

PERFORMANCE BRIEF: CommVault Galaxy Backup & Recovery

TEST SUMMARY

- Improves incremental backup times by more than 23x
- Reduces incremental backup traffic by up to 93%
- Improves restore times by more than 43x
- Reduces restore traffic by up to 93%

Riverbed® Steelhead® Appliances Accelerate CommVault® Galaxy® Backup & Recovery

CommVault Galaxy Backup & Recovery Software

CommVault Galaxy Backup & Recovery software delivers reliable data recovery with maximum cost-efficiencies. It makes it easy for customers to browse and find data, select as little or as much as is needed, and then recover it quickly and efficiently. CommVault Galaxy software is application-aware and self-managing, so that customers can spend their time on something more productive than double-checking backup copies. Point-and-click reporting saves time and helps ensure that jobs complete.

CommVault's Simpana software is a single product with application modules for Data Protection, Archive, Replication, Resource Management and Search—all built from the ground up, on a single code base and platform and includes Galaxy Backup & Recovery Software.

More details on CommVault Galaxy Backup & Recovery software can be found at: http://www.commvault.com/products/data_protection.asp?sid=10134

Steelhead Appliances Reduce CommVault Backup and Recovery Windows

Deploying Riverbed Steelhead appliances along with CommVault's Galaxy software greatly reduces the amount of time required to complete backup and recovery operations. This configuration makes backups over the WAN possible and eliminates the need for backup infrastructure and tape media at remote branch offices. As a result, organizations can also reduce their tape management and shipping costs and improve the security of data and reduce the risk of privacy breaches.

The Riverbed Optimization System (RiOS™) utilizes industry-leading data streamlining and transport streamlining to provide data deduplication, compression and transport protocol optimization. With RiOS, enterprises can cut CommVault Galaxy traffic on the WAN by as much as 93% allowing organizations to save on bandwidth costs while still completing backup jobs within the allocated windows. By enhancing restoration speeds, RiOS can also help CommVault customers minimize their recovery time objectives (RTO) and get their businesses back up and running should an event involving data loss occur.

Performance Improvements

Test results show that Riverbed Steelhead appliances significantly accelerate CommVault backup and restoration jobs while also reducing WAN bandwidth utilization. A Galaxy restoration operation was 43 times faster with Steelhead optimization and reduced bandwidth by 93%. In addition, an incremental full sync job was accelerated by 23 times with a 93% reduction on bandwidth utilization. For comparison, Commvault Galaxy compression provided a performance improvement of 6% for these same operations.

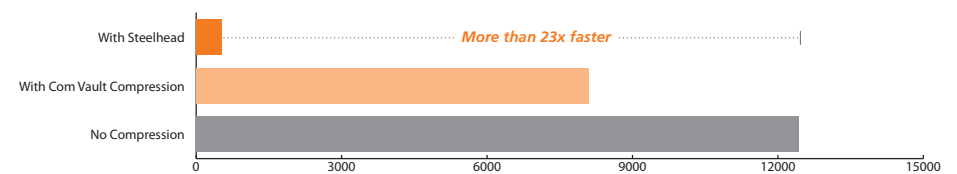
TESTING SCENARIO

These tests were performed using a Windows 2003 Server Enterprise Edition running CommVault Galaxy software version 7.0 and backup clients running Windows XP Professional. The backup data consisted of a range of file formats (XLS, PPT, PDF, DOC, EXE, JPG, ZIP, VSD and TXT) and varied in size from 9 MB to 4 GB. Tests with CommVault Galaxy compression enabled were also run to provide a comparison to testing with Steelheads.

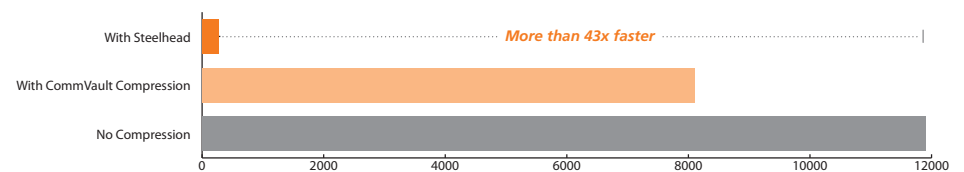
The performance tests were run on a T1 WAN link with latency of 100ms. The testing methodology included an initial full backup of a 4 GB file directory, a full restoration of the directory, an incremental backup with a ten percent delta (typical of a nightly incremental job), and folder and file restores.

