riverbed

Solution Brief

Improve Application Performance in the Hybrid Enterprise

The sun has set on the traditional enterprise network. Improvements to the public Internet, pervasive computing, big data, and the emerging Internet of Things are influencing a new era of technology. The Internet quickly changed the way we live and work; this next wave continues and builds upon that momentum. It's already affecting the way we do business, re-shaping our interactions with customers, and altering how employees connect and collaborate.

Today, applications, data, and users are everywhere.

The average enterprise has over 3,000 applications and they're on-premises as well as in the cloud. Users are located in headquarters, at the branch, at home or working remotely, and quite often, moving back and forth across multiple locations.

The prevalence of Software-as-a-Service (SaaS), mobile, and video applications has increased the need for more bandwidth and requirements are continuing to grow dramatically and rapidly. Gartner estimates that enterprises will need 28% additional bandwidth each year through 2017, "…due to the use of cloud computing, mobile devices and video. By 2017, enterprises that do not control network use risk requiring up to 3 Mbps per user of committed bandwidth, or more than 20 times the average need in 2012."[1]

[1] Gartner, "How Cloud, Mobile and Video Will Increase Enterprise Bandwidth Needs Through 2017," March 2013.

The Hybrid Enterprise

The Hybrid Enterprise

Networks form the enterprise's nervous system, and have evolved to include various combinations of delivery channels that offer flexibility to balance cost, performance and security. Bandwidth on private networks is expensive, but the Internet is free. More expensive private networks (MPLS links) typically used for mission-critical apps are being joined by cheaper public networks (Internet) for recreational traffic, (SaaS) apps, and bulk loads such as backups. Two years ago, 30% of companies were using an Internet connection in place of a traditional WAN link in at least one location. That number climbed to 50% in 2013 and is expected to quickly reach 55%.[2]

This age of ubiquitous computing requires a new approach to the underlying technical architecture that holds it all together and makes it work smoothly, bringing about the genesis of the hybrid enterprise. IT must not only provide access to applications and data, but also ensure an optimal end-user experience, despite where the applications are hosted, or their distance to users.

Hybrid Challenges

A hybrid IT environment by its very nature is more complex than either a pure on-premises or cloud-based business.

In the hybrid enterprise, people, apps, and data are everywhere.

- 62% of employees work in multiple locations.[3]
- 52% of companies have over half of their corporate data outside the data center.[4]

Going hybrid adds architectural complexity and blind spots for support, management, and security. This added complexity exacerbates the challenges of delivering and managing apps and data.

- 51% of companies say application complexity is their primary challenge.[5]
- More than half of enterprises say they are "concerned" or "very concerned" about the performance of their SaaS apps.[6]

[2] Jessica Scarpatti, "MPLS networks not obsolete, but Internet as WAN catches up," SearchNetworking/TechTarget.com, June 2014, http://searchnetworking.techtarget.com/feature/MPLS-networks-not-obsolete-but-Internet-as-WAN-catches-up

[3] Forrester, "Provisioning a Flexible Workplace Pushes the Boundaries of IT and Drives a Search for Outside Help," June 2012

[4] Forrester, "Successfully Consolidating Branch-Office Infrastructure in the Face of More Users, Services, and Devices," October 2011.

[5] Forrester, "Think You've Mastered Application Performance? Think Again," July 2013.

[6] Forrester, "End-to-End Application Acceleration Technologies Overcome SaaS Challenges," February 2012.

The Hybrid Enterprise

Growth of SaaS

More and more business-critical applications are moving to public clouds for SaaS while others, for compliance reasons, have migrated to private clouds or are kept on premises in corporate data centers. Businesses are leveraging combinations of hybrid networks (MPLS, private VPN, and public Internet) for real-time application delivery to highly dispersed and mobile users. Yet rich media-based apps, real-time collaboration, SaaS and other business-critical workloads, such as Office 365 and Saleforce.com, can impact and even slow application performance, resulting in productivity and collaboration issues for users, as well as unnecessary financial burdens on the enterprise.

Figure 1
Enterprises have an average of 66 SaaS applications.[7]

[7] Forrester, "Back Up Your Critical Cloud Data Before It's Too Late," February 2014.

The Hybrid Enterprise

Overcoming Hybrid Challenges

The hybrid enterprise doesn't just introduce challenges, but offers new opportunities to provide optimal end-user experience with all applications. The innate variety of hybrid networks offers flexibility to manage application performance in the most cost effective ways.

