



# SHARKFEST '13

Wireshark Developer and User Conference

## PA-7 Troubleshooting from the field

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# PA-7 Troubleshooting from the field

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- Introduction about me
- SMB in the unoptimized environment
- SMB in the optimized environment
- Customer reports that open a file is not so fast as copy the file

# About me

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- Around 5 Years IT Datacenter Operations and Help desk
- Around 15 Years network administration, network design, Troubleshooting different problems that are not seen in the network configuration, first contact with network analyzer (Sniffer, Network General)

# About me

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- Around 13 Years Network Analyst, working with different products to analyze and monitor performance problems. (change to Wireshark and Cacetech)
- Working as Technical Sales Consultant with Riverbed Performance Optimization Products
  - Steelhead (WAN Optimization)
  - Granite (Branch Office Consolidation)
  - Stingray (Application Delivery Controller)
  - Cascade (Performance Monitoring)

# LAB Config

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- Virtual Network in an ESX Environment
  - Fileserver
  - Datacenter Steelhead
  - WAN Emulator (WANEm)
  - Office Steelhead
  - Two PCs
  - WAN Simulation with 4 Mbit/s and 40 ms RTT

# Unoptimized SMB

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- what commands we see
- what errors we see
- what timing we see
- what bandwidth we see
- investigate a trace from the Client and Server Side with Wireshark and Pilot Console

# Unoptimized SMB

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- The client trace shows that SMB\_READ\_AND\_X have the most transaction time.
- All the others reflect mainly the roundtrip time
- in this case we see no errors

# optimized SMB technic behind

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- Compression and deduplication on bit level
- TCP optimization
- Latency optimization with read ahead and write behind



# optimized SMB File Copy

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- what commands we see
- what errors we see
- what timing we see
- what bandwidth we see
- investigate a trace from the Client and Server Side with Wireshark and Pilot Console

# optimized SMB File Copy

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- The client trace shows that SMB\_READ\_AND\_X have the much better transaction time.
- All the others reflect mainly the roundtrip time
- no errors
- Blocksize is mainly 64K
- bandwidth that's much more as the available 2 Mbit line

# optimized SMB Open File

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- Customer reports that the file is slower opened then copied.
- what commands we see
- what errors we see
- what timing we see
- what bandwidth we see
- investigate a trace from the Client with Wireshark and Pilot Console

# optimized SMB Open File

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- a lot of object path and name not found
  - that cannot be optimized
- a lot of reads with small block size
  - will be optimized as good as possible but with this blocksize we get also in the LAN slow throughput

# How optimization works

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- optimization is transparent
  - so cannot work as a proxy
  - for a example must ask each time a file is opened if it is there on the server
  - transport of the file can be optimized in volume and roundtrip time with different mechanism of the optimization vendor
  - best result can be reached when the application reads the file sequential.

# optimized SMB Open File

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- with this knowledge customer exported a project in a transfer directory.
- when he then opened the project it opens much faster
- when we investigate in the trace we see no more path not found or name not found in the trace.

# WAN Optimization Configuration Problem

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- How is the Optimization Device placed in the network
- Two Faces Device between Layer 2 and Layer 3
- Customer Reports that Application is sometimes slower with optimization enabled

# WAN Optimization Configuration Problem

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- Lets investigate the connections of the client
- There are a lot of different connections
- we had to investigate what sessions are part of the application
- Then I checked this connections with my knowledge of the tests before if optimization works



