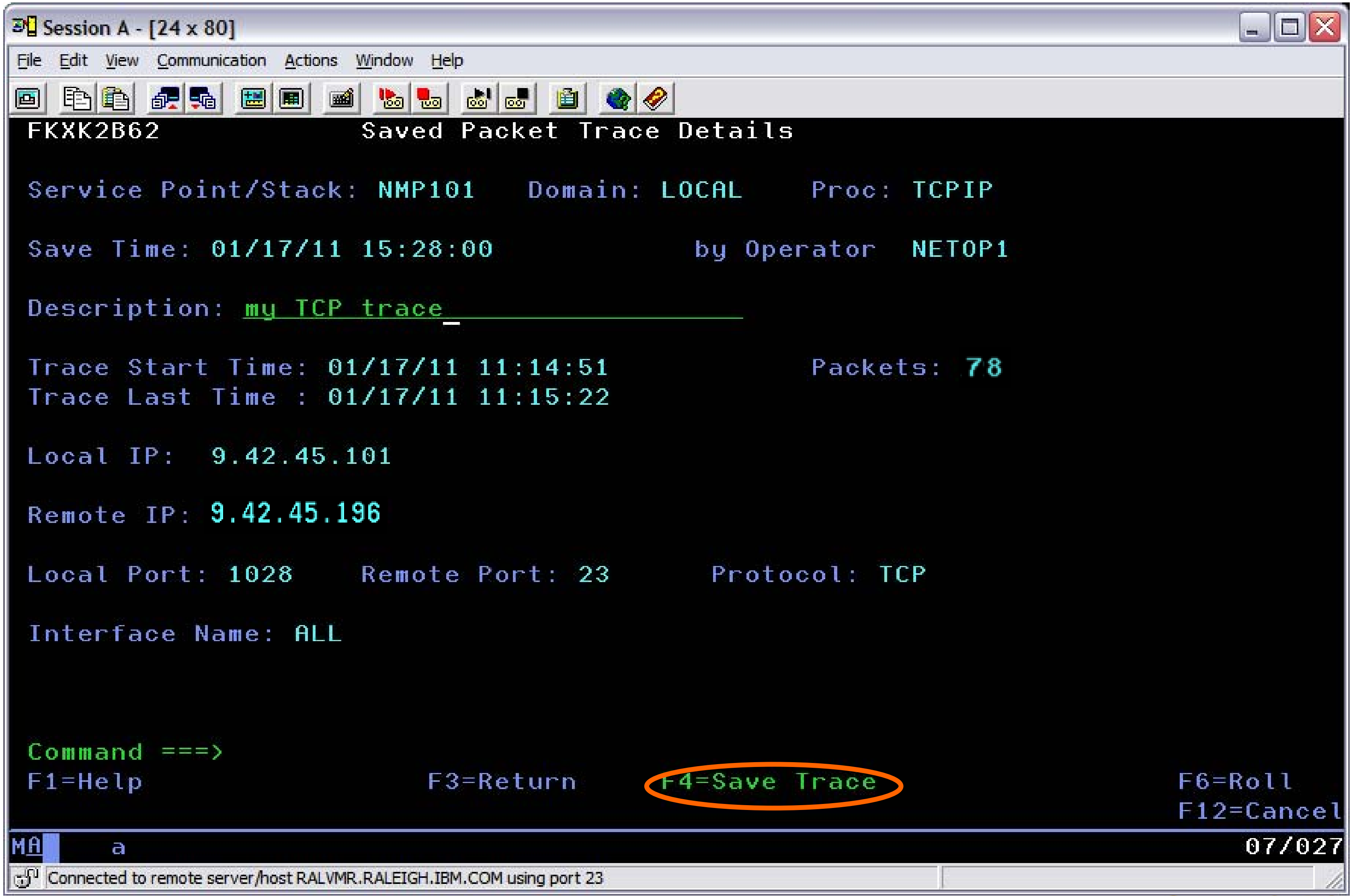
Save Session Packets


Session A - [24 x 80]
File
Edit
View
Communication
Actions
Window
Help

```
FKXK2B62            Saved Packet Trace Details

Service Point/Stack: NMP101   Domain: LOCAL    Proc: TCPIP

Save Time: 01/17/11 15:28:00            by Operator  NETOP1

Description: ______________________________

Trace Start Time: 01/17/11 11:14:51            Packets: 78
Trace Last Time : 01/17/11 11:15:22

Local IP:  9.42.45.101

Remote IP: 9.42.45.196

Local Port: 1028    Remote Port: 23      Protocol: TCP

Interface Name: ALL



Command ===>
F1=Help                 F3=Return     F4=Save Trace                  F6=Roll
                                                                     F12=Cancel
MA    a                                                                   07/015
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

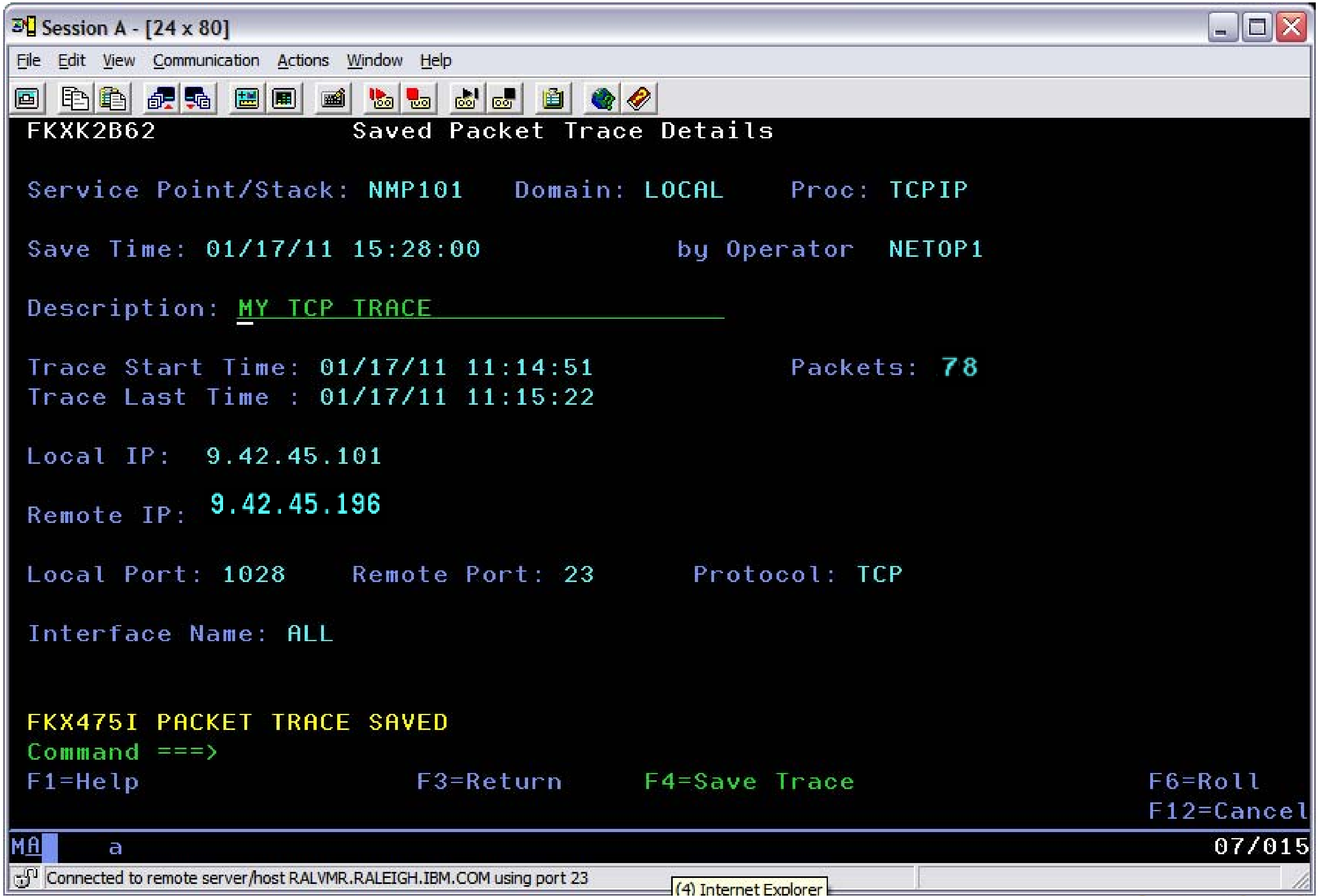
Save Session Packets


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
FKXK2B62                  Saved Packet Trace Details

Service Point/Stack: NMP101   Domain: LOCAL    Proc: TCPIP

Save Time: 01/17/11 15:28:00              by Operator  NETOP1

Description: my TCP trace_

Trace Start Time: 01/17/11 11:14:51              Packets: 78
Trace Last Time : 01/17/11 11:15:22

Local IP:  9.42.45.101

Remote IP: 9.42.45.196

Local Port: 1028    Remote Port: 23      Protocol: TCP

Interface Name: ALL



Command ===>
F1=Help                 F3=Return     F4=Save Trace                F6=Roll
                                                                   F12=Cancel
MA     a                                                              07/027
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

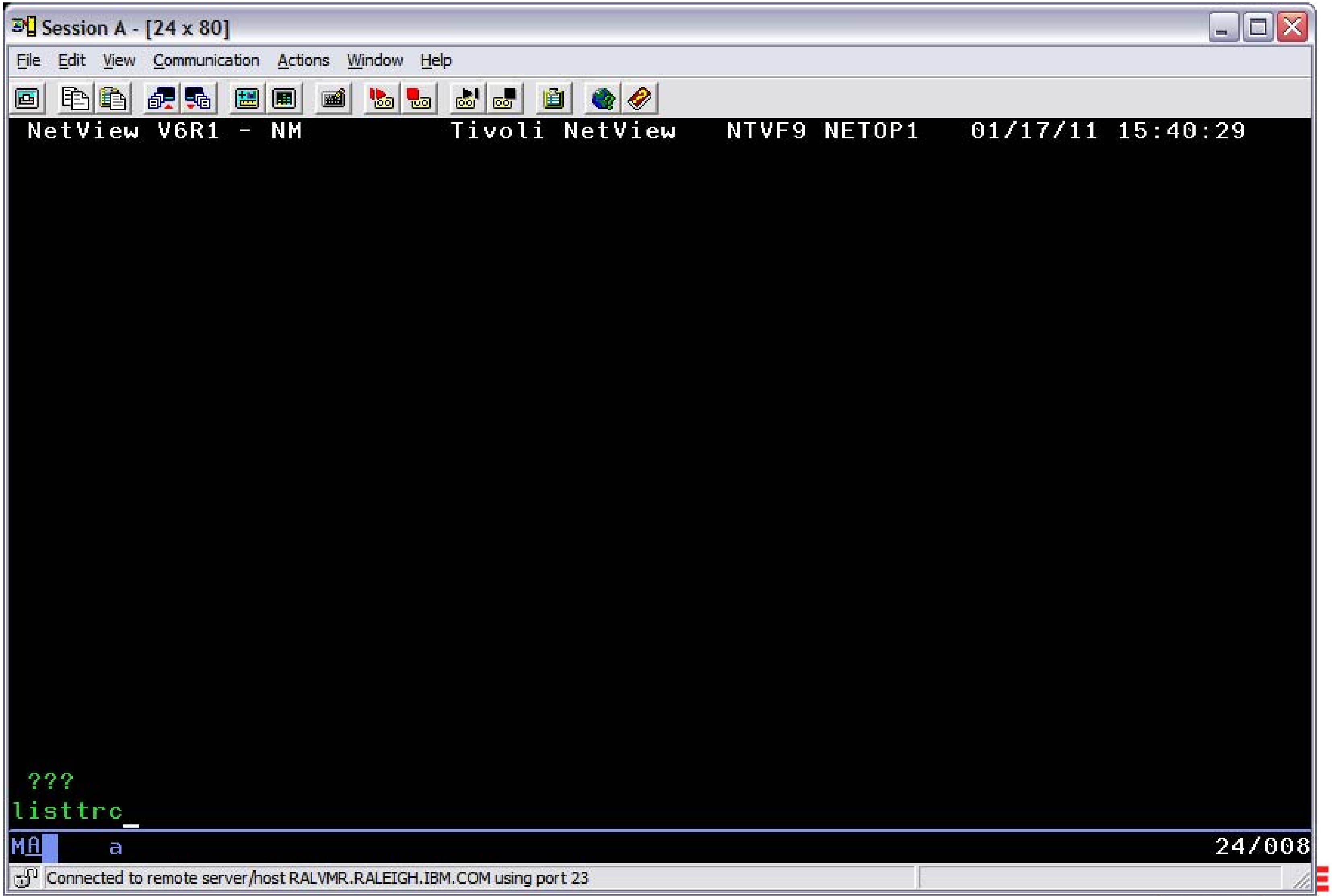
Save Session Packets


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
FKXK2B62                Saved Packet Trace Details

Service Point/Stack: NMP101   Domain: LOCAL    Proc: TCPIP

Save Time: 01/17/11 15:28:00               by Operator  NETOP1

Description: MY TCP TRACE

Trace Start Time: 01/17/11 11:14:51              Packets: 78
Trace Last Time : 01/17/11 11:15:22

Local IP:  9.42.45.101

Remote IP: 9.42.45.196

Local Port: 1028    Remote Port: 23      Protocol: TCP

Interface Name: ALL


FKX475I PACKET TRACE SAVED
Command ===>
F1=Help                 F3=Return     F4=Save Trace                     F6=Roll
                                                                       F12=Cancel
MA     a                                                                  07/015
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23
(4) Internet Explorer

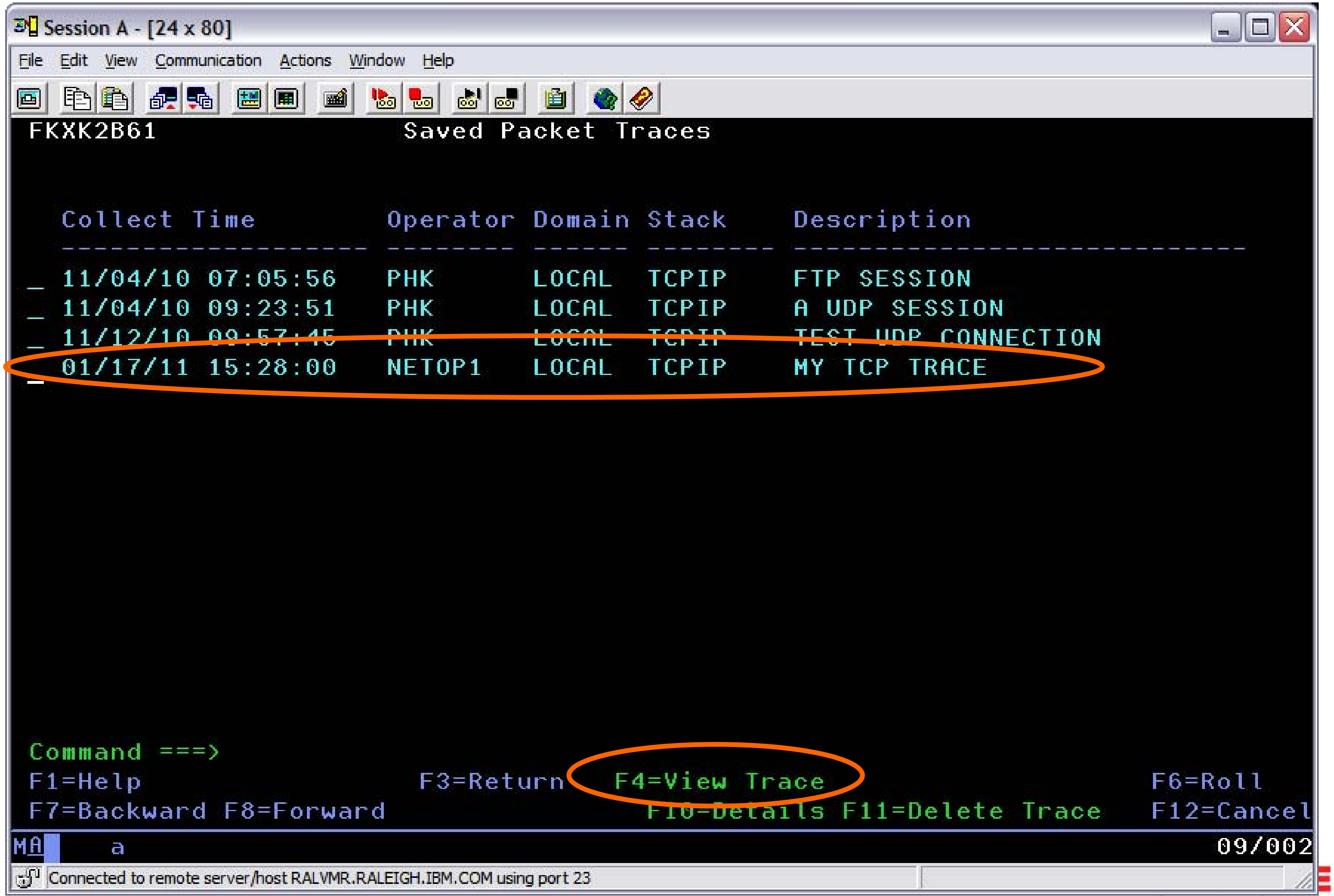
Recall Saved Traces


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
 NetView V6R1 - NM          Tivoli NetView    NTVF9 NETOP1    01/17/11 15:40:29





 ???
listtrc_
MA      a                                                              24/008
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

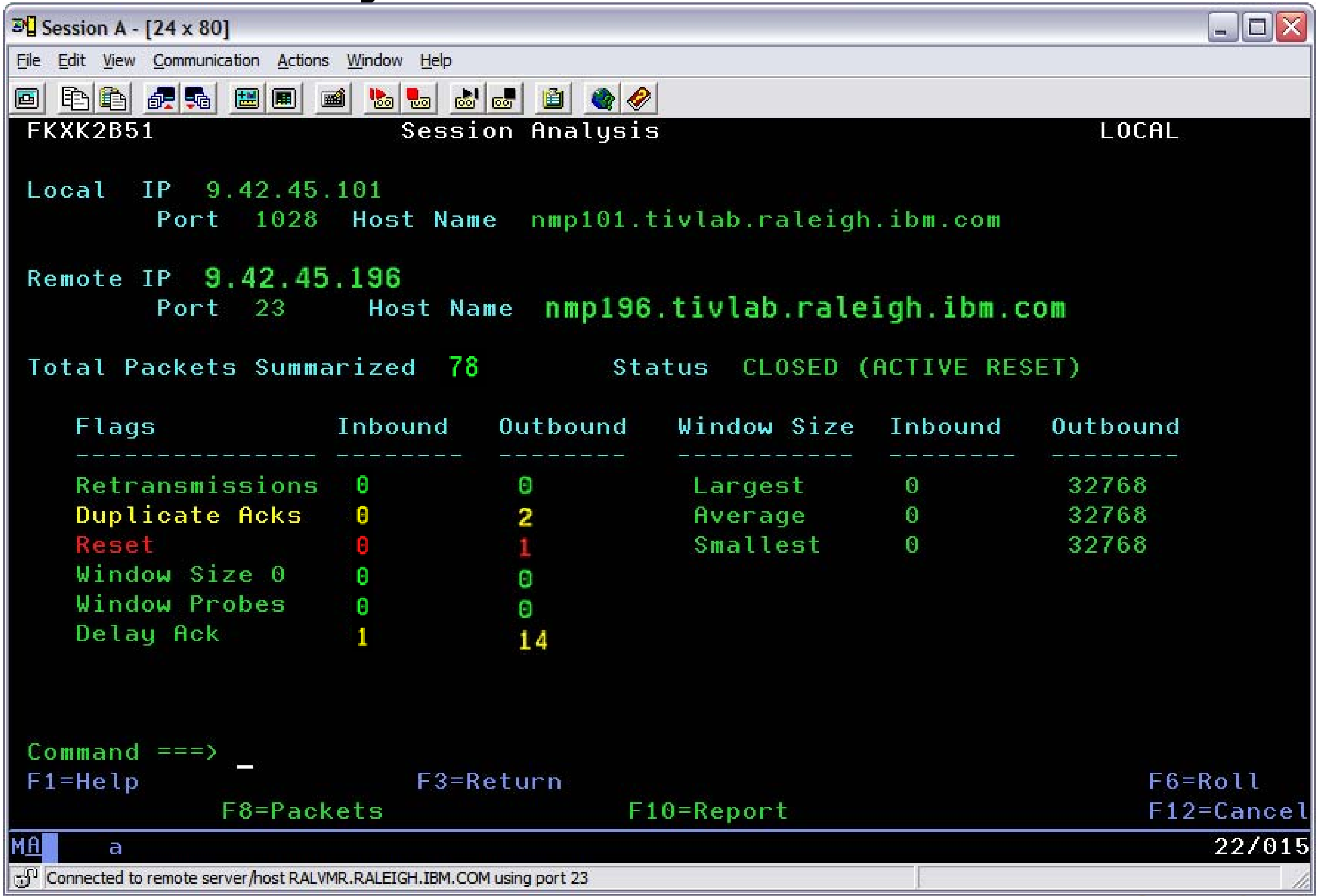
Recall Saved Traces


Session A - [24 x 80]
File
Edit
View
Communication
Actions
Window
Help

```
 FKXK2B61               Saved Packet Traces


   Collect Time         Operator Domain Stack    Description
   ------------------- -------- ------ -------- ----------------------------
 _ 11/04/10 07:05:56   PHK      LOCAL  TCPIP    FTP SESSION
 _ 11/04/10 09:23:51   PHK      LOCAL  TCPIP    A UDP SESSION
 _ 11/12/10 09:57:45   PHK      LOCAL  TCPIP    TEST UDP CONNECTION
 _ 01/17/11 15:28:00   NETOP1   LOCAL  TCPIP    MY TCP TRACE















 Command ===>
 F1=Help                 F3=Return   F4=View Trace                      F6=Roll
 F7=Backward F8=Forward                F10=Details F11=Delete Trace   F12=Cancel
MA    a                                                                   09/002
```

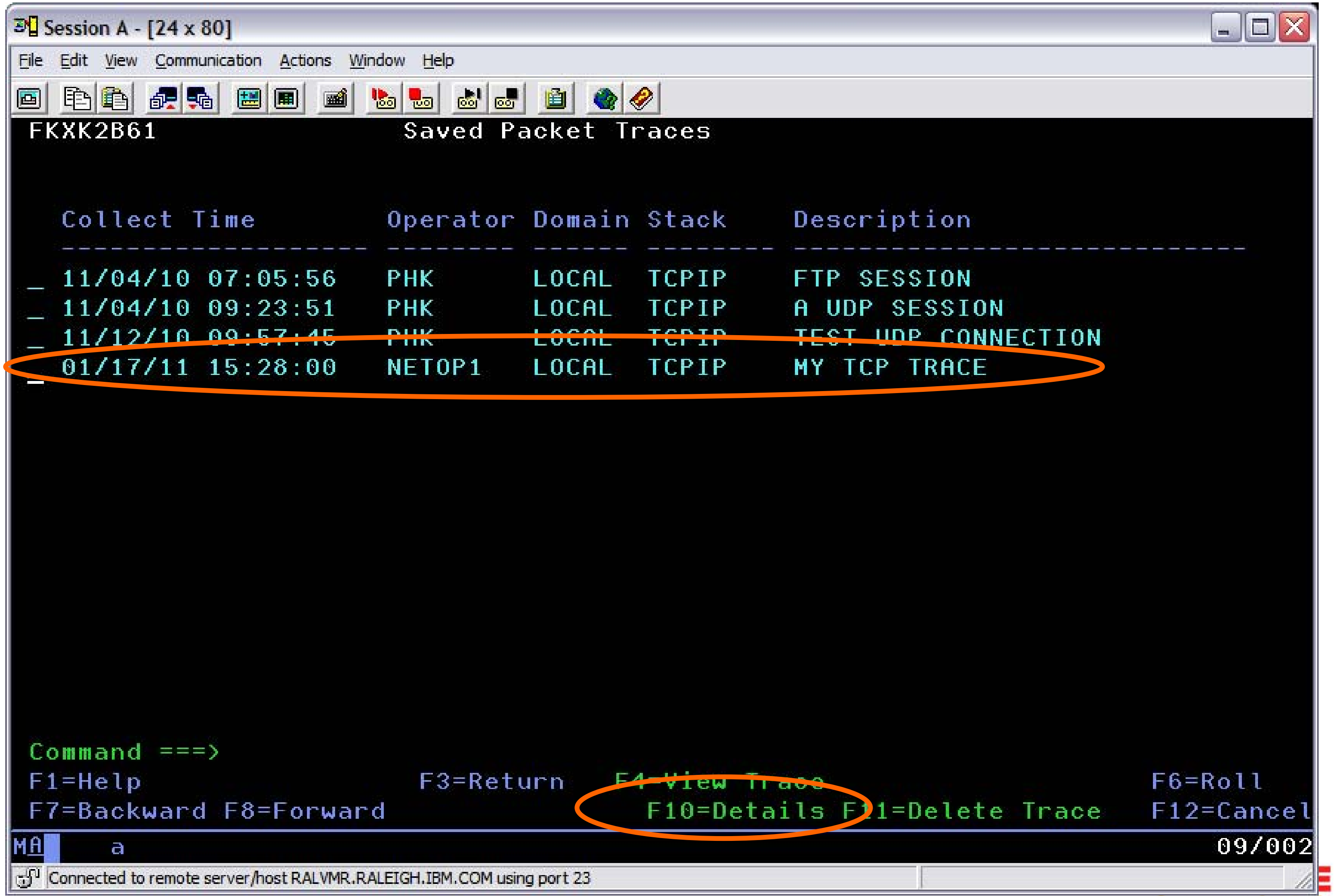
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Trace Summary