Acceptance is key here. It's time to embrace the hybrid world and develop a strategy for a unified, yet diversified delivery system that maintains a focus on application performance. An analysis of recent Gartner client inquires shows evidence that, "enterprise WAN connectivity has evolved in an ad-hoc manner based on project-by-project needs into what often are multiple independent solutions. This includes Internet used to offload MPLS, mobile broadband connecting to the Internet, and public cloud services added as application needs arise."[8]

An effective strategy coalesces the Internet and MPLS to support current and evolving application deployments. Planning for how application traffic flows through the WAN and how that impacts the end-user experience eliminates multiple point solutions and underpins a unified solution to ensure consistently optimal application performance.

With a good strategy for architecting a hybrid enterprise comes the need for visibility and control of application traffic to deliver consistent performance levels and become more proactive and efficient in addressing performance problems that do arise. Continuous monitoring of network traffic can provide insight into which applications run across your infrastructure, which users access them, and how the network impacts their performance. This intelligence not only enables an IT organization to better control network services such as path selection and QoS to support business priorities, but also enables more effective problem solving to avoid a loss of productivity.

These are not novel concepts, any organization focused on application performance has followed these basic guidelines, but today they must be expanded upon to successfully manage hybrid enterprises. Similarly, to further increase end-user performance, application optimization must extend throughout the hybrid enterprise for cloud and SaaS applications and across both private MPLS and public Internet links.

Developing a holistic strategy for the hybrid enterprise that combines visibility, optimization, and control will ensure peak application performance and optimal end-user experience. When properly navigated, the transition to a hybrid enterprise allows IT to become more nimble in responding to business needs.

[8] Gartner, "Hybrid Will Be the New Normal for Next Generation Enterprise WAN," September 2014.

Riverbed Solutions

Riverbed Solutions for the Hybrid Enterprise

Riverbed optimizes, simplifies, and secures delivery of any application over the fastest networks while providing the only solution to monitor and troubleshoot end-user experience for optimized SaaS apps such as SalesForce.com.

Application Visibility in a Hybrid World

SteelHead 9.0 integrates with SteelCentral AppResponse 9.5 to extend new end-user visibility with troubleshooting to SteelHead-optimized enterprise web and SaaS applications. The integrated solution provides visibility into a wide variety of issues - whether the service delays are occurring on the network or with the service/SaaS provider; how well the SteelHead solution is performing; and where to deploy additional optimization. Now IT teams can quickly resolve or avoid application performance problems before they impact end-user productivity.

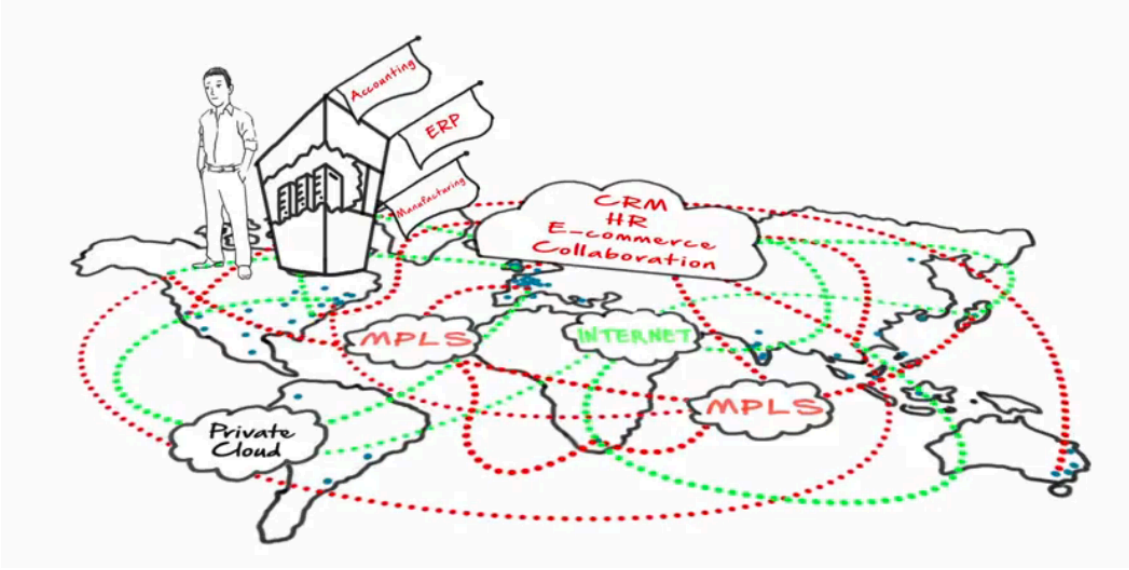

Figure 2

View this video, “A day in the life of John, Director of Network Ops” to see how Riverbed Solutions help manage complex, hybrid environments.

