Trace File Analysis

Identifying Wire Latency, Client Latency, Server Latency

Laura Chappell
Founder | Wireshark University

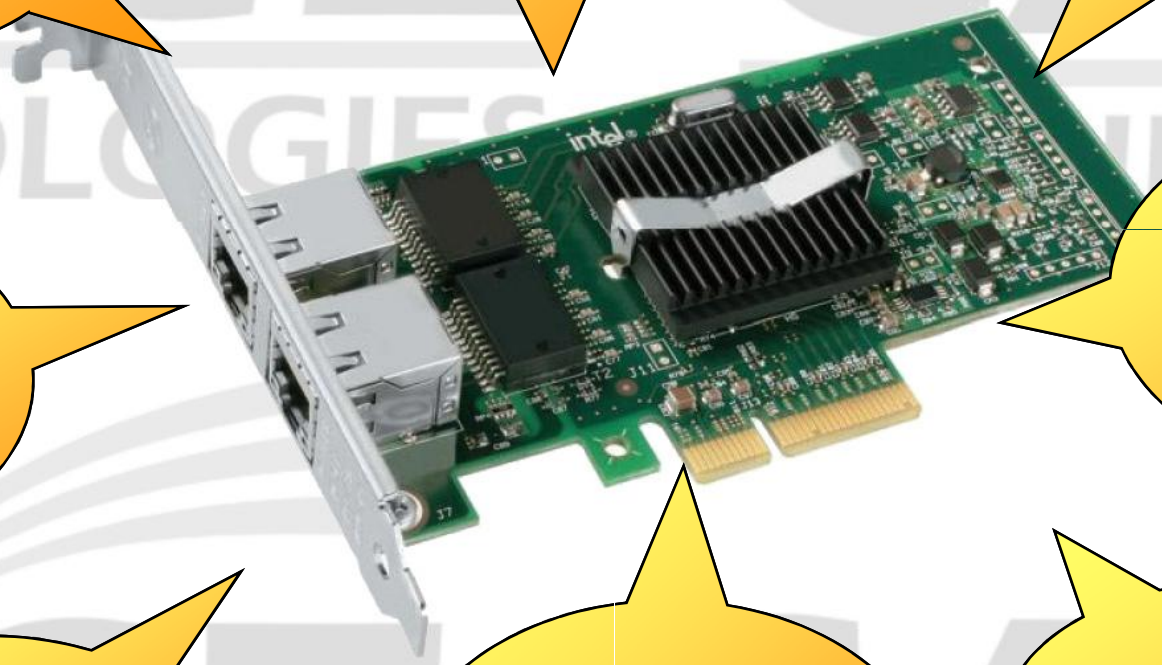
SHARKFEST **'08**
Foothill College
March 31 - April 2, 2008

TurboCap

Full Speed

Traffic TAP

1 Gb



2 Copper ports

Capture and Injection

Wireshark

Aggregation

WinPcap

Analyzing Network Performance Issues

Key Issues:

- High Latency (Client, Server, Link)
- Packet Loss (Upstream, Downstream)
- Congestion (Network, Receiver)
- Configuration Problems (Service Unavailable, Loops)
- Redirections (Routing, Service)
- Interdependencies (Third Parties)
- Low throughput (Itty-Bitty Stinkin' Packets)
- Negotiation Faults (Protocol or Application Layer)

