PA-7 Troubleshooting from the field
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PA-7 Troubleshooting from the field

- 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

- 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

• 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

- 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

- 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

- 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

- Compression and deduplication on bit level
- TCP optimization
- Latency optimization with read ahead and write behind
optimized SMB File Copy

- 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
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.
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

- 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

- optimization is transparent
  - so cannot work as a proxy
  - for an 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

- 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

- 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
• 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

- 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 what's 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

Client

Client-side Steelhead

Server-side Steelhead

Server

IP(C)→IP(S): SYN SEQ1

IP(C)→IP(S): SYN SEQ1 + Probe

IP(S)→IP(C): SYN/ACK

IP(C)→IP(S): SYN/ACK + Probe

Notification: not the last SH

IP(S)→IP(C): SYN/ACK + Probe rsp (S-SH)

Connection Result

IP(C-SH)→IP(S-SH): SYN

IP(S-SH)→IP(C-SH): SYN/ACK

IP(C-SH)→IP(S-SH): ACK

Setup Information

Listening on port 7800

Probes result is cached for 10 sec

Connect result is cached until failure

We are still using 0x4c but we now use two of them (back-to-back)

Notification is being sent to C-SH

IP(S)→IP(C): SYN/ACK

IP(C)→IP(S): ACK

IP(C)→IP(S): ACK

IP(S)→IP(C): SYN/ACK

IP(S)→IP(C): SYN SEQ2 + Probe

IP(S)→IP(C): SYN/ACK
WAN Optimization Configuration Problem

- 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
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- Thank you
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