Finding Those Needles in the Haystacks with NetView for z/OS V6.1

Larry Green
IBM

March 12, 2012
Session 10716
Related Sessions

- Thursday, March 15, 9:30, Session 10713
  - “Problem Solving with Consolidated Logs” (Larry Green (IBM))
- Thursday, March 15, 1:30, Session 10833
  - “Intelligent Load Balancing with IBM MultiSite Workload Lifeline” (Mike Fitzpatrick (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

Service Point/Stack: NHP101  Proc: TCPIP  Domain: LOCAL

Status/Owner     Start     For     Writer
_x_ CTRACE       SYSTCPIP  NONE/NA  NA       NA       *NONE*
_x_ PKTTRACE     SYSTCPDA  NONE/NA  NA       NA       *NONE*
_x_ 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

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

11/04
Select what to collect

<table>
<thead>
<tr>
<th>Infc/Link</th>
<th>Stat</th>
<th>Prot</th>
<th>IP Address/Prefix</th>
<th>Ports</th>
<th>Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>LOOPBACK</td>
<td>ON</td>
<td>TCP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOOPBACK6</td>
<td>ON</td>
<td>TCP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCPIPLINK</td>
<td>ON</td>
<td>TCP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LVIPA1</td>
<td>ON</td>
<td>TCP</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>TCPIPLINKB</td>
<td>ON</td>
<td>TCP</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>TCPIPLINK6</td>
<td>ON</td>
<td>TCP</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

**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
Set filter options
List of packets meeting filter criteria
### Packet detail

**z/OS TCP/IP Packet Trace Formatter, Copyright IBM Corp. 2000, 2009; 2009.028**

---

**2010/03/16**

<table>
<thead>
<tr>
<th>RcdNr</th>
<th>Sysname</th>
<th>Mnemonic</th>
<th>Entry Id</th>
<th>Time Stamp</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>441</td>
<td>NMP101</td>
<td>PACKET</td>
<td>00000004</td>
<td>08:49:16</td>
<td>053717 Packet Trace</td>
</tr>
</tbody>
</table>

**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:** 00685900

**IpHeader: Version:** 4  
**Header Length:** 20

**Tos:** 00  
**QOS:** Routine Normal Service

**Packet Length:** 52  
**ID Number:** 03C9

**Fragment:** 0  
**Offset:** 0

**TTL:** 64  
**Protocol:** TCP  
**Checksum:** 097F F

**TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'**

**CMD===>** _
Session Report

Command

1. Ping [RAddr]
2. TraceRte [RAddr]
3. Hostnames
4. Connections
5. SNMP [RAddr]
6. SNMP [Stack]
7. IP Trace Session Report w/Maxrecs 100
Summary analysis for that session

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)

<table>
<thead>
<tr>
<th>Flags</th>
<th>Inbound</th>
<th>Outbound</th>
<th>Window Size</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retransmissions</td>
<td>0</td>
<td>0</td>
<td>Largest</td>
<td>32768</td>
<td>32768</td>
</tr>
<tr>
<td>Duplicate Acks</td>
<td>0</td>
<td>2</td>
<td>Average</td>
<td>32741</td>
<td>32746</td>
</tr>
<tr>
<td>Reset</td>
<td>0</td>
<td>1</td>
<td>Smallest</td>
<td>32637</td>
<td>32592</td>
</tr>
<tr>
<td>Window Size 0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Window Probes</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delay Ack</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Command ===> 
F1=Help F3=Return
F8=Packets F9=Actions F10=Report
F6=Roll F12=Cancel
Individual packets for the session