Wire Latency - Client Latency - Server Latency

SYN

SYN ACK

ACK

GET /

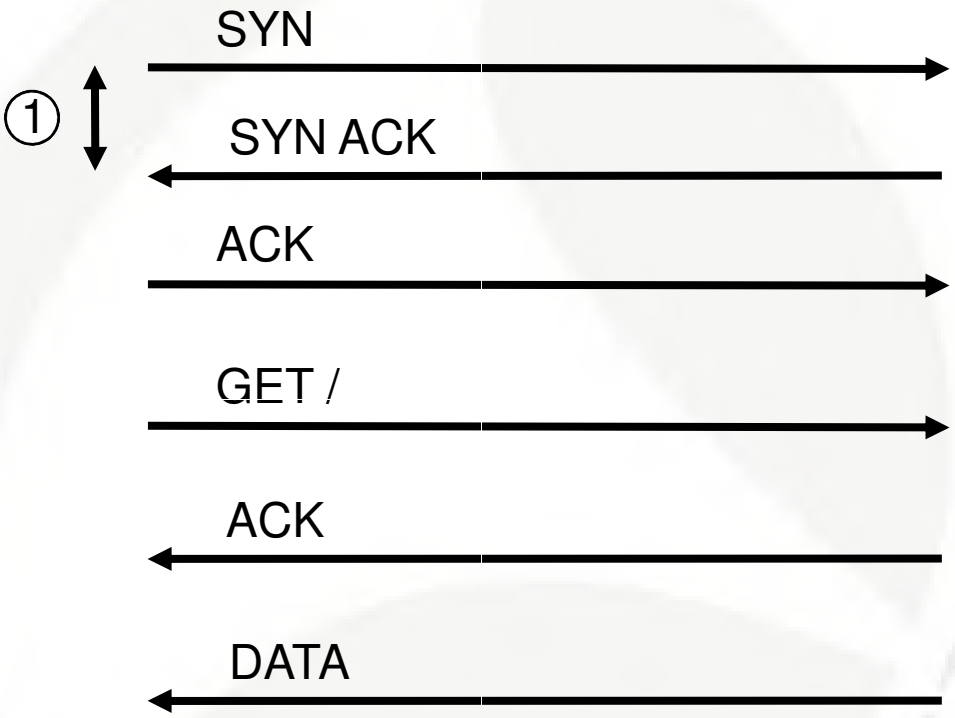
ACK

DATA

CACE TECHNOLOGIES

www.wiresharkU.com WIRESHARK UNIVERSITY

Wire Latency - Client Latency - Server Latency

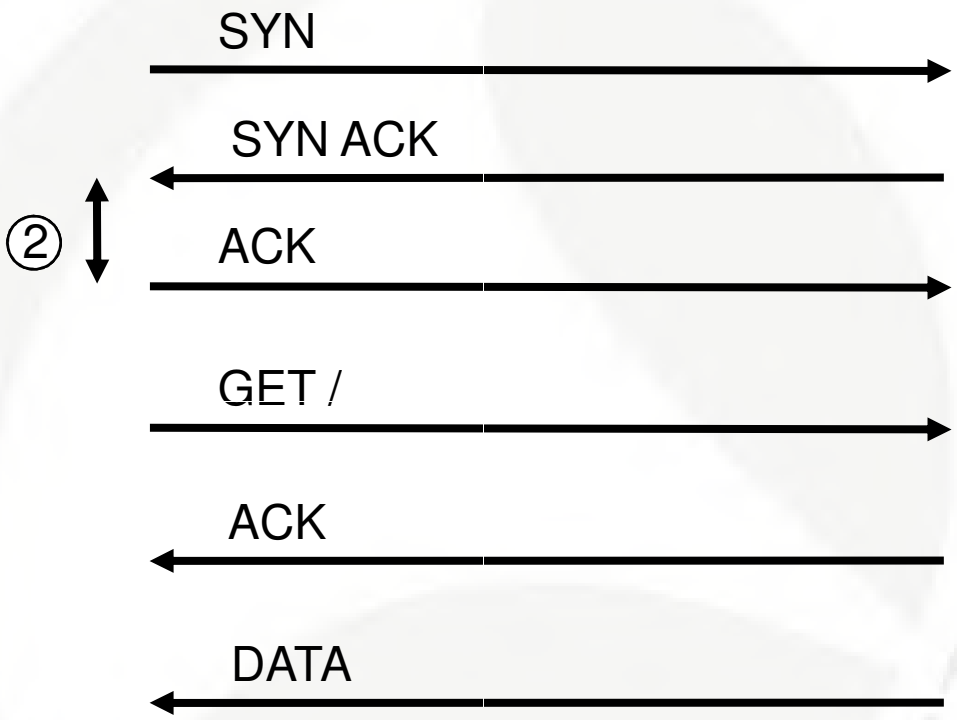


1 Time between the SYN and SYN ACK indicates the roundtrip wire latency time and processing through the TCP/IP stack to establish a connection. If this takes a long time on average, consider looking at links and devices along the network path that might be introducing latency.

