

PERFORMANCE BRIEF: Microsoft App-V

TEST SUMMARY

- Accelerates App-V virtual application streaming across the WAN by up to 9x
- Reduces bandwidth utilization by up to 99%

Riverbed® Steelhead® Appliances Accelerate Microsoft App-V

Microsoft App-V transforms applications into virtualized services for simplified and rapid deployment. It is the only virtualization solution that delivers applications that are never installed and dynamically delivered, on demand. Whether deployed on desktops, laptops or, terminal servers, App-V changes application management from a series of manual tasks into an automated, streamlined process that accelerates the pace and reduces the cost of business.

More details on Microsoft App-V can be found at www.microsoft.com/systemcenter/appv/default.aspx

Steelhead Appliances Accelerate Virtual Application Streaming and Reduce Bandwidth Utilization.

Deploying Riverbed Steelhead products with Microsoft App-V significantly accelerates the streaming of virtualized applications across the wide area network (WAN). Virtualized applications allow customers to deploy applications from central management servers without ever having to install actual software onto client machines. While this clearly provides benefits from an IT management perspective by simplifying administration, performance limitations over the WAN can impact the usability of the solution by end-users in a distributed environment.

With Riverbed's wide-area data services (WDS), organizations deploying Microsoft App-V virtual applications can dramatically reduce the amount of time it takes to stream an application from a central App-V server to users in remote offices or on the road. Steelhead products cut the amount of time it takes to load virtual applications as well as accelerating access to centralized data stores. The Riverbed Optimization System (RiOS) utilizes industry-leading data streamlining, transport streamlining and application streamlining to provide data deduplication, compression, and protocol optimization at both the transport and application layers.

With, RiOS, enterprises can cut App-V traffic on the WAN by as much as 99% allowing organizations to save on bandwidth costs while still delivering real-time access to information for their employees. The end result is greater IT operational efficiency and a more productive workforce.

Performance Improvements

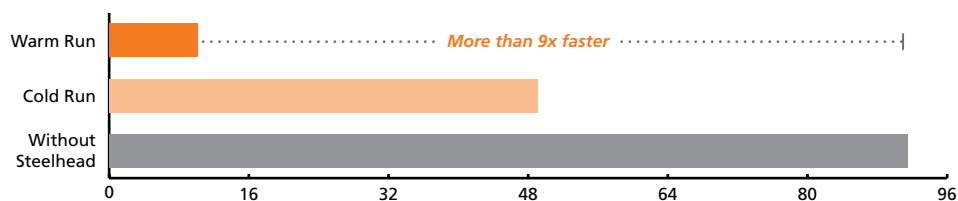
Test results show that Riverbed Steelhead products significantly accelerate App-V virtual application streaming. Accessing applications was more than 9 times faster with Steelhead appliances and bandwidth utilization was reduced by over 99%.

Although the App-V Desktop client caches the application stream, rendering the warm run (for the same user) redundant, it is important to note that for a multi-user branch office, only the first user streaming a virtual application suffers a "cold" hit, and the rest of the users in the branch office get the benefits of a "warm" run.

TESTING SCENARIO

Testing was performed using App-V 4.1 with RiOS 5.0 over a 1.5 Mbps WAN circuit with 100 ms of latency. Virtualized versions of MS PowerPoint and MS Word were stored on a Windows 2003 server running App-V 4.1 application sequencer. These virtual applications were then streamed to a Windows XP desktop running the App-V 4.1 Desktop Client.

Streaming MS Word virtualized with App-V – Time to Complete (in seconds)



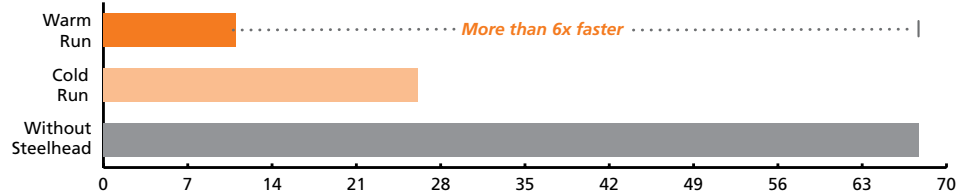
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DEPLOYMENT BENEFITS

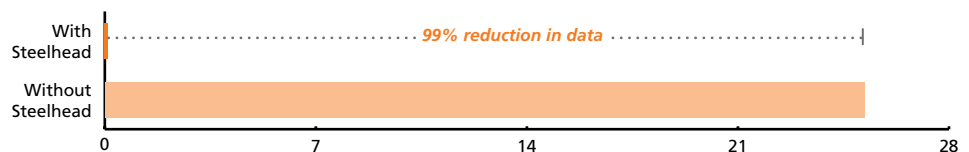
Deploying Riverbed for Microsoft App-V produces significant benefits:

- **Simplify IT management with virtualized applications.** IT organizations can quickly and easily deploy applications to users around the world without having to perform installations on client endpoints. The time savings for IT staff and administrative simplicity deliver significant cost-savings.
- **Consolidation without the performance penalty.** The distributed and mobile workforce can now access centralized virtual applications with LAN-like access to improve productivity and end-user satisfaction. This enables companies to not only centralize data, but also limit the ability of client machines to run applications providing greater security and control over the enterprise.
- **Reduce bandwidth utilization.** Steelhead products significantly reduce bandwidth utilization for remote offices and mobile workers when accessing virtualized applications.

