

# Riverbed® Significantly Improves Desktop Virtualization

## The Desktop Dilemma

More and more organizations are seeing the benefits of virtualization in achieving greater efficiency of the scarce resources in IT, namely budget and time. Some are considering desktop virtualization products like Citrix ICA, VMware View, or Microsoft Terminal Services to remove the direct physical ties between desktop hardware, servers, and end user applications. However, many customers will still require both thick and thin clients as not all environments are suitable candidates.

Further, not all the promises of desktop virtualization are easy to realize in complex real world deployments. The one area that most often can make or break the success of an initiative is the quality of the end user experience. If wide area network (WAN) bandwidth constraints and latency cause application performance to slow to a crawl, or worse, if display output and keyboard input suffer noticeable delays, then users will suffer.

## The WAN Optimization Solution

Don't despair! There are ways to overcome these performance difficulties for both thick and thin clients and to keep end users satisfied and productive. WAN optimization can be an essential tool in improving the response time and quality of both native and desktop virtualization solutions. Steelhead® appliances and Steelhead Mobile software from Riverbed Technology enable significant improvements in application and desktop performance across the WAN, overcoming the challenge of more reliance on more data across the same old network. WAN optimization from Riverbed is also far more effective in addressing the root causes of the problem than alternatives such as pouring more and more money into upgrading network connections to many offices. The Riverbed Optimization System (RiOS) has many features to improve desktop virtualization across the WAN:

- Scalable data reduction (SDR) in memory for high speed reduction of bandwidth requirements
- QoS for Citrix ICA (used by XenApp for example) to recognize different types of traffic and prioritize user activities
- Easy configuration for Citrix optimization to get you up and running quickly and simply
- Reduction of TCP-based traffic by 60-95%, making room for the added load of virtual desktops

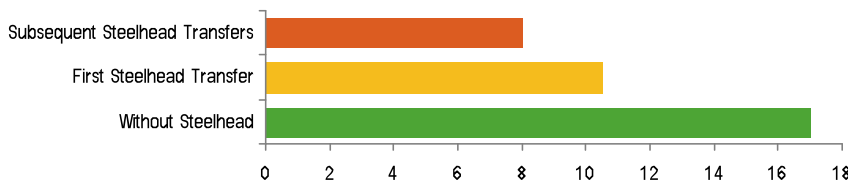
## BENEFITS

- Better performance for virtual desktop users
- Accelerate Citrix ICA, VMware View, and Microsoft Terminal Services
- Reduce bandwidth utilization up to 50-90%
- Improve user response time up to 5X

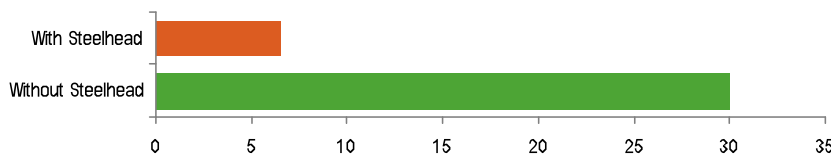
### Significant Performance Improvements

How does WAN optimization help? Often desktop virtualization products struggle to run in these constrained environments, but Riverbed is able to achieve much improved results. Extensive testing has shown that Riverbed WAN optimization reduces bandwidth utilization for desktop virtualization by 50% to 90%. In addition response time for activities like login can be improved 5X. These improvements are achieved with more efficient compression algorithms, memory-based de-duplication of the data to be transferred, TCP tuning, QoS enabling prioritization of traffic and reduction of native traffic on the WAN. These advantages can often make the difference in realizing desktop virtualization project success.

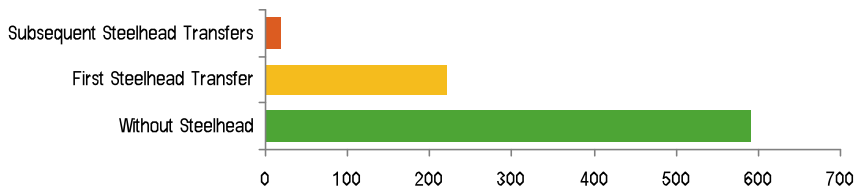
**Figure 1 – Test results with Citrix ICA for bandwidth required per session using Steelhead appliances. (In kpbs)**



**Figure 2 – Test results with Citrix ICA for login over a fully utilized T1 at 100msec round trip latency using Steelhead appliances. (In seconds)**



**Figure 3 – Test results with VMware VDI of check out of a View desktop over T1 with 100msec round trip latency using Steelhead appliances. (In minutes)**



### About Riverbed

Riverbed Technology is the IT infrastructure performance company. The Riverbed family of wide area network (WAN) optimization solutions liberates businesses from common IT constraints by increasing application performance, enabling consolidation, and providing enterprise-wide network and application visibility – all while eliminating the need to increase bandwidth, storage or servers. Thousands of companies with distributed operations use Riverbed to make their IT infrastructure faster, less expensive and more responsive. Additional information about Riverbed (NASDAQ: RVBD) is available at [www.riverbed.com](http://www.riverbed.com)



**Riverbed Technology, Inc.**  
 199 Fremont Street  
 San Francisco, CA 94105  
 Tel: (415) 247-8800  
[www.riverbed.com](http://www.riverbed.com)

**Riverbed Technology Ltd.**  
 Farley Hall, London Rd., Level 2  
 Binfield  
 Bracknell, Berks RG42 4EU  
 Tel: +44 1344 354910

**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, Bldg. 9F  
 3-6-9, Shiba, Minato-ku  
 Tokyo, Japan 105-0014  
 Tel: +81 3 5419 1990