Steelhead Appliances

- **Cost-effective deployment** – 13 appliance models that scale to meet the deployment needs of any office
- **Application acceleration** – Accelerate the broadest range of applications that are critical to business
- **Simplicity** – Transparently deploy in minutes without changes to applications, users, routers, or other IT infrastructure
- **Scalability** – One of the most scalable acceleration solution available on the market, supporting thousands of users on one device
- **Reporting** – At-a-glance reporting on optimization and traffic visibility with support for Netflow export.

Steelhead Mobile Software

- **Acceleration directly to any PC** – Mobile workers, home offices, and very small branch offices.
- **Fully transparent** – Deploy without any input, management, or monitoring from end users. Transparent to network connectivity or VPN.

Steelhead Interceptor

- **Massive scaling** – With the optional Interceptor, enterprises can enable massive clustered deployments of Steelhead appliances. Up to 4 Gbps of optimized throughput and up to 1,000,000 concurrent connections can be optimized simultaneously.

- **Support complexity** – Enable complex redundant deployment, even in environments with asymmetric routing.

Central Management Console

- **Deployment** – Enable touchless configuration of new appliances. Control policies, optimization rules, QoS configuration, and more.
- **Management** – Enable a single management interface for enterprise deployments of Steelhead appliances. One-touch software upgrades, health alerts, job scheduler and optimization performance can all be controlled centrally.
- **Visibility** – Enables real-time visibility into application and WAN performance. Configure reporting and policies for Netflow export.

Steelhead Mobile Controller

- **Deployment** – Enable automated deployment of Steelhead Mobile onto remote machines. Control policies, optimization rules, and more.
- **Management** – Access a single-source for monitoring and license management. One-touch software upgrades, health alerts, and optimization performance can be controlled centrally.
- **Visibility** – Enables real-time visibility into application and WAN performance. Customizable reporting is available.

Network Integration and Deployment Options

- **Transparency** – 3 WAN visibility modes for flexibility, export real-time flows from a Steelhead appliance to a third-party Netflow collector, giving full visibility into WAN traffic by source, destination, IP address, application port, and more
- **Auto discovery** – Appliances automatically find in-path peers in the network, with no tunnel configurations required
- **Deployment** – Installs transparently in-line or as a "one arm" attachment to routers/switches with direct configuration, WCCP, PBR, and L4 switch redirection modes
- **RiOS Services Platform (RSP)** – A protected services and application partition to run additional software modules on the Steelhead appliance
- **Multi-port interfaces** – 4 Port GigE Card available (optional on all rackable models); Up to 3 cards (12 ports total) per Steelhead appliance
- **Asymmetric routing** – Asymmetric route detection and connection forwarding for support of route asymmetry on both the client and server sides
- **Network agnostic** – Full mesh, hub and spoke, and multi-drop topologies supported; MPLS, IP VPN, Satellite, Frame, ATM and any other IP transport supported
- **Seamless integration** – Works easily with existing QoS, VoIP, video conferencing and other real-time traffic

Management and Policy

- **Configuration** – Web UI, CLI, and Central Management Console (CMC), Steelhead Management Console (SMC)
- **Marking** – DSCP, port, and VLAN mapping and/or preservation. Automatic port-to-application mapping for reporting
- **Reporting** – Robust real-time performance statistics gathering, export, and graphical reporting; Local, CMC, SMC, and Syslog logging; Report on traffic by QoS class, application, and more; SNMP support