CACE TECHNOLOGIES

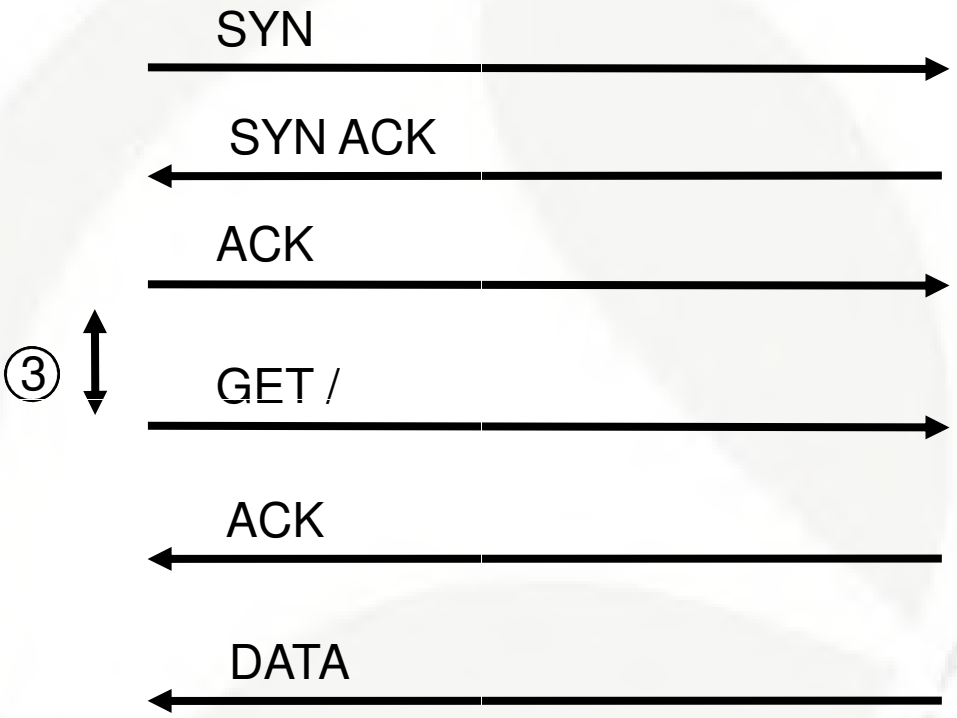
www.wiresharkU.com WIRESHARK UNIVERSITY

Wire Latency - Client Latency - Server Latency



2 Time between the SYN ACK and the ACK indicates the speed of the client in responding – this only relates to the client's TCP/IP stack, not their ability to process applications.

Wire Latency - Client Latency - Server Latency

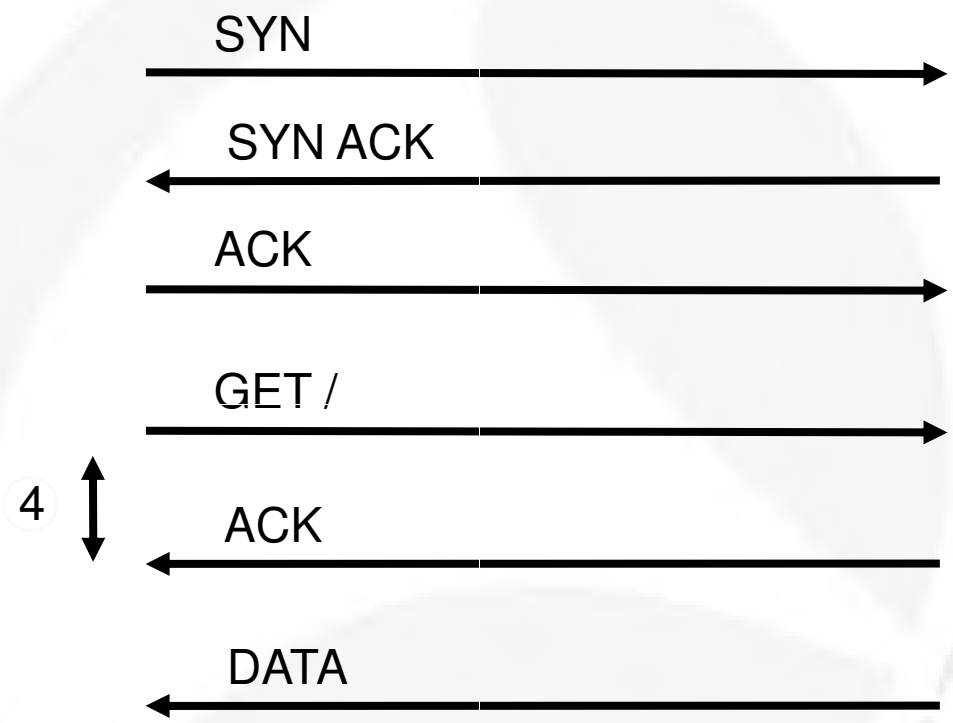


3 Time between the ACK and the GET command (or whatever command is sent next) indicates the speed of the client's application to make requests. Applications typically make an immediate request to the server upon completion of the TCP hanshake process. (Exception – applications that wait for a server to send data first – FTP, for example – the client waits for the banner.)