duplicate ack
delayed ack
Go to packet details

<table>
<thead>
<tr>
<th>RcdNr</th>
<th>State</th>
<th>Inf</th>
<th>Ip_id</th>
<th>Rtt</th>
<th>TimeStampV</th>
<th>TimeStampE</th>
<th>UrPtr</th>
<th>CgWnd</th>
</tr>
</thead>
<tbody>
<tr>
<td>427</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>1E51</td>
<td>0.68</td>
<td>3275787.175</td>
<td>3275787.094</td>
<td>0</td>
<td>964</td>
</tr>
<tr>
<td>428</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>03C1</td>
<td>0.68</td>
<td>3275787.175</td>
<td>3275787.459</td>
<td>0</td>
<td>750</td>
</tr>
<tr>
<td>429</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>1E52</td>
<td>0.68</td>
<td>3275787.459</td>
<td>3275787.459</td>
<td>0</td>
<td>1018</td>
</tr>
<tr>
<td>430</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>03C2</td>
<td>0.68</td>
<td>3275787.459</td>
<td>3275787.759</td>
<td>0</td>
<td>750</td>
</tr>
<tr>
<td>431</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>03C3</td>
<td>0.68</td>
<td>3275787.459</td>
<td>3275789.462</td>
<td>0</td>
<td>750</td>
</tr>
<tr>
<td>432</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>1E53</td>
<td>0.63</td>
<td>3275789.489</td>
<td>3275789.462</td>
<td>0</td>
<td>1072</td>
</tr>
<tr>
<td>433</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>03C4</td>
<td>0.63</td>
<td>3275789.489</td>
<td>3275789.763</td>
<td>0</td>
<td>804</td>
</tr>
<tr>
<td>434</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>1E54</td>
<td>0.63</td>
<td>3275789.764</td>
<td>3275789.763</td>
<td>0</td>
<td>1125</td>
</tr>
<tr>
<td>435</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>03C5</td>
<td>0.63</td>
<td>3275789.764</td>
<td>3275790.063</td>
<td>0</td>
<td>804</td>
</tr>
<tr>
<td>436</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>1E55</td>
<td>0.63</td>
<td>3275792.503</td>
<td>3275790.063</td>
<td>0</td>
<td>1179</td>
</tr>
<tr>
<td>437</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>03C6</td>
<td>0.63</td>
<td>3275792.503</td>
<td>3275792.769</td>
<td>0</td>
<td>804</td>
</tr>
<tr>
<td>438</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>1E56</td>
<td>0.63</td>
<td>3275792.769</td>
<td>3275792.769</td>
<td>0</td>
<td>1232</td>
</tr>
<tr>
<td>439</td>
<td>ESTABLISHED</td>
<td>5</td>
<td>03C7</td>
<td>0.63</td>
<td>3275792.769</td>
<td>3275793.069</td>
<td>0</td>
<td>804</td>
</tr>
<tr>
<td>441</td>
<td>CLOSED</td>
<td>5</td>
<td>03C9</td>
<td>0.63</td>
<td>3275792.769</td>
<td>3275812.281</td>
<td>0</td>
<td>804</td>
</tr>
</tbody>
</table>
### Packet Details

<table>
<thead>
<tr>
<th>RcdNr</th>
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<td>00000004</td>
<td>08:49:16.053717</td>
<td>Packet Trace</td>
</tr>
</tbody>
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**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: 006859D0  
**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  

**Source**: 9.42.45.101  

**CMD===>**

```
HA a
```
### Session Analysis

**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)

<table>
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<tr>
<th>Flags</th>
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<th>Outbound</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Retransmissions</td>
<td>0</td>
<td>0</td>
<td>Largest</td>
<td>32768</td>
<td>32768</td>
</tr>
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</tr>
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<td>0</td>
<td>1</td>
<td>Smallest</td>
<td>32637</td>
<td>32592</td>
</tr>
<tr>
<td>Window Size 0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Window Probes</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delay Ack</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Command:**  
- F1=Help  
- F3=Return  
- F6=Roll  
- F8=Packets  
- F9=Actions  
- F10=Report  
- F12=Cancel
Session Report

** Session A - [24 x 80] **

** 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==>

24/009

a

[Connected to remote server Host RALVR.RALEIGH.IBM.COM using port 23]
### Session Report (cont.)

#### CNMKWIND OUTPUT FROM Session Report

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Local</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client or Server</td>
<td>SERVER</td>
<td>CLIENT</td>
</tr>
<tr>
<td>Port</td>
<td>1028</td>
<td>23</td>
</tr>
<tr>
<td>Application</td>
<td>telnet</td>
<td></td>
</tr>
<tr>
<td>Link speed (parm)</td>
<td>10</td>
<td>10 Megabits/s</td>
</tr>
</tbody>
</table>

#### Connection:

- **First timestamp:** 2010/03/16 08:48:32.554268
- **Last timestamp:** 2010/03/16 08:49:18.053717
- **Duration:** 08:00:43.499449
- **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:

<table>
<thead>
<tr>
<th>Category</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application data bytes</td>
<td>8293</td>
<td>245</td>
</tr>
<tr>
<td>Sequence number delta</td>
<td>8294</td>
<td>247</td>
</tr>
<tr>
<td>Total bytes Sent</td>
<td>8293</td>
<td>246</td>
</tr>
</tbody>
</table>

TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'

CMD===> _
### Session Report (cont.)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total bytes sent</td>
<td>8293</td>
<td>246</td>
</tr>
<tr>
<td>Bytes retransmitted</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Throughput</td>
<td>0.186</td>
<td>0.805</td>
</tr>
<tr>
<td>Bandwidth utilization</td>
<td>0.01%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Delay ACK Threshold</td>
<td>200 ms</td>
<td>200 ms</td>
</tr>
<tr>
<td>Minimum Ack Time</td>
<td>0.000686</td>
<td>0.00045</td>
</tr>
<tr>
<td>Average Ack Time</td>
<td>0.000686</td>
<td>0.000877</td>
</tr>
<tr>
<td>Maximum Ack Time</td>
<td>0.000686</td>
<td>0.000152</td>
</tr>
<tr>
<td>Data Segment Stats: Inbound</td>
<td>37</td>
<td>16</td>
</tr>
<tr>
<td>Number of data segments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum segment size</td>
<td>536</td>
<td>536</td>
</tr>
<tr>
<td>Largest segment size</td>
<td>524</td>
<td>131</td>
</tr>
<tr>
<td>Average segment size</td>
<td>224</td>
<td>15</td>
</tr>
<tr>
<td>Smallest segment size</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Segments/window</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Average bytes/window</td>
<td>345</td>
<td>15</td>
</tr>
<tr>
<td>Most bytes/window</td>
<td>2414</td>
<td>131</td>
</tr>
</tbody>
</table>

**Window Stats:**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of windows</td>
<td>24</td>
<td>16</td>
</tr>
</tbody>
</table>

TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'

CMD=> a

SHARE 2012 in Atlanta
**Session Report (cont.)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of windows:</td>
<td>24, 16</td>
<td></td>
</tr>
<tr>
<td>Maximum window size:</td>
<td>65536, 65536</td>
<td></td>
</tr>
<tr>
<td>Largest window advertised:</td>
<td>32768, 32768</td>
<td></td>
</tr>
<tr>
<td>Average window advertised:</td>
<td>32741, 32746</td>
<td></td>
</tr>
<tr>
<td>Smallest window advertised:</td>
<td>32637, 32592</td>
<td></td>
</tr>
<tr>
<td>Window scale factor:</td>
<td>0, 0</td>
<td></td>
</tr>
<tr>
<td>Window frequency:</td>
<td>0.5517, 0.3678</td>
<td>windows/s</td>
</tr>
<tr>
<td>Time Stamp updates:</td>
<td>25, 34</td>
<td></td>
</tr>
<tr>
<td>Total Round Trip Time:</td>
<td>23.987290, 43.499529</td>
<td>(43.08%), (78.12%)</td>
</tr>
<tr>
<td>Average Round Trip Time:</td>
<td>0.000000, 0.000000</td>
<td></td>
</tr>
<tr>
<td>Maximum Data in Pipe:</td>
<td>2414, 131</td>
<td></td>
</tr>
<tr>
<td>Maximum retransmission:</td>
<td>0, 0</td>
<td></td>
</tr>
<tr>
<td>Number of Packets:</td>
<td>40, 38</td>
<td></td>
</tr>
<tr>
<td>Untraced Packets:</td>
<td>0, 0</td>
<td></td>
</tr>
<tr>
<td>In-order data:</td>
<td>25, 12</td>
<td>(62.50%), (31.57%)</td>
</tr>
<tr>
<td>Acknowledgments:</td>
<td>1, 5</td>
<td>(2.50%), (13.15%)</td>
</tr>
<tr>
<td>Data and ACK:</td>
<td>12, 4</td>
<td>(30.00%), (10.52%)</td>
</tr>
<tr>
<td>Duplicate ACKs:</td>
<td>0, 2</td>
<td>(0.00%), (5.26%)</td>
</tr>
<tr>
<td>Window size updates:</td>
<td>0, 0</td>
<td>(0.00%), (0.00%)</td>
</tr>
</tbody>
</table>

TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'

CMD==> _ 24/099
Session Report (cont.)

```
CMKWINPND OUTPUT FROM Session Report

(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: 00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)
(+D) Data and ACK: 00:00:00.189316, 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==>
```
### Session Report (cont.)

