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Microsoft® SharePoint® Server 2010 Performance Benefits with Riverbed WAN Optimization

A Riverbed whitepaper

Riverbed worked closely with the Microsoft technical teams to validate interoperability with SharePoint 2010. The test results outlined in this white paper include streamlining application performance, mitigating latency and optimizing the effectiveness of SharePoint 2010 over the WAN*

Introduction

Microsoft SharePoint® Server 2010 allows users around the globe to share documents and information in a collaborative environment. While SharePoint Server provides a rich suite of team productivity tools, in geographically disperse deployments users may still encounter issues which can impose on overall application performance, including:

- Congested pipes
- Long distances from server
- Variable links
- Constantly changing connection locations
- Network latency

With just one participant working from a remote location, live collaboration on shared documents can quickly become a strain on all participants. IT managers have realized that issues like variable links, constantly changing connection locations, and network latency make it difficult to alleviate slow file operations and screen refreshes, which can contribute to slow file operations and screen refreshes.

Optimal collaboration experiences with SharePoint Server 2010 should provide quick document check-in/check-out performance to all team members, regardless of their connection point, or their distance from the server. This paper highlights how using the Riverbed® Steelhead® WAN optimization can help overcome the challenges faced by SharePoint Server users in a distributed environment.

The Riverbed Steelhead product solution

Enhance and extend Microsoft® SharePoint® 2010 implementations

Riverbed Technology's WAN optimization solutions optimize core SharePoint Server 2010 user operations to deliver LAN-like performance for remote offices by utilizing the Riverbed® Optimization System (RiOS®), which simultaneously addresses bandwidth constraints and the combined effects of latency and protocol inefficiencies. RiOS uses fine-grain data reduction, as well as compression, to perform data streamlining, typically reducing bandwidth utilization by 60 to 95%. Transport and application streamlining minimize protocol chattiness, eliminating 65 to 99% of packet round trips across the WAN.

RiOS also utilizes specialized application streamlining for HTTP and HTTPS, which enables dramatic performance improvements for team productivity, when using a centralized instance of SharePoint Server. With RiOS, distributed SharePoint servers and complex replication models are no longer necessary for accelerated performance at any office, anywhere in the world. Ultimately, this paper will present the Riverbed Steelhead products as solutions to the WAN performance obstacles SharePoint Server users may experience.

Riverbed Steelhead products mitigate the effect of latency and bandwidth when implementing SharePoint Server over the WAN

Deploying Steelhead appliances help to mitigate the effect of latency and bandwidth limitations, when implementing SharePoint Server over the WAN. This is achieved in a number of ways, including:

- Boosting the performance for SharePoint operations in distributed environments
- Eliminate network connection congestion due to lower bandwidth
- Significantly reduce or minimize the high chattiness in application protocols

Riverbed and SharePoint Server 2010 Test Summary

The test results outlined below demonstrate the performance improvement and bandwidth reduction users can expect to see when using Steelhead products in a SharePoint Server environment. Testing was performed in conjunction with the SharePoint Server 2010 performance team at the Microsoft campus in Redmond, Washington.

* - Anthony Blake, Senior Product Manager, SharePoint Team, Microsoft Corporation

The test configuration simulated a typical client scenario using SharePoint Server in a distributed enterprise. The simulated client was at a remote office accessing a centralized SharePoint server over 1544kbps WAN bandwidth with 100ms latency (round trip time). See logical diagram in Figure 1 below.
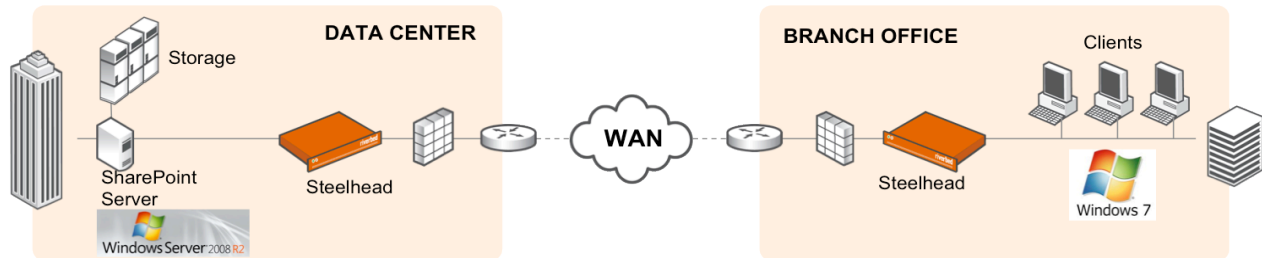

Figure 1: Deployment Diagram, WAN-T1 with 100ms Latency setup

Tests were performed using Windows 7 Enterprise as the client platform connecting to a SharePoint Server 2010 running on Windows 2008 R2 with SQL Server 2008.