- **Optimization policy** – Per-application admission and optimization controls
- **Bandwidth management** – HFSC-based QoS allows for application prioritization, low-latency queuing for VoIP; Settable WAN bandwidth rate controls included
- **Hierarchical QoS** – Granular QoS capability for networks with varying bandwidth links; allows per-site application of QoS rules and simplified management
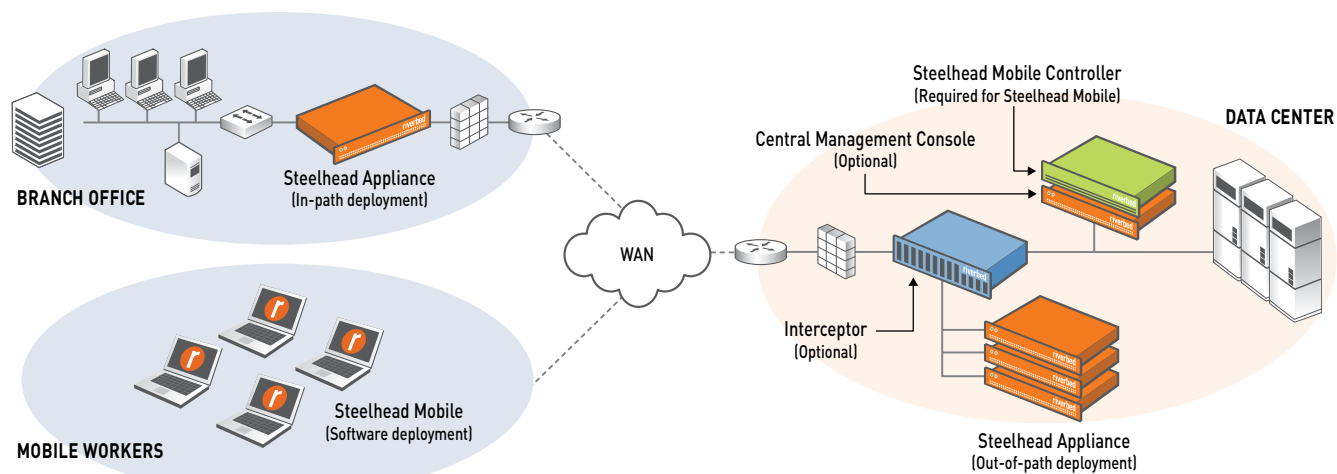
High Availability

- **Clustering** – Serial (in-path), parallel (out-of-path), or virtual in-path clustering for massive scalability
- **Fail-to-wire** – Ensures no loss in network connectivity in the event of device failure
- **N:1 and 1:1 redundancy** – Hot-standby redundancy and N:1 clustering
- **Redundant disk and power** – Available RAID and dual power supplies on larger models
- **Dual image SW upgrades** – Schedule over-the-wire software upgrades with dual image, rollback, and scheduled restart/reboot
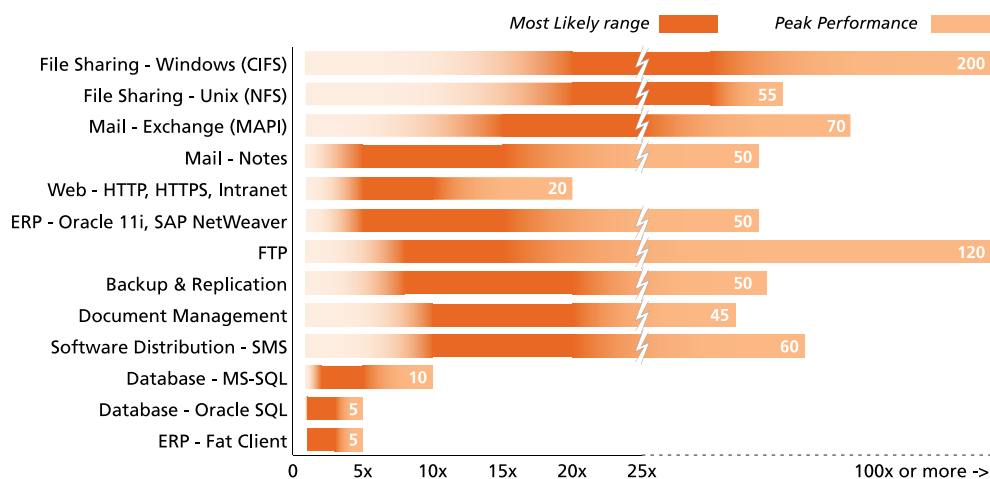
Security

