

The New Age of Global IT

Simplify, Consolidate, Accelerate.



The CIO's dilemma: IT simplicity or business performance?

Increasingly Distributed organizations

- 67% of employees work in a location other than the headquarters
- IT needs to be where the people are



Increasingly Consolidated IT

- Lower costs & easier to manage
- Guaranteed data protection



The challenges that distributed enterprises face today

DATA SECURITY



PRODUCTIVITY



COST SAVINGS



CNNMoney.com
Info on 3.8M bank customers lost
 Computer hackers with information about computers handling 1600 by carrier in transit
 the credit business.
 January 8, 2008 8:15 PM EST

Global technology company plans data center consolidation
 By Christopher Lombardi
 May 17, 2008

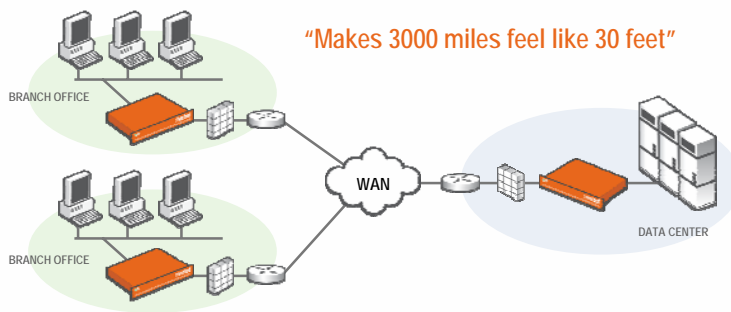
*Link going to database that these contributions will occur in 2008. Data on any company's IT infrastructure is not the result of the search.

The New York Times
Aircraft Manufacturer Offers Guided Tour of a Fiasco
 July 17, 2008, Sunday
 By MARK LAMBERTSON (NYT), Business/Finance & Tech

"To all the complexity, the mistakes grew out of relatively simple lapses in communication. Engineers in Europe sent in the maintenance plan in plaintext. Lockheed overlooked the format of the server format. In a digital language, that sometimes did not require ASCII rather on what they were doing."



Steelhead™ appliances solve these problems



- Increases user and IT productivity
- Accelerates applications
- Saves bandwidth
- Eliminates the need for remote infrastructure
- The easiest product on the market to deploy
 - No changes to client/servers
 - No changes to IP addresses



The three root causes of poor wide-area application performance

Not enough bandwidth

Transport protocol chattiness

Application protocol inefficiencies

If you don't solve all three, users won't see performance benefits.



RiOS is an integrated approach

The Riverbed Optimization System

Data Streamlining

- Optimize WAN bandwidth utilization

Transport Streamlining

- Eliminate transport protocol inefficiencies

Application Streamlining

- Optimize application WAN performance

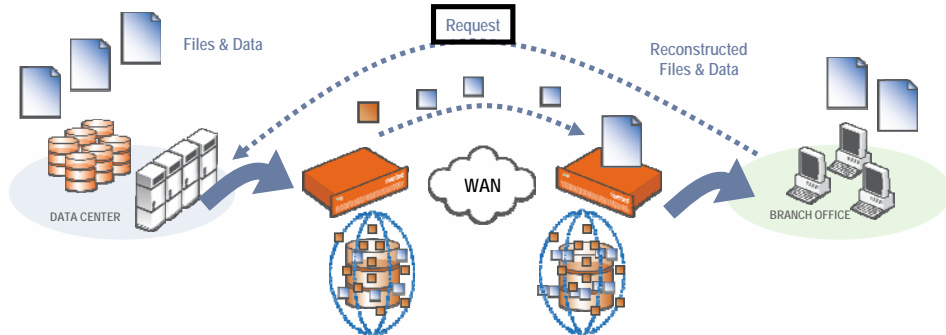
Management Streamlining

- Enable transparent deployment & central management



Data streamlining overcomes bandwidth limitations

60-99% reduction in WAN utilization



- Requests go directly from the client to the server
- Steelhead auto-intercepts response, and segments data
- Only new bytes compressed & sent over the WAN
- 16-Byte references communicate megabytes of existing data
- Remote Steelhead reconstructs data and delivers it to the client