The applications tested included Microsoft PowerPoint, Excel and Word, using a variety of file sizes. Operations were performed using a standard SharePoint site and included a set of common activities such as uploading, downloading, checking-out, editing, and checking-in modified files.

The HTTP module in RiOS now includes the ability to optimize authentication and authorization traffic. SharePoint Server can benefit from this feature by mitigating the chatty behavior of authorization requests required for each object. Refer to the published guidelines in the Riverbed Management Console user's guide for further configuration details. The performance tests were run on T1 WAN links with a latency of 100ms.The variables tested included the size and type of the file. Testing was performed with HTTP and also HTTPS.

Terminology

A "cold" operation is defined as a data transfer that has never been seen by the Steelhead product before (completely new data).

A "warm" operation is defined as a data transfer in which the Steelhead product has seen most or all of the data before (warm performance is also observed with an incremental change of data that has been used by another application across the WAN).

Test Results

The table below highlights a sample of the SharePoint Server 2010 performance improvement and bandwidth reduction observed, with Steelhead products in the network. Graphs are also included for clarity.

Testing showed SharePoint Server 2010 performance improvements of the order of 30x for download operations. Also bandwidth usage was reduced by up to 99% with the Steelhead product.

Sharepoint Server 2010 Test Description	Time without Steelhead (seconds)	Time with Steelhead (Cold)	Time with Steelhead (Warm)	Performance Improvement
HTTP 6.3MB .ppt File Download	**37**	16	**1.3**	28x
HTTP 6.5MB .doc File Upload	42	**6**	**1.5**	28x
HTTPS 6.3MB .xls File Download	28	**5**	**1**	28x

Table 1: Performance Improvement results for Microsoft® SharePoint® Server 2010 with Riverbed Steelhead

Sharepoint Server 2010 Test Description	Bytes transferred without Steelhead	Bytes transferred with Steelhead (cold)	Bytes transferred with Steelhead (warm)	Bandwidth Reduction
HTTP 6.3MB ppt Upload	14665490	1430005	252814	98%
HTTPS Word .doc Edit	7622124	509276	342444	96%

Table 2: Bandwidth Reduction results for SharePoint 2010 file with Riverbed Steelhead
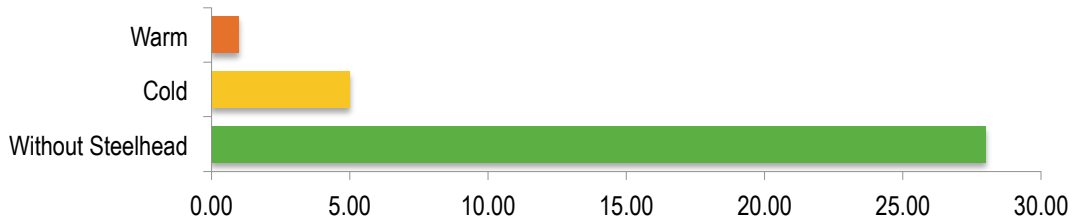
SharePoint HTTP 6.3MB ppt File Download – Performance Improvement
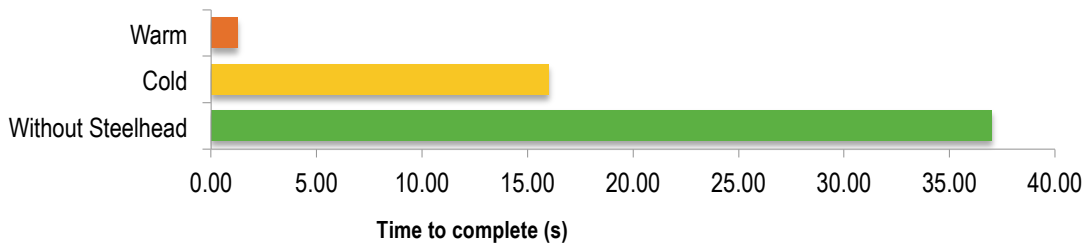
SharePoint HTTP 6.3MB ppt File Download - Bandwidth Reduction
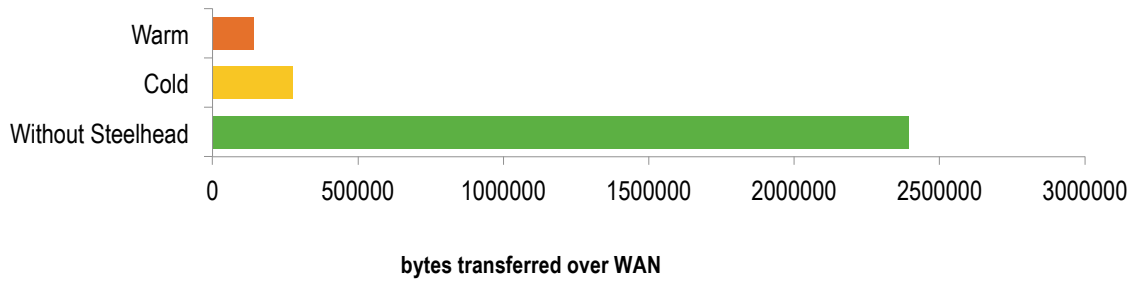
SharePoint HTTPS 4.1MB xls File Download – Performance Improvement