```
FKXK2B51                  Session Analysis                          LOCAL

Local   IP   9.42.45.101
        Port   1028   Host Name   nmp101.tivlab.raleigh.ibm.com

Remote IP   9.42.45.196
        Port   23      Host Name   nmp196.tivlab.raleigh.ibm.com

Total Packets Summarized  78        Status   CLOSED (ACTIVE RESET)

   Flags            Inbound   Outbound   Window Size  Inbound   Outbound
   ---------------- --------  --------   -----------  --------  --------
   Retransmissions   0         0          Largest      0         32768
   Duplicate Acks    0         2          Average      0         32768
   Reset             0         1          Smallest     0         32768
   Window Size 0     0         0
   Window Probes     0         0
   Delay Ack         1         14


Command ===> _
F1=Help                  F3=Return                                 F6=Roll
             F8=Packets               F10=Report                   F12=Cancel
MA      a                                                           22/015
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23
```

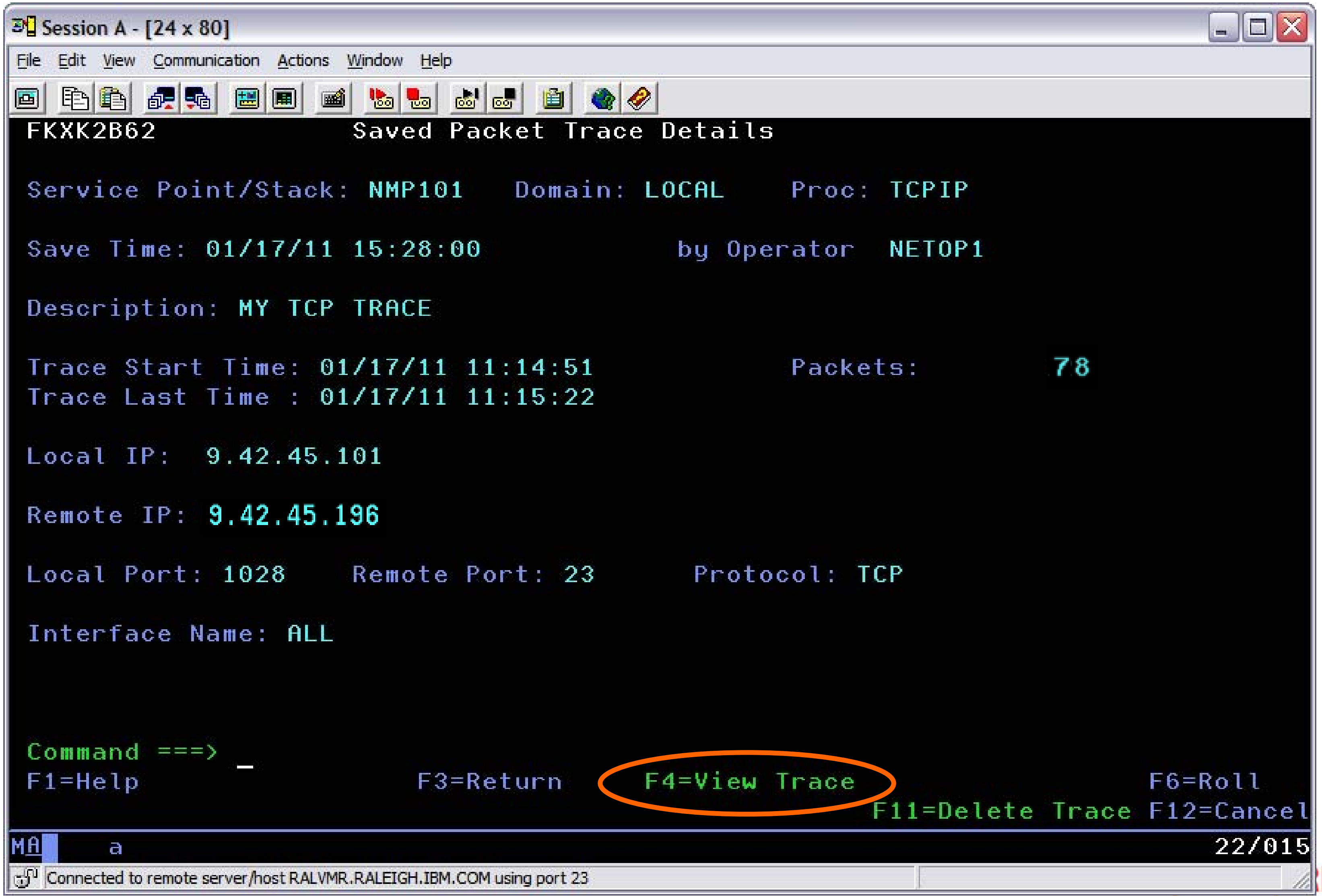
Recall Saved Traces


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
FKXK2B61                    Saved Packet Traces


   Collect Time          Operator Domain Stack    Description
   -------------------- -------- ------ -------- ----------------------------
_  11/04/10 07:05:56     PHK      LOCAL  TCPIP    FTP SESSION
_  11/04/10 09:23:51     PHK      LOCAL  TCPIP    A UDP SESSION
_  11/12/10 09:57:45     PHK      LOCAL  TCPIP    TEST UDP CONNECTION
   01/17/11 15:28:00     NETOP1   LOCAL  TCPIP    MY TCP TRACE
_











Command ===>
F1=Help                 F3=Return   F4=View Trace                   F6=Roll
F7=Backward F8=Forward                 F10=Details F11=Delete Trace  F12=Cancel
MA     a                                                            09/002
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Details About the Trace

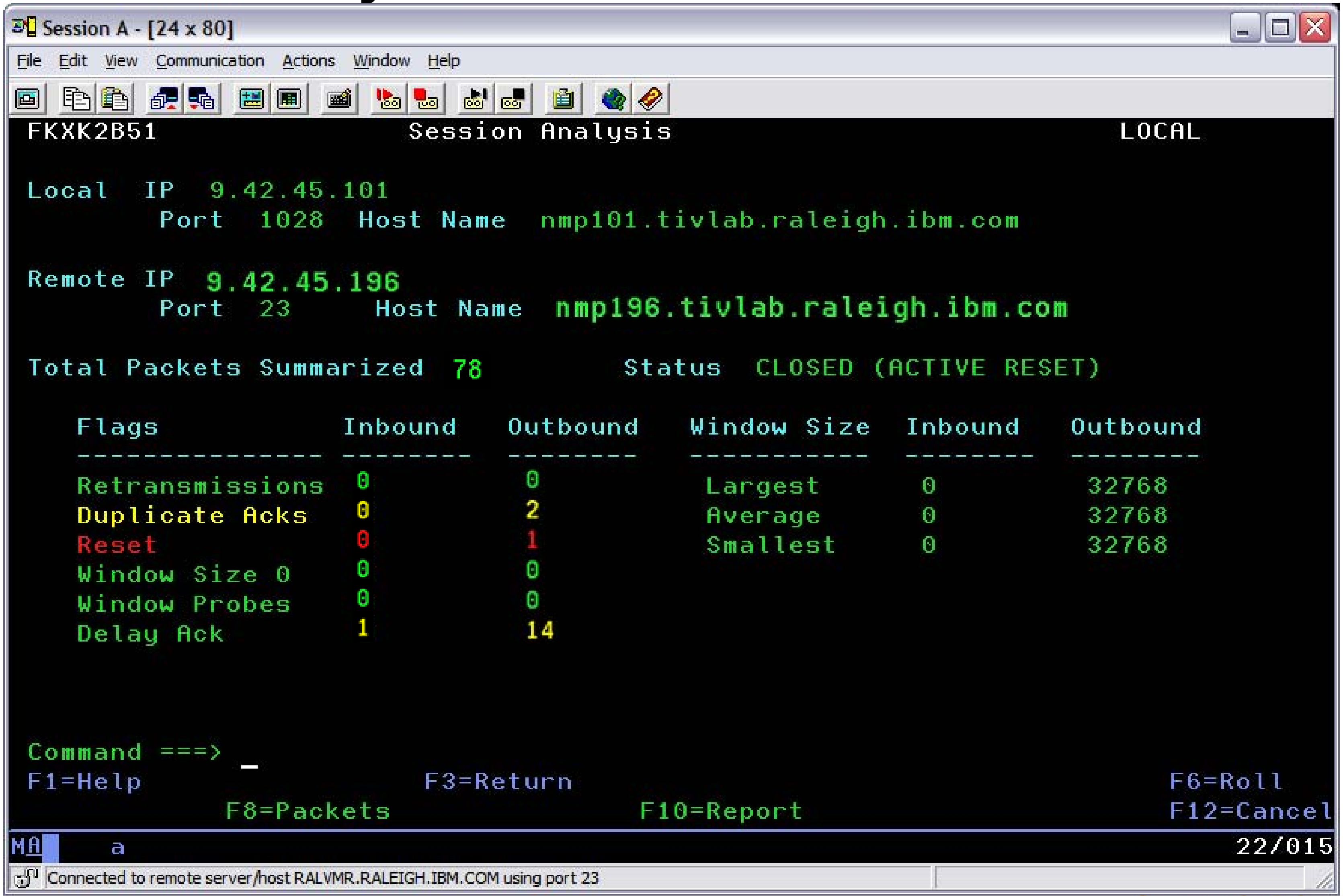


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
FKXK2B62                  Saved Packet Trace Details

Service Point/Stack: NMP101   Domain: LOCAL     Proc: TCPIP

Save Time: 01/17/11 15:28:00              by Operator   NETOP1

Description: MY TCP TRACE

Trace Start Time: 01/17/11 11:14:51               Packets:        78
Trace Last Time : 01/17/11 11:15:22

Local IP:   9.42.45.101

Remote IP:  9.42.45.196

Local Port: 1028    Remote Port: 23      Protocol: TCP

Interface Name: ALL



Command ===> _
F1=Help                F3=Return     F4=View Trace                  F6=Roll
                                                F11=Delete Trace F12=Cancel
MA     a                                                              22/015
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

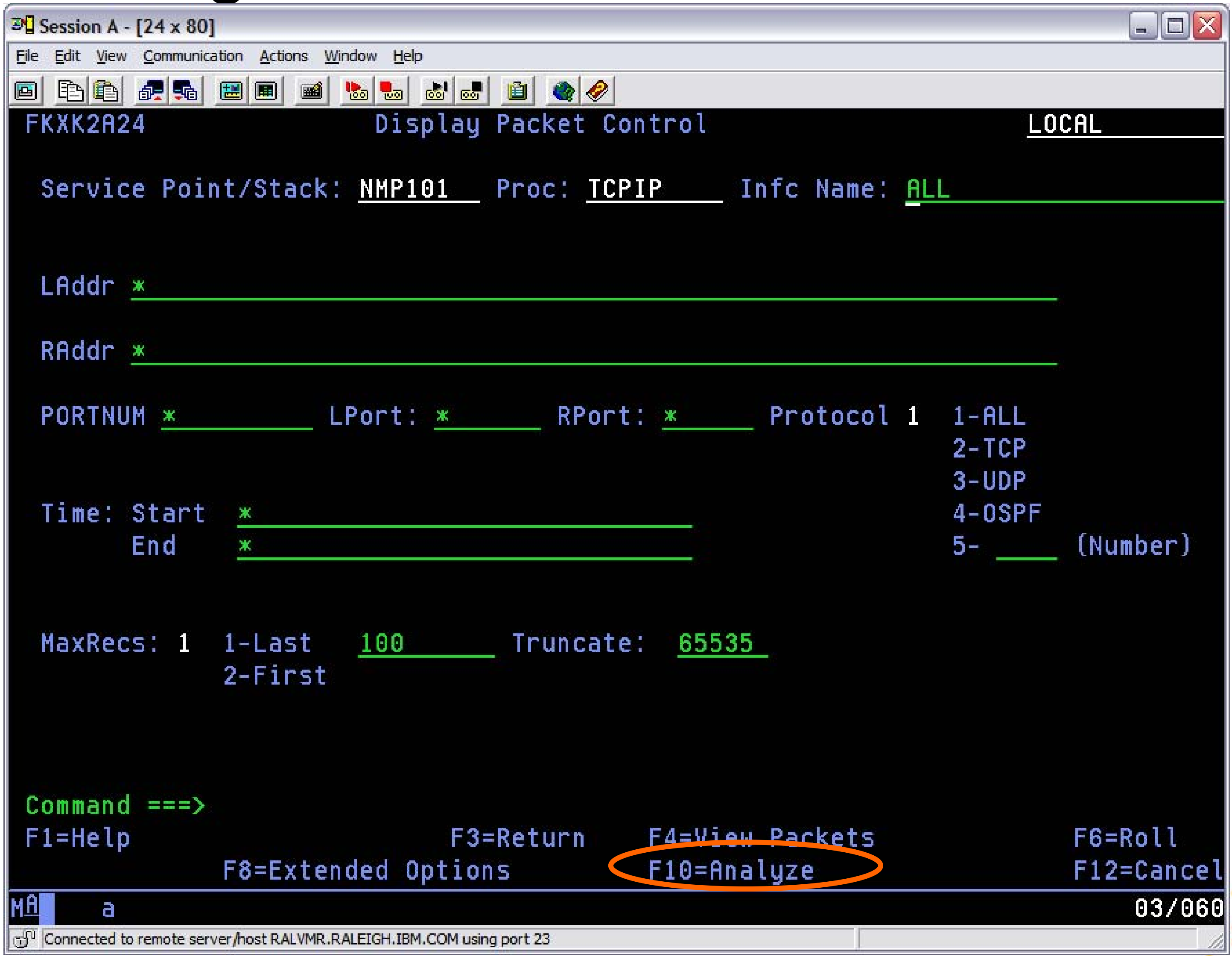
Trace Summary



```
FKXK2B51               Session Analysis                           LOCAL

Local  IP  9.42.45.101
        Port  1028  Host Name  nmp101.tivlab.raleigh.ibm.com

Remote IP  9.42.45.196
        Port  23     Host Name  nmp196.tivlab.raleigh.ibm.com

Total Packets Summarized  78        Status  CLOSED (ACTIVE RESET)

   Flags           Inbound   Outbound   Window Size  Inbound   Outbound
   --------------- --------  --------   -----------  --------  --------
   Retransmissions  0          0         Largest       0        32768
   Duplicate Acks   0          2         Average       0        32768
   Reset            0          1         Smallest      0        32768
   Window Size 0    0          0
   Window Probes    0          0
   Delay Ack        1          14



Command ===> _
F1=Help                 F3=Return                                    F6=Roll
            F8=Packets                F10=Report                     F12=Cancel
MA   a                                                                  22/015
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

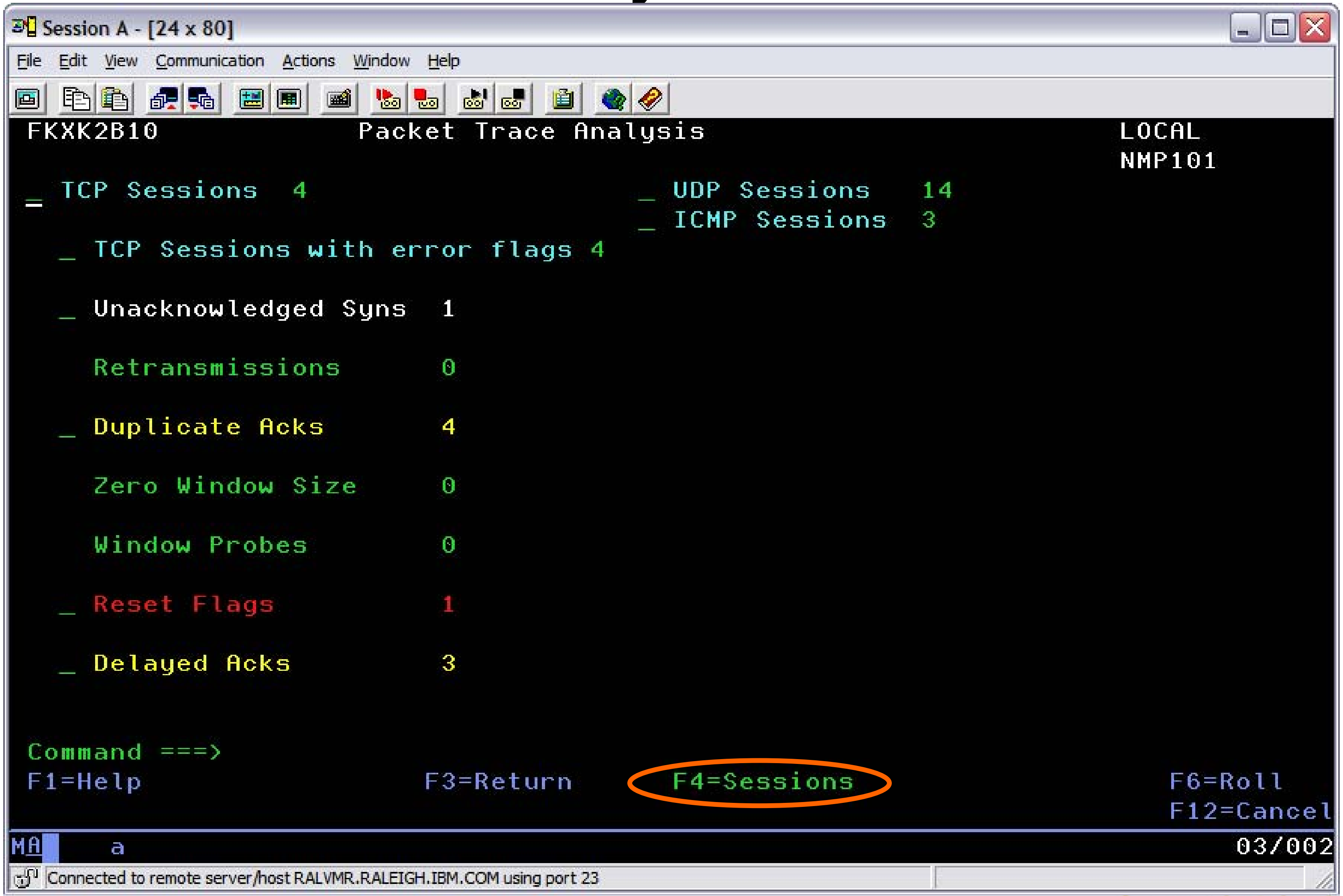
Returning to Trace Filter Screen


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
FKXK2A24                  Display Packet Control                      LOCAL

 Service Point/Stack: NMP101    Proc: TCPIP     Infc Name: ALL


 LAddr *

 RAddr *

 PORTNUM *         LPort: *        RPort: *       Protocol 1   1-ALL
                                                                2-TCP
                                                                3-UDP
 Time: Start  *                                                 4-OSPF
       End    *                                                 5-      (Number)


 MaxRecs: 1  1-Last    100       Truncate:  65535
             2-First




Command ===>
F1=Help                     F3=Return    F4=View Packets             F6=Roll
             F8=Extended Options          F10=Analyze                 F12=Cancel
MA     a                                                               03/060
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

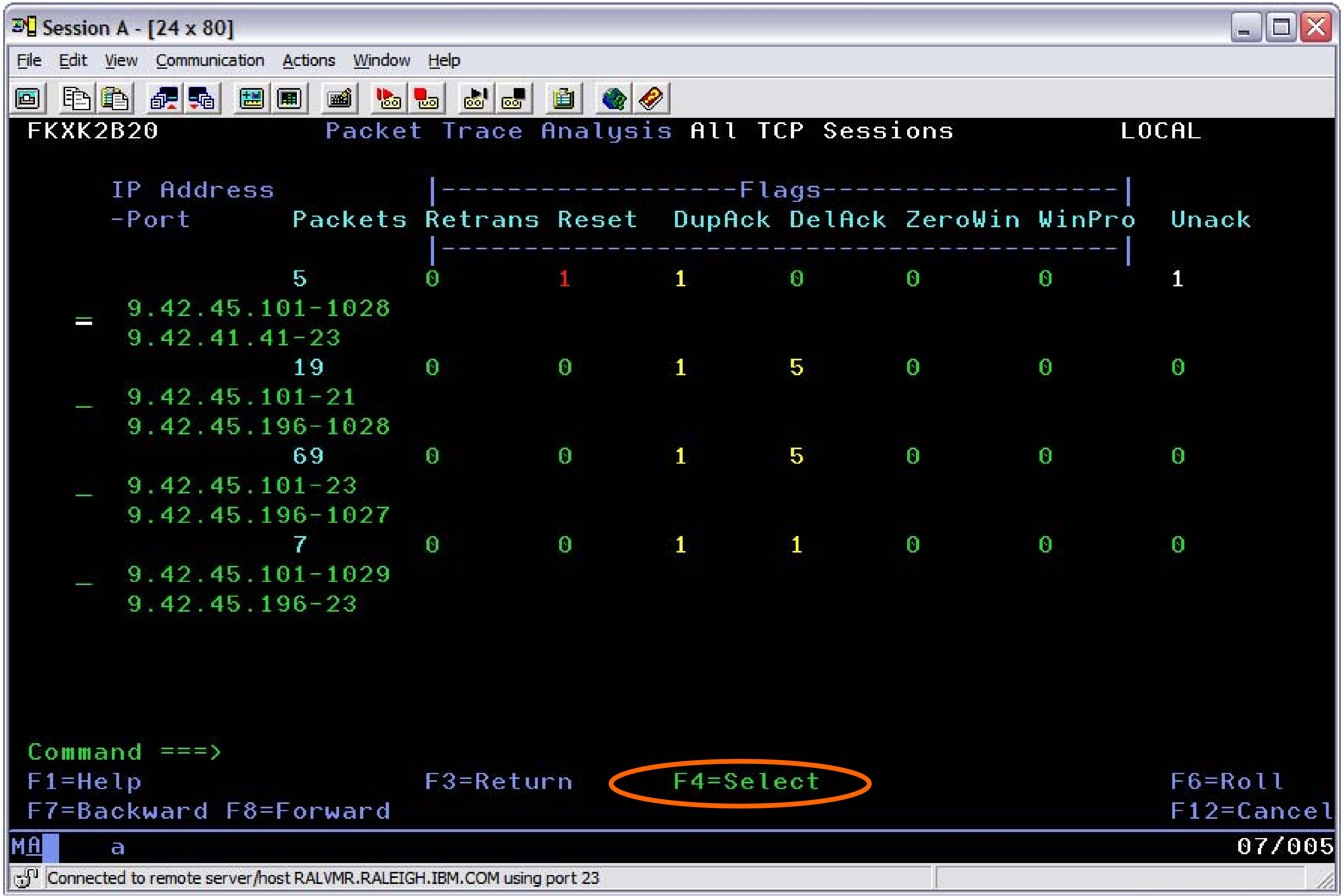
Choose sessions to analyze


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
 FKXK2B10            Packet Trace Analysis                           LOCAL
                                                                      NMP101
 _ TCP Sessions  4                          _ UDP Sessions   14
                                            _ ICMP Sessions  3
   _ TCP Sessions with error flags 4

   _ Unacknowledged Syns  1

     Retransmissions      0

   _ Duplicate Acks       4

     Zero Window Size     0

     Window Probes        0

   _ Reset Flags          1

   _ Delayed Acks         3


 Command ===>
 F1=Help                F3=Return     F4=Sessions                       F6=Roll
                                                                        F12=Cancel
MA     a                                                                03/002
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