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Data Streamlining provides multiple bandwidth optimizations

Data Reduction

- Eliminate redundant data on the WAN
- 60 – 95% reduction in bandwidth utilization

Compression

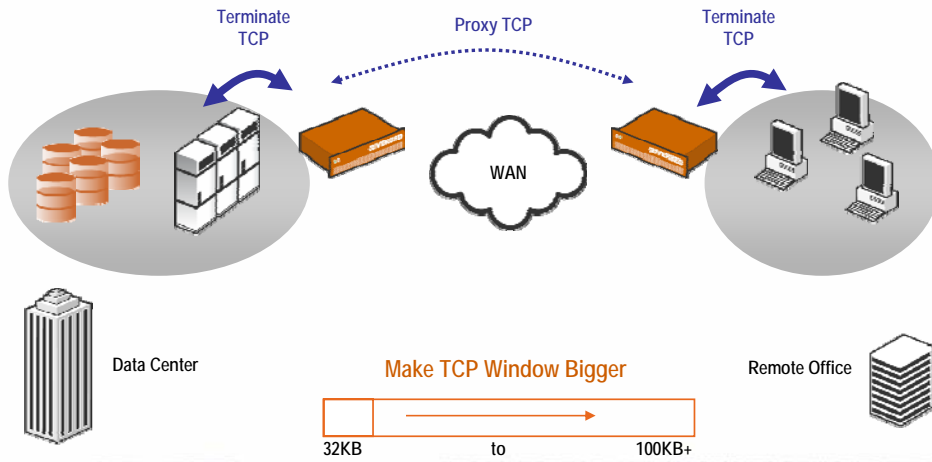
- LZ-Compression for “new” data segments
- Useful for data transferred on first pass

QoS

- Prioritize data on bandwidth and latency
- Compatible with existing QoS

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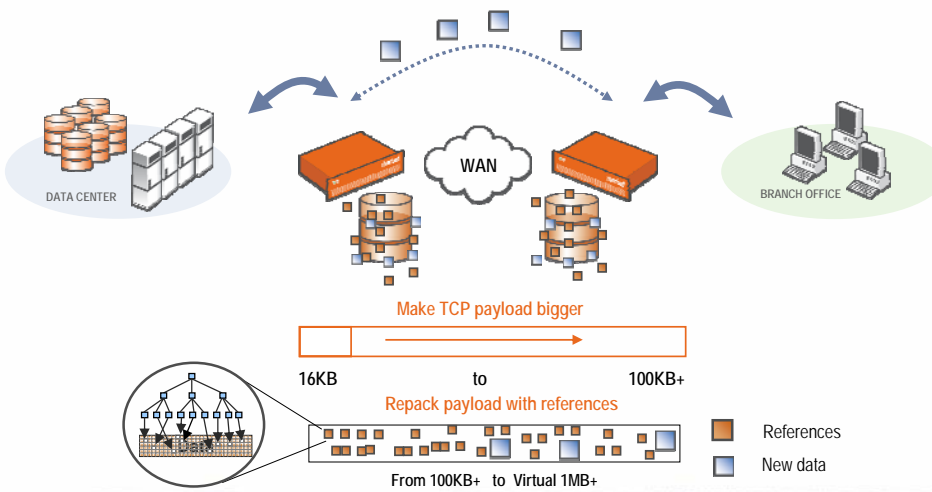
Solving TCP Ch chattiness: Virtual Window Expansion



riverbe

Transport streamlining overcomes TCP limitations

The net effect is a 60-98% reduction in round trips



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Transport streamlining provides many more TCP optimizations