#### CNMKWIND OUTPUT FROM Session Report

- **(o) Out-of-order:**
  - Inbound: 00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)
  - Outbound: 00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)

- **(d) Delayed ACKs:**
  - Inbound: 00:00:00.298475, 00:00:03.992077 (0.53%), (7.16%)
  - Outbound: 00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)

- **(f) Fragments:**
  - Inbound: 00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)
  - Outbound: 00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)

#### Number of:

<table>
<thead>
<tr>
<th>Type</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>( S ) SYN:</td>
<td>0</td>
<td>1 (0.00%), (2.63%)</td>
</tr>
<tr>
<td>( A S ) ACK SYN:</td>
<td>1</td>
<td>0 (2.50%), (0.00%)</td>
</tr>
<tr>
<td>( F ) FIN:</td>
<td>0</td>
<td>0 (0.00%), (0.00%)</td>
</tr>
<tr>
<td>( A F ) ACK FIN:</td>
<td>0</td>
<td>0 (0.00%), (0.00%)</td>
</tr>
<tr>
<td>( R ) RST:</td>
<td>0</td>
<td>1 (0.00%), (2.63%)</td>
</tr>
<tr>
<td>(U ) URG:</td>
<td>0</td>
<td>0 (0.00%), (0.00%)</td>
</tr>
</tbody>
</table>

#### Time Spent on:

<table>
<thead>
<tr>
<th>Type</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>( S ) SYN:</td>
<td>00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)</td>
<td></td>
</tr>
<tr>
<td>( A S ) ACK SYN:</td>
<td>00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)</td>
<td></td>
</tr>
<tr>
<td>( F ) FIN:</td>
<td>00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)</td>
<td></td>
</tr>
<tr>
<td>( A F ) ACK FIN:</td>
<td>00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)</td>
<td></td>
</tr>
<tr>
<td>( R ) RST:</td>
<td>00:00:00.000000, 00:00:19.211505 (0.00%), (34.50%)</td>
<td></td>
</tr>
<tr>
<td>(U ) URG:</td>
<td>00:00:00.000000, 00:00:00.000000 (0.00%), (0.00%)</td>
<td></td>
</tr>
</tbody>
</table>

#### Messages:

- **I** - Inbound packet

TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'

CMD===> _

---

24/099
Session Report (cont.)

```
<table>
<thead>
<tr>
<th>TcpHdr</th>
<th>IO</th>
<th>F</th>
<th>Seq</th>
<th>Ack</th>
<th>RcvWnd</th>
<th>Data</th>
<th>Delta Time</th>
<th>TimeStamp</th>
<th>Rc</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>0</td>
<td>0</td>
<td>709065838</td>
<td>32768</td>
<td>0</td>
<td>0.000000</td>
<td>06:48:32.554268</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A S</td>
<td>I</td>
<td>1516924025</td>
<td>709065839</td>
<td>32768</td>
<td>0</td>
<td>0.000793</td>
<td>08:48:32.555061</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0 u</td>
<td>709065839</td>
<td>1516924028</td>
<td>32768</td>
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<td>0.000044</td>
<td>08:48:32.555105</td>
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<td></td>
</tr>
<tr>
<td>AP</td>
<td>I</td>
<td>1516924026</td>
<td>709065839</td>
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<td>3</td>
<td>0.001814</td>
<td>08:48:32.556919</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0 d</td>
<td>709065839</td>
<td>1516924029</td>
<td>32765</td>
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<td>0.236337</td>
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<td>1516924029</td>
<td>32765</td>
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<td>0.630173</td>
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<td>AP</td>
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<td>0.000363</td>
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</tr>
<tr>
<td>AP</td>
<td>I</td>
<td>1516924029</td>
<td>709065842</td>
<td>32765</td>
<td>3</td>
<td>0.000590</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>AP</td>
<td>0 d</td>
<td>709065845</td>
<td>1516924032</td>
<td>32765</td>
<td>0</td>
<td>0.270321</td>
<td>08:48:33.694703</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP</td>
<td>I</td>
<td>1516924032</td>
<td>709065845</td>
<td>32765</td>
<td>6</td>
<td>0.000884</td>
<td>08:48:33.695507</td>
<td></td>
<td></td>
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<tr>
<td>AP</td>
<td>0</td>
<td>709065845</td>
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<td></td>
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<tr>
<td>AP</td>
<td>I</td>
<td>1516924038</td>
<td>709065863</td>
<td>32759</td>
<td>3</td>
<td>0.000683</td>
<td>08:48:33.696385</td>
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<td></td>
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<td>AP</td>
<td>0</td>
<td>709065863</td>
<td>1516924041</td>
<td>32765</td>
<td>3</td>
<td>0.000065</td>
<td>08:48:33.696450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP</td>
<td>0</td>
<td>709065866</td>
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<td>32765</td>
<td>3</td>
<td>0.000073</td>
<td>08:48:33.696523</td>
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</tr>
<tr>
<td>AP</td>
<td>I</td>
<td>1516924041</td>
<td>709065869</td>
<td>32762</td>
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<td>0.000582</td>
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<tr>
<td>AP</td>
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<td>32759</td>
<td>3</td>
<td>0.000093</td>
<td>08:48:33.697118</td>
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<td></td>
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<td>AP</td>
<td>0</td>
<td>709065872</td>
<td>1516924050</td>
<td>32759</td>
<td>3</td>
<td>0.000065</td>
<td>08:48:33.697183</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

To view your key settings, enter 'DISPFK'.
Session Report (cont.)

