

# PERFORMANCE BRIEF: PTC Pro/ENGINEER® Wildfire™

## TEST SUMMARY

- Pro/ENGINEER Wildfire operations over the WAN are 17 times faster
- Bandwidth utilization is reduced by up to 98%

### Pro/ENGINEER Wildfire over the WAN

There are multiple use cases for PTC's Pro/ENGINEER Wildfire 3D product design solution over a wide area network. One of the common use cases is using the application to open remote files via the CIFS protocol. In this situation, file collaboration over a Wide Area Network (WAN) can take a dramatic toll on productivity.

Files are often many tens to hundreds of megabytes, resulting in inefficiency even in basic operations such as file opens and file saves. Manufacturing and design firms estimate that design engineers can spend one-quarter to one full hour a day waiting for remote file operations to complete, dramatically reducing the available working time per person.

### Steelhead-Enhanced Pro/ENGINEER Wildfire

The network traffic associated with Pro/ENGINEER Wildfire assemblies contains a large amount of compressible, repetitive data, offering the opportunity for massive acceleration, data reduction, and productivity enhancement. Riverbed significantly optimizes Pro/ENGINEER Wildfire to deliver LAN-like performance for remote offices by utilizing the Riverbed Optimization System (RiOS).

RiOS simultaneously addresses bandwidth constraints and the combined effects of latency and protocol inefficiencies. RiOS utilizes fine-grain data reduction as well as compression to perform Data Streamlining, which reduces bandwidth utilization by 60 to 95%. Transport Streamlining and Application Streamlining minimize protocol chattiness and eliminate 65 to 98% of packet roundtrips across the WAN.

### Performance Improvements

Test results showed that Riverbed Steelhead appliances accelerate Pro/ENGINEER Wildfire tasks by up to 17x in these tests of common network operations. Bandwidth utilization was reduced by 98%, indicating that 98% of the data previously traversing the WAN was redundant information that was eliminated by Riverbed's Data Streamlining techniques. The graphs below present a representative sample of the results, based on numerous combinations of actions and deployment scenarios.

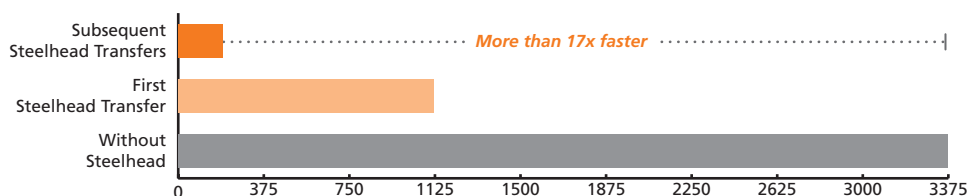
#### TESTING SCENARIOS

Pro/ENGINEER Wildfire testing focused on opening various sizes of assembly files over the WAN, using a standard Microsoft file server as the file repository.

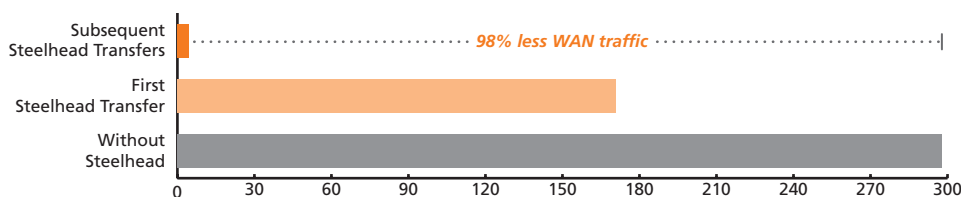
The WAN environment consisted of a T1 WAN connection, and 100 milliseconds of delay between locations. This scenario would be typical of a remote office WAN connection between Los Angeles and New York.

These tests were performed using Windows XP Professional as the client, Windows 2000 server, and PTC Pro/ENGINEER Wildfire 2.0. A 300MB assembly was used for the test.

Open Assembly (300MB) – Time to Complete (in seconds)

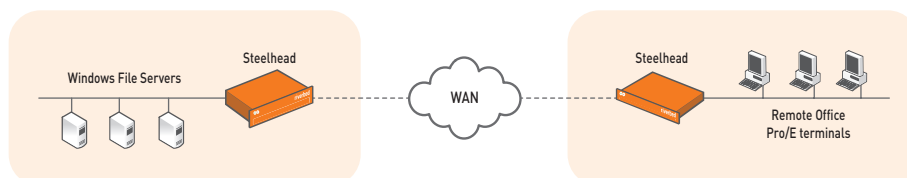


Open Assembly (300MB) – Bandwidth Utilization (in MB)



*\*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.*

### Typical Deployment Architecture



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## DEPLOYMENT BENEFITS

Deploying Riverbed in conjunction with Pro/ENGINEER Wildfire provides multiple benefits, including:

- **Productivity gains.** By dramatically reducing the amount of time needed to complete basic network file operations, engineers can save an hour or more per day.
- **Reduced bandwidth utilization.** Steelhead appliances reduce bandwidth utilization for remote offices that rely on accessing 3D product design assemblies located on networked file servers in other offices, reducing IT costs.
- **Better, faster collaboration.** By reducing the time to transfer Pro/ENGINEER Wildfire assemblies 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.
- **Remote office server consolidation.** LAN-like WAN performance means that server consolidation can become a reality, and remote IT infrastructure can be reduced or eliminated. Consolidation dramatically reduces IT maintenance costs, and the tasks of upgrading and patching servers can be greatly simplified.

## 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 up to 100x. RiOS consists of four key components:

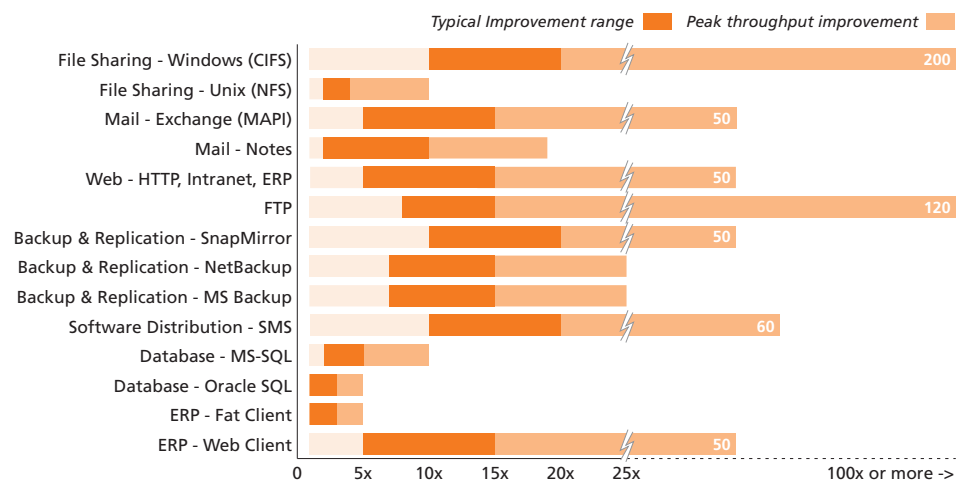
**Data Streamlining** – RiOS Data Streamlining works across all TCP applications to reduce bandwidth consumption by 60% to 95%. Data Streamlining works across Windows file sharing (including MS Office), Email (including MS Exchange and Lotus Notes), CAD, ERP, databases, and all other applications that use TCP, to ensure 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. 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 the 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.

## Steelhead Appliances Accelerate a Broad Range of Applications



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