- **SSL acceleration** – Accelerate SSL encrypted traffic without breaking the preferred trust model
- **Authentication** – RADIUS and TACACS+ support for authenticating access
- **Network encryption** – Configurable IPSec encryption for WAN traffic
- **Encrypted data store** – Support AES-128, AES-192, and AES-256 encryption for data stored on disk
- **Secure registration** – Ensures only approved devices communicate with the Central Management Console (CMC)

riverbed™

Typical Steelhead Deployment

BRANCH OFFICE

Steelhead Appliance
(In-path deployment)

MOBILE WORKERS

Steelhead Mobile
(Software deployment)

WAN

Central Management Console
(Optional)

Interceptor
(Optional)

Steelhead Mobile Controller
(Required for Steelhead Mobile)

DATA CENTER

Steelhead Appliance
(Out-of-path deployment)

Riverbed Accelerates All TCP Applications

Most Likely range   *Peak Performance*

Application	Value
File Sharing - Windows (CIFS)	200
File Sharing - Unix (NFS)	55
Mail - Exchange (MAPI)	70
Mail - Notes	50
Web - HTTP, HTTPS, Intranet	20
ERP - Oracle 11i, SAP NetWeaver	50
FTP	120
Backup & Replication	50
Document Management	45
Software Distribution - SMS	60
Database - MS-SQL	10
Database - Oracle SQL	5
ERP - Fat Client	5

0   5x   10x   15x   20x   25x   100x or more ->

About Riverbed

Riverbed Technology is the performance leader in WDS solutions for companies worldwide. By enabling application performance over the wide area network (WAN) that is orders of magnitude faster than what users experience ordinarily, Riverbed is changing the way people work, and enabling a distributed workforce that can collaborate as if they were local. Additional information about Riverbed (Nasdaq: RVBD) is available at www.riverbed.com.

DATA SHEET: Riverbed® Steelhead® Product Family

Accelerating Applications for the Global Workforce

Companies of all sizes depend on the Riverbed Steelhead product family to accelerate the performance of applications over the WAN.

Steelhead appliances and Steelhead Mobile deliver the highest performing and most scalable WDS solution available, overcoming both bandwidth and latency problems to deliver LAN-like performance to branch offices or mobile workers across the globe.

With Riverbed, users are more productive, data moves faster and applications perform seamlessly. Riverbed Technology brings the world closer, changing the way people work.

Riverbed Steelhead products accelerate application performance and data transfer over the wide area network (WAN), overcoming bandwidth and geographical limitations to improve productivity and enable global collaboration. With Riverbed, file transfers that once took hours or minutes, now take minutes or seconds.

Workers today need access to information wherever and whenever they work – whether at corporate headquarters, a branch office on another continent, or on-site with a customer. The demand for anywhere / anytime access to data puts tremendous strain on IT to deliver an increasing number of applications over the WAN.

Riverbed's award-winning wide-area data services (WDS) solutions strategically enable IT to centralize and reduce operational overhead and expense, while improving end-user satisfaction. Riverbed's products have been proven in some of the most demanding and complex networks in the world, with thousands of customers deploying Steelhead WDS solutions.

Small Office

Mid-Size Office

Large Office or Data Center

Mobile Client

KEY BENEFITS

Acceleration of key enterprise applications

Riverbed Steelhead products accelerate the broad set of applications important to business. Riverbed application modules, combined with the company's data streamlining and transport streamlining, deliver dramatic performance increases across the WAN for all TCP applications, by up to 100 times.

IT infrastructure consolidation

Consolidate file, email and application servers, and storage from remote branches to cut costs and operational complexity without sacrificing performance.

Reduced bandwidth utilization

Companies that have deployed Riverbed's Steelhead products typically reduce bandwidth utilization by 60% to 95%, often allowing them to defer costly bandwidth upgrades.