```
CNMKWIND OUTPUT FROM Session Report  
LINE 200 OF 213
AP 0 d 7090668085 1516932319 32764 0  0.299936  08:48:56.842212
APR 0 u 7090668085 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

X-------------------------------- Bottom of Data -----------------------------------X
```

TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==> _
```
### Summary Analysis for that session

**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)

<table>
<thead>
<tr>
<th>Flags</th>
<th>Inbound</th>
<th>Outbound</th>
<th>Window Size</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retransmissions</td>
<td>0</td>
<td>0</td>
<td>Largest</td>
<td>32768</td>
<td>32768</td>
</tr>
<tr>
<td>Duplicate Acks</td>
<td>0</td>
<td>2</td>
<td>Average</td>
<td>32741</td>
<td>32746</td>
</tr>
<tr>
<td>Reset</td>
<td>0</td>
<td>1</td>
<td>Smallest</td>
<td>32637</td>
<td>32592</td>
</tr>
<tr>
<td>Window Size 0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Window Probes</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delay Ack</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Command**: `===>`  
**F1=Help**  
**F3=Return**  
**F8=Send**  
**F9=Actions**  
**F10=Report**  
**F6=Roll**  
**F12=Cancel**

**Connected to remote server/host RAL/MAR.raleigh.ibm.com using port 23**
Commands Available for this Session

Local IP 9.42.45.101
Port 1028 Host Name nmp101.ti

Remote IP 9.42.45.196
Port 23 Host Name nmp196.ti

Total Packets Summarized 78 Stat

<table>
<thead>
<tr>
<th>Flags</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retransmissions</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Duplicate Acks</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Reset</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Window Size 0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Window Probes</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Delay Ack</td>
<td>1</td>
<td>14</td>
</tr>
</tbody>
</table>

Command =>=
F1=Help F3=Return
F8=Packets
F10=Report

F6=Roll F12=Cancel

1. Drop Connection
2. Save Session Packets

*******

22/015

Connected to remote server/host: RAL.VMR.RALEIGH.IBM.COM using port 23

Anta 2012
Save Session Packets

Local IP 9.42.45.101
Port 1028 Host Name npm101.ti

Remote IP 9.42.45.196
Port 23 Host Name npm196.ti

Total Packets Summarized 78 Stat

Flags          Inbound  Outbound
---------------  -------  -------
Retransmissions  0       0
Duplicate Ack    0       2
Reset            0       1
Window Size 0    0       0
Window Probes    0       0
Delay Ack        1       14

2. Command
1. Drop Connection
2. Save Session Packets

F1=Help           F3=Return
F6=Roll           F12=Cancel
F8=Packets        F10=Report

Connected to remote server/host: RALVRH.raleigh.ibm.com using port 23
Save Session Packets

Service Point/Stack: NMP101  Domain: LOCAL  Proc: TCPIP
Save Time: 01/17/11 15:28:00  by Operator  NET0P1
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 ==> F3=Return  F4=Save Trace  F6=Roll  F12=Cancel

Connected to remote server/host RALVMP_RALEIGH.IBM.COM using port 23
Save Session Packets

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

Connected to remote server/host RALVNR.RALEIGH.IBM.COM using port 23
Save Session Packets

Saved Packet Trace Details

Service Point/Stack: NMP101  Domain: LOCAL  Proc: TCPIP
Save Time: 01/17/11 15:28:00  by Operator NET001
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