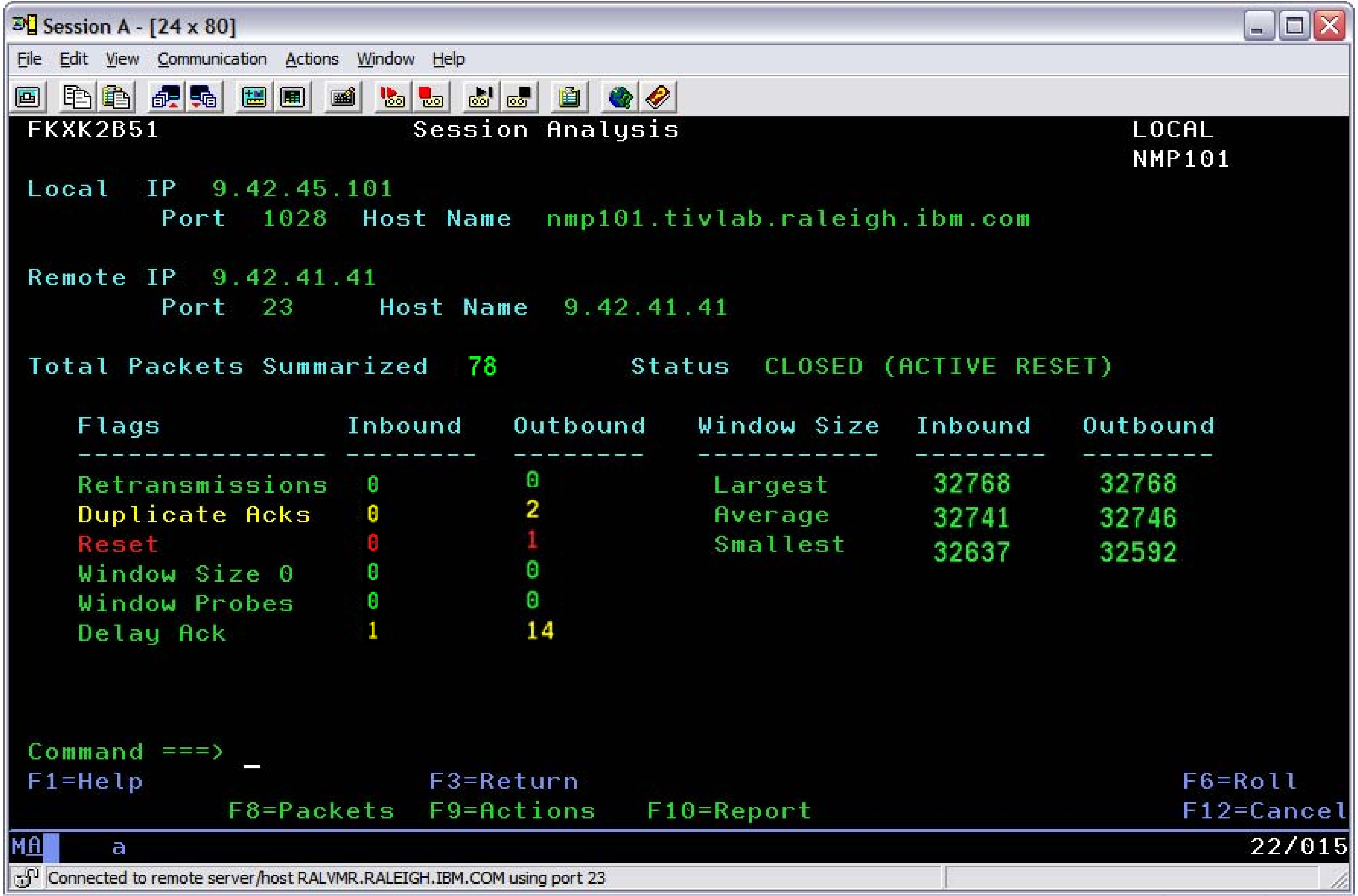
Select a session to examine


Session A - [24 x 80]
File
Edit
View
Communication
Actions
Window
Help

```
 FKXK2B20          Packet Trace Analysis All TCP Sessions          LOCAL

      IP Address         |------------------Flags------------------|
      -Port      Packets Retrans Reset  DupAck DelAck ZeroWin WinPro  Unack
                         |-----------------------------------------|
                 5       0       1      1      0      0       0       1
       9.42.45.101-1028
    =
       9.42.41.41-23
                 19      0       0      1      5      0       0       0
       9.42.45.101-21
    _
       9.42.45.196-1028
                 69      0       0      1      5      0       0       0
       9.42.45.101-23
    _
       9.42.45.196-1027
                 7       0       0      1      1      0       0       0
       9.42.45.101-1029
    _
       9.42.45.196-23




 Command ===>
 F1=Help                 F3=Return      F4=Select                     F6=Roll
 F7=Backward F8=Forward                                               F12=Cancel
MA     a                                                                 07/005
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

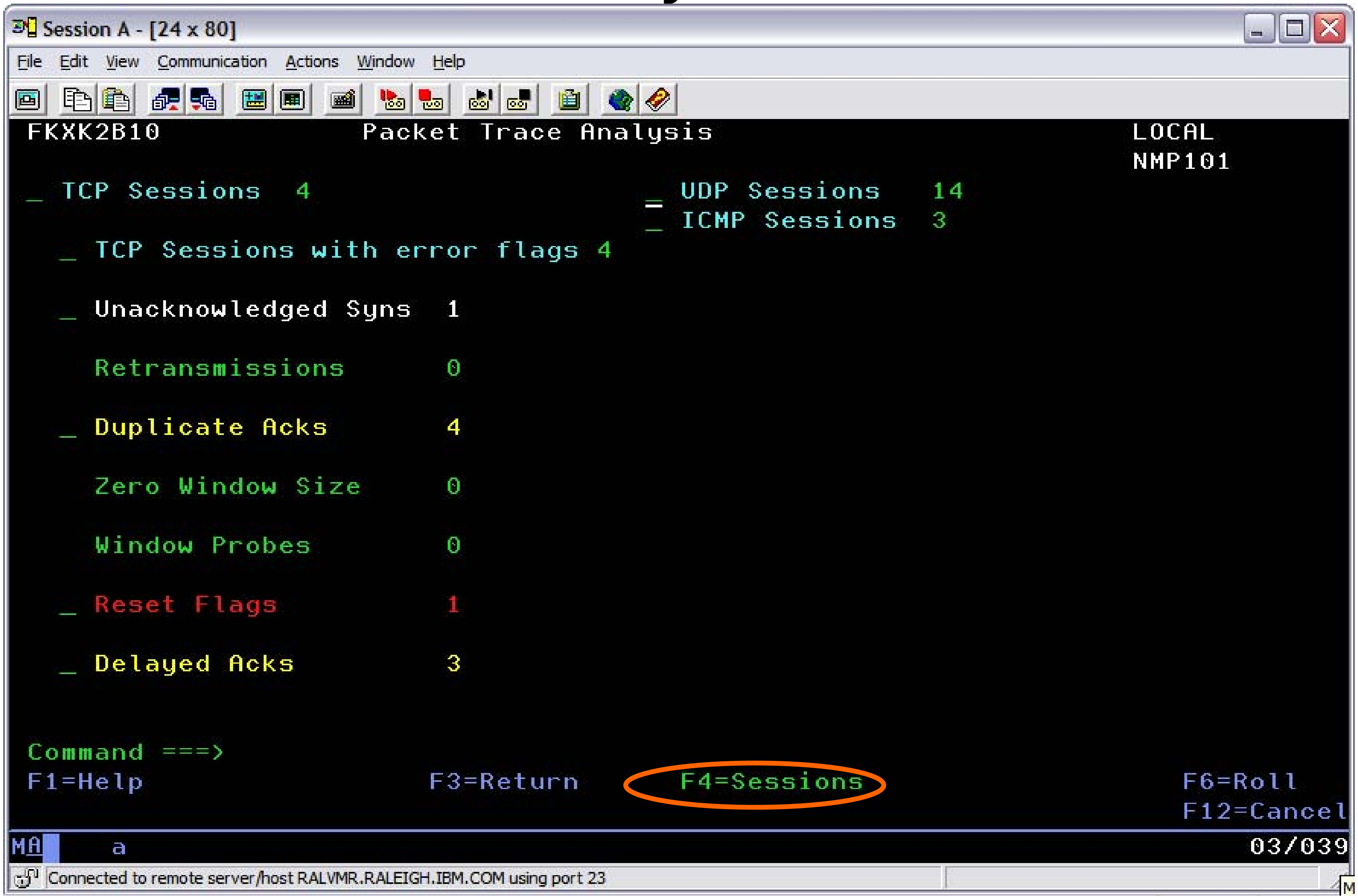
Summary analysis of selected session



```
FKXK2B51               Session Analysis                          LOCAL
                                                                  NMP101
Local  IP  9.42.45.101
        Port  1028  Host Name  nmp101.tivlab.raleigh.ibm.com

Remote IP  9.42.41.41
        Port  23     Host Name  9.42.41.41

Total Packets Summarized  78         Status  CLOSED (ACTIVE RESET)

   Flags            Inbound   Outbound   Window Size  Inbound   Outbound
   ---------------  --------  --------   -----------  --------  --------
   Retransmissions   0         0          Largest      32768     32768
   Duplicate Acks    0         2          Average      32741     32746
   Reset             0         1          Smallest     32637     32592
   Window Size 0     0         0
   Window Probes     0         0
   Delay Ack         1         14



Command ===>  _
F1=Help                 F3=Return                                F6=Roll
            F8=Packets  F9=Actions   F10=Report                  F12=Cancel
MA     a                                                           22/015
```

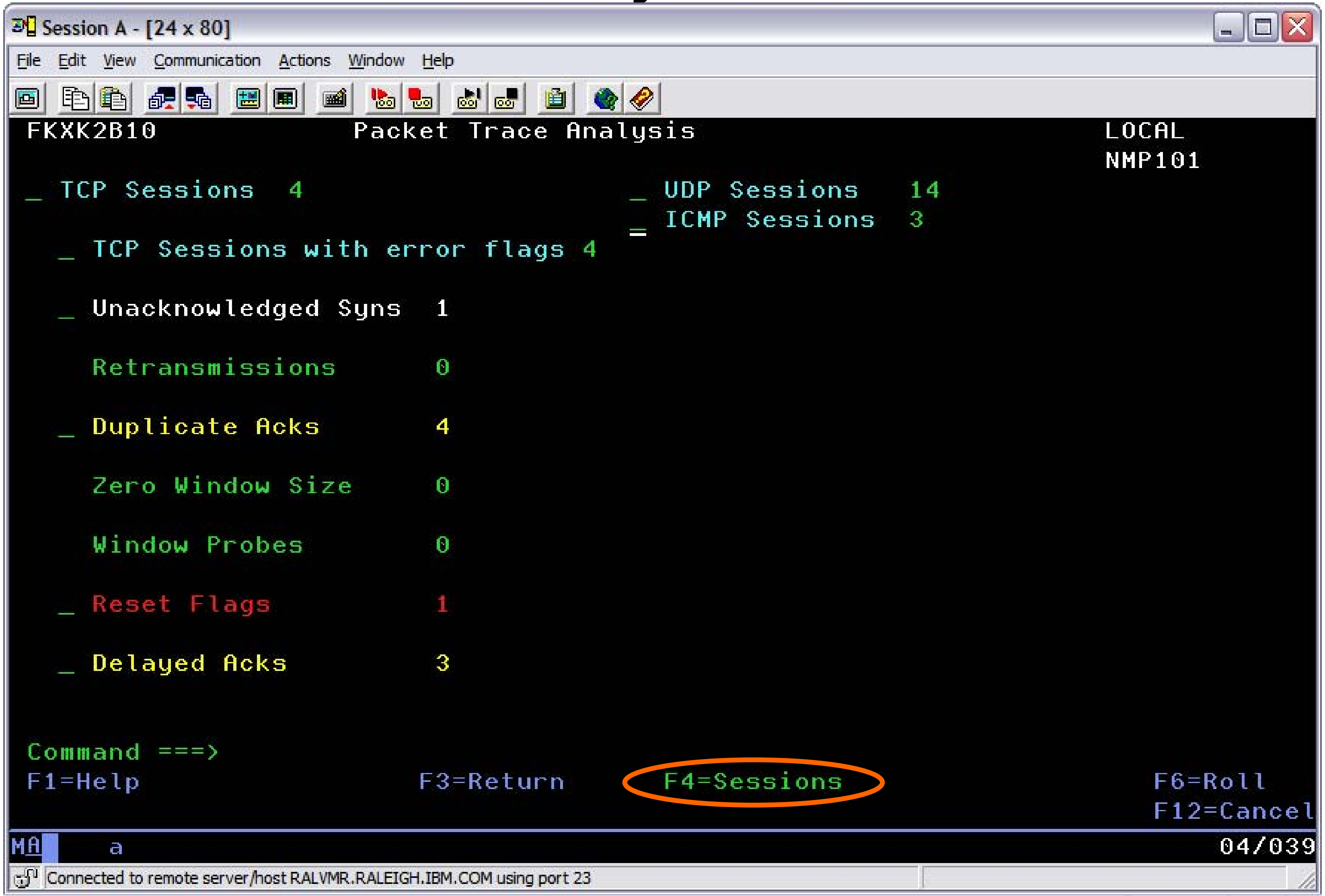
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Choose sessions to analyze – UDP


Session A - [24 x 80]
File
Edit
View
Communication
Actions
Window
Help

```
FKXK2B10            Packet Trace Analysis                          LOCAL
                                                                   NMP101
_ TCP Sessions  4                          _ UDP Sessions   14
                                           _ ICMP Sessions  3
  _ TCP Sessions with error flags 4

  _ Unacknowledged Syns  1

    Retransmissions      0

  _ Duplicate Acks       4

    Zero Window Size     0

    Window Probes        0

  _ Reset Flags          1

  _ Delayed Acks         3


Command ===>
F1=Help                F3=Return     F4=Sessions                    F6=Roll
                                                                    F12=Cancel
MA     a                                                            03/039
Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23
```

Choose sessions to analyze – ICMP


Session A - [24 x 80]
File Edit View Communication Actions Window Help

```
FKXK2B10              Packet Trace Analysis                            LOCAL
                                                                       NMP101
_ TCP Sessions  4                             _ UDP Sessions   14
                                              = ICMP Sessions  3
  _ TCP Sessions with error flags 4

  _ Unacknowledged Syns  1

    Retransmissions      0

  _ Duplicate Acks       4

    Zero Window Size     0

    Window Probes        0

  _ Reset Flags          1

  _ Delayed Acks         3


Command ===>
F1=Help                F3=Return       F4=Sessions                      F6=Roll
                                                                        F12=Cancel
MA     a                                                                04/039
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Scenario: Analyze a Specific TCP Session

The problem

A performance problem is reported against an FTP application

Actions

- The system programmer runs a packet trace against the application.
- He examines the summary packets list in IPTRACE.
- He sees a series of outbound packets, but no inbound packets for this application for a single host.
- The system programmer selects a packet and uses Trace Session Report (command option 7) to analyze the session.
- He sees that there is a large number of retransmissions on the outbound side, indicating a problem with the remote host.

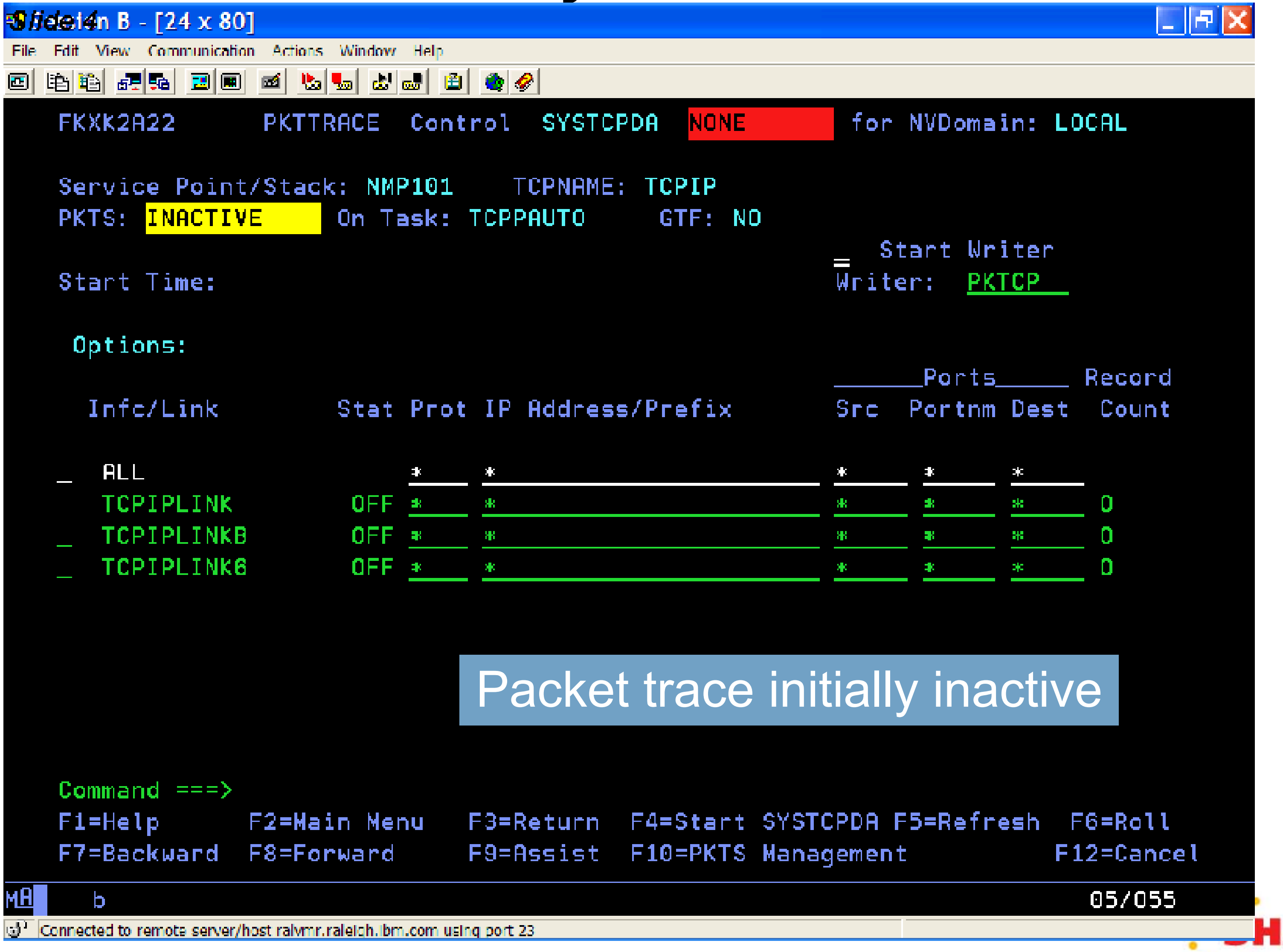
Agenda

- Timeline
- Smart Packet Collection
- Packet Trace on the fly
- Expanded Log Browse
- NetView Web Application
- Enterprise Integration
- Serviceability
- GDPS Active/Active

Packet trace on the fly

- Why?
  - When monitoring a connection, you may find you need to trace the packets flowing on that connection.
- How?
  - IPSTAT function
    - Connection management and debugging capabilities for all connections through a given stack.
    - NEW → You can start the IPTRACE function from the IPSTAT screens. This means you can start the packet trace from an IP connection you've already selected.

Packet trace on the fly

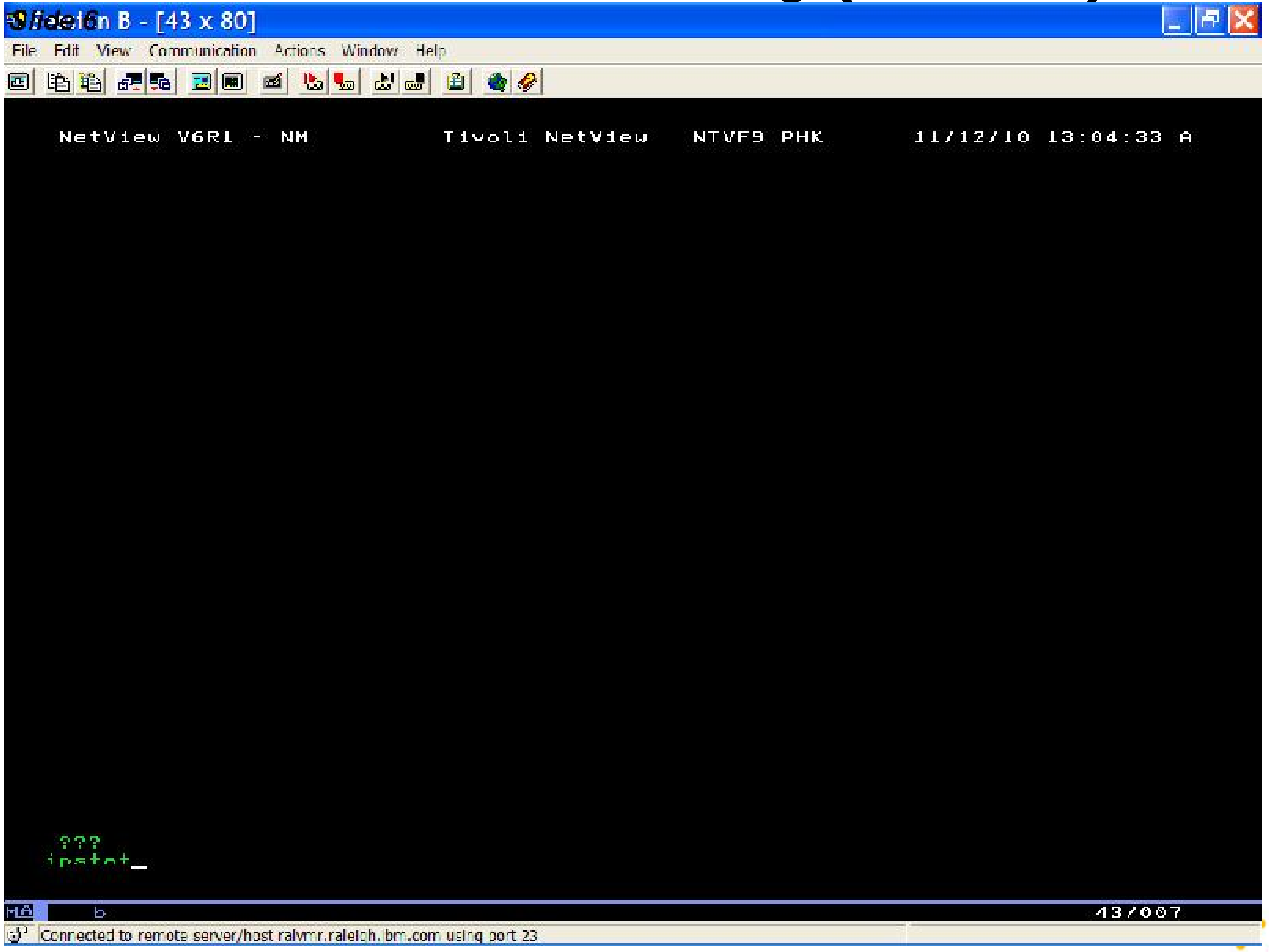


```
FKXK2A22      PKTTRACE  Control  SYSTCPDA   NONE       for NVDomain: LOCAL

Service Point/Stack: NMP101    TCPNAME: TCPIP
PKTS: INACTIVE     On Task: TCPPAUTO     GTF: NO
                                                      =  Start Writer
Start Time:                                          Writer:  PKTCP

 Options:
                                                     ______Ports_____  Record
  Infc/Link          Stat Prot IP Address/Prefix     Src  Portnm Dest  Count

_  ALL                    *    *                      *    *     *
   TCPIPLINK         OFF  *    *                      *    *     *      0
_  TCPIPLINKB        OFF  *    *                      *    *     *      0
_  TCPIPLINK6        OFF  *    *                      *    *     *      0

Command ===>
F1=Help      F2=Main Menu    F3=Return  F4=Start SYSTCPDA F5=Refresh  F6=Roll
F7=Backward  F8=Forward      F9=Assist  F10=PKTS Management          F12=Cancel
MA    b                                                                 05/055
```

Connected to remote server/host ralvmr.raleigh.ibm.com using port 23

Packet trace initially inactive

Start Connection Monitoring (IPSTAT)