Optimized Disaster Recovery

With Riverbed's DR acceleration module, organizations can replicate and backup data to remote sites even faster, often reducing transfer windows from hours to minutes. Companies can further enhance their data protection strategy by eliminating remote backup infrastructure to greatly reduce the risk of data loss through lost tapes or media.

Secure application acceleration

Riverbed is the only company that can optimize SSL traffic without compromising the end-to-end trust model. Companies subject to compliance regulations such as SOX, HIPAA, PCI or other security requirements can deliver both performance and security for their applications.

Enable the mobile workforce

Mobile workers often receive sub-optimal application performance when they connect to resources from remote locations. With Steelhead Mobile, IT can deliver local performance to remote workers wherever they connect.

The Riverbed Difference: Speed, Scalability, Simplicity

SPEED

Riverbed Steelhead products address performance limitations using a multi-tiered optimization approach. Unlike older generation technologies, such as wide area file services (WAFS) or file caching, Steelhead products optimize traffic using a patented application agnostic algorithm to achieve massive-scale data deduplication. The Riverbed solution layers TCP and application protocol optimization on top of its data reduction technique to deliver a multi-tiered optimization strategy that sets the technological high-bar for WDS, and delivers unparalleled application acceleration over the WAN.

SCALABILITY

Riverbed's universal data store provides greater scalability than per-peer storage models and reduces WAN optimization storage requirements. By avoiding the per-peer storage limitation, companies can easily scale to hundreds of sites with any-to-any connectivity. Steelhead products also utilize a TCP-based transport, which avoids the pitfalls of running a proprietary transport on a shared network. The Steelhead product family supports up to 4Gbps of throughput and one million concurrent connections. The product family is one of the most scalable in the industry.


SIMPLICITY

Companies can deploy Steelhead products in a matter of minutes. Steelhead deployments can be performed from a single console with virtually plug-and-play installations, and the Riverbed solution does not require any changes to clients and servers nor the use of specific routing protocols. Steelhead products have been proven in a broad range of network environments alongside VoIP, video conferencing, and QoS, giving customers flexibility and seamless integration with the existing infrastructure.

Accelerate Key Enterprise Applications
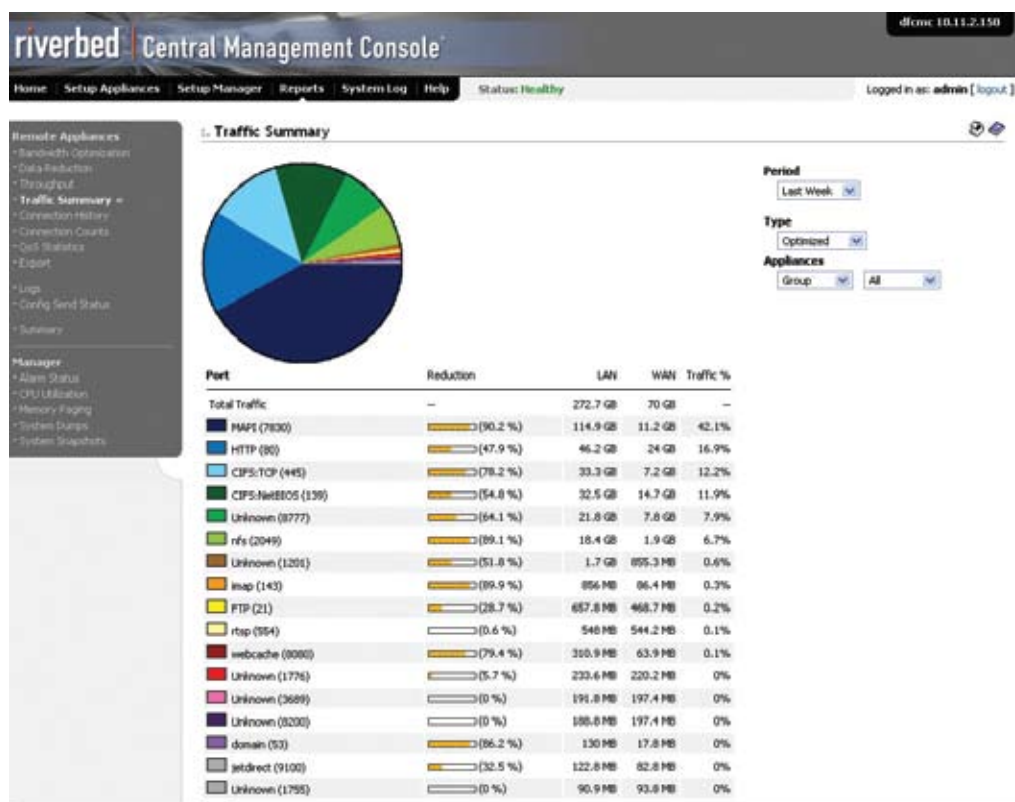
- Steelhead products accelerate all TCP-based applications through a multi-tiered optimization approach.