Riverbed Solutions

Use Case: SaaS End-User Experience Visibility & Troubleshooting

Challenge: When my users report problems with SaaS applications, resolution is slow because we have no measurement of what specific users are experiencing, no control over the application itself or the end-to-end network it's delivered on, and triaging requires a support engagement with the SaaS provider.

Solution benefits: The same SteelHead installation that optimizes and accelerate your SaaS applications now delivers end-user experience monitoring and troubleshooting for enterprise web and SaaS applications. SteelCentral AppResponse provides faster troubleshooting by specifying the breakdown of network versus application delays so you can pinpoint whether the SaaS provider or your network is the root cause of a performance problem..

Products: SteelCentral AppResponse 9.5 integration with SteelHead 9.0

How it works: With the integration of SteelFlow traffic data from SteelHeads into SteelCentral AppResponse, you can monitor page time, server busy time and network busy time for SaaS applications to ensure that you are delivering the best end-user experience. You can also graphically see optimized versus non-optimized objects for an individual page view, optimized page times and comparative performance with/without optimization, how many responses were optimized on a page, and actual versus expected user experience for optimized versus non-optimized pages – making it easier to share performance info and resolve issues with teams not familiar with the internal details of web applications.

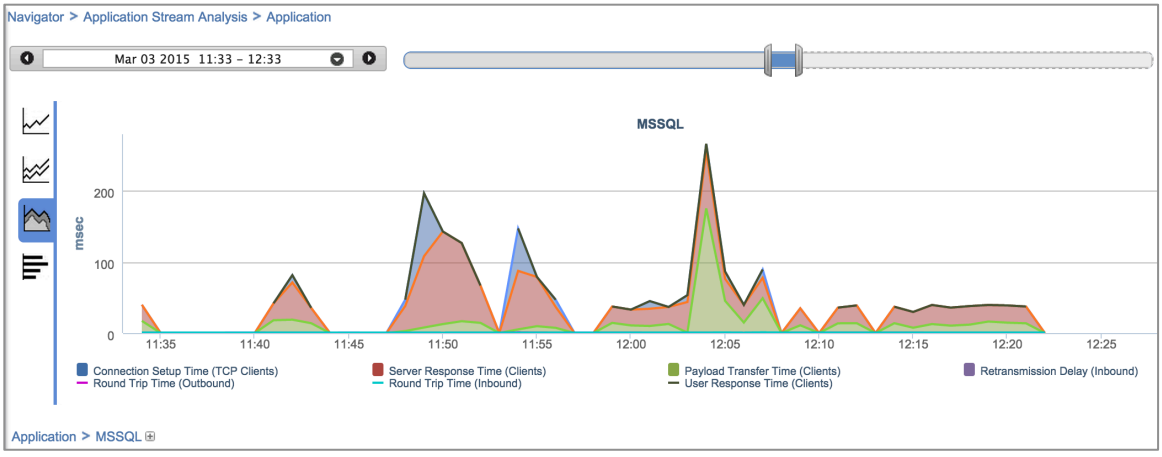

Figure 3
SteelCentral AppResponse Application Stream View shows a breakdown of delays to help isolate the cause of poorly performing applications.

Riverbed Solutions

Business Requirement Driven Application Control

The architectural complexity of delivering and managing apps and data in a hybrid enterprise demands a more simplified management approach. Leveraging new centralized, business intent-based policies, SteelHead 9.0 offers an application-centric approach with intuitive control and management of users, applications, and networks that is based on what you want to achieve – as a business.