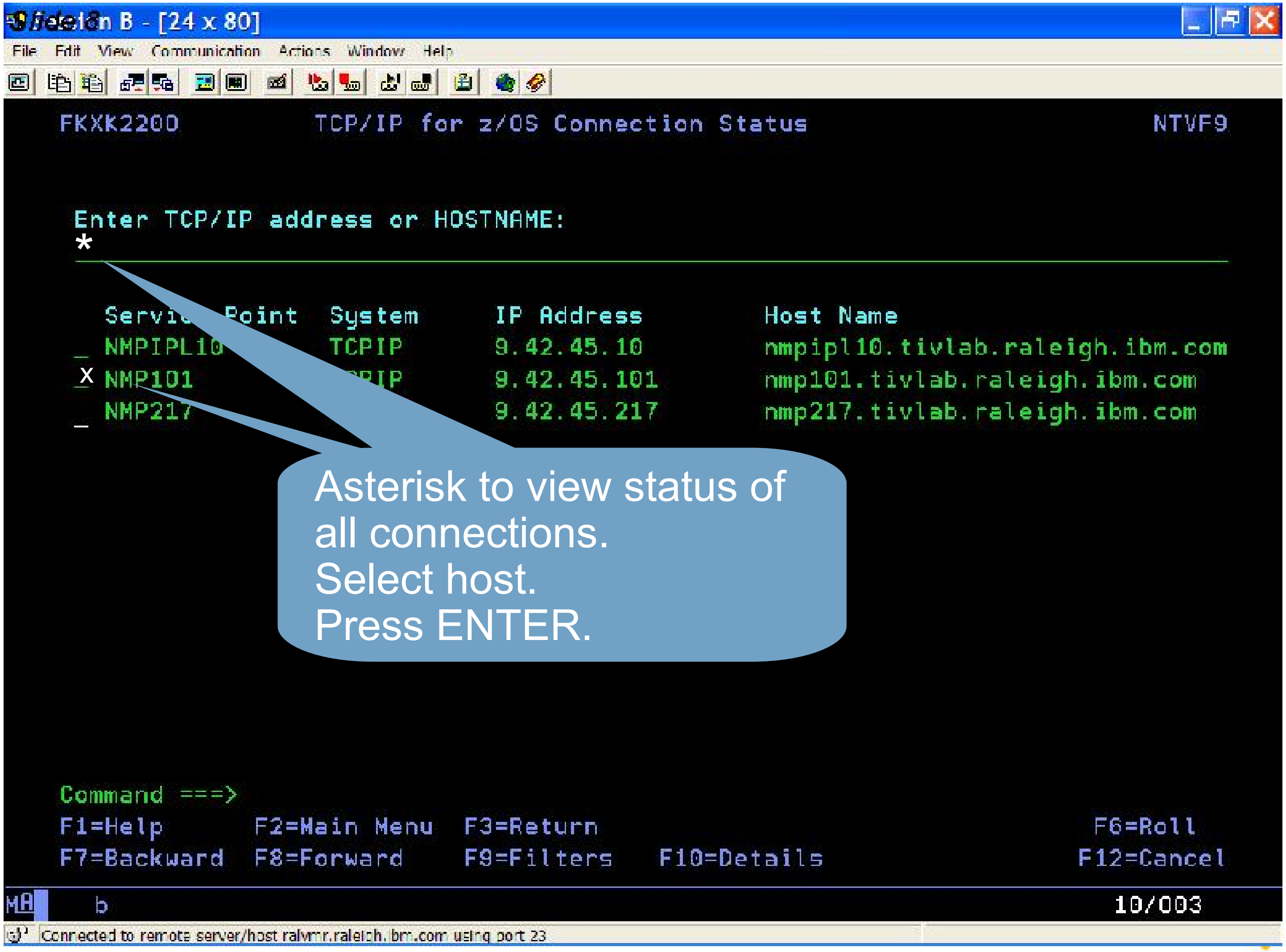

Session B - [43 x 80]
File
Edit
View
Communication
Actions
Window
Help

```
  NetView V6R1 - NM          Tivoli NetView   NTVF9 PHK      11/12/10 13:04:33 A




  ???
 ipstat_
```

```
MA      b                                                             43/007
```

Connected to remote server/host ralvmr.raleigh.ibm.com using port 23

Select host and connections



Session B - [24 x 80]
File Edit View Communication Actions Window Help

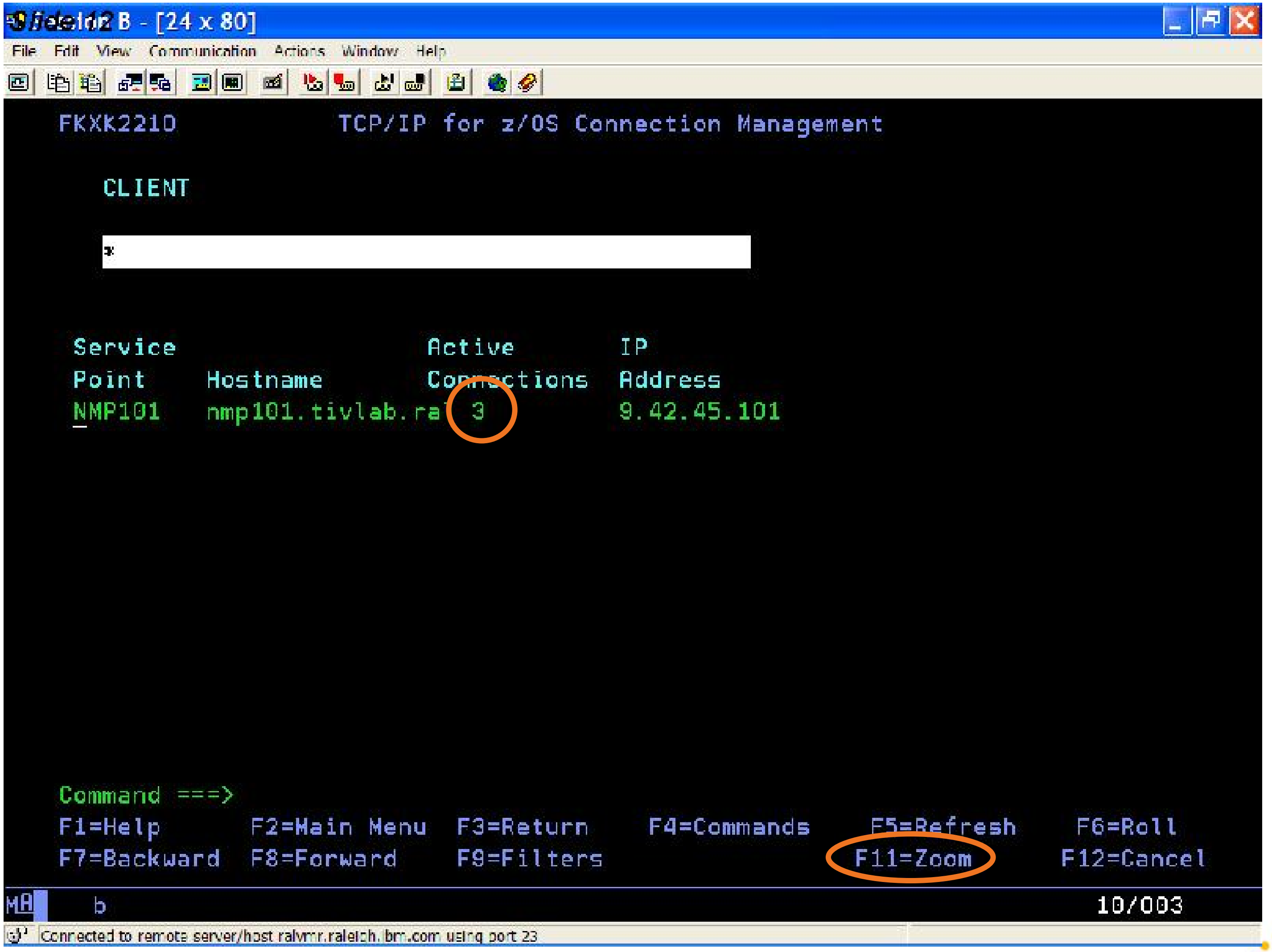
```
FKXK2200          TCP/IP for z/OS Connection Status                  NTVF9


  Enter TCP/IP address or HOSTNAME:
  *
  ____________________________________________________________________________

    Servi   Point  System      IP Address       Host Name
  _ NMPIPL10       TCPIP       9.42.45.10       nmpipl10.tivlab.raleigh.ibm.com
  x NMP101           PIP       9.42.45.101      nmp101.tivlab.raleigh.ibm.com
  _ NMP217                     9.42.45.217      nmp217.tivlab.raleigh.ibm.com
  _









Command ===>
F1=Help       F2=Main Menu  F3=Return                                F6=Roll
F7=Backward   F8=Forward    F9=Filters    F10=Details                F12=Cancel
```

```
MA      b                                                            10/003
```

Connected to remote server/host ralvmr.raleigh.ibm.com using port 23

Asterisk to view status of all connections.
Select host.
Press ENTER.

Active connections

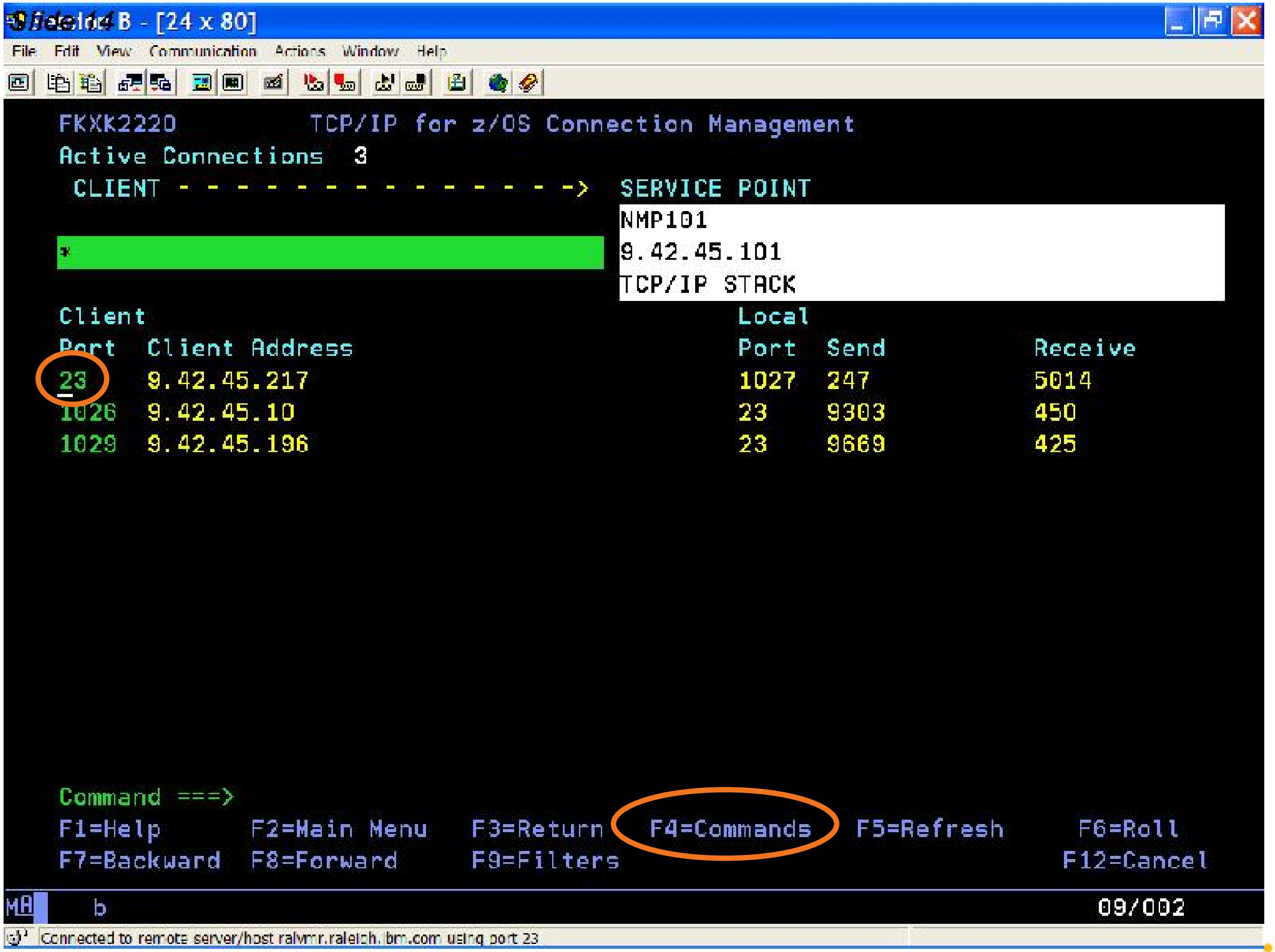


Session B - [24 x 80]
File Edit View Communication Actions Window Help

```
   FKXK2210            TCP/IP for z/OS Connection Management

      CLIENT

      *


    Service                  Active        IP
    Point     Hostname       Connections   Address
    NMP101    nmp101.tivlab.ra  3          9.42.45.101













   Command ===>
   F1=Help      F2=Main Menu  F3=Return    F4=Commands    F5=Refresh    F6=Roll
   F7=Backward  F8=Forward    F9=Filters                  F11=Zoom     F12=Cancel
MA     b                                                               10/003
```

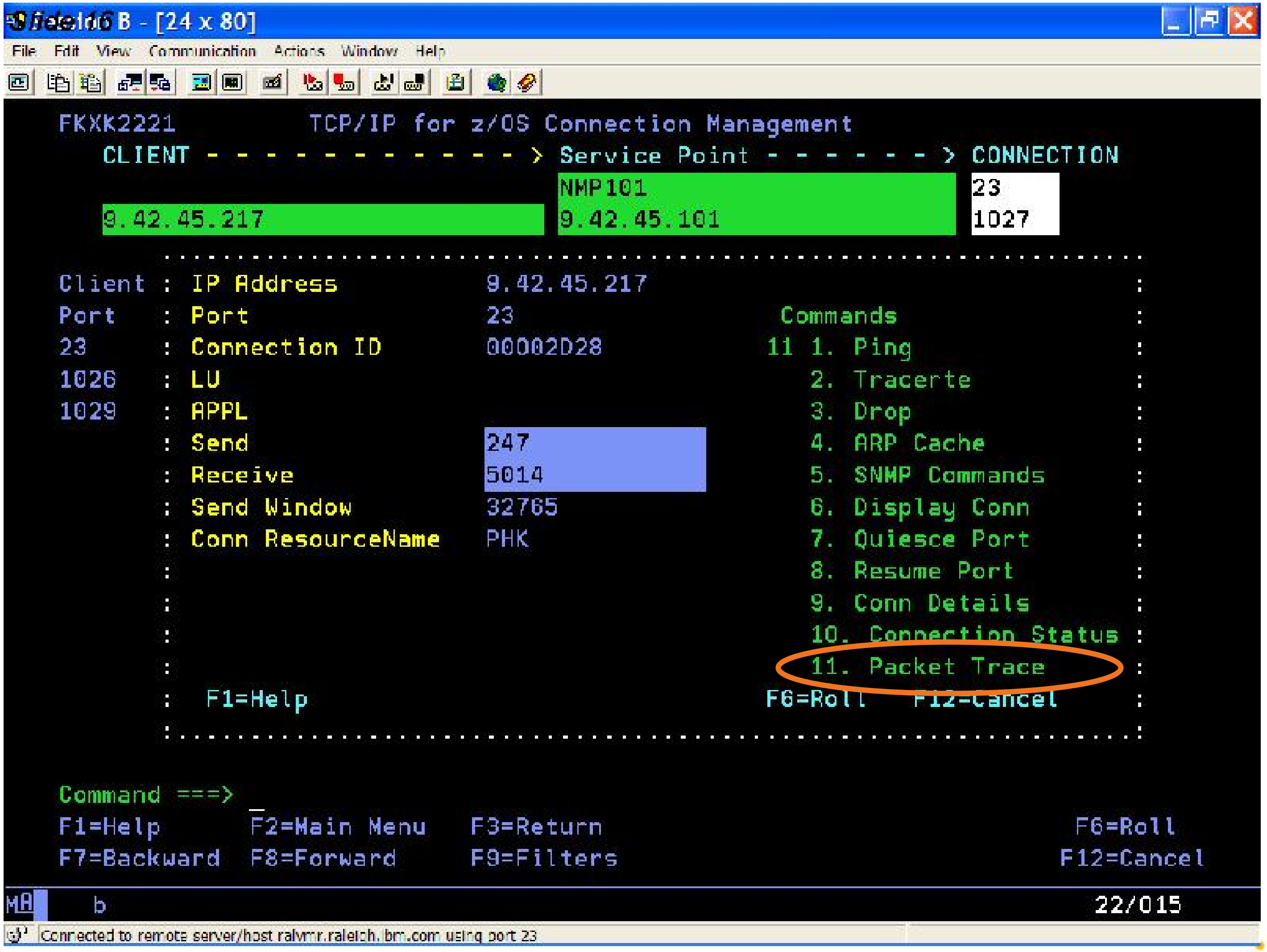
Connected to remote server/host ralvmr.raleigh.ibm.com using port 23

List of active connections


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

```
FKXK2220          TCP/IP for z/OS Connection Management
Active Connections   3
 CLIENT - - - - - - - - - - - - - - ->  SERVICE POINT
                                        NMP101
*                                       9.42.45.101
                                        TCP/IP STACK

Client                                          Local
Port   Client Address                           Port   Send          Receive
23     9.42.45.217                              1027   247           5014
1026   9.42.45.10                               23     9303          450
1029   9.42.45.196                              23     9669          425










Command ===>
F1=Help      F2=Main Menu   F3=Return   F4=Commands   F5=Refresh    F6=Roll
F7=Backward  F8=Forward     F9=Filters                             F12=Cancel
MA     b                                                            09/002
Connected to remote server/host ralvmr.raleigh.ibm.com using port 23
```

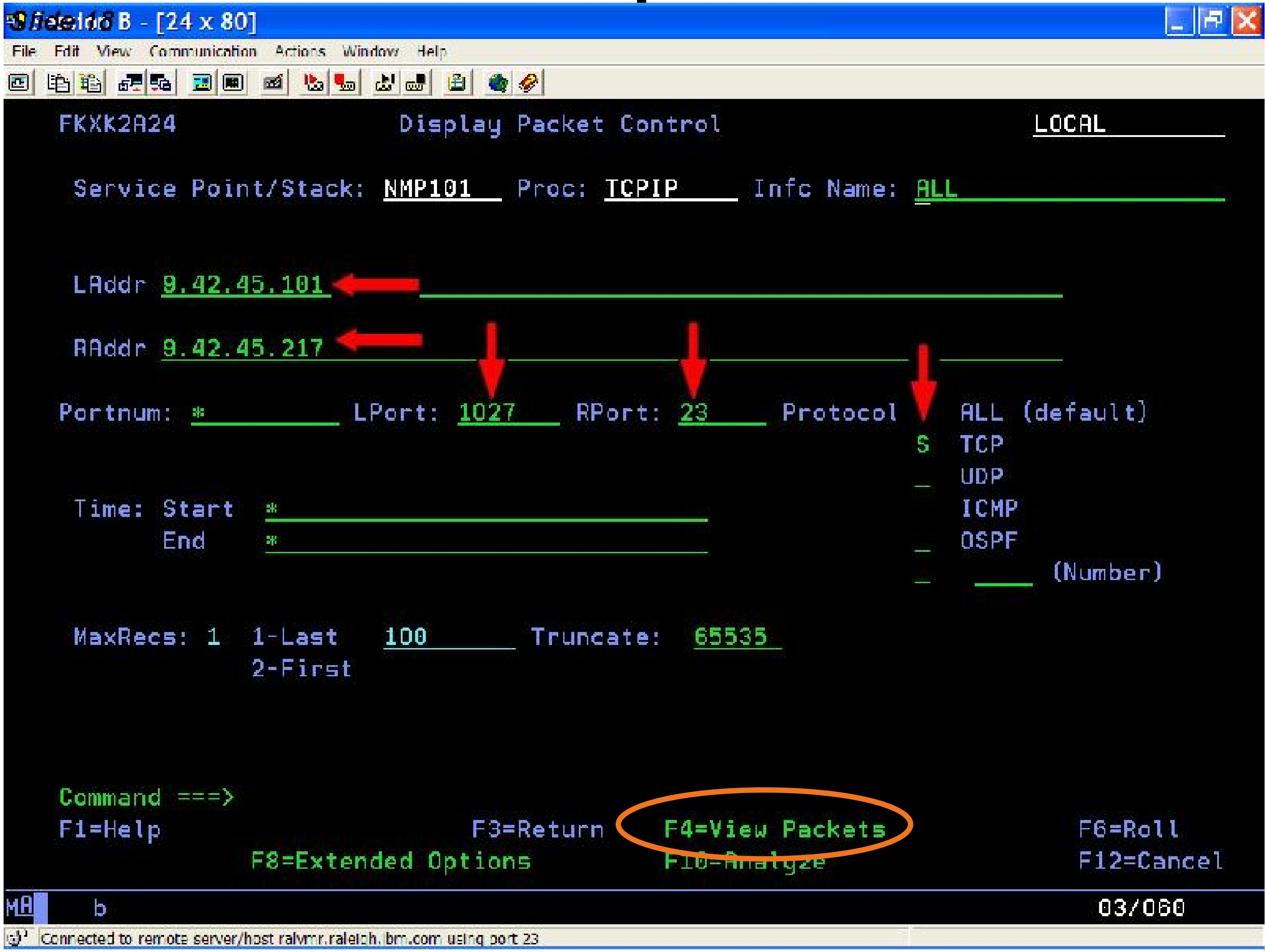
Available commands



```
  FKXK2221          TCP/IP for z/OS Connection Management
     CLIENT - - - - - - - - - - - - > Service Point - - - - - - > CONNECTION
                                      NMP101                       23
     9.42.45.217                      9.42.45.101                  1027
           . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  Client : IP Address          9.42.45.217                         :
  Port   : Port                23               Commands           :
  23     : Connection ID       00002D28        11 1. Ping          :
  1026   : LU                                     2. Tracerte      :
  1029   : APPL                                   3. Drop          :
         : Send                247                4. ARP Cache     :
         : Receive             5014               5. SNMP Commands :
         : Send Window         32765              6. Display Conn  :
         : Conn ResourceName   PHK                7. Quiesce Port  :
         :                                        8. Resume Port   :
         :                                        9. Conn Details  :
         :                                        10. Connection Status :
         :                                        11. Packet Trace :
         :  F1=Help                          F6=Roll     F12=Cancel :
         : . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . :

  Command ===> _
  F1=Help      F2=Main Menu    F3=Return                         F6=Roll
  F7=Backward  F8=Forward      F9=Filters                       F12=Cancel
MA    b                                                         22/015
```

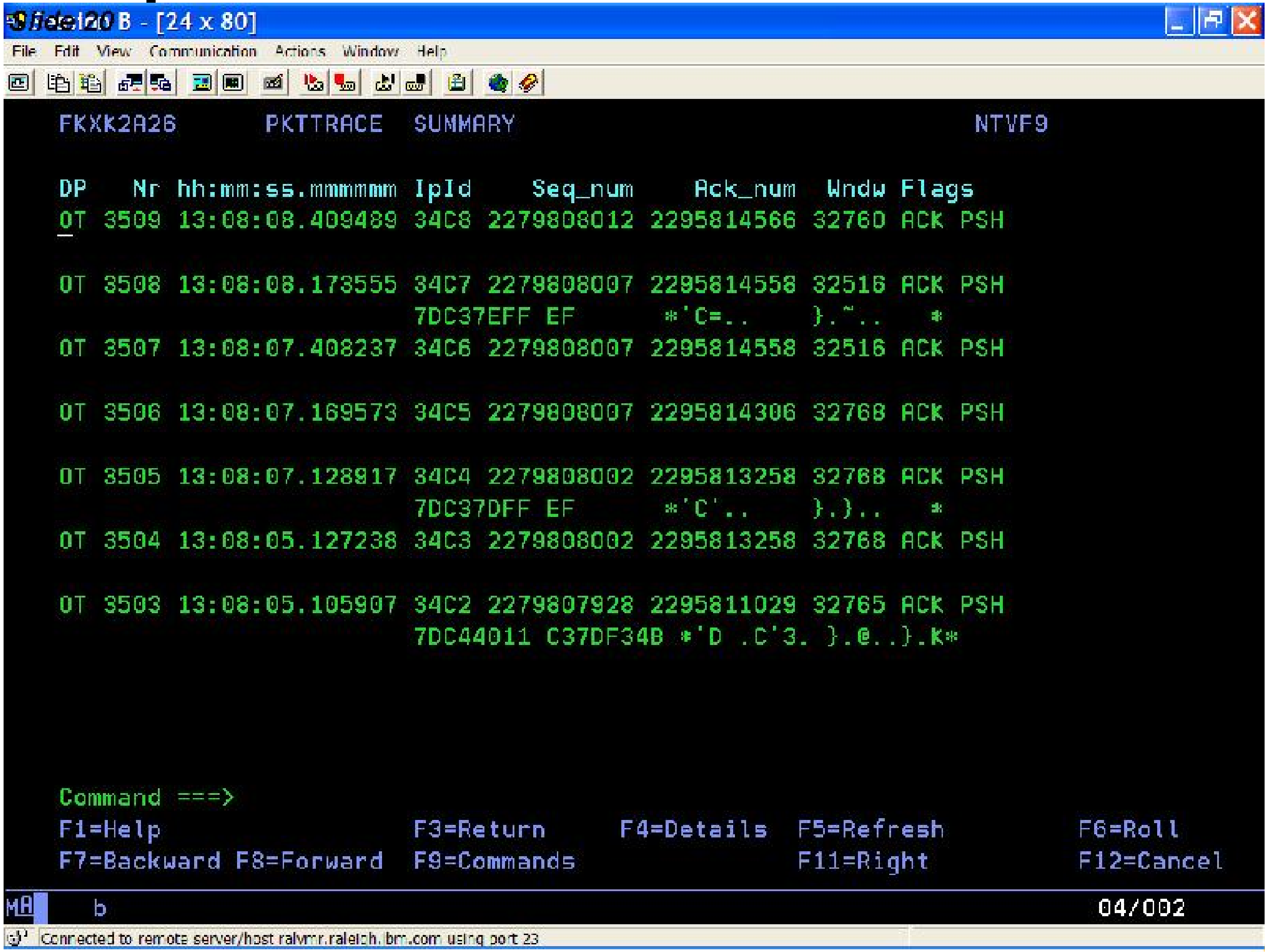
Connected to remote server/host ralvmr.raleigh.ibm.com using port 23