- Riverbed delivers specific application acceleration modules for CIFS, MAPI (5.5 thru 2007), HTTP/HTTPS, NFS, MS-SQL, and Oracle 11i.

- An easy-to-use GUI provides dashboard visibility of WAN traffic and optimization status.

Technological Leadership to Enable Your Business

Riverbed Steelhead products have been proven to dramatically accelerate application performance in some of the most demanding customer environments. Our customers range from the Fortune 50 and Global 1000, to companies with one office.

Riverbed's award-winning products have consistently proven themselves as the highest performing WDS solutions, earning recognition as the "Technology of the Year - Best WAN Accelerator" by InfoWorld for four years running (2005, 2006, 2007, and 2008) and has been positioned by Gartner in the leaders quadrant in the "WAN Optimization Controller (WOC) Magic Quadrant* two years in a row."

"Our files and data now move more than 70 times faster between offices, giving us the ability to complete projects more quickly."

Bruce Bartolf, CTO, Gensler

True Application Layer Acceleration

Riverbed's multi-tiered optimization approach leverages industry-leading data de-duplication and transport layer acceleration along with a broader set of application specific protocol optimizations. At the application layer (layer 7), Riverbed employs several application acceleration methods that result in even greater performance gains. The net effect is that applications and data simply move faster. Specific layer 7 protocol optimizations are available for Windows File Sharing (CIFS), Exchange (MAPI versions 5.5 thru 2007), Web (HTTP and HTTPS), NFS, MS-SQL, and Oracle 11i.[1]

IT Infrastructure Consolidation - The Performance Trade-Off

Many organizations are looking to consolidate their IT infrastructure as a way to simplify management, increase resource utilization and reduce costs. Unfortunately, the consolidated IT model can often result in diminished application performance and a hit to user productivity that offsets any consolidation cost savings. Riverbed's Steelhead products allow users to access consolidated IT resources without trading off performance.

MS Exchange (Email Flood): 6.4 MB email attachment over 256K WAN – Time to Complete (in seconds)
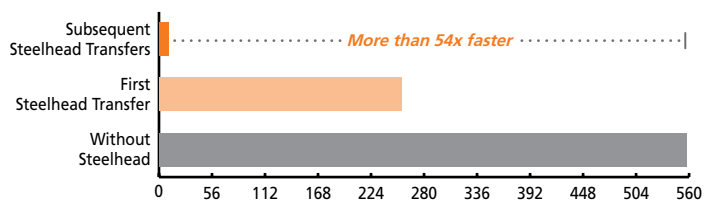
The Serverless Branch Office

The rapid pace of business and tight deadlines can challenge IT to keep up with the deployment of new branch offices. The serverless branch office enabled with Steelhead products can help IT ramp up and get branches up and running faster. Steelhead products can be deployed easily in minutes with minimal configuration. With no more complex build outs or remote servers to install and manage, branches get set up faster, administrative overhead decreases, and users are more productive.