FKX4751 PACKET TRACE SAVED
Command ===>  F1=Help  F3=Return  F4=Save Trace  F6=Roll  F12=Cancel

07/015  Connected to remote server/host RALVR1, RALEIGH, IBM.COM using port 23
Recall Saved Traces
Recall Saved Traces

Session A - [24 x 80]

<table>
<thead>
<tr>
<th>Collect Time</th>
<th>Operator</th>
<th>Domain</th>
<th>Stack</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/04/10 07:05:56</td>
<td>PHK</td>
<td>LOCAL</td>
<td>TCPIP</td>
<td>FTP SESSION</td>
</tr>
<tr>
<td>11/04/10 09:23:51</td>
<td>PHK</td>
<td>LOCAL</td>
<td>TCPIP</td>
<td>A UDP SESSION</td>
</tr>
<tr>
<td>11/12/10 09:57:45</td>
<td>PHK</td>
<td>LOCAL</td>
<td>TCPIP</td>
<td>TEST UDP CONNECTION</td>
</tr>
<tr>
<td>01/17/11 15:28:00</td>
<td>NETOP1</td>
<td>LOCAL</td>
<td>TCPIP</td>
<td>MY TCP TRACE</td>
</tr>
</tbody>
</table>

F4=View Trace
### Trace Summary

**Session A - [24 x 80]**

**FKKK2B51**

**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)

<table>
<thead>
<tr>
<th>Flags</th>
<th>Inbound</th>
<th>Outbound</th>
<th>Window Size</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retransmissions</td>
<td>0</td>
<td>0</td>
<td>Largest</td>
<td>0</td>
<td>32768</td>
</tr>
<tr>
<td>Duplicate Acks</td>
<td>0</td>
<td>2</td>
<td>Average</td>
<td>0</td>
<td>32768</td>
</tr>
<tr>
<td>Reset</td>
<td>0</td>
<td>1</td>
<td>Smallest</td>
<td>0</td>
<td>32768</td>
</tr>
<tr>
<td>Window Size 0</td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
<td>32768</td>
</tr>
<tr>
<td>Window Probes</td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
<td>32768</td>
</tr>
<tr>
<td>Delay Ack</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Command**: F1=Help  
F2=FullScreen  
F3=Return  
F4=Exit  
F5=Options  
F6=Roll  
F7=Help  
F8=Print  
F9=Quit  
F10=Report  
F11=Zoom  
F12=Cancel

**Connected to remote server/host RALVMR,raleigh.ibm.com using port 23**
# Recall Saved Traces

<table>
<thead>
<tr>
<th>Collect Time</th>
<th>Operator</th>
<th>Domain</th>
<th>Stack</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/04/10 07:05:56</td>
<td>PHK</td>
<td>LOCAL</td>
<td>TCPIP</td>
<td>FTP SESSION</td>
</tr>
<tr>
<td>11/04/10 09:23:51</td>
<td>PHK</td>
<td>LOCAL</td>
<td>TCPIP</td>
<td>A UDP SESSION</td>
</tr>
<tr>
<td>01/17/11 15:28:00</td>
<td>NETOP1</td>
<td>LOCAL</td>
<td>TCPIP</td>
<td>MY TCP TRACE</td>
</tr>
</tbody>
</table>

**Highlighted Trace:**
- **Collect Time:** 01/17/11 15:28:00
- **Operator:** NETOP1
- **Domain:** LOCAL
- **Stack:** TCPIP
- **Description:** MY TCP TRACE

**Keyboard Shortcuts:**
- F10: Details
- F11: Delete Trace
- F12: Cancel
Details About the Trace

Service Point/Stack: NMP101  Domain: LOCAL  Proc: TCPIP
Save Time: 01/17/11 15:28:00  by Operator NET01
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

22/015

Connected to remote server/host RALVMF_raleigh.ibm.com using port 23
Trace Summary

Session A - [24 x 80]

FKXK2B51  Session  Analysis

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)

<table>
<thead>
<tr>
<th>Flags</th>
<th>Inbound</th>
<th>Outbound</th>
<th>Window Size</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retransmissions</td>
<td>0</td>
<td>0</td>
<td>Largest</td>
<td>0</td>
<td>32768</td>
</tr>
<tr>
<td>Duplicate Acks</td>
<td>0</td>
<td>2</td>
<td>Average</td>
<td>0</td>
<td>32768</td>
</tr>
<tr>
<td>Reset</td>
<td>0</td>
<td>1</td>
<td>Smallest</td>
<td>0</td>
<td>32768</td>
</tr>
<tr>
<td>Window Size 0</td>
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<td>0</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Window Probes</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td></td>
</tr>
<tr>
<td>Delay Ack</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Command ===> -
F1=Help  F3=Return  F10=Report
F8=Packets  F6=Roll  F12=Cancel