Control selections for packet trace


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

```
  FKXK2A24                 Display Packet Control                   LOCAL

   Service Point/Stack: NMP101   Proc: TCPIP     Infc Name: ALL


   LAddr 9.42.45.101

   RAddr 9.42.45.217

  Portnum: *          LPort: 1027     RPort: 23       Protocol    ALL (default)
                                                            S   TCP
                                                            _   UDP
   Time: Start  *                                               ICMP
               End    *                                     _   OSPF
                                                            _      ____  (Number)

   MaxRecs: 1  1-Last   100        Truncate:   65535
               2-First



  Command ===>
  F1=Help                     F3=Return     F4=View Packets               F6=Roll
              F8=Extended Options           F10=Analyze                   F12=Cancel
MA     b                                                                 03/060
Connected to remote server/host ralvmr.raleigh.ibm.com using port 23
```

List of packets

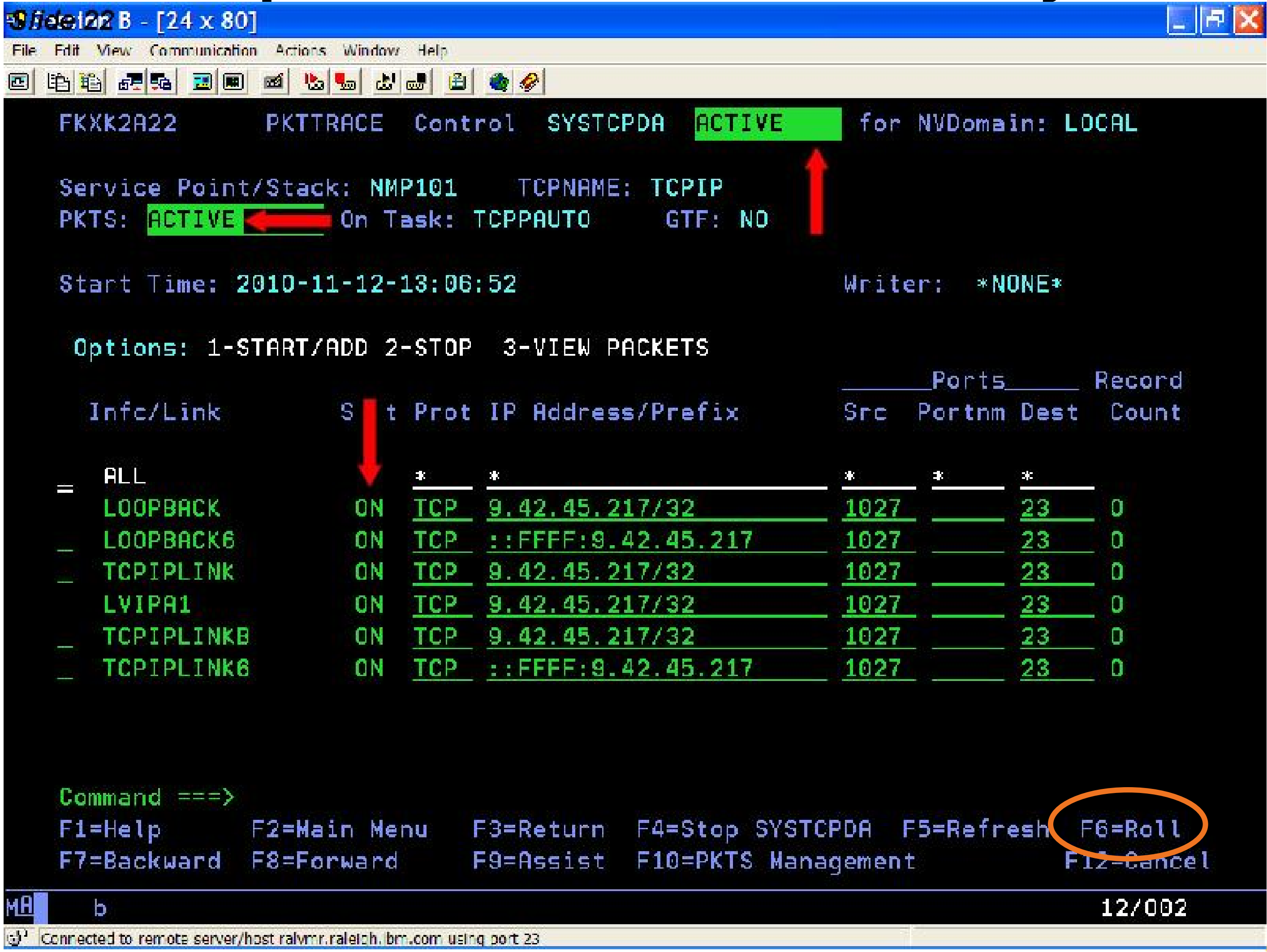


```
FKXK2A26      PKTTRACE  SUMMARY                               NTVF9

DP   Nr hh:mm:ss.mmmmmm IpId    Seq_num    Ack_num  Wndw Flags
OT 3509 13:08:08.409489 34C8 2279808012 2295814566 32760 ACK PSH

OT 3508 13:08:08.173555 34C7 2279808007 2295814558 32516 ACK PSH
                        7DC37EFF EF      *'C=..    }.~..   *
OT 3507 13:08:07.408237 34C6 2279808007 2295814558 32516 ACK PSH

OT 3506 13:08:07.169573 34C5 2279808007 2295814306 32768 ACK PSH

OT 3505 13:08:07.128917 34C4 2279808002 2295813258 32768 ACK PSH
                        7DC37DFF EF      *'C'..    }.}..   *
OT 3504 13:08:05.127238 34C3 2279808002 2295813258 32768 ACK PSH

OT 3503 13:08:05.105907 34C2 2279807928 2295811029 32765 ACK PSH
                        7DC44011 C37DF34B *'D .C'3. }.@..}.K*




Command ===>
F1=Help                 F3=Return     F4=Details  F5=Refresh         F6=Roll
F7=Backward F8=Forward  F9=Commands               F11=Right          F12=Cancel
```

```
     b
```

Connected to remote server/host ralvmr.raleigh.ibm.com using port 23

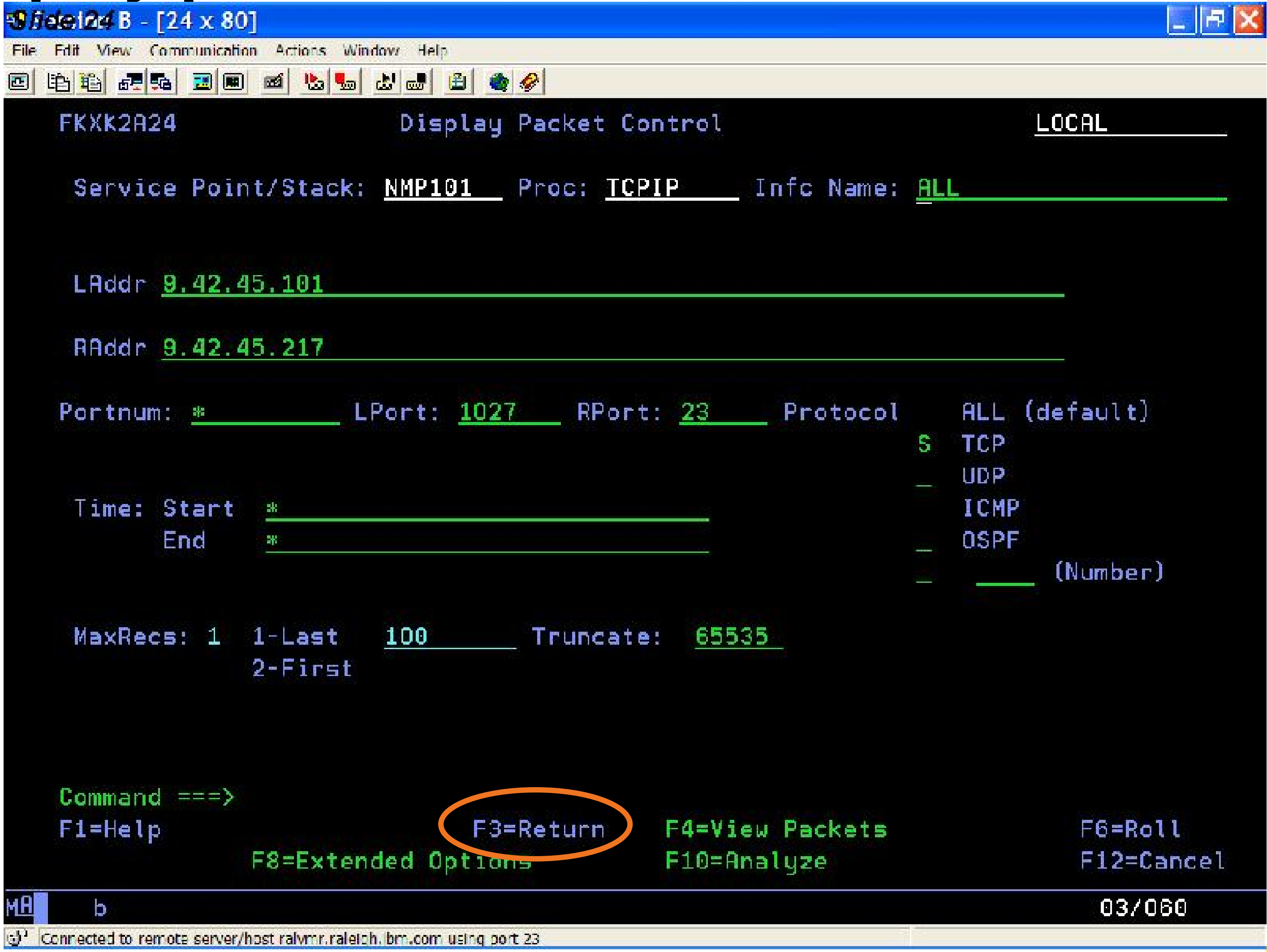
Trace components started on the fly



```
FKXK2A22      PKTTRACE  Control  SYSTCPDA  ACTIVE     for NVDomain: LOCAL

Service Point/Stack: NMP101    TCPNAME: TCPIP
PKTS: ACTIVE         On Task: TCPPAUTO     GTF: NO

Start Time: 2010-11-12-13:06:52                     Writer:   *NONE*

 Options: 1-START/ADD 2-STOP  3-VIEW PACKETS
                                                    ______Ports_____  Record
  Infc/Link         S  t Prot IP Address/Prefix     Src  Portnm Dest   Count

   ALL                   *    *                     *    *      *
=  LOOPBACK         ON   TCP  9.42.45.217/32        1027        23     0
_  LOOPBACK6        ON   TCP  ::FFFF:9.42.45.217    1027        23     0
_  TCPIPLINK        ON   TCP  9.42.45.217/32        1027        23     0
   LVIPA1           ON   TCP  9.42.45.217/32        1027        23     0
_  TCPIPLINKB       ON   TCP  9.42.45.217/32        1027        23     0
_  TCPIPLINK6       ON   TCP  ::FFFF:9.42.45.217    1027        23     0


Command ===>
F1=Help       F2=Main Menu   F3=Return  F4=Stop SYSTCPDA  F5=Refresh  F6=Roll
F7=Backward   F8=Forward     F9=Assist  F10=PKTS Management          F12=Cancel
MA     b                                                             12/002
```

Connected to remote server/host ralvmr.raleigh.ibm.com using port 23

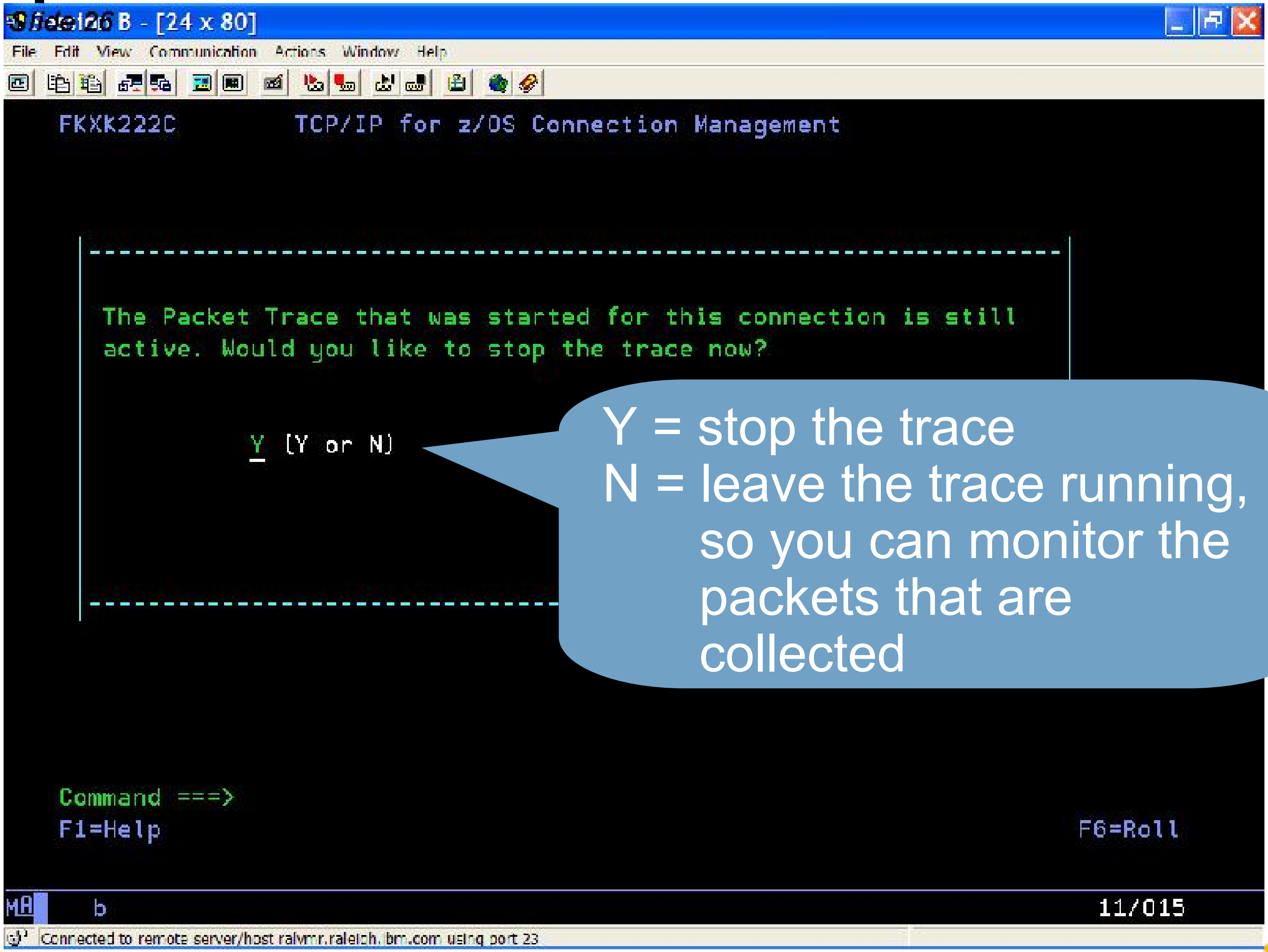
Display packet control


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

```
  FKXK2A24                Display Packet Control                        LOCAL

   Service Point/Stack: NMP101   Proc: TCPIP     Infc Name: ALL


   LAddr 9.42.45.101

   RAddr 9.42.45.217

  Portnum: *          LPort: 1027     RPort: 23      Protocol     ALL  (default)
                                                            S   TCP
                                                            _   UDP
   Time: Start   *                                              ICMP
         End     *                                          _   OSPF
                                                            _        (Number)

   MaxRecs: 1  1-Last   100       Truncate:  65535
               2-First



  Command ===>
  F1=Help                    F3=Return       F4=View Packets              F6=Roll
               F8=Extended Options           F10=Analyze                  F12=Cancel
MA     b                                                                03/060
```

Connected to remote server/host ralvmr.raleigh.ibm.com using port 23

Stop trace?

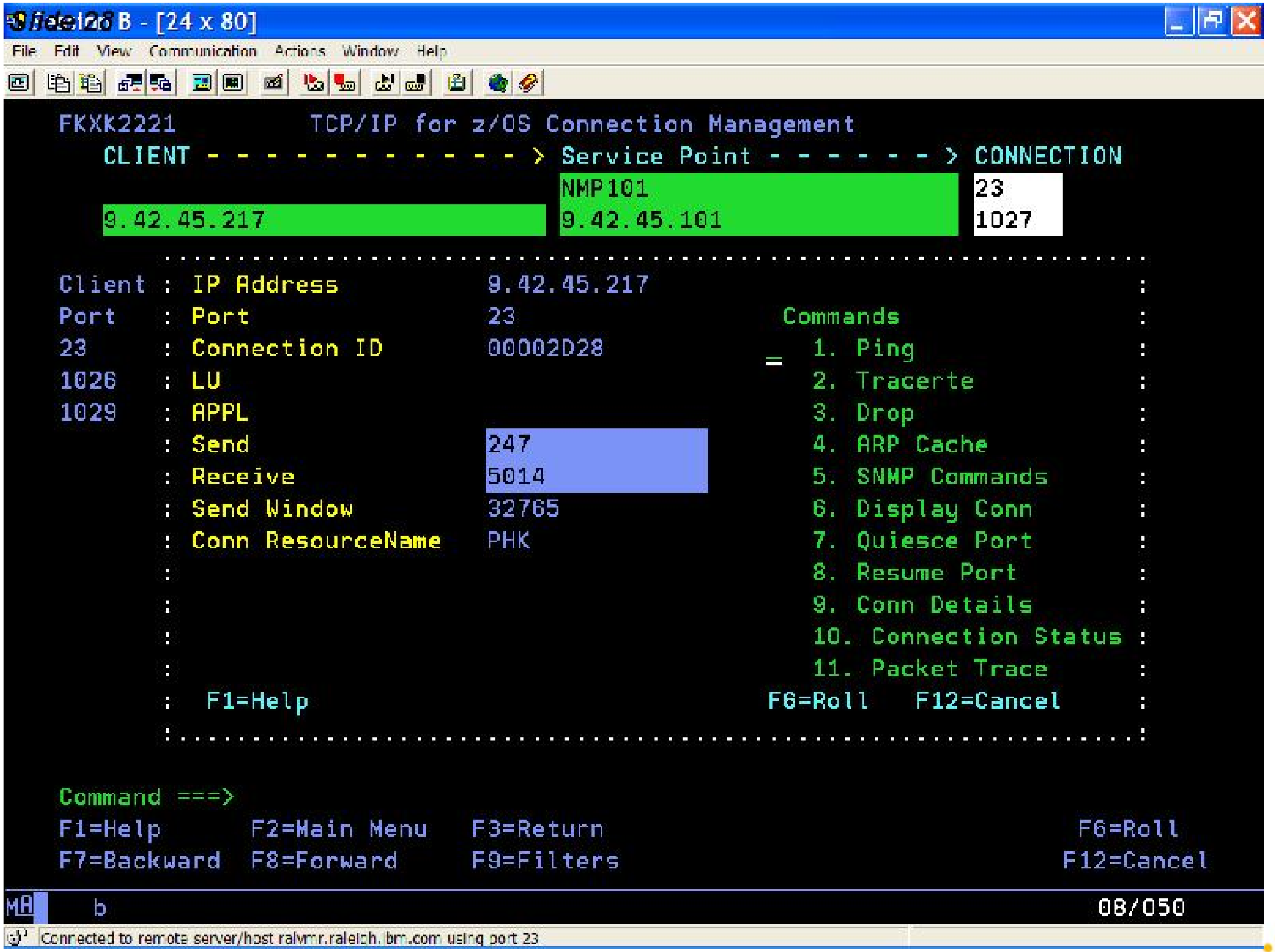

B - [24 x 80]
File Edit View Communication Actions Window Help

```
FKXK222C        TCP/IP for z/OS Connection Management

 The Packet Trace that was started for this connection is still
 active. Would you like to stop the trace now?

            Y  (Y or N)

Command ===>
F1=Help                                                     F6=Roll
```

```
MA    b                                                     11/015
Connected to remote server/host ralvmr.raleigh.ibm.com using port 23
```

Y = stop the trace
N = leave the trace running, so you can monitor the packets that are collected

Choose another connection or exit



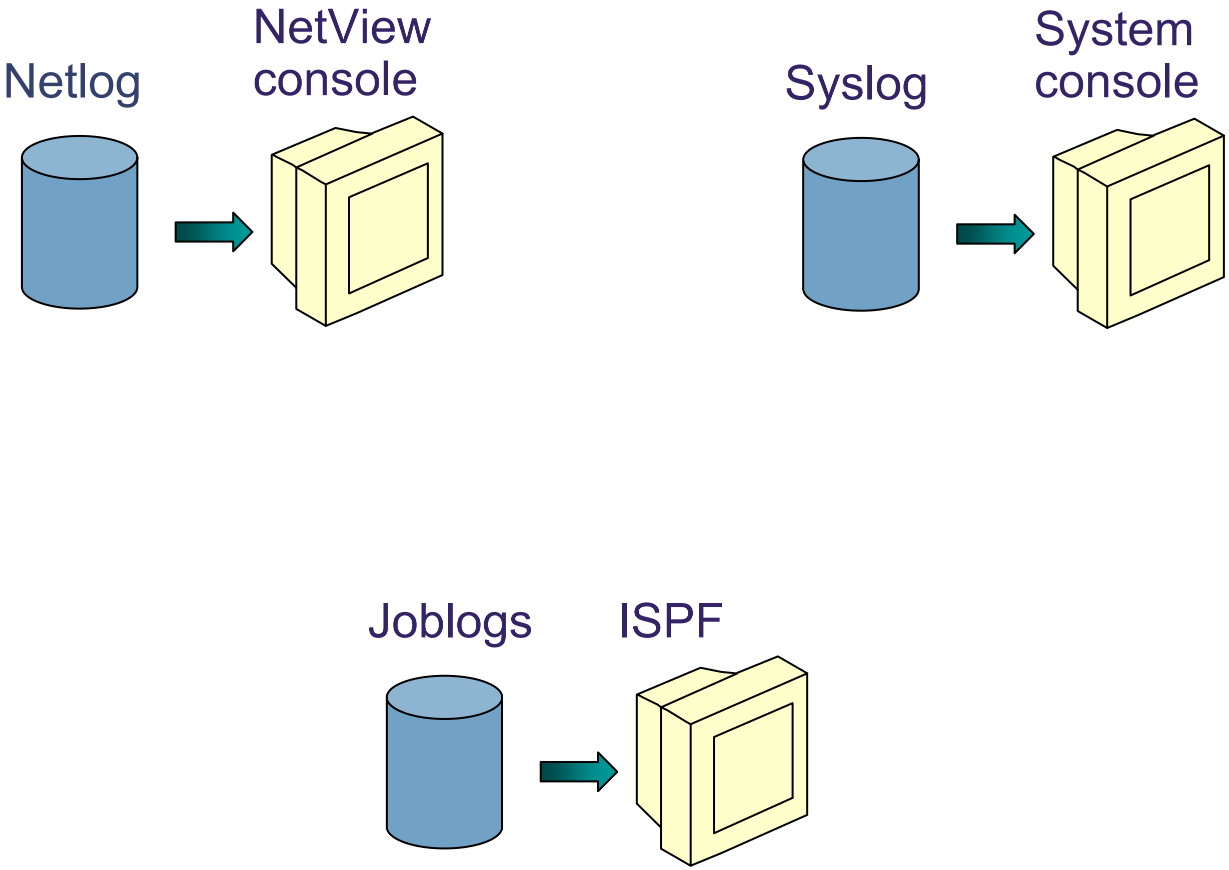
```
   FKXK2221         TCP/IP for z/OS Connection Management
      CLIENT - - - - - - - - - - - > Service Point - - - - - - > CONNECTION
                                     NMP101                       23
      9.42.45.217                    9.42.45.101                  1027
             ...................................................................
   Client  : IP Address         9.42.45.217                             :
   Port    : Port               23                  Commands            :
   23      : Connection ID      00002D28          =   1.  Ping          :
   1026    : LU                                       2.  Tracerte      :
   1029    : APPL                                     3.  Drop          :
           : Send               247                   4.  ARP Cache     :
           : Receive            5014                  5.  SNMP Commands :
           : Send Window        32765                 6.  Display Conn  :
           : Conn ResourceName  PHK                   7.  Quiesce Port  :
           :                                          8.  Resume Port   :
           :                                          9.  Conn Details  :
           :                                          10. Connection Status :
           :                                          11. Packet Trace  :
           :  F1=Help                                F6=Roll   F12=Cancel   :
           :...................................................................:

   Command ===>
   F1=Help      F2=Main Menu   F3=Return                         F6=Roll
   F7=Backward  F8=Forward     F9=Filters                       F12=Cancel
MA      b                                                         08/050
```