Steelhead Products Powered by Riverbed Optimization System (RiOS)

RiOS software combines patent-pending data reduction, TCP optimization, application-level latency optimizations, and remote office file and management functionality. Together, these technologies provide a comprehensive solution for enterprise WAN optimization, scaling across a range of applications and network topologies to accelerate applications up to 100x. RiOS consists of four key components:

Data Streamlining – RiOS data streamlining works across all TCP applications to reduce bandwidth consumption by up to 99%. Data streamlining works across Windows file sharing (including MS Office), email (including MS Exchange and Lotus Notes), CAD, ERP, databases, and all other applications that use TCP, to ensure the same data is never sent more than once over the WAN. Data streamlining also supports rules-based policy administration of optimization classes and packet marking for QoS and route control.

Transport Streamlining – RiOS transport streamlining reduces the number of TCP packets required to transfer data by up to 98%. Transport streamlining overcomes TCP limitations by adapting transmission characteristics such as window scale, loss handling, congestion notification, and more. RiOS transport streamlining also enables greater utilization of high bandwidth, high latency connections with high-speed TCP capabilities.

Application Streamlining – RiOS application streamlining provides additional order-of-magnitude application performance improvements by reducing application protocol chattiness up to 98% and minimizing application overhead. By minimizing application demands on the network such as application protocol round trips and required network connections, RiOS can provide massive throughput increases to applications including Windows file sharing (CIFS), Exchange (MAPI), Web (HTTP), and database (MS-SQL). RiOS also includes important features for maximizing branch office productivity, such as file server capabilities and transparent pre-population of popular data.

Management Streamlining – RiOS simplifies the deployment and management of application acceleration infrastructure by employing a transparent approach to communications. RiOS enables easy deployment through auto-discovery of peers and auto-interception of traffic, with no reconfiguration of clients, servers, or routers necessary. RiOS simplifies ongoing management by providing simple but powerful Web-based and command line interfaces and reporting, as well as the integrated, centralized management and configuration. RiOS enables a host of additional management features including dozens of deployment configurations optional IPSec encryption, RADIUS/TACACS+ authentication, and SNMP traps.

Riverbed WAN Optimization Results Highlights

➢ SharePoint operations are up to 30 times faster

➢ Bandwidth utilization is reduced by up to 99%

STEELHEAD DEPLOYMENT BENEFITS

Deploying Riverbed Steelhead appliances with Microsoft® SharePoint® Server 2010 provides multiple benefits, including:

• **Improved productivity.** SharePoint Server 2010 over the WAN can now be significantly accelerated. By dramatically reducing the time needed to complete the most typical operations, users can save hours each day.

• **Faster, more efficient collaboration.** Teams at distributed locations are now able to collaborate more fluidly by taking advantage of the accelerated speeds data can now be checked in and checked -out with Riverbed. .

• **Reduced bandwidth utilization.** Steelhead products significantly reduce bandwidth utilization for remote offices utilizing SharePoint Server, thus enabling more effective use of existing bandwidth.

• **Simpler SharePoint Server deployment.** Steelhead products enable accelerated performance to remote offices from a central SharePoint server. Multiple SharePoint instances and complex replication models can be consolidated to the data center without compromising performance to even the most remote branch.

Conclusion

By optimizing the performance of Microsoft® SharePoint® 2010 over the network, users can defer upgrading bandwidth to support SharePoint processes and may also be able to leverage a smaller and less expensive network connection. Depending on the distances involved, this could result in significant savings. Riverbed also can help maintain a centralized SharePoint deployment model, which can effectively service distributed workers. This can result in reduced IT maintenance costs. Riverbed WAN optimization solutions enable enterprises to maximize the benefits of SharePoint across a distributed environment by providing a very positive and productive user experience, when accessing SharePoint over a WAN.

About Riverbed

Riverbed Technology is the IT infrastructure performance company. The Riverbed family of wide area network (WAN) optimization solutions liberates businesses from common IT constraints by increasing application performance, enabling consolidation, and providing enterprise-wide network and application visibility – all while eliminating the need to increase bandwidth, storage or servers. Thousands of companies with distributed operations use Riverbed to make their IT infrastructure faster, less expensive and more responsive. Additional information about Riverbed (NASDAQ: RVBD) is available at www.riverbed.com

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