Connected to remote server/host RALVMR.raleigh.ibm.com using port 23
Returning to Trace Filter Screen
Choose sessions to analyze

Session A

- 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

Connected to remote server/host: RALVMR, RALEIGH, IBM.COM using port 23
Select a session to examine
Summary analysis of selected session

Session Analysis

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)

<table>
<thead>
<tr>
<th>Flags</th>
<th>Inbound</th>
<th>Outbound</th>
<th>Window Size</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retransmissions</td>
<td>0</td>
<td>0</td>
<td>Largest</td>
<td>32768</td>
<td>32768</td>
</tr>
<tr>
<td>Duplicate Acks</td>
<td>0</td>
<td>2</td>
<td>Average</td>
<td>32741</td>
<td>32746</td>
</tr>
<tr>
<td>Reset</td>
<td>0</td>
<td>1</td>
<td>Smallest</td>
<td>32637</td>
<td>32592</td>
</tr>
<tr>
<td>Window Size 0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Window Probes</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delay Ack</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Command ==> a
F1=Help
F3=Return
F8=Packets
F9=Actions
F10=Report
F6=Roll
F12=Cancel

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

22/015

2012
Choose sessions to analyze – UDP
Choose sessions to analyze – ICMP

TCP Sessions | UDP Sessions | ICMP Sessions
---|---|---
4 | 14 | 3
TCP Sessions with error flags
- Unacknowledged Syns | 1
- Retransmissions | 0
- Duplicate Ackses | 4
- Zero Window Size | 0
- Window Probes | 0
- Reset Flags | 1
- Delayed Ackses | 3

Command ===> F3=Return F4=Sessions

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

04/039 2012
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

Packet trace initially inactive
Start Connection Monitoring (IPSTAT)
Select host and connections

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

TCP/IP for z/OS Connection Management

<table>
<thead>
<tr>
<th>Service</th>
<th>Hostname</th>
<th>Active Connections</th>
<th>IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMP101</td>
<td>nmp101.tivlab.ra</td>
<td>3</td>
<td>9.42.45.101</td>
</tr>
</tbody>
</table>

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

Connected to remote server/host as user lcl using port 23
# List of active connections

<table>
<thead>
<tr>
<th>Port</th>
<th>Client Address</th>
<th>Local Port</th>
<th>Send</th>
<th>Receive</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>9.42.45.217</td>
<td>1027</td>
<td>247</td>
<td>5014</td>
</tr>
<tr>
<td>1026</td>
<td>9.42.45.10</td>
<td>23</td>
<td>9303</td>
<td>450</td>
</tr>
<tr>
<td>1029</td>
<td>9.42.45.196</td>
<td>23</td>
<td>9569</td>
<td>425</td>
</tr>
</tbody>
</table>
Available commands
Control selections for packet trace

- Service Point/Stack: NMP101
- Proc: TCPIP
- Info Name: ALL

- LAddr: 0.42.45.101
- RAddr: 0.42.45.217
- Portnum: *
- LPort: 1027
- RPort: 23
- Protocol: ALL (default)

- Time: Start *
- End *
- MaxRecs: 1
  - 1-Last 100
  - 2-First
  - Truncate: 65535

- Command ==> F1=Help F3=Return F4=View Packets F6=Roll F8=Extended Options F10=Analyze F12=Cancel