Connected to remote server/host ralvmr.raleigh.ibm.com using port 23

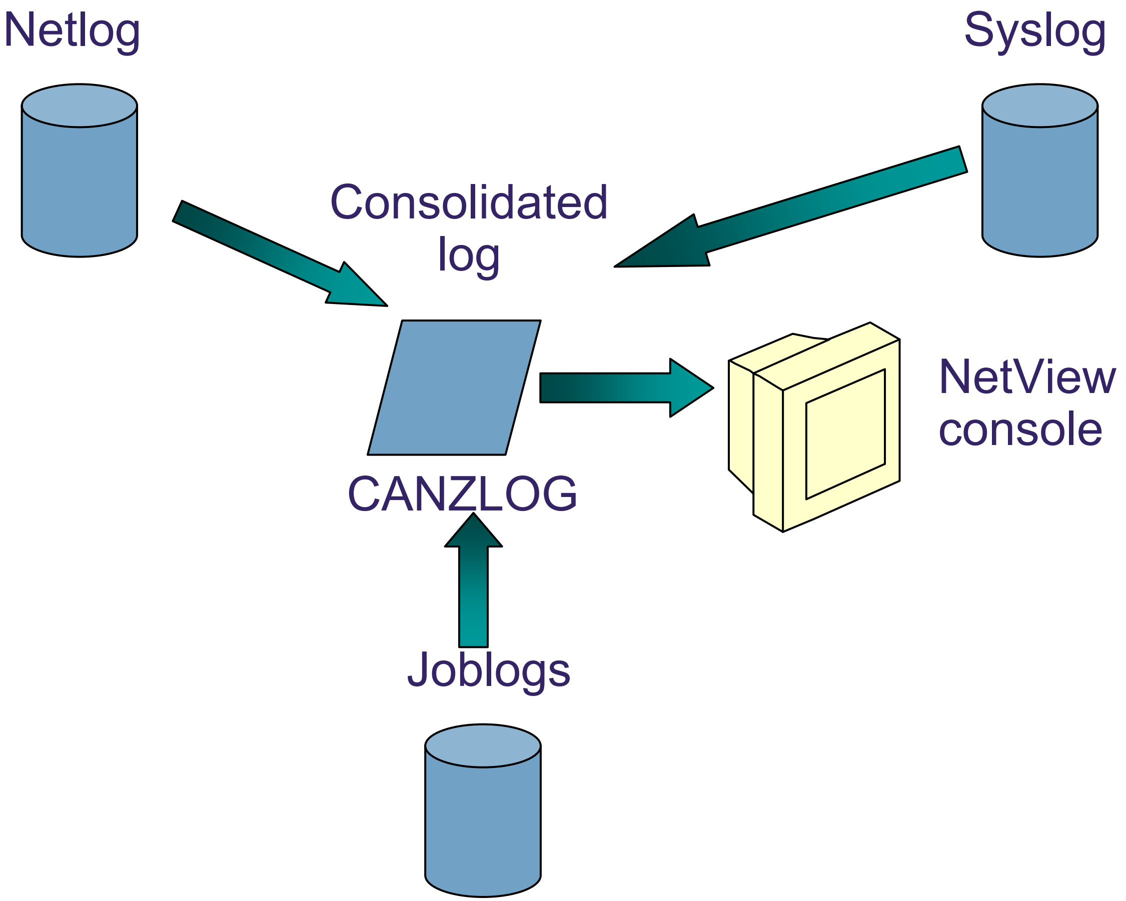
Agenda

- Timeline
- Smart Packet Collection
- Packet Trace on the fly
- Expanded Log Browse
- NetView Web Application
- Enterprise Integration
- Serviceability
- GDPS Active/Active

Browsing Logs Prior to NetView V6.1


NetView
console
Netlog
System
console
Syslog
Joblogs
ISPF

Log Browse with NetView V6.1


Netlog
Syslog
Consolidated log
CANZLOG
NetView console
Joblogs

CANZLOG = Consolidated Audit, NetView and z/OS Log

Highlights

- Existing netlog and all its UIs are preserved unchanged
- New, shared data space to capture messages
  - Includes normal NetView messages
  - Provides basis for browsing
  - All messages are available to automation
- Browse consolidated log
  - Filter by any message attribute or combination: msgID, jobname, route code, etc.
  - Define your own message attributes
  - Define and save sets of filter criteria, per operator or installation-wide
- Seamless archiving
- Export to Service

Some Message Attributes

- All messages
  - Tags: 8 user-defined tags (set in MRT or Automation Table)
  - Origin time: store clock value indicating when the message was created
  - Auto time: how long after the origin this message completed automation
  - DOM time: how long after the origin this message was matched by a DOM
  - ACTIONDL: type of DOM (if any) that matched this message
- MVS messages
  - ASID: Address Space ID
  - ASTYPE: type of address space issuing the message (started task, TSO user, USS procedure, etc.)
  - Job name: job name of originating address space
  - SYSID: system name of originating LPAR
  - DescCodes: descriptor codes
  - CHKEY: started task ID or (for batch) jobname
  - Cons Name: destination console name
  - Reply ID: for WTORs only, the ID used with the REPLY command
  - MCSFLAGS: MVS multiple console support flag field
- NetView messages
  - Domain: 1-to-5-character identifier of NetView instance that generated the message
  - HDRMTYPE: 1-character value indicating NetView message type
  - Sender ID: 8-character value indicating NetView OPID of originator of the message
- Customization attributes
  - UserChar: 16-character field; can be set in various installation exits or by MRT
  - UserFlag: 16-bit field; can be set in various installation exits or by MRT
  - AutoToken: 8-character field; can be set in MPF, in MRT, or various installation exits
- And more …

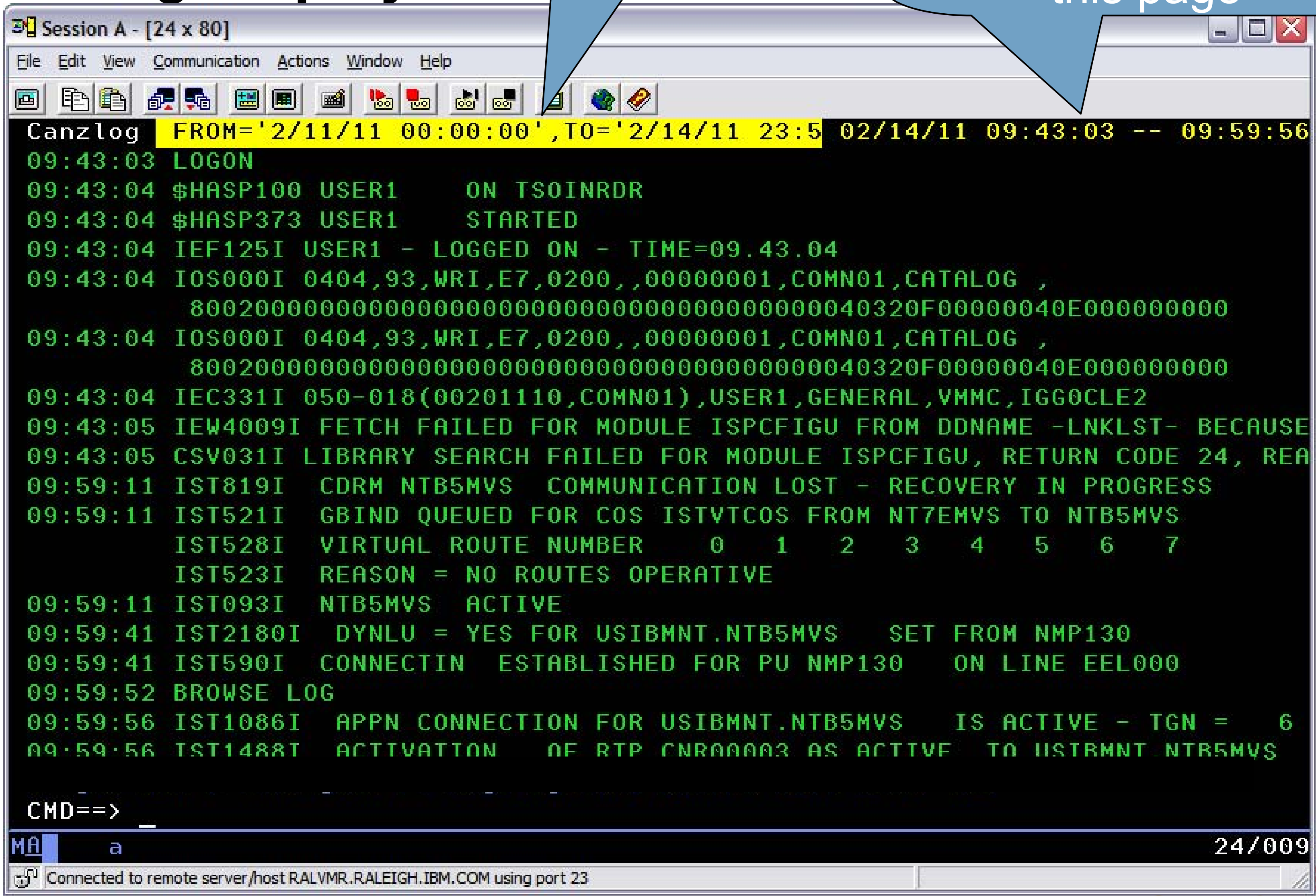
Robust filtering

- Any message attribute or combination
- Types
  - Common: available to all operators (subject to authorization check)
  - Task: available only to the operator who defined them
- Actions
  - Save: save filter to storage and on disk
  - Replace: replace an existing filter in storage and on disk
  - Delete: delete filter from storage and disk

Canzlog display

Filters

Time covered by records displayed on this page



```
Canzlog  FROM='2/11/11 00:00:00',TO='2/14/11 23:5 02/14/11 09:43:03 -- 09:59:56
09:43:03 LOGON
09:43:04 $HASP100 USER1    ON TSOINRDR
09:43:04 $HASP373 USER1    STARTED
09:43:04 IEF125I USER1 - LOGGED ON - TIME=09.43.04
09:43:04 IOS000I 0404,93,WRI,E7,0200,,00000001,COMN01,CATALOG ,
          800200000000000000000000000000000000000040320F00000040E000000000
09:43:04 IOS000I 0404,93,WRI,E7,0200,,00000001,COMN01,CATALOG ,
          800200000000000000000000000000000000000040320F00000040E000000000
09:43:04 IEC331I 050-018(00201110,COMN01),USER1,GENERAL,VMMC,IGG0CLE2
09:43:05 IEW4009I FETCH FAILED FOR MODULE ISPCFIGU FROM DDNAME -LNKLST- BECAUSE
09:43:05 CSV031I LIBRARY SEARCH FAILED FOR MODULE ISPCFIGU, RETURN CODE 24, REA
09:59:11 IST819I  CDRM NTB5MVS  COMMUNICATION LOST - RECOVERY IN PROGRESS
09:59:11 IST521I  GBIND QUEUED FOR COS ISTVTCOS FROM NT7EMVS TO NTB5MVS
         IST528I  VIRTUAL ROUTE NUMBER    0   1   2   3   4   5   6   7
         IST523I  REASON = NO ROUTES OPERATIVE
09:59:11 IST093I  NTB5MVS  ACTIVE
09:59:41 IST2180I  DYNLU = YES FOR USIBMNT.NTB5MVS   SET FROM NMP130
09:59:41 IST590I  CONNECTIN  ESTABLISHED FOR PU NMP130   ON LINE EEL000
09:59:52 BROWSE LOG
09:59:56 IST1086I  APPN CONNECTION FOR USIBMNT.NTB5MVS   IS ACTIVE - TGN =   6
09:59:56 IST1488I  ACTIVATION   OF RTP CNR00003 AS ACTIVE  TO USIBMNT.NTB5MVS

CMD==> _
MA     a                                                                  24/009
```

Connected to remote server/host RALVMR.RALEIGH.IBM.COM using port 23

Related Session

- Session 9914
  - “Canzlog in NetView for z/OS 6.1: User Experience”
    (Dale Carter (Bank of America) and Tom Howe (IBM))
  - Thursday, August 11, 9:30

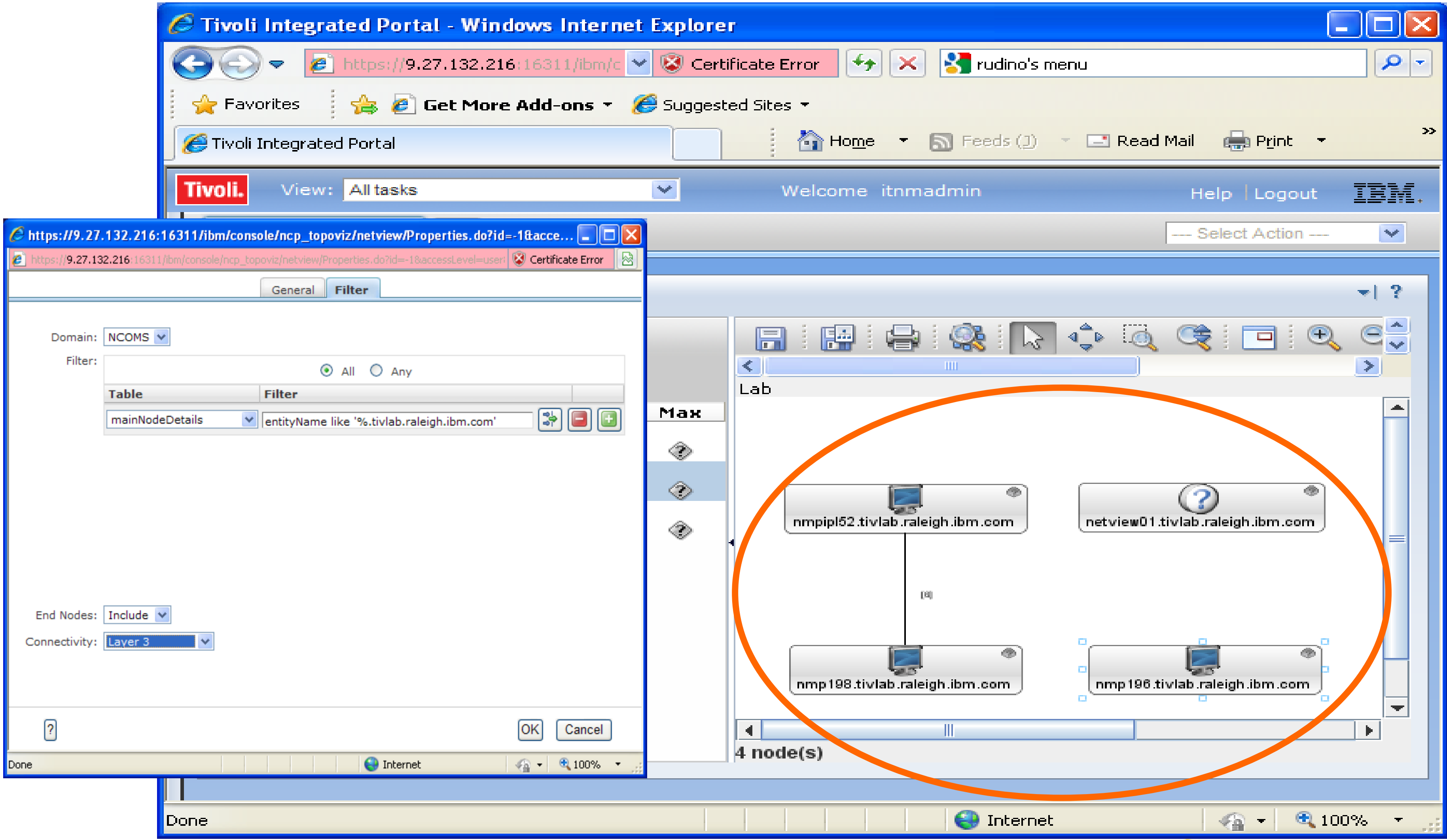
Agenda

- Timeline
- Smart Packet Collection
- Packet Trace on the fly
- Expanded Log Browse
- NetView Web Application
- Enterprise Integration
- Serviceability
- GDPS Active/Active

MultiSystem Manager updates

- MultiSystem Manager Tivoli Management Regions (TMR) agent is retired.
- MultiSystem Manager IP agent is retired.
  - NetView for Unix/Windows replaced by IBM Tivoli Network Manager
- MultiSystem Manager IBM Tivoli Network Manager (ITNM) agent is updated.

Views in ITNM


Tivoli Integrated Portal - Windows Internet Explorer
https://9.27.132.216:16311/ibm/c
Certificate Error
rudino's menu
Favorites
Get More Add-ons
Suggested Sites
Tivoli Integrated Portal
Home
Feeds (J)
Read Mail
Print
Tivoli.
View: All tasks
Welcome itnmadmin
Help
Logout
IBM.
--- Select Action ---
Max
Lab
nmpipl52.tivlab.raleigh.ibm.com
netview01.tivlab.raleigh.ibm.com
nmp198.tivlab.raleigh.ibm.com
nmp196.tivlab.raleigh.ibm.com
4 node(s)
Done
Internet
100%

https://9.27.132.216:16311/ibm/console/ncp_topoviz/netview/Properties.do?id=-1&acce...

https://9.27.132.216:16311/ibm/console/ncp_topoviz/netview/Properties.do?id=-1&accessLevel=user

Certificate Error
General
Filter

Domain: NCOMS

Filter: ● All ○ Any

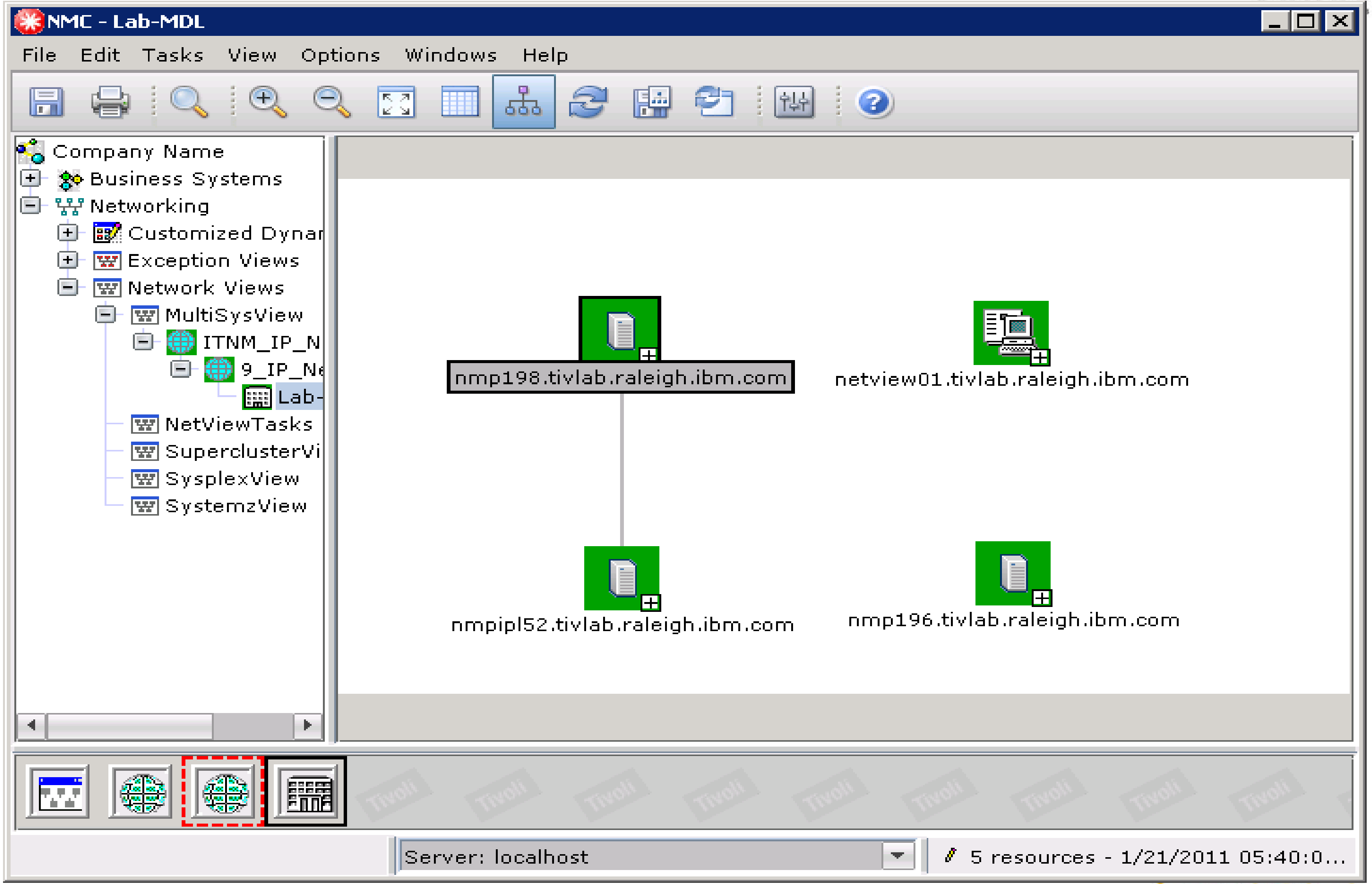
Table	Filter
mainNodeDetails	entityName like '%.tivlab.raleigh.ibm.com'