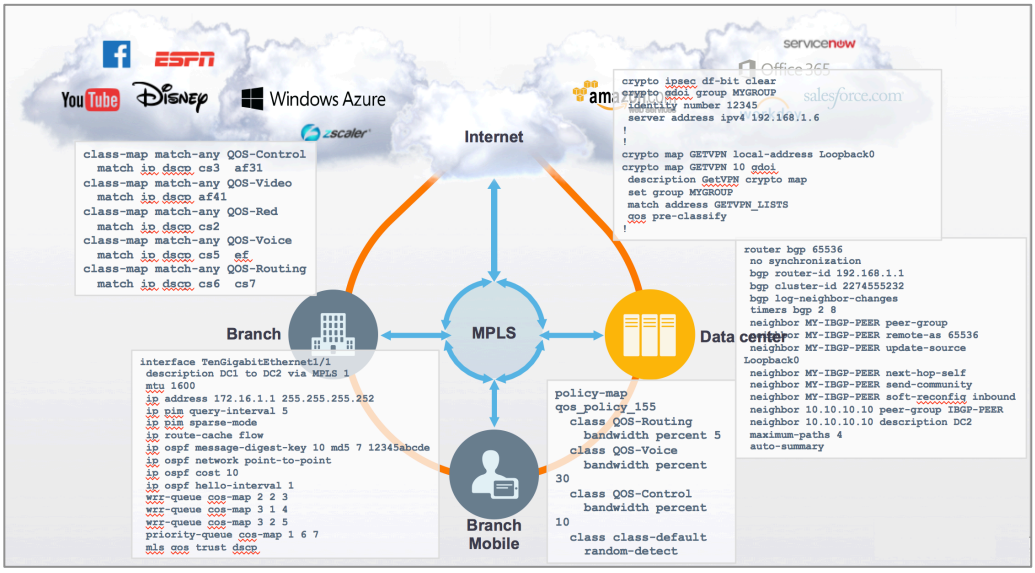

Figure 4
The complexity of the hybrid network makes it difficult and time consuming to manage. QoS alone requires more rules, remains static, and becomes ineffective for a mobile workforce.

With a wizard-like process for defining application policies based on customer business requirements, SteelHead 9.0 via SteelCentral Controller enables you to easily leverage and control hybrid networks for accelerated application delivery. The solution calculates and derives all primary and alternate path possibilities that applications can take to remote sites, chooses an alternate path based on availability, and secures all traffic between SteelHead solutions across private and Internet links. The solution thus simplifies application and path management, ensures secure service-level delivery for business critical apps, and increases end-user productivity.

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Use Case: Control

Challenge: I have to build a new rule for each application to identify/classify that traffic and specify which paths it should use. For example, if my objective is to off-load all bulk file transfers from MPLS circuits to Internet VPN circuits, I have to build separate path selection rules for FTP, NFS, CIFS, SCCM, NNTP, Comstore, torrents…that is seven rules for just one objective, and they have to be implemented in every location.

Solution Benefits: Riverbed enhances IT control with application-centric management policies that enable you to direct critical applications down the best available path, leveraging hybrid networking and secure transport. Enabled by a simplified, wizard-like approach designed to facilitate the translation of business intent into application-centric service policies, the solution easily calculates and derives all primary and alternate path possibilities that applications can take to users, dynamically chooses an alternate path based on availability, and secures all traffic between SteelHead solutions across private and Internet links.

How it Works: SteelHead 9.0 via SteelCentral Controller can manage hundreds of applications, including policy configuration, reporting, and troubleshooting. The solution is pre-populated with known applications, allows the addition of custom applications, and features Application Groups to easily enable business-intent policy definition. SteelHead 9.0 presents a unified view of applications and sites, aligning SteelHead deployments to network topologies so you can see how policies are working in real-time.

Path selection with SteelCentral Controller is as easy as 1, 2, 3

Step One – Application Groups

Remember those pre-populated and customizable app groups? Riverbed provides recommendations and best practices about the App Group – we'll tell you what Business Video is and give you the names of sample applications within the category. Once you select an App Group you can configure path selection with a simple button – Configure.

Step Two – Network

Now you can set the network uplink for that group – Business Video - by simply checking a box and saving the rule. We'll even provide uplink recommendations and best practices.

Step Three– Paths

You automatically get a Consolidated Rule View in a single, unified table that tells you globally what rule you selected – in other words, what network uplink (MPLS, Internet secured, etc.) – for each App Group.

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Using this wizard-like process for defining application policies based on business requirements, SteelHead 9.0 via SteelCentral Controller enables you to more easily leverage and control hybrid networks for accelerated application delivery. The SteelHead solution selects the best path for the application based on real-time path availability and secures all traffic between SteelHead solutions across private and Internet links.