03/000
### List of packets

<table>
<thead>
<tr>
<th>DP</th>
<th>Nh</th>
<th>h:mm:ss.mmmmmm</th>
<th>IpId</th>
<th>Seq_num</th>
<th>Ack_num</th>
<th>Wndw</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT 3509</td>
<td>13:08:08.409409</td>
<td>34C6</td>
<td>2279080012</td>
<td>2295814566</td>
<td>32760</td>
<td>ACK</td>
<td>PSH</td>
</tr>
<tr>
<td>OT 3508</td>
<td>13:08:08.173555</td>
<td>34C7</td>
<td>2279080007</td>
<td>2295814556</td>
<td>32516</td>
<td>ACK</td>
<td>PSH</td>
</tr>
<tr>
<td>OT 3507</td>
<td>13:08:08.720237</td>
<td>34C6</td>
<td>2279080007</td>
<td>2295814556</td>
<td>32516</td>
<td>ACK</td>
<td>PSH</td>
</tr>
<tr>
<td>OT 3506</td>
<td>13:08:08.169573</td>
<td>34C5</td>
<td>2279080007</td>
<td>2295814306</td>
<td>32768</td>
<td>ACK</td>
<td>PSH</td>
</tr>
<tr>
<td>OT 3505</td>
<td>13:08:07.126817</td>
<td>34C4</td>
<td>2279080002</td>
<td>2295813258</td>
<td>32768</td>
<td>ACK</td>
<td>PSH</td>
</tr>
<tr>
<td>OT 3504</td>
<td>13:08:05.127328</td>
<td>34C3</td>
<td>2279080002</td>
<td>2295813258</td>
<td>32768</td>
<td>ACK</td>
<td>PSH</td>
</tr>
<tr>
<td>OT 3503</td>
<td>13:08:05.105905</td>
<td>34C2</td>
<td>2279080732</td>
<td>2295811029</td>
<td>32765</td>
<td>ACK</td>
<td>PSH</td>
</tr>
</tbody>
</table>

**Command ===>

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

**Session 10716**
Trace components started on the fly
Display packet control

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
  ICMP
  OSPF
  (Number)

Time:Start #
  End

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

Command ==> F3=Return F4=View Packets F6=Roll
F1=Help F8=Extended Options F10=Analyze F12=Cancel

03/000

Session 10716
Stop trace?

Y = stop the trace
N = leave the trace running, so you can monitor the packets that are collected
Choose another connection or exit
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

Netlog → NetView console → Syslog → System console

Joblogs → ISPF
Log Browse with NetView V6.1

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
  • “What happened over the weekend?”
  • “Show me all the IEF123 messages.”
  • “I need to see all the ABC* and DEF* messages from jobs JOB1 and JOB2 during first shift last Tuesday with descriptor code 2.”

• 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
Related Session

• Session 10713
  • “Problem Solving with Consolidated Logs” (Larry Green (IBM))
  • Thursday, March 15, 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
Views in NMC

The diagram shows various views in the NMC software, including network views and system views. The network views are represented by icons labeled with IP addresses, such as `nmp198.tivlab.raleigh.ibm.com`, `netview01.tivlab.raleigh.ibm.com`, `nmp18152.tivlab.raleigh.ibm.com`, and `nmp196.tivlab.raleigh.ibm.com`. These views are part of the Tivoli NetView management solution, which helps in managing and monitoring a network's resources.
System Details Views
Display Resource Details
### NMC Display Details

<table>
<thead>
<tr>
<th>RODM Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SysObjectid</td>
<td>1.3.6.1.4.1.2.3.13</td>
</tr>
<tr>
<td>SysContact</td>
<td>SNMPBASE - Unspecified</td>
</tr>
<tr>
<td>EntityId</td>
<td>15</td>
</tr>
<tr>
<td>SysDescr</td>
<td>Sysname: OS/390 Nodename: NMP198...</td>
</tr>
<tr>
<td>FQDN</td>
<td>NMP198</td>
</tr>
<tr>
<td>SysLocation</td>
<td>SNMPBASE - Unspecified</td>
</tr>
<tr>
<td>Sysplex</td>
<td>NV3PLEX</td>
</tr>
</tbody>
</table>
Discovery Library Adapter (DLA)

1. NetView discovers IP, sysplex and system resources
2. Discovered resources are stored in RODM
3. DLA extracts resource & relationship data from RODM, formats & transports it to CMDB
Discovery Library Adapter (DLA)

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

Site 1: Application A active

Site 2: Application A standby

Transactions

Workload Distributor

data

replication

data

Controller

DB2

IMS

SOURCE
Example (cont.): “Active” Application Fails

Site 1: Application A fails

Site 2: Application A standby
Example (cont.): “Standby” Application Becomes “Active”

- Automatic workload switchover
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

Session 10716
Related Session on GDPS Active/Active

- **Session 10833**
  - “Intelligent Load Balancing with IBM Multi-Site Workload Lifeline” (Mike Fitzpatrick (IBM))
  - Thursday, March 15, 1:30
Questions?
More Information

- NetView website
- 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!