MS CIFS File Transfer: 2.37MB over 256K / 20ms Connection – Time to Complete (in seconds)
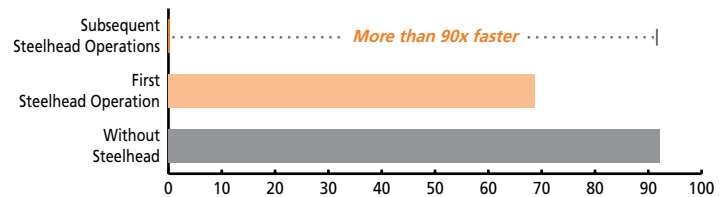
Optimized Disaster Recovery – Data Protection and Availability

Businesses of all sizes depend on their DR plans to build robust failover capabilities, ensure data protection, and provide availability. With Riverbed's DR acceleration, organizations can perform WAN-based backups or data replication without struggling to finish jobs in a tight backup window. Previously unacceptable backup times can be accomplished 30 times faster, using the same backup software. With accelerated backup and replication, customers can also take more frequent snapshots and dramatically improve their recovery time in the event of a failure.

NetApp SnapMirror Full Datastore Initialization or Recovery (5GB Directory Tree) Over T1 WAN – Time to Complete (in minutes)
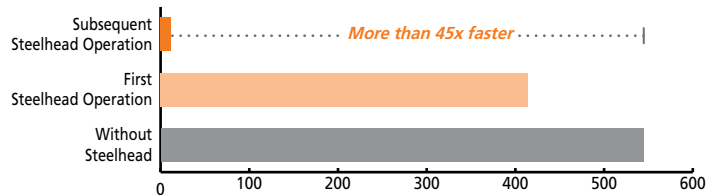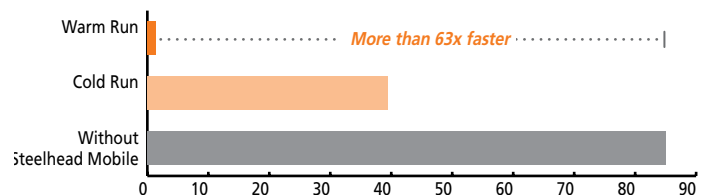

Headline stories about tapes falling off trucks and the potential leakage of sensitive data have become all too common for both the enterprise and the consumer. CxOs require assurance that sensitive data will remain private and are looking for ways to reduce their data loss risk. By eliminating remote backup infrastructure and media, companies can significantly enhance their data protection strategy.

Enabling the Mobile Workforce

IT has often struggled to support remote users who need access to corporate data and applications, and mobile users have come to expect suboptimal performance when they work remotely. Steelhead Mobile software extends Riverbed's award-winning technology to any PC or laptop to deliver acceleration wherever users connect. With Steelhead Mobile, applications run faster and remote workers are no longer "remote."

SharePoint HTTP File Save: 6.14 MB file via Verizon Wireless v620 Broadband Card (788Kbps with 209ms RTT latency) – Time to Complete
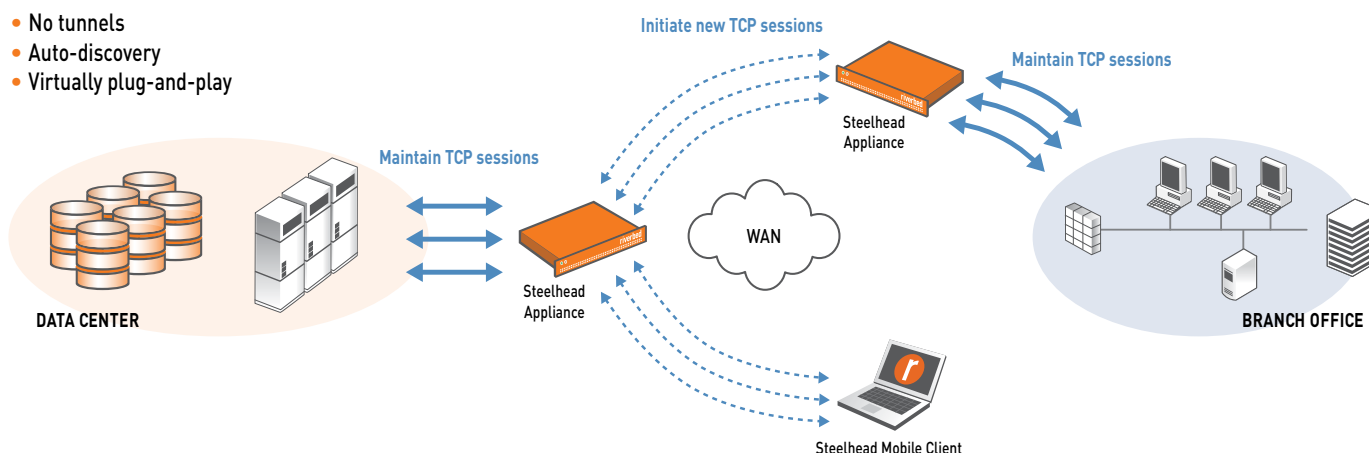
The Riverbed Framework