End Nodes: Include

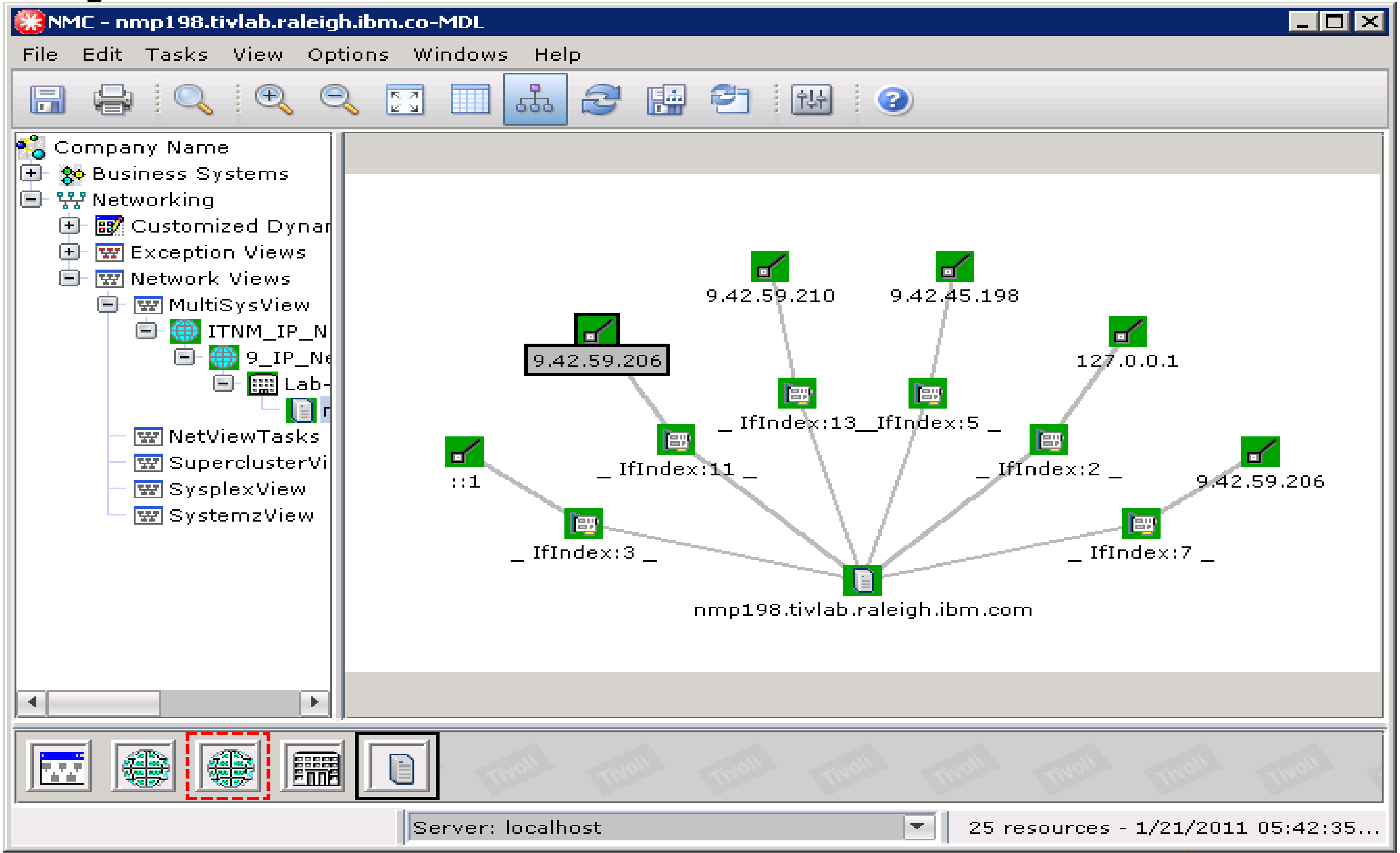
Connectivity: Layer 3

?
OK
Cancel
Done
Internet
100%

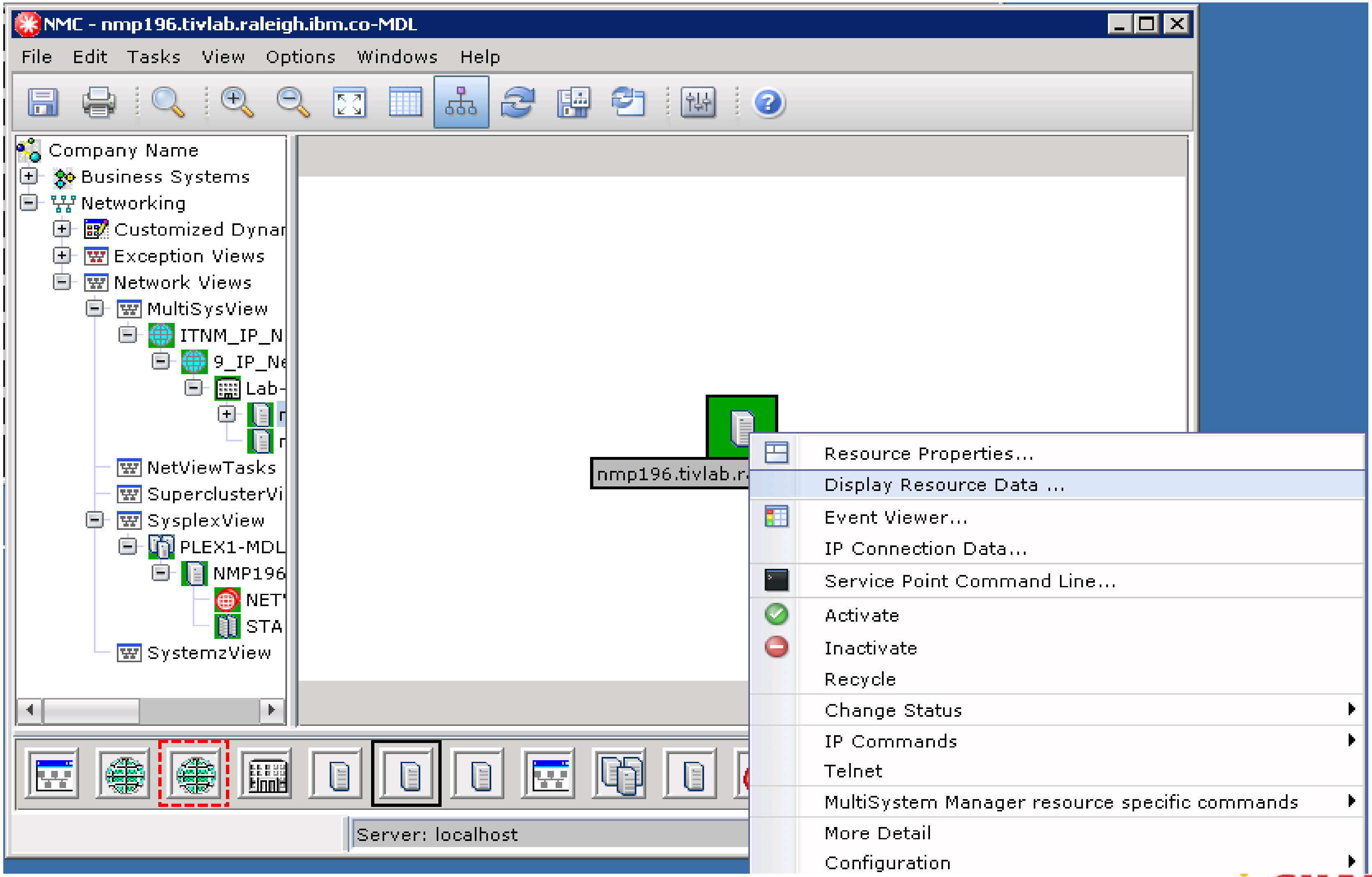
Views in NMC


NMC - Lab-MDL
File
Edit
Tasks
View
Options
Windows
Help
Company Name
Business Systems
Networking
Customized Dynar
Exception Views
Network Views
MultiSysView
ITNM_IP_N
9_IP_Ne
Lab-
NetViewTasks
SuperclusterVi
SysplexView
SystemzView
nmp198.tivlab.raleigh.ibm.com
netview01.tivlab.raleigh.ibm.com
nmpipl52.tivlab.raleigh.ibm.com
nmp196.tivlab.raleigh.ibm.com
Server: localhost
5 resources - 1/21/2011 05:40:0...

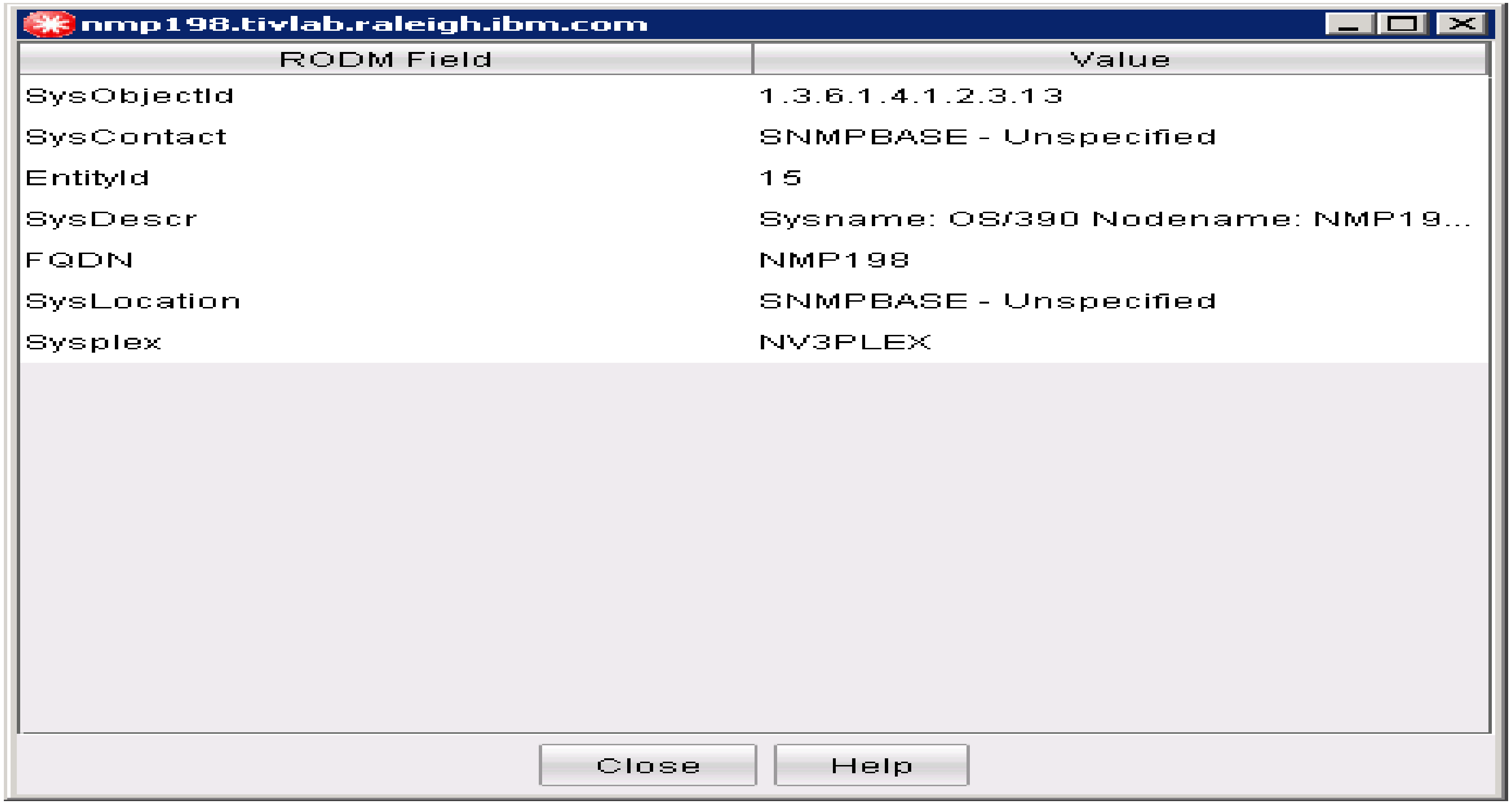
System Details Views


NMC - nmp198.tivlab.raleigh.ibm.co-MDL
File
Edit
Tasks
View
Options
Windows
Help
Company Name
Business Systems
Networking
Customized Dynar
Exception Views
Network Views
MultiSysView
ITNM_IP_N
9_IP_Ne
Lab-
NetViewTasks
SuperclusterVi
SysplexView
SystemzView
9.42.59.210
9.42.45.198
9.42.59.206
127.0.0.1
_ IfIndex:13 _
_IfIndex:5 _
::1
_ IfIndex:11 _
_ IfIndex:2 _
9.42.59.206
_ IfIndex:3 _
_ IfIndex:7 _
nmp198.tivlab.raleigh.ibm.com
Server: localhost
25 resources - 1/21/2011 05:42:35...

Display Resource Details


NMC - nmp196.tivlab.raleigh.ibm.co-MDL
File Edit Tasks View Options Windows Help
Company Name
Business Systems
Networking
Customized Dynar
Exception Views
Network Views
MultiSysView
ITNM_IP_N
9_IP_Ne
Lab-
NetViewTasks
SuperclusterVi
SysplexView
PLEX1-MDL
NMP196
NET
STA
SystemzView
nmp196.tivlab.r
Resource Properties...
Display Resource Data ...
Event Viewer...
IP Connection Data...
Service Point Command Line...
Activate
Inactivate
Recycle
Change Status
IP Commands
Telnet
MultiSystem Manager resource specific commands
More Detail
Configuration
Server: localhost

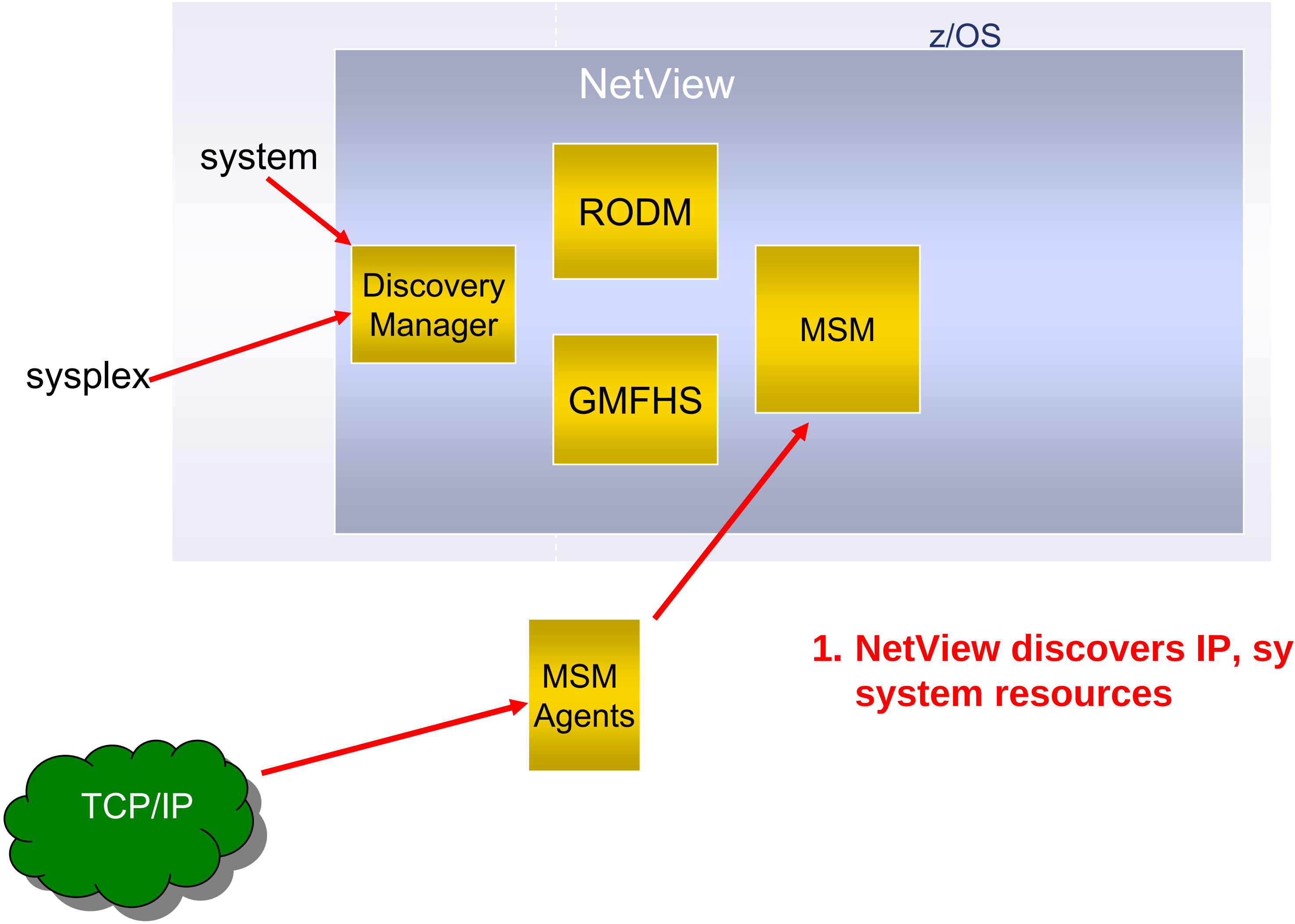
NMC Display Details


nmp198.tivlab.raleigh.ibm.com

RODM Field	Value
SysObjectId	1.3.6.1.4.1.2.3.13
SysContact	SNMPBASE - Unspecified
EntityId	15
SysDescr	Sysname: OS/390 Nodename: NMP19...
FQDN	NMP198
SysLocation	SNMPBASE - Unspecified
Sysplex	NV3PLEX

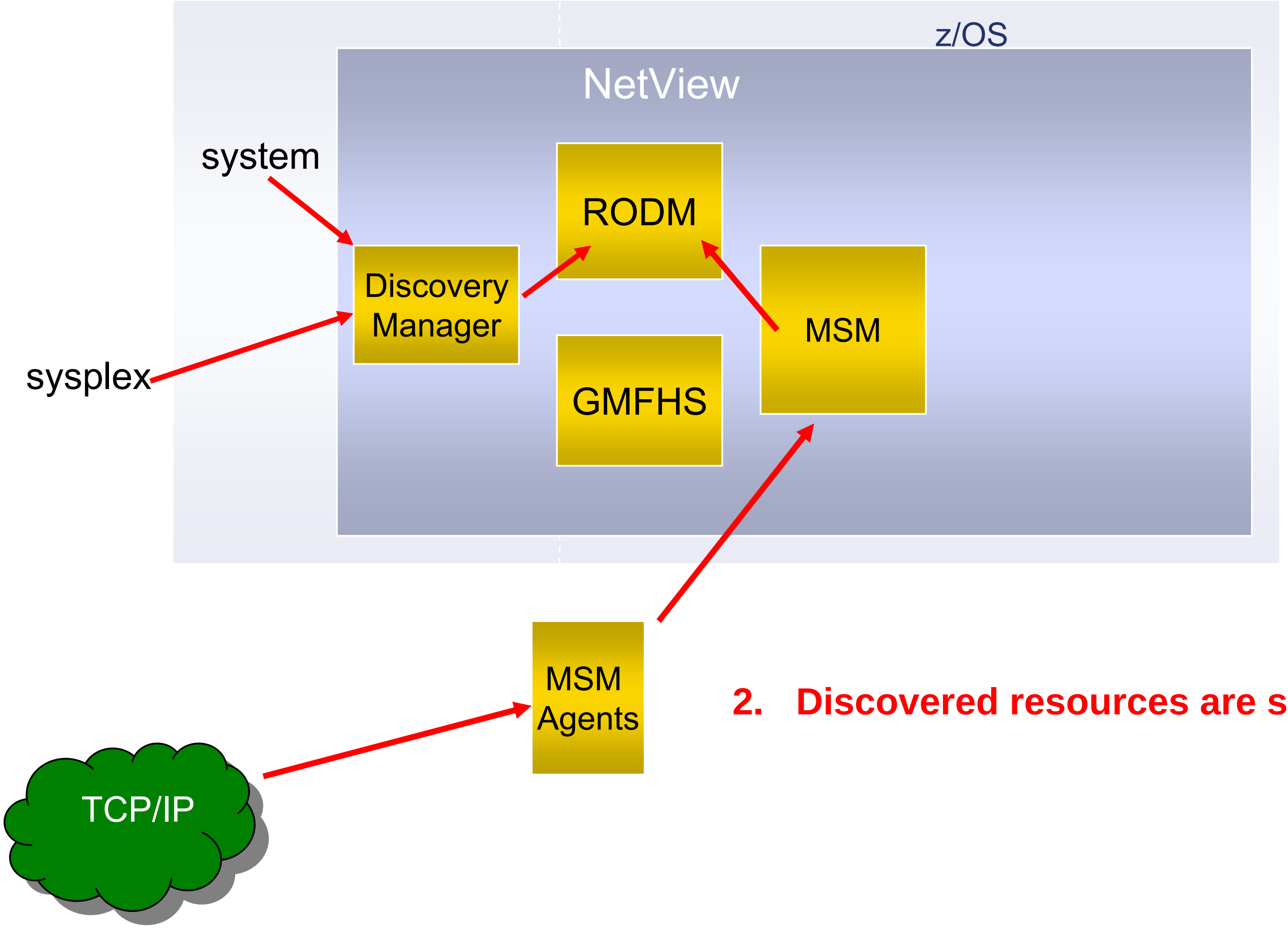
Close
Help

Discovery Library Adapter (DLA)


z/OS
NetView
system
sysplex
Discovery Manager
RODM
GMFHS
MSM
MSM Agents
TCP/IP

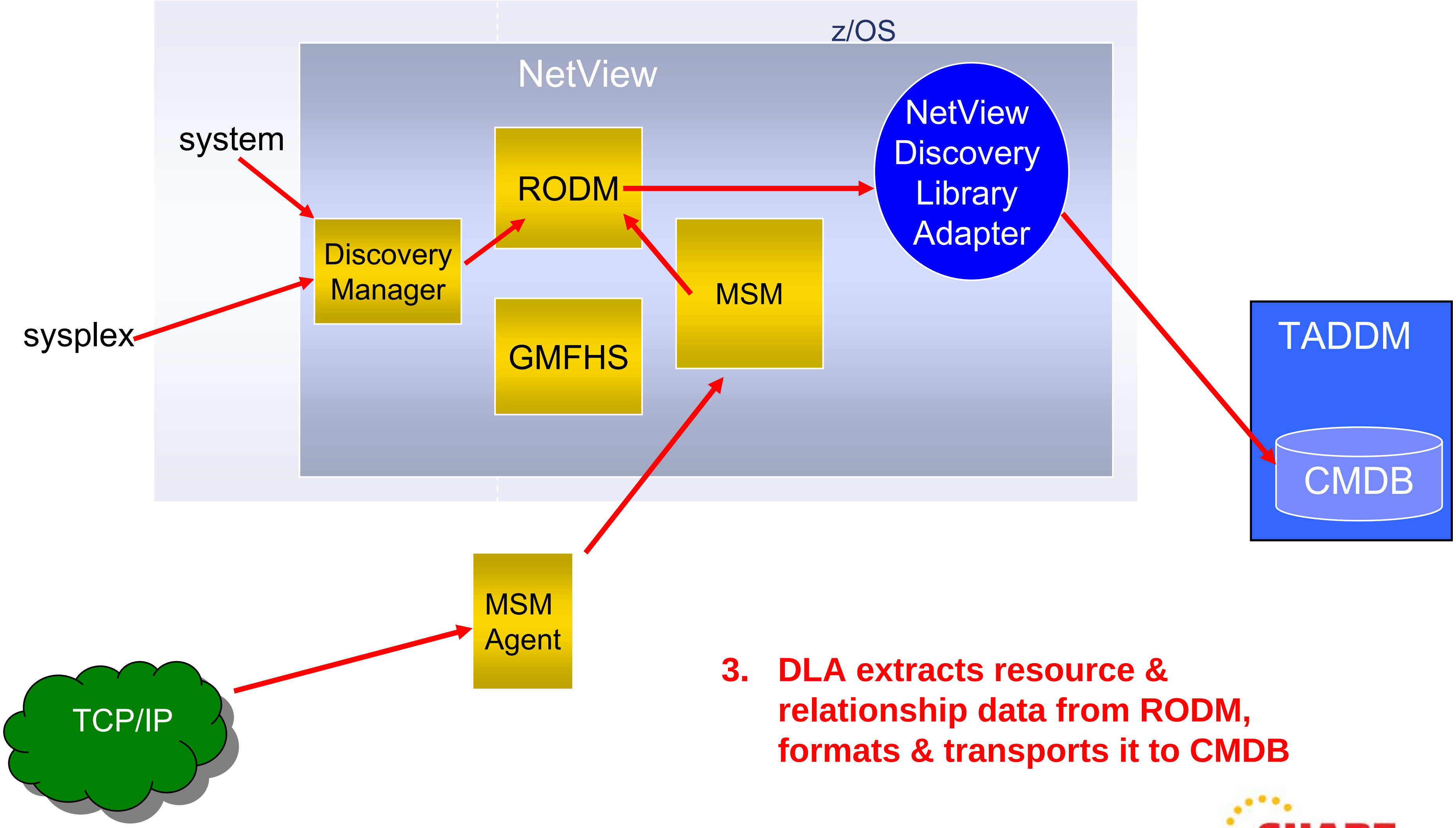
1. NetView discovers IP, sysplex and system resources

