

PERFORMANCE BRIEF: Microsoft Data Protection Manager

TEST SUMMARY

- More than 14 times faster replica recovery operations
- More than 41 times faster end user recovery operations
- Up to 99% reduction in bandwidth utilization

Riverbed Steelhead® Appliances Accelerate Microsoft's Enterprise Backup Solution

Continuous Data Protection with Microsoft DPM

Microsoft Data Protection Manager (DPM), a member of the Windows Server System family, provides continuous data protection to Windows application and file servers. By working as a disk-based intermediary between high-performance servers and slower tape backup systems, DPM can significantly reduce the time required to restore data lost due to a hardware failure. DPM seamlessly integrates with servers and tape systems, providing multiple replicas of server data with the ability to restore or archive to tape any replica on disk. DPM supports servers in geographically distant locations and aims to deliver a standardized RPO and RTO for a global network. However, bandwidth and distance limitations can eliminate the performance benefits that DPM offers over tape to remote offices. Network congestion or latency can turn what should be a simple recovery effort into a major crisis.

Steelhead Appliances Enhance DPM Deployments

Riverbed significantly optimizes Data Protection Manager to deliver LAN-like performance to remote servers 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 also utilizes specialized Application Streamlining for DPM, which enables dramatic performance improvements for disk-based data protection over the WAN. With RiOS, DPM operations to remote servers can be completed in close to the same time as local servers, extending the promise of DPM technology to the entire enterprise.

Performance Improvements

Test results show that Riverbed Steelhead appliances dramatically accelerate DPM operations and significantly reduce WAN bandwidth utilization. A full replica restore can see acceleration greater than 14 times. An end-user recovery operation can be accelerated up to and beyond 41x and can see bandwidth reduction in excess of 99%.

TESTING SCENARIO

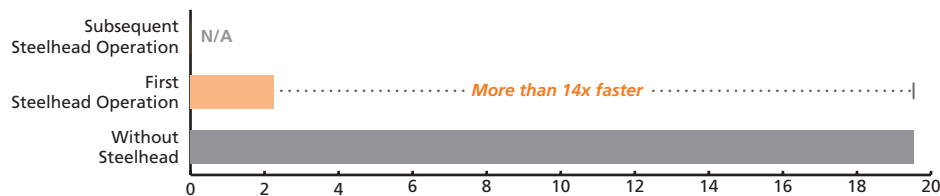
These tests were performed using Data Protection Manager 2006 running on servers with Windows Server 2003. DPM on-the-wire compression was enabled for all "without Steelhead" tests and disabled for all Steelhead-enabled tests.

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

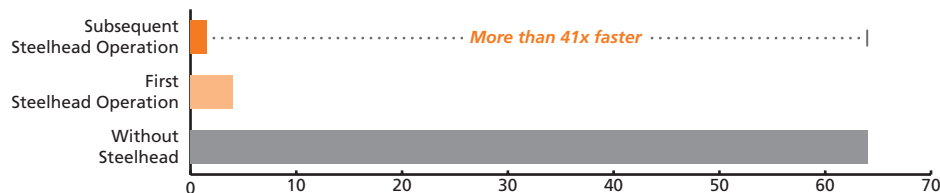
A "First Operation" is defined as a data transfer that has never been seen by the Steelhead appliance before (completely new data).

A "Subsequent Operation" is defined as a data transfer in which the Steelhead appliance has seen most or all of the data before (an incremental change or data that has been used by another application across the WAN).

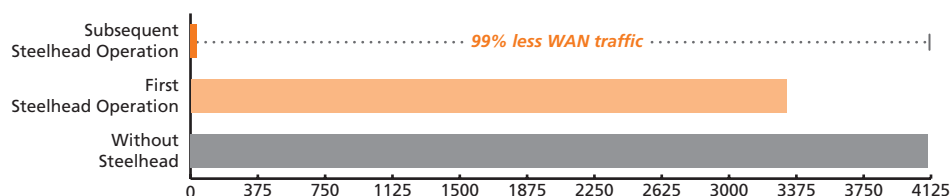
Full Replica Restore: Restore 266MB file over T1 WAN – Time to Complete (in seconds)



End-user Recovery: Restore 6.5MB file over T1 WAN – Time to Complete (in seconds)



End-user Recovery: Restore 6.5MB file over T1 WAN – Bandwidth Utilization (in KB)



*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.

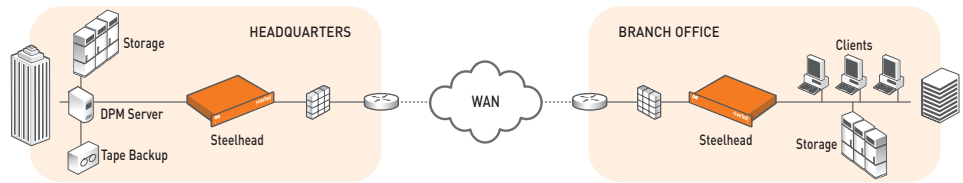
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DEPLOYMENT BENEFITS

Deploying Riverbed for Microsoft Data Protection Manager provides multiple benefits, including:

- **Real CDP over the WAN.** DPM recovery operations over the WAN can now be significantly accelerated. By dramatically reducing the time needed to complete restore processes, users can return to work much faster after a hardware failure.
- **RPO/RTO Compliance.** By enabling faster convergence times and improved data consistency for DPM 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 DPM operations, thus reducing IT costs.

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:

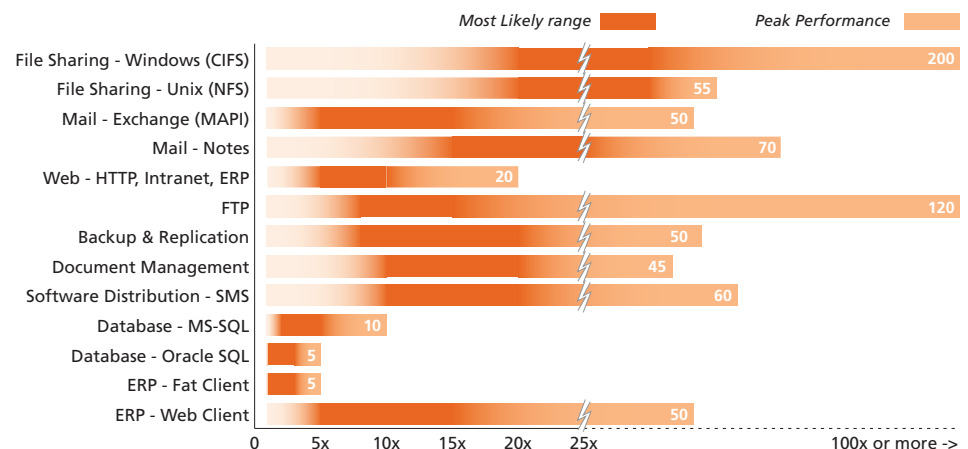
Data Streamlining – RiOS Data Streamlining works across all applications to reduce bandwidth consumption typically by 60% to 95%. Data Streamlining works across Windows file sharing (including MS Office), NFS, Email (including MS Exchange and Lotus Notes), CAD, ERP, databases, and all other applications 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 Appliances Accelerate a Broad Range of Applications



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