- No tunnels
- Auto-discovery
- Virtually plug-and-play

Maintain TCP sessions

Initiate new TCP sessions

Maintain TCP sessions

Steelhead Appliance

WAN

Steelhead Appliance

DATA CENTER

Steelhead Appliance

BRANCH OFFICE

Steelhead Mobile Client

The Riverbed Optimization System (RiOS™)

RiOS software powers Steelhead products through a combination of patent-pending data reduction, TCP optimization, and application-level protocol optimizations. Together, these technologies, along with RiOS management capabilities, provide a comprehensive solution for enterprise WDS. RiOS consists of four key components:

Data streamlining – RiOS data streamlining works across all TCP applications to reduce bandwidth utilization, typically by 60% to 95%. Data streamlining works across file sharing (including Windows and NFS), email (including MS Exchange and Lotus Notes), CAD, ERP, web-based HTTP and HTTPS applications, databases, and all other applications that use TCP.

Transport streamlining – RiOS transport streamlining reduces the number of TCP packets required to transfer data by 65% to 98%. Transport streamlining also enables the acceleration of SSL-encrypted traffic throughout the enterprise to eliminate the security and performance trade-off. With HS-TCP and MX-TCP, RiOS can enable greater utilization of high bandwidth links (ie. long fat networks (LFN) such as OC3, OC12, metrofiber).

> *"Steelhead appliances cut WAN-based backup windows from 16 hours to just 6 hours. This enables us to do more frequent, more reliable backups."*
>
> *Rakesh Patel, Technical Architect, Liz Claiborne*

> *"Steelhead appliances were the easiest to manage, which is a critical component to a successful global deployment as large as ours."*
>
> *Kang-Seok Chung, Senior Manager, IT Infrastructure Group, LG Electronics*

Application streamlining – RiOS application streamlining offers the broadest support of application-specific modules for key enterprise applications to provide additional application performance improvements on top of the data streamlining and transport streamlining optimizations performed on all TCP traffic. By reducing application protocol chattiness up to 98% and minimizing application overhead, RiOS can provide massive throughput increases to applications including file sharing (CIFS and NFS), Exchange (MAPI 5.5 thru 2007), Web (HTTP and HTTPS), and database (MS-SQL and Oracle 11i).

Management streamlining – RiOS enables easy deployment through auto-discovery of peers and auto-interception of traffic, with no reconfiguration of clients, servers, or routers. Many customers deploy Steelhead products in minutes and RiOS simplifies ongoing management by providing simple, but powerful web-based and command-line interfaces, in-depth reporting and real-time NetFlow export. Simple integration into the network has led to Riverbed deployments in a vast array of network environments and topologies including, but not limited to, MPLS, VoIP, video conferencing, QoS, VPN, satellite infrastructure, ATM, frame relay, microwave, and wireless.