High-speed TCP

- "Fill the pipe" for OC12 and larger connections

Connection pooling

- Eliminate 50% of overhead for small, short-lived connections

Adaptive congestion windows

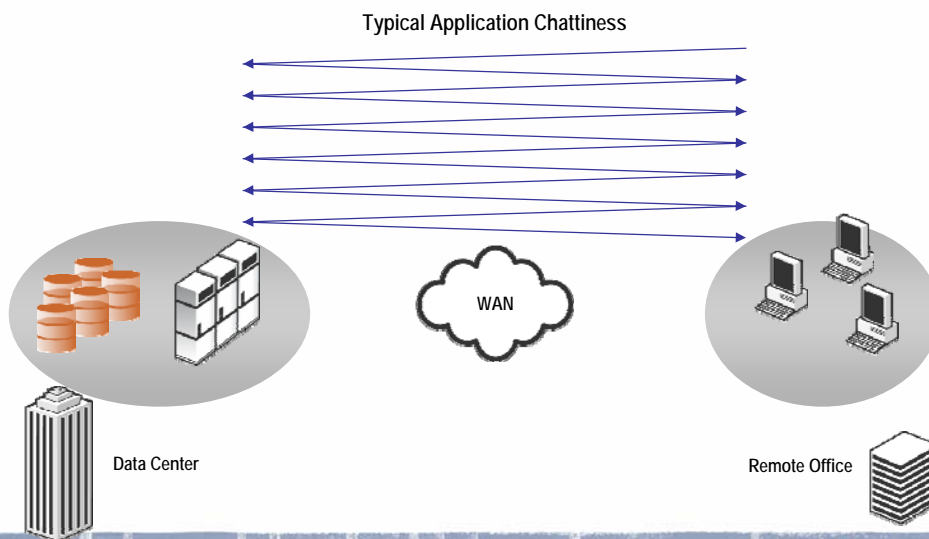
- Adapt transfer parameters based on network characteristics