CACE TECHNOLOGIES

www.wiresharkU.com WIRESHARK UNIVERSITY

Wire Latency - Client Latency - Server Latency

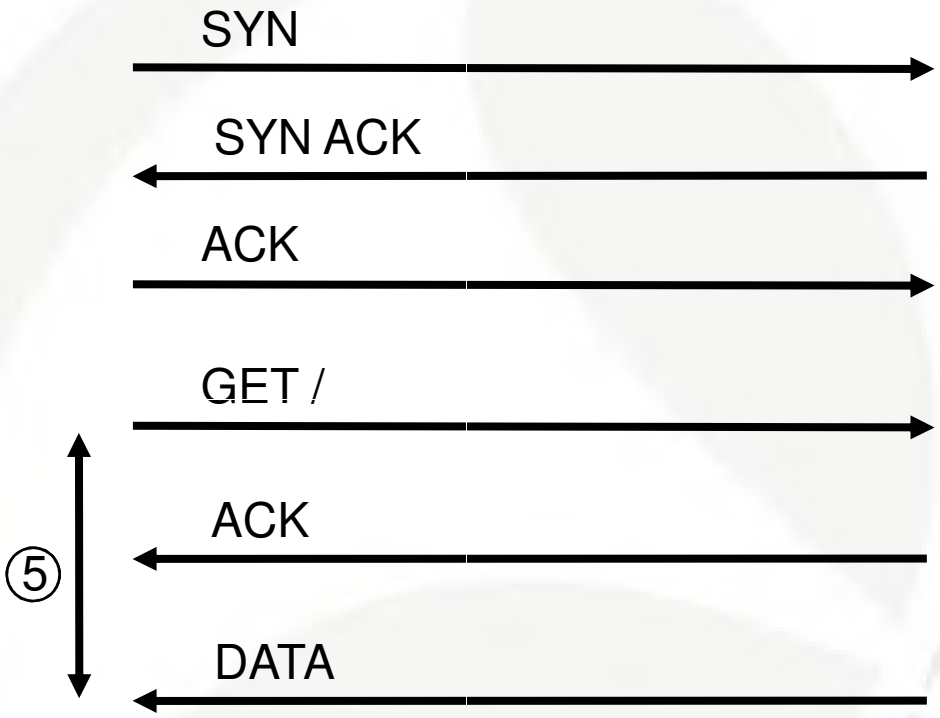


4 Time between the GET command and the ACK indicates wire latency again. If this takes a long time, then look at the network path again.

CACE TECHNOLOGIES

www.wiresharkU.com WIRESHARK UNIVERSITY

Wire Latency - Client Latency - Server Latency



5 Time from the GET command to the actual return of data indicates the time required by the server to process the request and get the data back to the client. If this time value is high (but #4 is low), then we'd look at the server as the slow one in this connection.

CACE TECHNOLOGIES

www.wiresharkU.com WIRESHARK UNIVERSITY

Lab: Latency

Issue: downloads take too long

File: download-bad.pcap

Review the handshake process and evaluate the time between:

- SYN and SYN ACK _____ ms
- SYN ACK and ACK _____ ms
- GET and related ACK _____ ms
- ACK and data requested _____ ms

At this point, where does the latency problem appear to be located? Server? Client? Wire?

Lab: Latency

Issue: downloads take too long

File: anotherlousyhotelnetwork.pcap

Review the handshake process and evaluate the time between:

- DNS query _____ ms
- DNS response _____ ms
- SYN and SYN ACK _____ ms
- SYN ACK and ACK _____ ms
- GET and related ACK _____ ms
- ACK and data requested _____ ms

At this point, where does the latency problem appear to be located? Server? Client? Wire?

What's Next?

Laura's Lab Kit v9

In show bags as well as…

ISO image: www.novell.com/connectionmagazine/laurachappell.html

CACE TECHNOLOGIES

www.wiresharkU.com
WIRESHARK UNIVERSITY