

SMB3.1.1 Acceleration in SteelHead 9.2.0

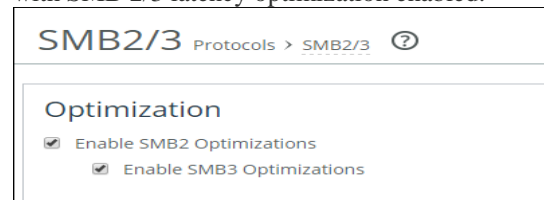
Riverbed© SteelHead™ is the industry's first device to offer Server Message Block (SMB) 3.1.1 optimization with SMB3.1.1 signing, secure dialect negotiation and encryption support. These traffic optimizations include read-ahead, write-behind, and batch prediction and several other techniques. This results in best performance in the industry as shown in the document in terms of low-latency transfers and bandwidth utilization.

Test Results using SteelHead:

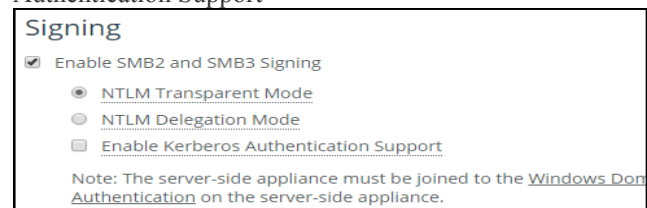
- Up to 40 times improvement in data transfer time for Signed SMB3.1.1
- Up to 99% reduction in bandwidth consumption for Signed SMB3.1.1
- Industry first to optimize Encrypted SMB transfers, with amazing results as shown

Configuration

For the SMB3.1.1 optimization, both the client-side and the server-side SteelHeads must be running software version 9.2.0 with SMB 2/3 latency optimization enabled.



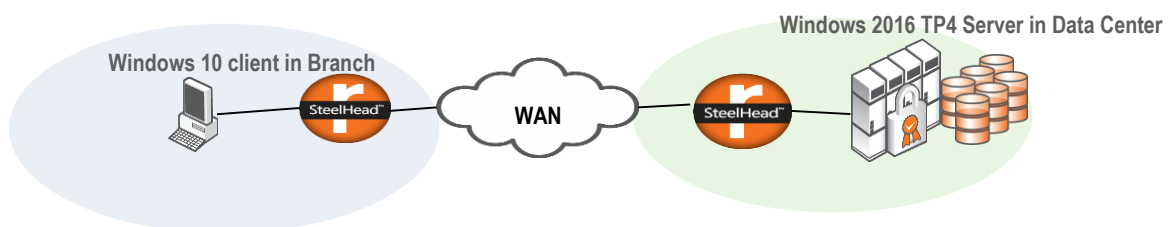
Next step is to enable signing. Riverbed recommends that you use “NTLM transparent” mode or the end-to-end Kerberos mode, which is enabled by selecting “Enable Kerberos Authentication Support”



Performance Summary

Test results indicate dramatic improvement in overcoming latency and overall bandwidth reduction with the SteelHead.

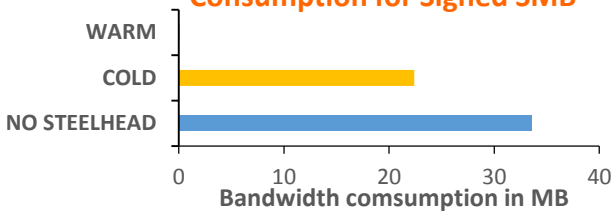
Typical SMB deployment Architecture



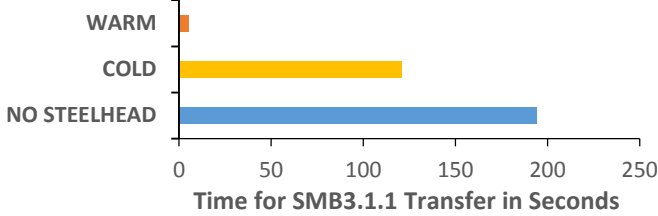
Performance tests includes ‘no Steelhead’, cold and warm transfers as explained in Testing Parameters. First set of graphs shows results for signed SMB transfers and the second set shows for Encrypted SMB transfers where the share on server is encrypted. The warm transfer for both shows an impressive 40 times faster performance while using the SteelHead and up to 99% reduction in data usage.

Signed SMB3.1.1 Test Results

99% Reduction in Bandwidth Consumption for Signed SMB

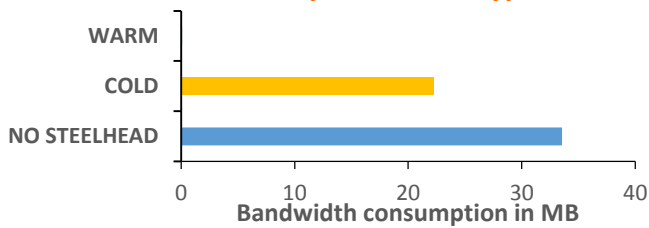


Up to 40x Faster for Signed SMB



Encrypted SMB3.1.1 test results

99% Reduction in Bandwidth Consumption for Encrypted SMB



About Riverbed

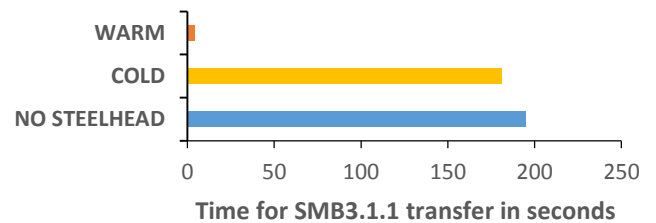
Riverbed, at more than \$1 billion in annual revenue, is the leader in application performance infrastructure, delivering the most complete platform for the hybrid enterprise to ensure applications perform as expected, data is always available when needed, and performance issues can be proactively detected and resolved before impacting business performance. Riverbed enables hybrid enterprises to transform application performance into a competitive advantage by maximizing employee productivity and leveraging IT to create new forms of operational agility. Riverbed’s 26,000+ customers include 97% of the *Fortune* 100 and 98% of the *Forbes* Global 100. Learn more at Riverbed.com



TESTING PARAMETERS

- Two SteelHeads with release 9.2.0
- Server-side Steelhead joins Windows domain in Active Directory integrated (Windows 2008 and later) mode
- 1544Kbits/sec and 100ms RTT on Network WAN simulator
- WAN byte statistics are collected from WanEm, a virtual WAN simulator
- Eight files (Word, Excel, PPT) of size 25.1 MB used to transfer between client and server
- “No SteelHead” tests conducted by stopping services on the SteelHead and allowing traffic to ‘passthrough’
- Cold transfer is where the data is detected by the Steelheads for the very first time
- Subsequent transfers of the same data between the endpoints are referred to as ”warm” transfers
- Test performed by transferring 8 files (25.1 MB) from Windows 2016 TP4 server to Windows 2010 client,

Up to 40x Faster for Encrypted SMB



Conclusion

The SteelHead has consistently delivered a great SMB performance. The newly added feature in 9.2.0 for SMB 3.1.1 continues to deliver on that promise to reduce bandwidth usage while improving user experience.