Limited and fast retransmits

- Ensure priority handling for packet resends

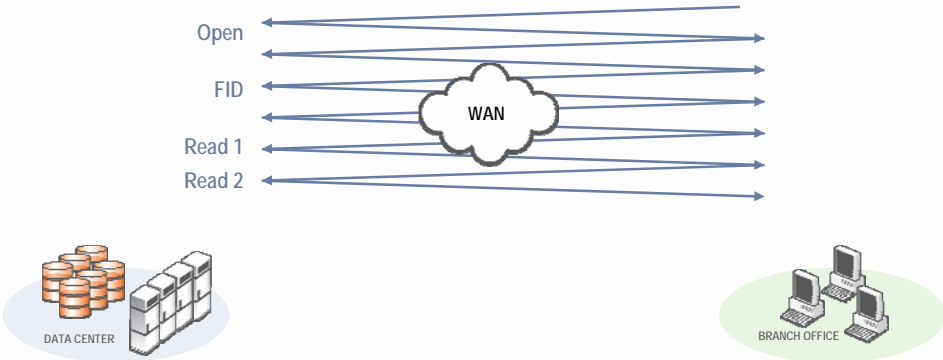


Solving Application Ch chattiness Problems

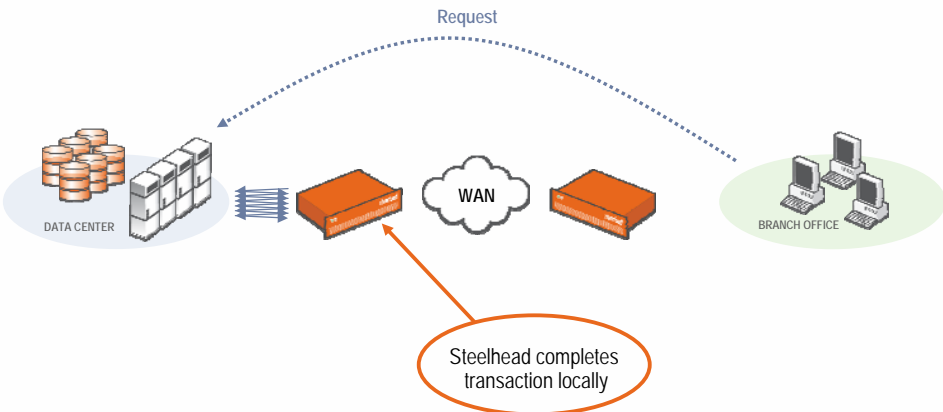


Application streamlining overcomes application protocol limitations

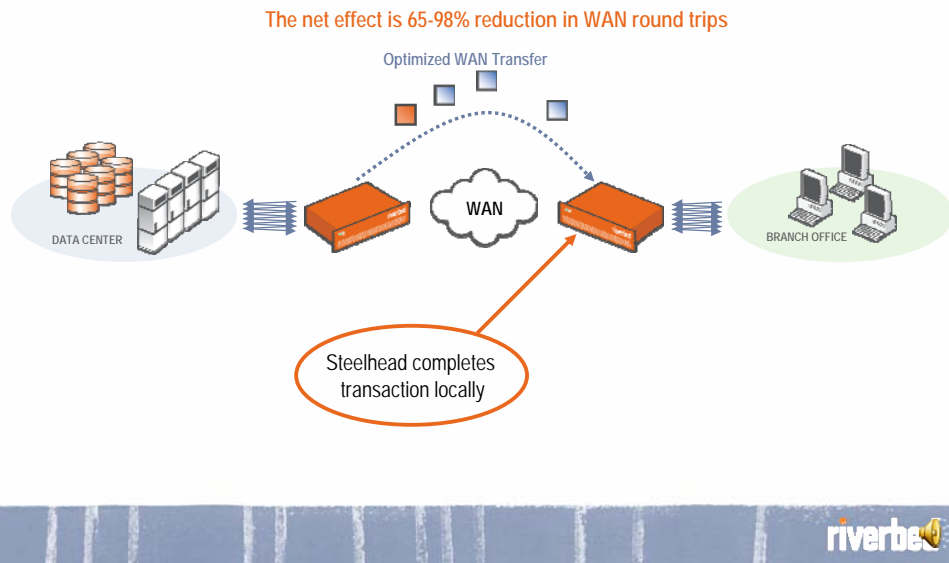
Typical application inefficiency



Application streamlining overcomes application protocol limitations



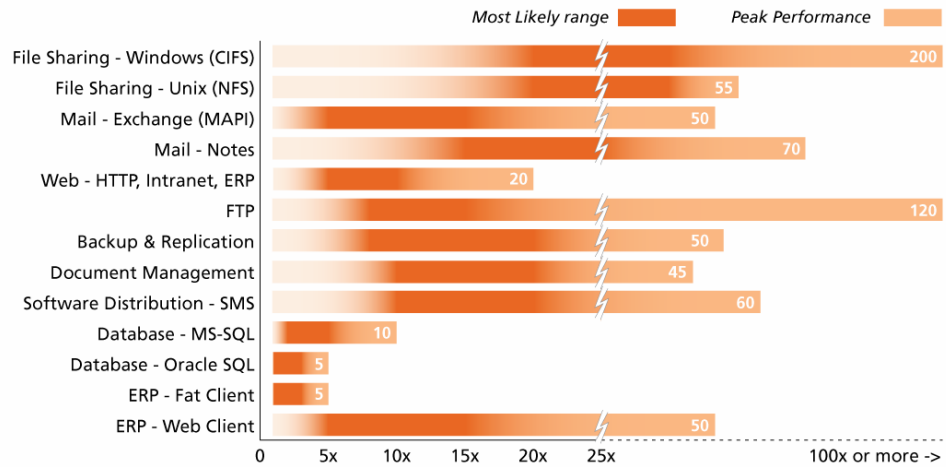
Application streamlining overcomes application protocol limitations



Application streamlining overcomes application limitations

CIFS	• Windows File Sharing & Windows-based applications
NFS New	• Unix File Sharing & Unix-based applications
MAPI	• Microsoft Exchange
HTTP	• Web-based applications
MS-SQL	• Database driven applications
BACKUP & REPLICATION	• Simplified replication of remote servers
PROXY FILE SERVICE	• Disconnected operations & integrated file sharing

Riverbed's approach accelerates all TCP applications



Management Streamlining

Transparency & high availability



Steelhead appliances are designed for easy network integration

Scalability

- Wide range of models for data centers down to small offices
- Up to 1,000,000 concurrent connections (with Interceptor)
- Up to 4Gbps optimized bandwidth (with Interceptor)

Deployment Flexibility

- Up to six 10/100/1000 in-path interfaces (optional)
- TCP connection forwarding
- Diverse in-path and out-of-path deployment options

Software-based Redundancy

- Serial clustering
- Parallel clustering
- Hot backups

Hardware-based Redundancy

- Fail-to-wire Ethernet cards
- Triple power supply (optional)
- RAID (optional)