With SteelHead 9.0 via SteelCentral Controller, you can

- Set up path selection policies based on business need and intent
- See how policies are working through dashboards that provide global, site, and application views with detailed performance metrics for applications, networks, path selection, secure transport, and QoS
- Easily change policies in real-time based on new insights derived from the metrics – before users can even report a problem application

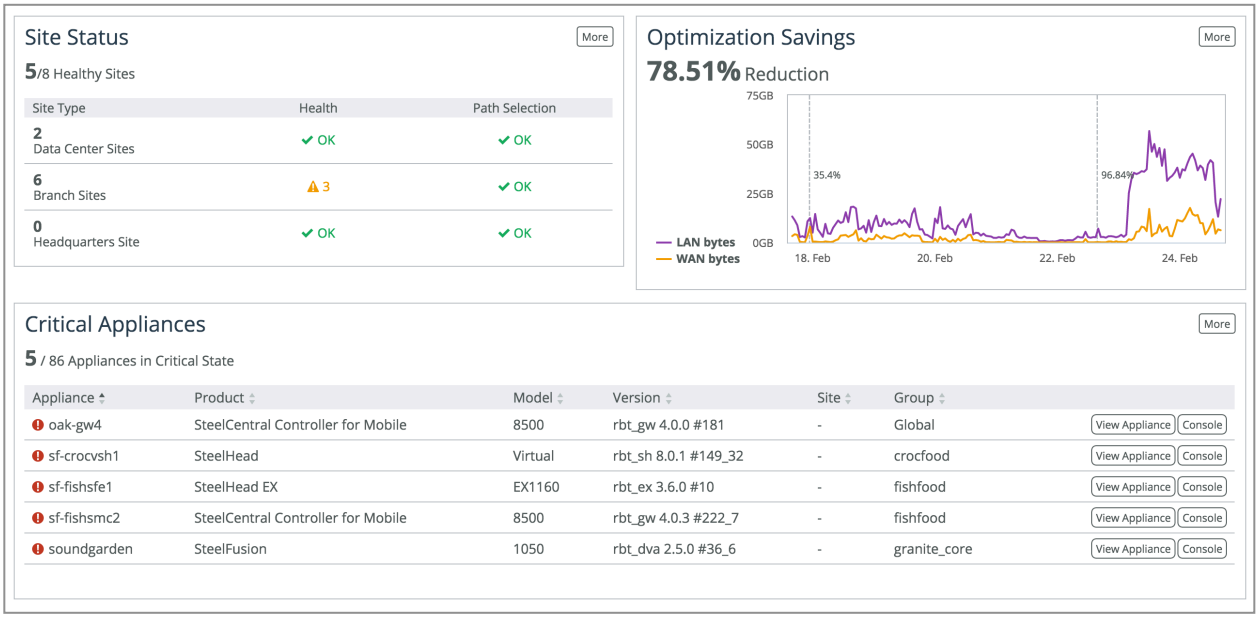

Figure 5

The SteelCentral Controller for SteelHead Dashboard displays an overview of sites, appliance health, and optimization savings.

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Optimized, secure delivery of all apps across all networks

SteelHead 9.0 delivers up to 100x performance for on-premises, cloud, and SaaS applications with optimization across the hybrid enterprise to users everywhere. New GeoIQ for Office 365 guarantees users always have the best optimization for their Office 365 mailbox no matter where the mailbox or the users are located.

Use Case: Accelerating applications to and from the cloud

Challenge: I have users all over the world – in remote offices, working from home, on the road – accessing all types of applications – on premise, cloud and SaaS - over various combinations of connection types - MPLS, internet VPN, and public Internet. I get a lot of user complains for SaaS and cloud applications. I need to ensure that every user has the best experience with all applications despite the distance between them, but I have little to no control of SaaS and cloud applications. I need to ensure application service levels and avoid a negative impact on the business.

Here are some data points from Forrester that illustrate these forces:

- 62% of employees work in multiple locations
- 51% say application complexity makes work harder
- 52% have their corporate data outside of the data center

While many business-critical applications are moving to public clouds, SaaS applications in particular frequently experience slow performance and deliver a less-than-optimal user experience due to the distance from the cloud to the user.

Solution benefits: With SteelHead 9.0, Riverbed uniquely delivers the greatest bandwidth savings and ensures the best performance for the largest number of business-relevant applications running today's businesses, whether they are on-premise, in the cloud, or now also SaaS-based applications. SteelHead offers GeoIQ for Office 365, which guarantees users always have the best optimization for their Office 365 mailboxes. With GeoIQ, we intelligently optimize mailbox traffic with a SteelHead near the user and the mailbox, thus optimizing the most direct path. GeoIQ for Office 365 mailboxes ensures better performance and application delivery no matter where users or mailboxes are located.