Discovery Library Adapter (DLA)


z/OS
NetView
system
RODM
Discovery Manager
MSM
sysplex
GMFHS
MSM Agents
TCP/IP

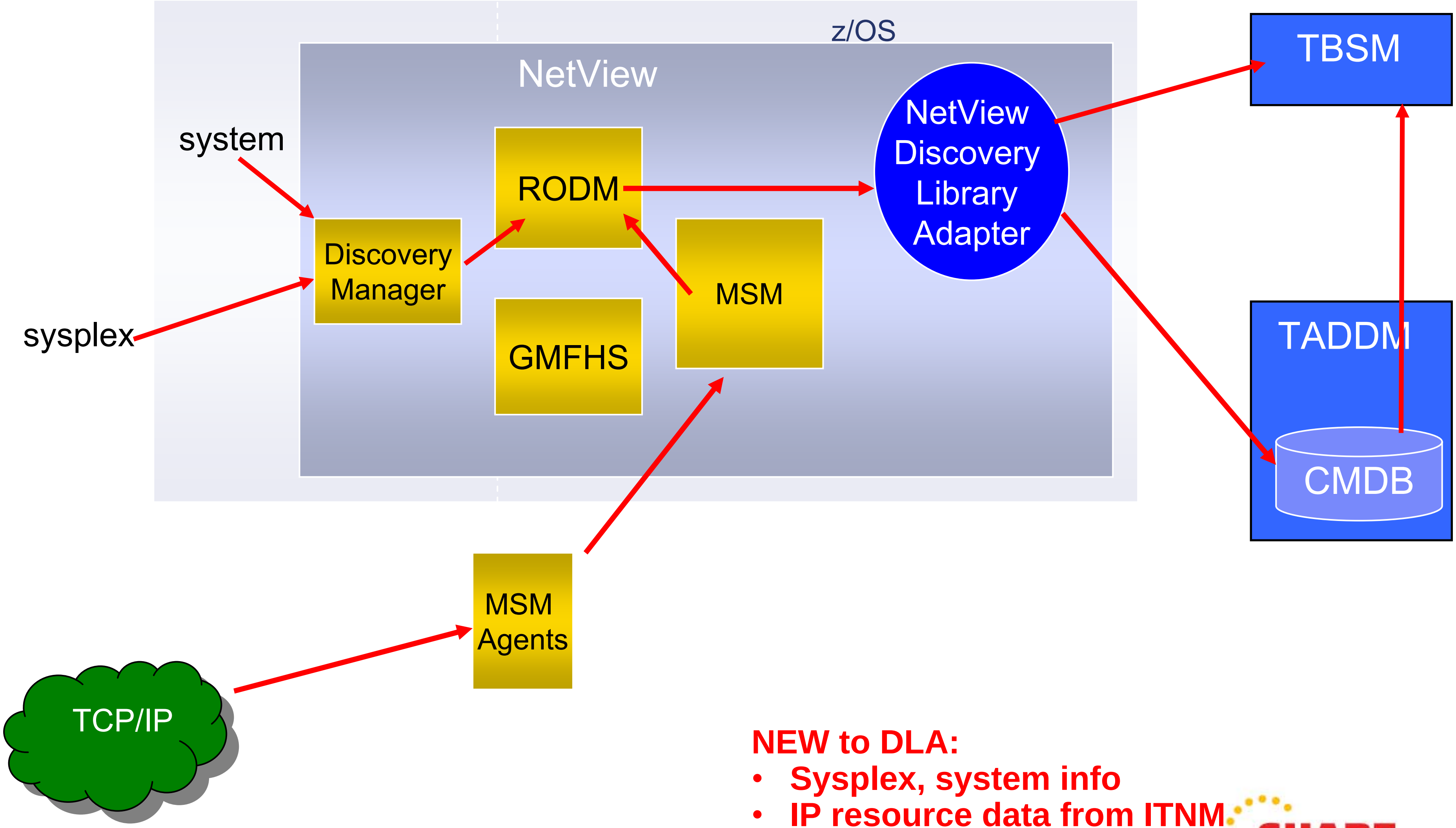
2. **Discovered resources are stored in RODM**

Discovery Library Adapter (DLA)


z/OS
NetView
system
sysplex
Discovery Manager
RODM
GMFHS
MSM
NetView Discovery Library Adapter
TADDM
CMDB
MSM Agent
TCP/IP

3. **DLA extracts resource & relationship data from RODM, formats & transports it to CMDB**

Discovery Library Adapter (DLA)


z/OS
NetView
system
sysplex
Discovery Manager
RODM
GMFHS
MSM
NetView Discovery Library Adapter
TBSM
TADDM
CMDB
MSM Agents
TCP/IP

NEW to DLA:

- **Sysplex, system info**
- **IP resource data from ITNM**

Agenda

- Timeline
- Smart Packet Collection
- Packet Trace on the fly
- Expanded Log Browse
- NetView Web Application
- Enterprise Integration
- Serviceability
- GDPS Active/Active

Serviceability

- Trace changes in global variable values
  - Results in a message written to netlog, with variable’s name, value, and info about what program changed it
  - Message available for automation
  - GLOBALV command

Agenda

- Timeline
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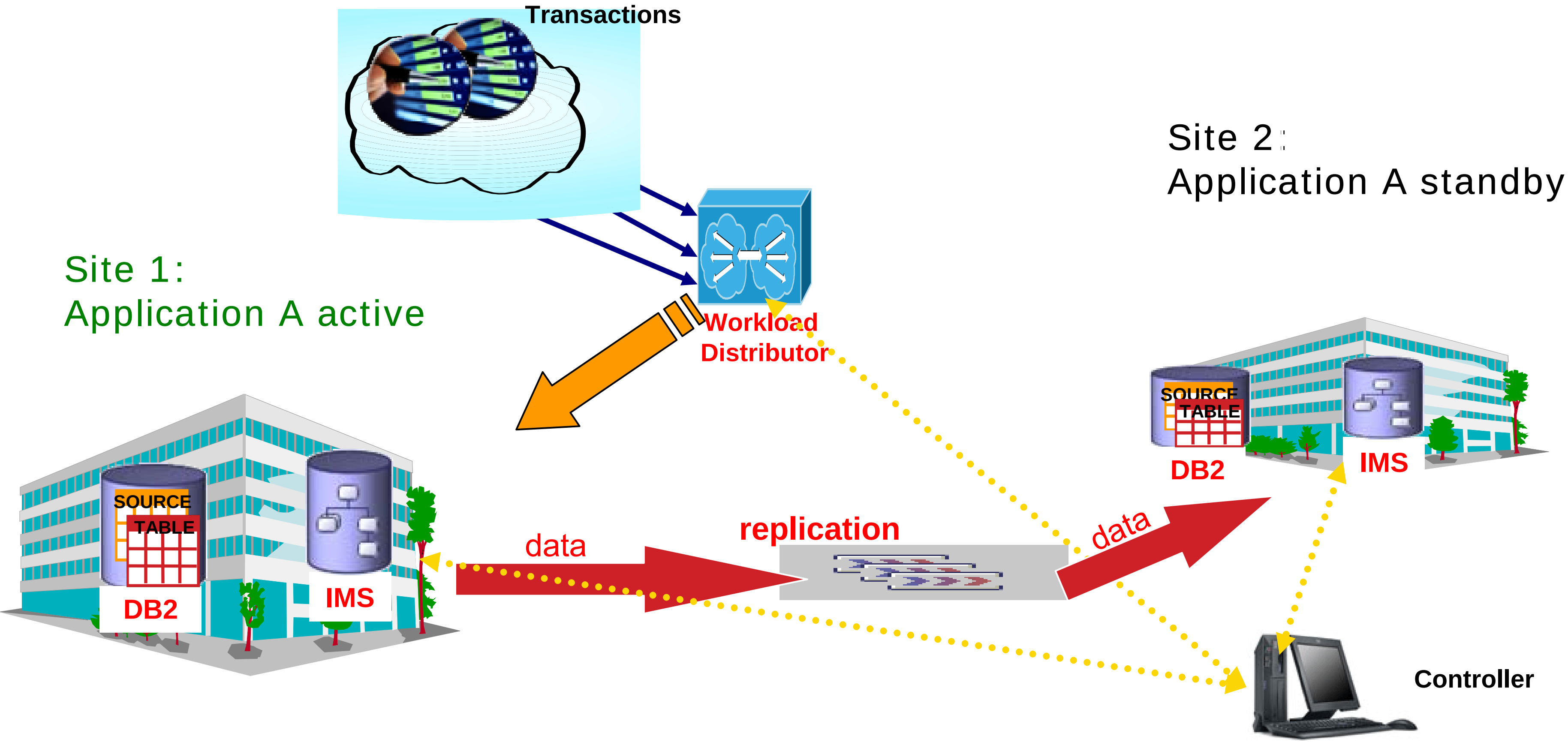
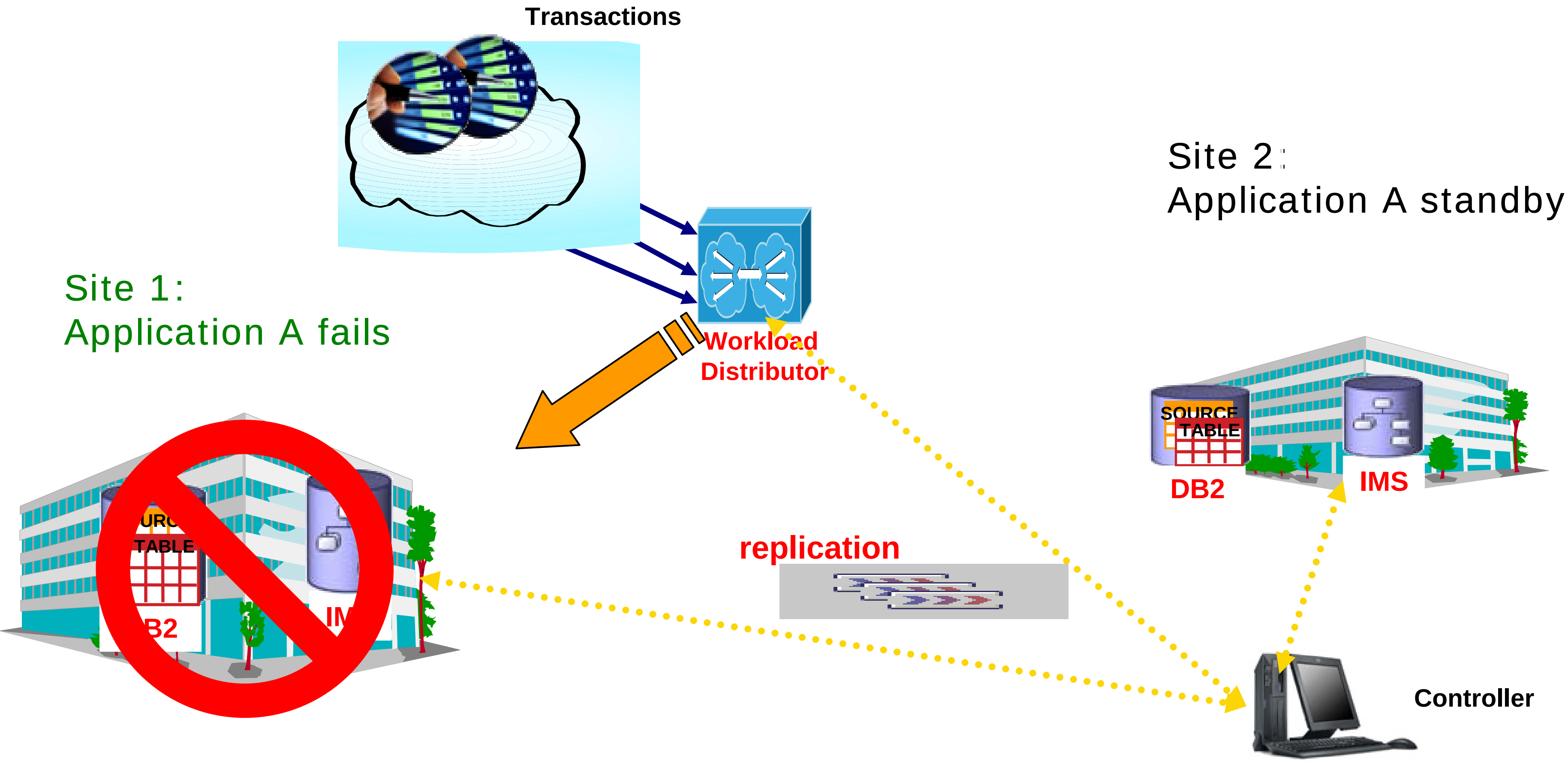
GDPS Active/Active Continuous Availability solution

- Environment
  - Two or more sites, separated by *unlimited distances*, running the same applications and having the same data to provide cross-site workload balancing and Continuous Availability / Disaster Recovery
- Paradigm shift
  - Failover model → *near continuous availability model*
- Significantly increases site / system / workload resiliency
- Granularity down to the workload level
- Reduces time to recovery in disaster situations

Example: Initial Setup


Transactions
Site 2:
Application A standby
Site 1:
Application A active
Workload
Distributor
SOURCE
TABLE
DB2
IMS
data
replication
data
SOURCE
TABLE
DB2
IMS
Controller

Example (cont.): “Active” Application Fails



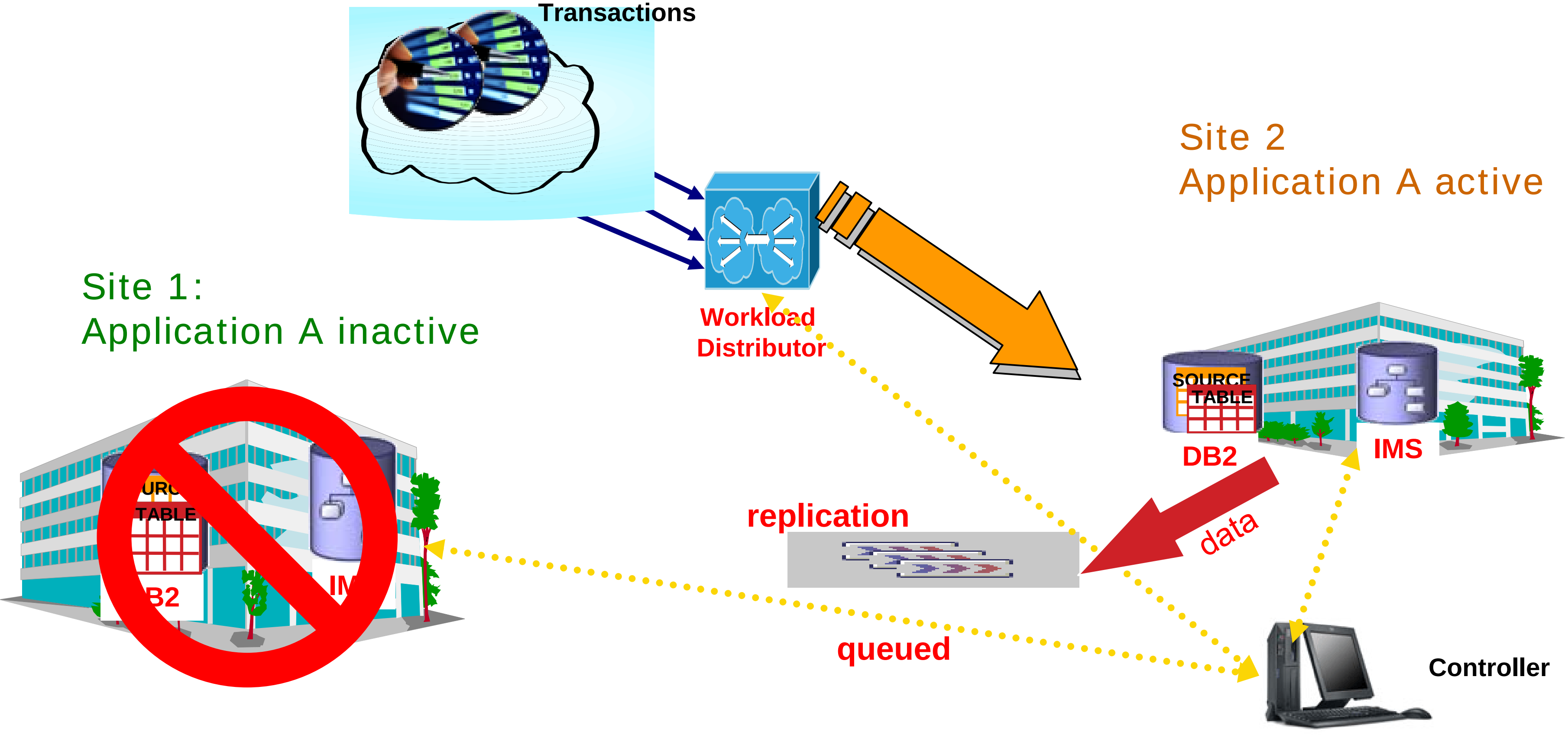
Transactions
Workload Distributor
SOURCE TABLE
DB2
IMS
URC
TABLE
B2
IM
replication
Controller

Site 1:
Application A fails

Site 2:
Application A standby

Example (cont.): “Standby” Application Becomes “Active”

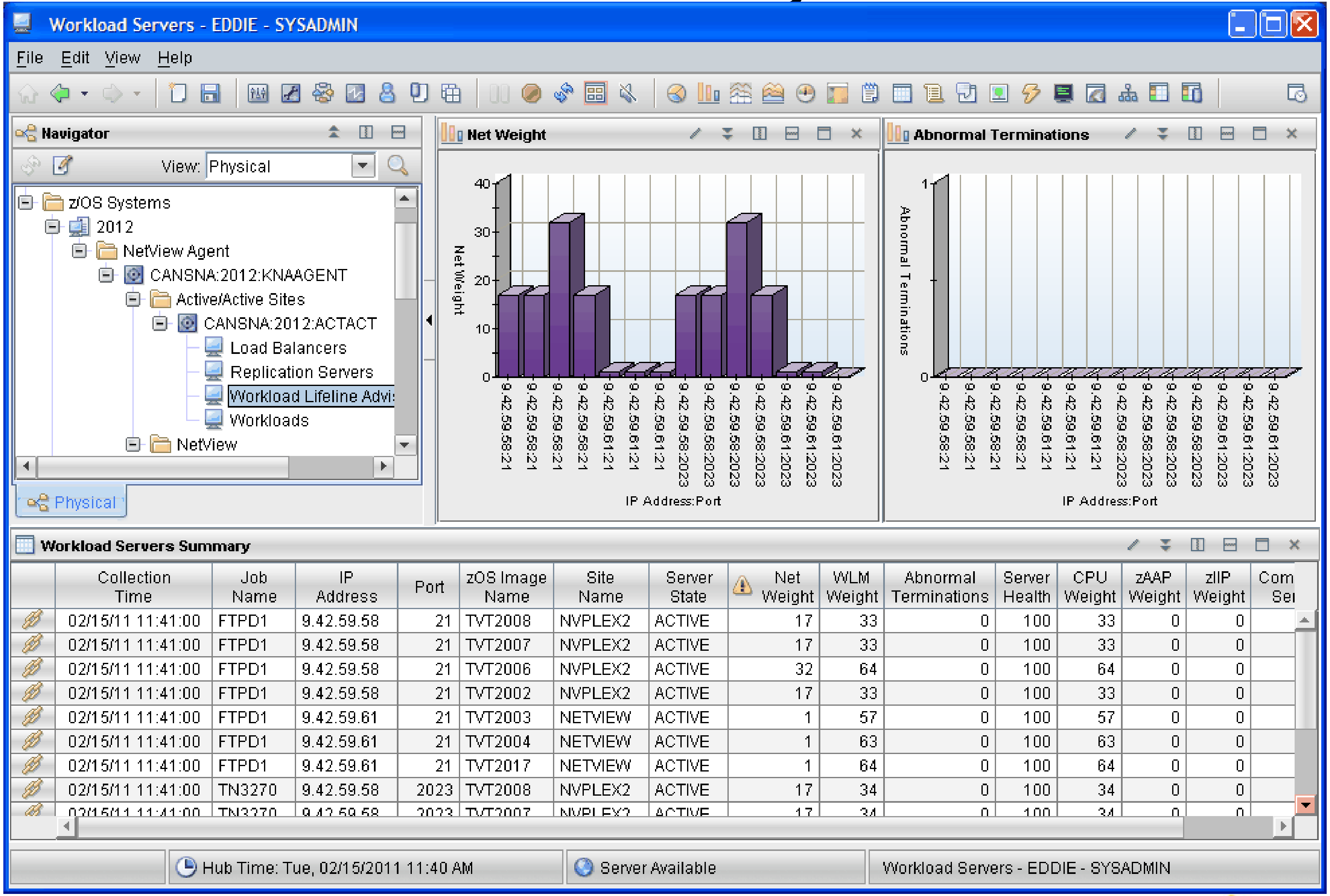
- Automatic workload switchover


Transactions
Site 2
Application A active
Site 1:
Application A inactive
Workload
Distributor
SOURCE
TABLE
DB2
IMS
URC
TABLE
B2
IM
replication
data
queued
Controller

GDPS Active/Active Continuous Availability solution

- Participating products
  - GDPS
  - NetView for z/OS
  - System Automation for z/OS
  - DB2
  - InfoSphere DB2 Replication Server
  - IMS
  - InfoSphere IMS Replication for z/OS
  - Multi-Site Workload Lifeline Advisor
- NetView monitors
  - Workload status
  - Workload servers
  - Workload replication
  - Load balancers
  - Other managed elements
  - Associations among them

Workload Servers Summary


Workload Servers - EDDIE - SYSADMIN
File Edit View Help
Navigator
View: Physical
z/OS Systems
2012
NetView Agent
CANSNA:2012:KNAAGENT
Active/Active Sites
CANSNA:2012:ACTACT
Load Balancers
Replication Servers
Workload Lifeline Advis
Workloads
NetView
Physical
Net Weight
40
30
20
10
0
Net Weight
9.42.59.58:21
9.42.59.58:21
9.42.59.58:21
9.42.59.58:21
9.42.59.61:21
9.42.59.61:21
9.42.59.61:21
9.42.59.58:2023
9.42.59.58:2023
9.42.59.58:2023
9.42.59.58:2023
9.42.59.61:2023
9.42.59.61:2023
9.42.59.61:2023
IP Address:Port
Abnormal Terminations
1
0
Abnormal Terminations
9.42.59.58:21
9.42.59.58:21
9.42.59.58:21
9.42.59.58:21
9.42.59.61:21
9.42.59.61:21
9.42.59.61:21
9.42.59.58:2023
9.42.59.58:2023
9.42.59.58:2023
9.42.59.58:2023
9.42.59.61:2023
9.42.59.61:2023
9.42.59.61:2023
IP Address:Port

Workload Servers Summary

	Collection Time	Job Name	IP Address	Port	zOS Image Name	Site Name	Server State	⚠ Net Weight	WLM Weight	Abnormal Terminations	Server Health	CPU Weight	zAAP Weight	zIIP Weight	Com Se
	02/15/11 11:41:00	FTPD1	9.42.59.58	21	TVT2008	NVPLEX2	ACTIVE	17	33	0	100	33	0	0	
	02/15/11 11:41:00	FTPD1	9.42.59.58	21	TVT2007	NVPLEX2	ACTIVE	17	33	0	100	33	0	0	
	02/15/11 11:41:00	FTPD1	9.42.59.58	21	TVT2006	NVPLEX2	ACTIVE	32	64	0	100	64	0	0	
	02/15/11 11:41:00	FTPD1	9.42.59.58	21	TVT2002	NVPLEX2	ACTIVE	17	33	0	100	33	0	0	
	02/15/11 11:41:00	FTPD1	9.42.59.61	21	TVT2003	NETVIEW	ACTIVE	1	57	0	100	57	0	0	
	02/15/11 11:41:00	FTPD1	9.42.59.61	21	TVT2004	NETVIEW	ACTIVE	1	63	0	100	63	0	0	
	02/15/11 11:41:00	FTPD1	9.42.59.61	21	TVT2017	NETVIEW	ACTIVE	1	64	0	100	64	0	0	
	02/15/11 11:41:00	TN3270	9.42.59.58	2023	TVT2008	NVPLEX2	ACTIVE	17	34	0	100	34	0	0	
	02/15/11 11:41:00	TN3270	9.42.59.58	2023	TVT2007	NVPLEX2	ACTIVE	17	34	0	100	34	0	0	

Hub Time: Tue, 02/15/2011 11:40 AM

Server Available

Workload Servers - EDDIE - SYSADMIN

Related Session on GDPS Active/Active

- Session 9666
  - "Beyond Disaster Recovery: Taking Your Enterprise from High Availability to Continuous Availability" (Karen Durward (IBM))
  - Thursday, August 11, 4:30

Questions?

More Information

- NetView website
  http://www.ibm.com/software/tivoli/products/netview-zos/
- NetView customer forum
  http://tech.groups.yahoo.com/group/NetView/
- NetView wiki
  https://www.ibm.com/developerworks/wikis/display/tivolidoccentral/Tivoli+NetView+for+zOS
- NetView media gallery
  http://www.ibm.com/developerworks/wikis/display/tivolimediagallery/Tivoli+NetView+for+zOS

Thank you!