

# PERFORMANCE BRIEF: Veritas NetBackup

## TEST SUMMARY

- Steelhead appliances accelerate file-based and block-based backup over IP networks
- Bandwidth utilization is reduced by up to 99%
- NetBackup Enterprise Server data transfer operations are up to 34 times faster

## Riverbed Steelhead® Appliances Accelerate Veritas NetBackup™ Enterprise Server

Enterprises are utilizing data backup solutions such as Veritas NetBackup to protect vital corporate and customer data across global networks. However, data backup across the wide-area network is fundamentally restricted by the performance of the WAN. Bandwidth limitations and network latency can make network-based data backup an expensive process with undesirably long backup windows. Many enterprises unsuccessfully attempt to alleviate this problem by adding costly WAN bandwidth upgrades. But streamlining the actual data to be backed up and mitigating impact of network latency are also essential for accelerating the completion of data backup via the WAN.

### Steelhead-Enhanced NetBackup Enterprise Server

Riverbed significantly optimizes NetBackup Enterprise Server for backing up data in distributed enterprises, to enable centralized backup and recovery of servers and desktops in remote offices. Despite block-based differencing algorithms that may be used in conjunction with NetBackup, Riverbed accelerates NetBackup Enterprise Server by eliminating the transfer of redundant data at a much finer level than traditional block sizes. Riverbed combines this reduction with optimized transport and application protocols, thus minimizing the effects of latency and dramatically accelerating the backup process.

### Performance Improvements

Riverbed Steelhead appliances reduced the time to transfer NetBackup Enterprise Server data by a factor of 8 times for client backup, and up to 34 times for server backup, while bandwidth consumption was reduced by up to 99%. Master Server backup time was dramatically reduced from more than 15 minutes to only 27 seconds. Additionally, there was a 99% reduction in bandwidth utilization with a warm (subsequent) run, implying that 99% of the data previously traversing the WAN was redundant, and eliminated by Riverbed's unique Data Streamlining techniques.

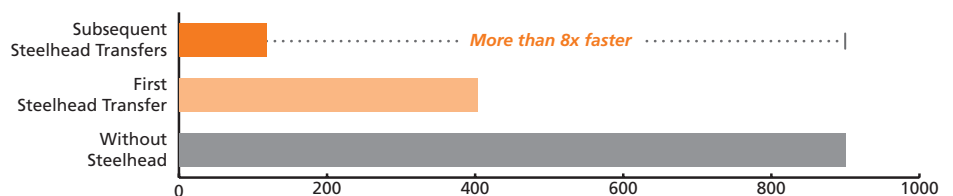
## TESTING PARAMETERS

This test was performed over a T1 link with 50 millisecond latency, typical of a WAN connection between New York and Chicago. The test file used a 162 MB file repository and NetBackup v5.1. Full backups were tested between a client and a Media Server, and a NetBackup Media Server to a Master Server.

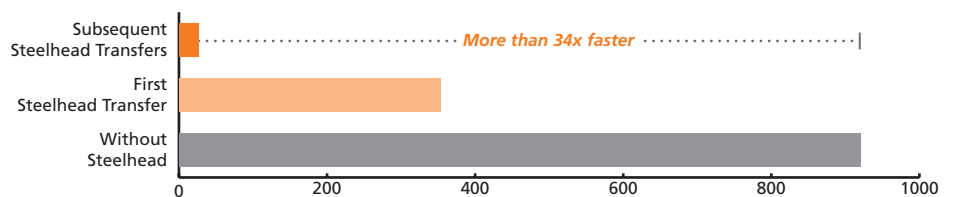
A "First Transfer" is defined as a data transfer that has never been seen by the Steelhead appliance before (completely new data).

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

Data backup from a client to Media Server – Time to Complete (in seconds)



Data backup from a Media Server to Master Server – Time to Complete (in seconds)



Bandwidth Utilization (in megabytes)



\*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 in conjunction with NetBackup Enterprise Server provides multiple benefits, including:

- **Consolidate Backup Equipment.** Centralize backup strategies over the WAN to simplify remote office backup, while preventing WAN congestion.
- **Ensure more reliable backup processes.** Data backup over the WAN can now reliably be completed in short backup windows that ensure backup freshness.
- **Improve backup quality.** Because Steelhead appliances remove all redundant traffic from the WAN, full backups can be performed more frequently in place of incremental backups.
- **Maximize application availability.** Backup windows and transfer times can now be significantly reduced, in many cases by an order of 10x or more. This provides much greater flexibility in the scheduling and frequency of backup tasks, providing increased protection of mission-critical data.

## 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 up to 100x. RiOS consists of four key components:

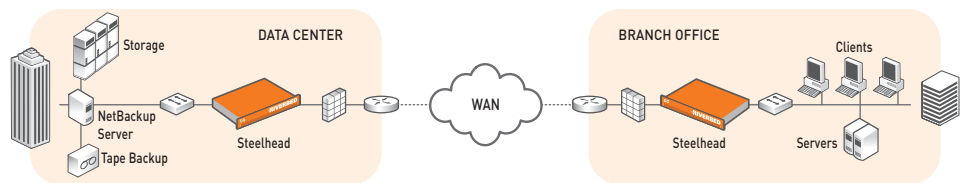
**Data Streamlining** – RiOS Data Streamlining works across all TCP applications to reduce bandwidth consumption by 60% to 95%. Data Streamlining works across Windows file sharing (including MS Office), Email (including MS Exchange and Lotus Notes), CAD, ERP, databases, and all other applications that use TCP, to ensure that 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 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.

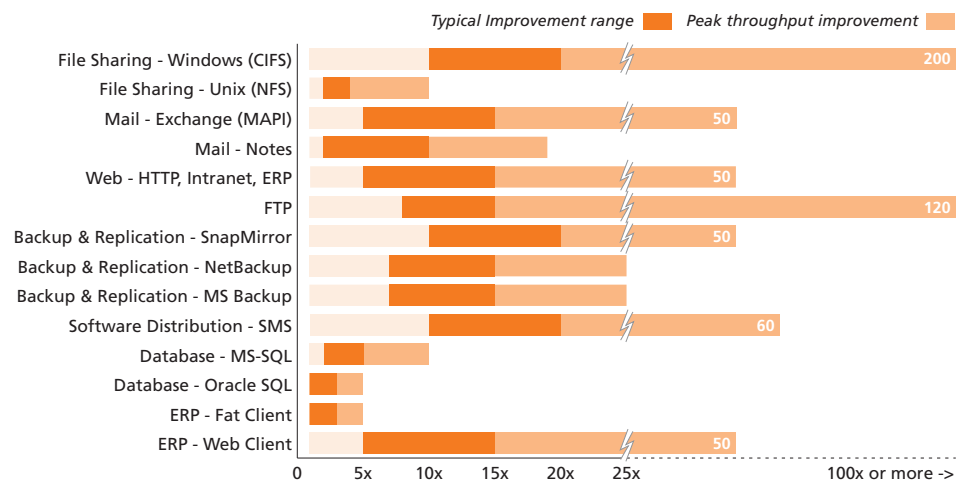
**Application Streamlining** – RiOS Application Streamlining provides additional order-of-magnitude application performance improvements by reducing application protocol chattiness up to 98% and minimizing application overhead. By minimizing application demands on the network such as application protocol round trips and required network connections, RiOS can provide massive throughput increases to applications including Windows file sharing (CIFS), Exchange (MAPI), Web (HTTP), 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 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.

## Typical Deployment Architecture



## Steelhead Appliances Accelerate a Broad Range of Applications



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