Enhanced Steelhead Visibility and Reporting

Granularity / Trending

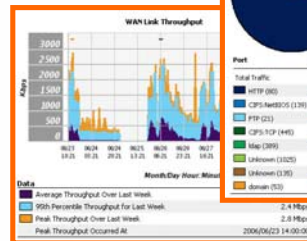
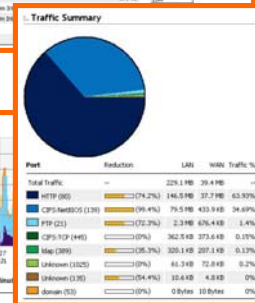
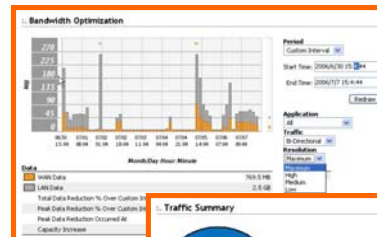
- 1 second sample granularity
- Custom time interval

Port / App Identification

- Port / App autodiscovery
- Pass-thru traffic

New Perf Reports

- WAN-side throughput
- Connection forwarding
- Connection pooling



CMC v3.0: Improving Global Visibility & Central Configuration

Global Reporting

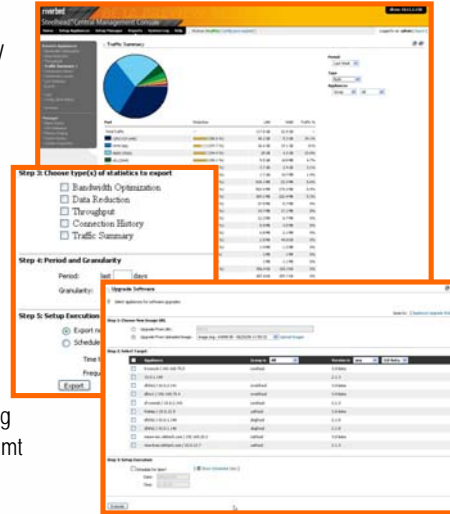
- Global Traffic Summary
- Pass thru traffic
- Total Connections

Advanced Data Mining

- Trending to 1 Year
- Custom Time Intervals
- Global Stats Export

Central Configuration

- Software Image Hosting
- Streamlined Config Mgmt



Steelhead appliances are sized for your offices

Small Office

- 520**
- 1 Mbps optimized throughput
 - 300 optimized TCP connections

- 200**
- 1 Mbps optimized throughput
 - 100 optimized TCP connections

- 100**
- 1 Mbps optimized throughput
 - 25 optimized TCP connections

Mid-Size Office

- 2020**
- 10 Mbps optimized throughput
 - 2000 optimized TCP connections

- 1520**
- 4 Mbps optimized throughput
 - 1000 optimized TCP connections

- 1020**
- 2 Mbps optimized throughput
 - 625 optimized TCP connections

Large Office / Data Center

- 5520**
- 155 Mbps optimized throughput
 - 15,000 optimized TCP connections

- 3520**
- 45 Mbps optimized throughput
 - 6000 optimized TCP connections

- 3020**
- 20 Mbps optimized throughput
 - 3500 optimized TCP connections

- 6020**
- 310 Mbps optimized throughput
 - 40,000 optimized TCP connections
- Systemwide Reporting**

Central Management Console

Massive Scaling

- Interceptor**
- 4 Gbps optimized throughput
 - 1,000,000 optimized TCP connections



One product, many solutions

Riverbed Steelhead™ Appliances

Application Acceleration

- Windows File Sharing
- Email
- Web
- ERP/CRM
- Lotus Notes
- NFS
- FTP
- Backup
- Replication
- Custom apps

Site Consolidation

- File servers
- Email servers
- Filers
- Remote storage
- Tape backup equip.
- Off-site media mgmt.
- On-line backup
- Outsourced services

Bandwidth Optimization

- Reduce WAN bandwidth
- Avoid WAN upgrades
- Expand narrow links
- Fill up LFNs
- Prioritize traffic
- Protect VoIP quality



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