Streaming MS PowerPoint virtualized with App-V – Time to Complete (in seconds)



Data Transferred for PowerPoint – Bandwidth Utilization (in MB)



**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.*

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 sometimes 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, Microsoft Office, Email (including MS Exchange and Lotus Notes), SSL-encrypted applications, 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 rules-based policy administration of optimization classes and packet marking for QoS and route control.

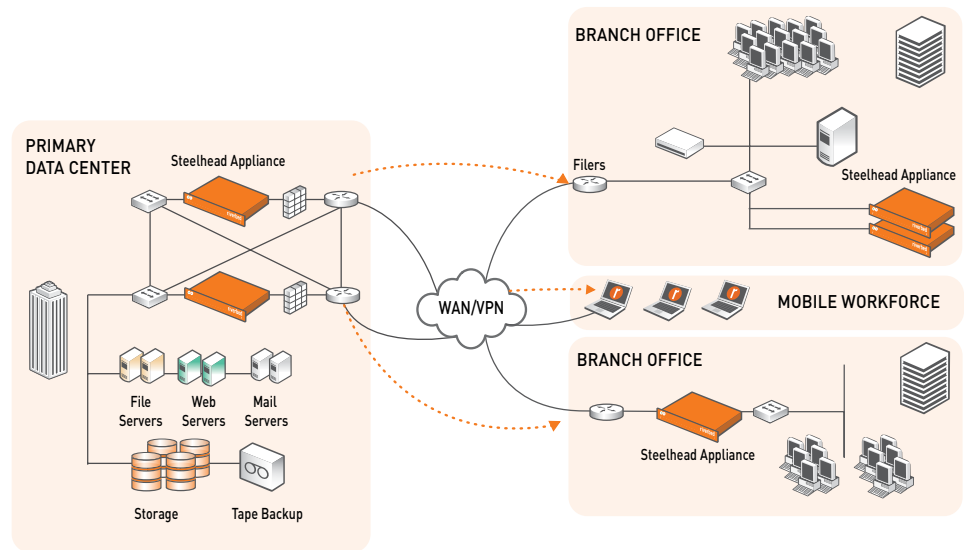
Transport Streamlining RiOS transport streamlining reduces the number of TCP packets required to transfer data by 65% to 98%. Transport streamlining overcomes TCP limitations by adapting transmission characteristics such as window scale, loss handling, congestion notification, and more. Transport streamlining also allows SSL-encrypted applications to be accelerated as well. RiOS Transport streamlining also enables greater utilization of high bandwidth, high latency connections with High-Speed TCP and MX-TCP.

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 5.5 through 2007), Web (HTTP and HTTPS), and Database (MS-SQL). RiOS also includes important features for maximizing branch office productivity such as file server capabilities, transparent pre-population of popular data, and the Riverbed Services Platform (RSP) – a virtualized partition that can run additional services and applications on Steelhead appliances without the need for a dedicated server.

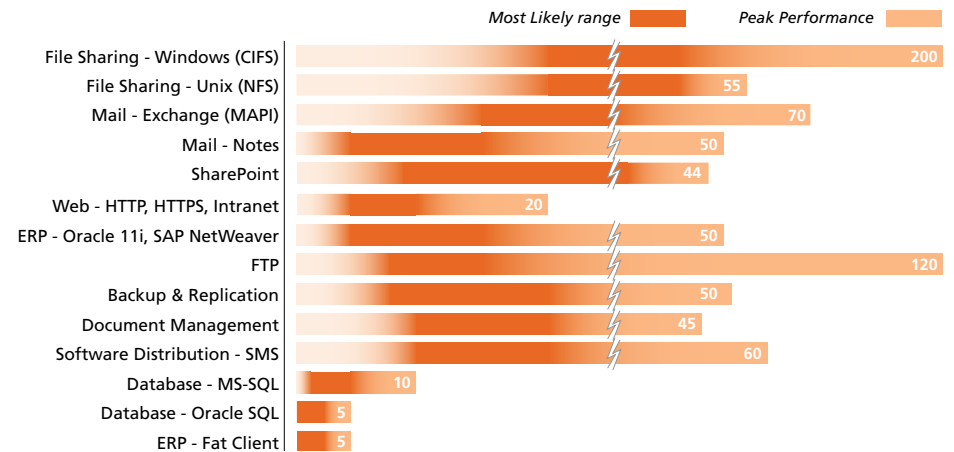
Management Streamlining RiOS simplifies the deployment and management of application acceleration infrastructure by employing a transparent approach to communications. RiOS enables easy deployment through auto-discovery of peers and auto-interception of traffic, with no reconfiguration of clients, servers, 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.

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Typical Deployment Architecture



Steelhead Appliances Accelerate a Wide Range of Applications



Riverbed Technology, Inc.
 199 Fremont Street
 San Francisco, CA 94105
 Tel: +1 415 247 8800
 Fax: +1 415 247 8801
 www.riverbed.com

Riverbed Technology Ltd.
 1, The Courtyard, Eastern Road
 Bracknell
 Berkshire RG12 2XB
 United Kingdom
 Tel: +44 1344 354 910

Riverbed Technology Pte. Ltd.
 391A Orchard Road #22-06/10
 Ngee Ann City Tower A
 Singapore 238873
 Tel: +65 6508 7400

Riverbed Technology K.K.
 Shiba-Koen Plaza Building 9F
 3-6-9, Shiba, Minato-ku
 Tokyo, Japan 105-0014
 Tel: +81 3 5419 1990