

PERFORMANCE BRIEF: Autodesk Revit Architecture

TEST SUMMARY

- Steelhead® appliances accelerate Revit file transfer over WAN networks
- Bandwidth utilization is reduced by up to 98%
- Revit Architecture data transfer operations are up to 6 times faster

Riverbed® Steelhead® Appliances Accelerate Autodesk Revit Architecture Suite

Professionals worldwide use Revit Architecture building information modeling software in their design of buildings, creating proposals, adapting and changing those designs, and coordinating plans, schedules and construction documents through inevitable changes. However, architects productivity and collaboration is very often reduced because of the size of the files they need to get the job done, and the poor quality of the networks they use for transferring these files. Much of the work is done by working teams distributed across far distances, adding latency to the network. This is further compounded as they are frequently outside their office, using lower bandwidth wide area network (WAN) connections such as 3G and Wi-Fi, rather than high speed local area networks (LANs).

Riverbed-Enhanced Revit Architecture

Riverbed® significantly optimizes Revit Architecture data in distributed enterprises, to enable faster file access and more collaboration. Riverbed accelerates Revit Architecture by eliminating the transfer of redundant data at a very fine granularity. Riverbed combines this reduction with optimized transport and application protocols, thus minimizing the effects of latency and dramatically accelerating file transfer.

Performance Improvements

In recent tests, Riverbed Steelhead appliances reduced the time to transfer Revit Architecture data by a factor of 4.7 times for Revit 2008, and up to 6.0 times for Revit 2009, while bandwidth consumption was reduced by up to 81% for the first time data was sent. Data transfer time was dramatically reduced from more than 68 minutes to under 15 minutes. Additionally, there was a 98% reduction in bandwidth utilization with a warm (subsequent) run, implying that 98% of the data previously traversing the WAN was redundant, and eliminated by Riverbed's unique data streamlining techniques.

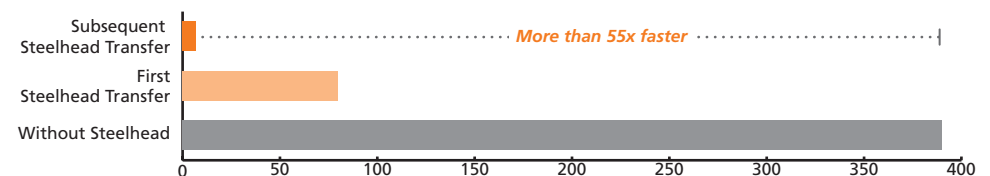
TESTING SCENARIO

This test was performed over a T1 link with 100 millisecond latency, typical of a WAN connection. The testing simulates two Revit Architecture users working on separate local workstations. Each user opens a common Central File on a server located across a WAN, saves a Local copy to their computer, performs some work (which involves getting permissions and borrowing elements from the Central File), and then publishes their changes to the Central File. The tests include Saves to Central that are near-simultaneous, simulating typical real-life Central File conflicts.

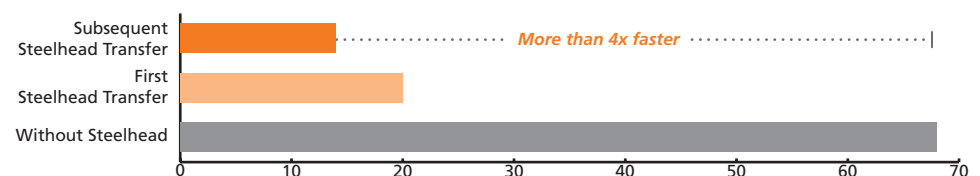
A "first transfer" is defined as a data transfer that has never been seen by the Steelhead appliance before (completely new data).

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).

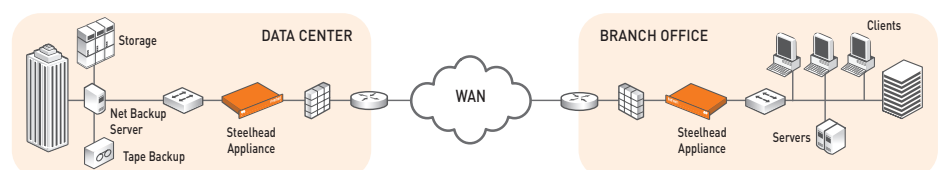
Reduction in Bandwidth- Amount of data sent over the WAN (in MB)



Reduction in Transfer Time- Time to transfer a 396 MB document (in minutes)



Typical Deployment Architecture



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DEPLOYMENT BENEFITS

Deploying Riverbed in conjunction with Autodesk Revit Architecture provides multiple benefits, including:

- **More collaboration.** By reducing the time to transfer AutoCAD files by an order or magnitude or more, Steelhead appliances enable users in multiple offices to work collaboratively on large design documents. Work can be shifted to offices with downtime, or the right person can work on a task regardless of their location. Benefit from faster review cycles, quicker turnaround, and less delay across time zones
- **More productivity.** By dramatically reducing the amount of time needed to complete basic CAD file operations, engineers can save an hour per day or more. Proposals can be completed in a fraction of the time.
- **Fewer costly mistakes.** Central file serving eliminates many errors and nuisances in revision control, while also reducing conflicting work and inconsistency in designs.
- **Reduced networking costs.** Steelhead appliances reduce bandwidth utilization from remote offices that rely on accessing Revit documents located on networked file servers in other offices, reducing monthly IT costs.

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 WAN optimization, 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 mark-ing 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.

About Riverbed

Riverbed Technology is the performance leader in WAN optimization solutions for. 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

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