SteelHead solutions enable accelerated application delivery in 90% of public cloud environments with support for Amazon Web Services (AWS), certification with Microsoft Azure (certified), and VMware VCloud Air (certified).

Riverbed Solutions

How it works: SteelHead solutions offer dynamic performance management capabilities that ensure optimization of all applications.

- GeoIQ optimizes the most direct path between user and mailbox
- Data Streamlining leverages patented scalable data referencing technology to reduce the amount of bandwidth needed to transmit data
- Application Streamlining reduces the application “chattiness” and the number of round-trips made
- Transport Streamlining increases the efficiency of protocols by increasing the TCP payload, often just by repackaging the TCP packets
- Internet optimization ensures the fastest path between the end-user and the SaaS/IaaS cloud datacenter to improve application performance
- Laptop client software for mobile and remote employees ensures end-user optimization is always available

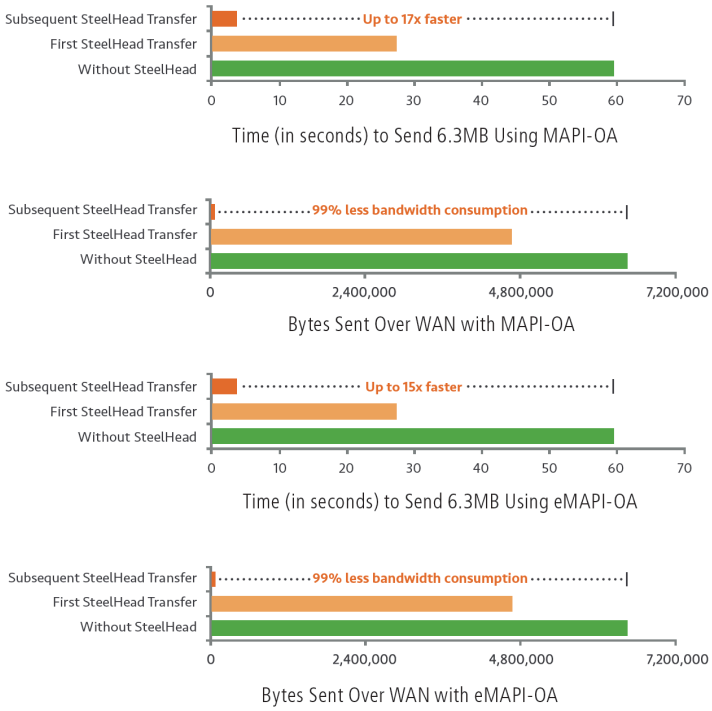

Figure 6
Performance improvements for email when ending and receiving regular email with an attachment using regular Microsoft Outlook Anywhere (OA) and encrypted OA.

Time to complete (in seconds)

Summary

Riverbed SteelHead 9.0 offers the most complete visibility, optimization, and control solution to accelerate performance of on-premises, cloud and SaaS applications across the hybrid enterprise.

SteelHead 9.0 allows you to:

Deliver the best end-user experience across the hybrid network by optimizing application performance for on-premise, cloud, and SaaS applications

Enable Faster Problem Resolution with improved IT visibility into optimized application traffic and end-user experience to definitively pinpoint the origin of any application delivery or performance problems

Increase visibility into previously unavailable optimized application traffic, across hybrid networks – including on-premise, private and public/SaaS clouds

Enhance IT control with a simplified, wizard-like approach designed to facilitate the translation of business intent into application-centric service policies

Secure all traffic across hybrid networks between SteelHeads for Private (MPLS) and Internet links with standards-based encryption for added security and regulatory compliance

About Riverbed

Riverbed, at more than $1 billion in annual revenue, is the leader in application performance infrastructure, delivering the most complete platform for the hybrid enterprise to ensure applications perform as expected, data is always available when needed, and performance issues can be proactively detected and resolved before impacting business performance. Riverbed enables hybrid enterprises to transform application performance into a competitive advantage by maximizing employee productivity and leveraging IT to create new forms of operational agility. Riverbed's 26,000+ customers include 97% of the *Fortune* 100 and 98% of the *Forbes* Global 100. Learn more at Riverbed.com/SteelHead