Riverbed Accelerates Double-Take

Steelhead® Appliances Performance Brief

Continuous Data Protection with Double-Take

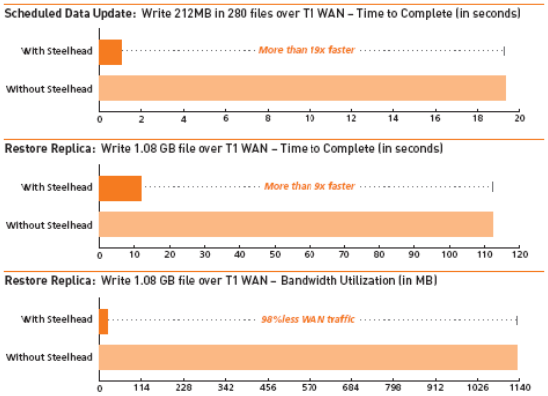
Using patented asynchronous replication technology, Double-Take software enables IT organizations to provide local access to critical network resources like Windows file servers, Exchange, and Microsoft SQL databases, while also providing a real-time mirror of the same data at a data center where it can be backed up by a central backup system. Double-Take also supports dynamic failover functionality, redirecting users to a working mirror in the event of server failure. Additionally, Double-Take software can rebuild a mirror automatically to ensure users can once again access their data from a local copy. Environments that utilize Double-Take software can enjoy increased productivity from continuous access to data whose access is not restricted to the availability of a single server or network. However, Double-Take software can only provide its benefits when the distance and available bandwidth between its mirrors isn't an issue. Large geographic separation and congested pipes can introduce disruptive delays and reduced productivity.

Steelhead Appliances Enhance Double-Take Deployments

Steelhead appliances can significantly improve Double-Take operations 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 99%. Transport Streamlining and Application Streamlining minimize protocol chattiness, typically eliminating 65 to 98% of packet round trips across the WAN. RiOS can reduce the convergence time between Double-Take mirrors, increasing data consistency rates for Double-Take environments and enabling IT administrators to achieve their RPO and RTO goals. And while Double-Take does offer data compression, RiOS can further reduce bandwidth requirements, shrinking the footprint of a Double-Take deployment even more.

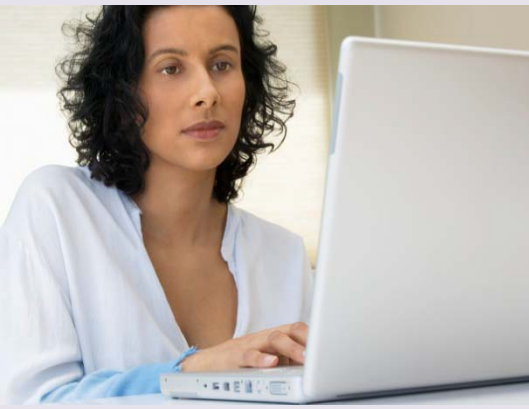
Performance Improvements

Test results show that Riverbed Steelhead appliances dramatically accelerate replication and restoration operations used by Double-Take software, and significantly reduce WAN bandwidth utilization. Modifying data when running in scheduled mode can see acceleration greater than 19x. Restoring a replica can be accelerated up to 9x and can see bandwidth reduction up to 98%.



*These results are based on the testing scenario presented in this paper. Your results may vary based on the conditions of your own network and the specifics of your own use cases.

Solution Overview



Test Summary:

These tests were performed using Double-Take software version 4.4.2.1 running on servers with Windows Server 2003. Double-Take compression was turned off.

The performance tests were run on a T1 WAN link with latency of 100ms. The data sample used comprised randomly generated Microsoft Word, PowerPoint, and Excel files using an automated script. The variables tested included the size and number of files.

- **More than 19 times faster** scheduled data modifications to a Double-Take replica
- **More than 9 times faster** replica restoration
- **Up to 98% reduction** in bandwidth utilization

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Solution Overview

Deployment Benefits:

Deploying Riverbed for Double-Take deployments provides multiple benefits, including:

- **Improved productivity**
  Double-Take replica restores over the WAN can now be significantly accelerated. By dramatically reducing the time needed to complete restore operations, users can return to work much faster following a server failure. Accelerated backup also means that organizations can protect their data more frequently.

- **RPO/RTO Compliance**
  By enabling faster backup times for Double-Take deployments, more data can be restored in less time to meet recovery point and time objectives.

- **Reduced bandwidth utilization**
  Steelhead appliances significantly reduce bandwidth utilization for Double-Take operations, thus reducing IT costs.

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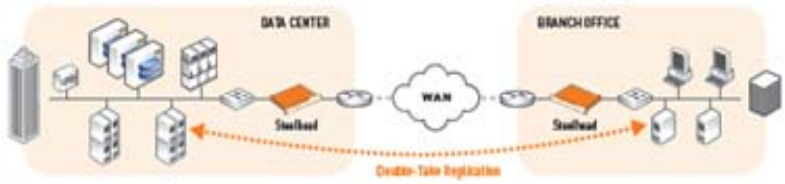
Typical Deployment Architecture:



Riverbed Optimization System (RiOS) Features:

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 wide-area data services, scaling across a range of applications and network topologies to accelerate applications from 5 to 50 times, and in some cases up to 100x faster. RiOS consists of four key components:

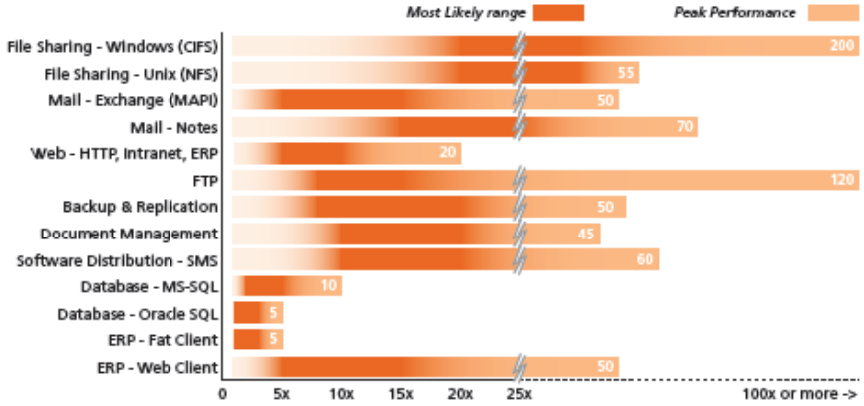
Data Streamlining – RiOS Data Streamlining works across all applications to reduce bandwidth consumption typically by 60% to 95%. Data Streamlining works across Windows file sharing (including MS Office), NFS, Email (including MS Exchange and Lotus Notes), CAD, ERP, databases, and all other applications that use TCP, to ensure the same data is never sent more than once over the WAN. Data Streamlining also supports Quality-of-Service enforcement for all applications.

Transport Streamlining – RiOS Transport Streamlining reduces the number of TCP packets required to transfer data typically by 65% 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), UNIX-based applications (NFS) 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 also enables a host of additional management features including dozens of deployment configurations, capabilities for redundancy, optional IPsec encryption, RADIUS/TACACS+ authentication, and SNMP traps.

Steelhead Appliance Accelerates a Broad Range of Applications



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