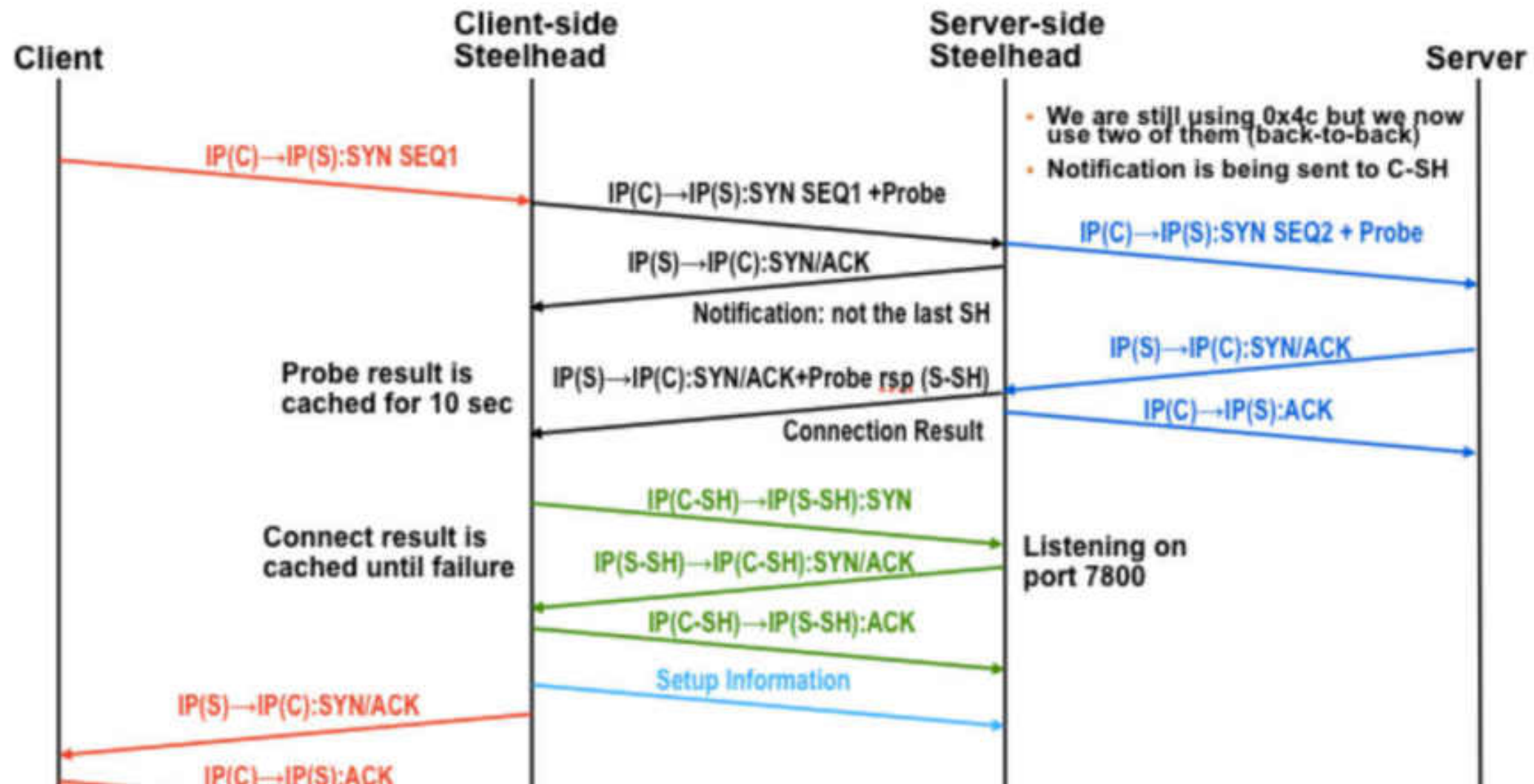
# WAN Optimization Configuration Problem

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- as i found no hints i go in a more general view of TCP behavior
- I found that sometimes the max. Roundtriptime was 9 seconds.
- Investigate with Wireshark whats going on.
- Investigate on Client LAN side
- Investigate on Client WAN side
- Investigate on Server WAN side

# Session Setup Optimization by Riverbed

## In-path Enhanced Auto-discovery First Connection Packet Flow



# WAN Optimization Configuration Problem

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- Customer reported a wrong subnet mask for the inpath interface
- because of this Serverside Steelhead does a ARP as he thinks the Server is on the same network.
- after the second SYN he knows that someone is going wrong and switch to bridge mode for this connection
- now the packet is no more inspected and will be bridged to the router
- Steelhead turns off optimization for a connection before

# PA-7 Troubleshooting from the field

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- Thank you
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