*Deployment Solution is not supported due to an incompatible TCP/IP stack.

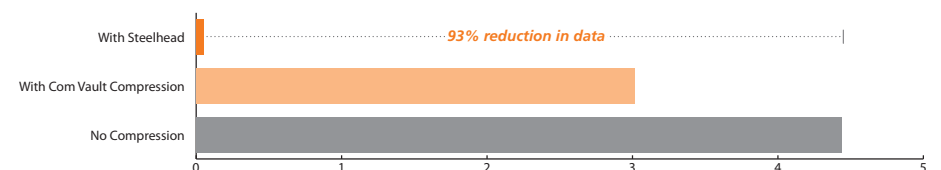
Full Sync Incremental: Time to Complete



Full Restore: Time to Complete (in sec)



Data Transferred: (in GB)



*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.

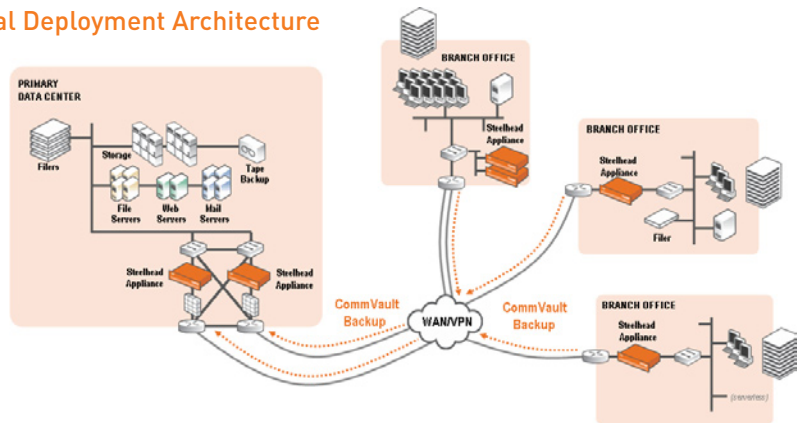
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DEPLOYMENT BENEFITS

Deploying Riverbed with CommVault Galaxy produces significant benefits.

- Centralize Backup.** Reducing the time to complete backup and restore jobs enables organizations to centralize their backup operations to reduce overhead and complexity and eliminate or reallocate unnecessary backup infrastructure saving additional costs.
- Enhanced Data Protection.** By eliminating data stores, tapes and other media from remote offices, enterprises can enhance their security posture to protect critical corporate or customer information.
- Reduced bandwidth utilization.** Steelhead appliances significantly reduce bandwidth utilization for CommVault Galaxy operations creating network cost-savings while alleviating WAN congestion.

Typical Deployment Architecture



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:

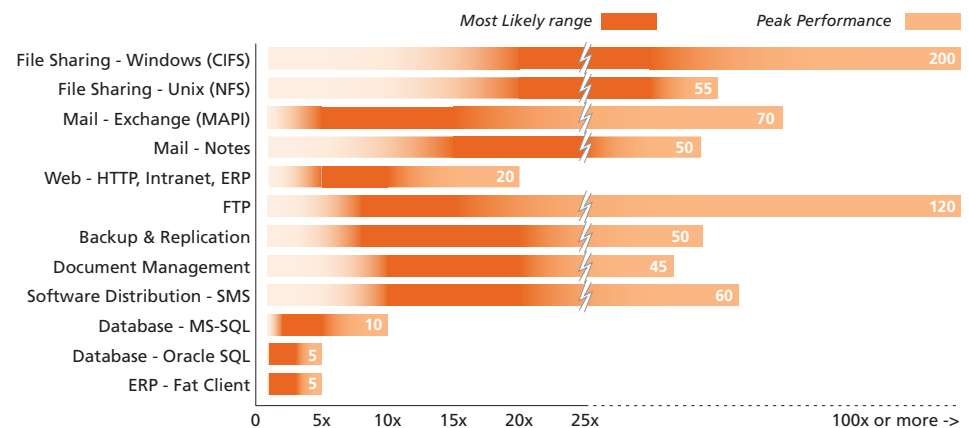
Data Streamlining – RiOS data streamlining works across all TCP applications to reduce bandwidth consumption by 60% to 95%. Data streamlining works across Windows file sharing, Microsoft Office, Email (including MS Exchange and Lotus Notes), SSL-encrypted applications, CAD, ERP, databases, and all other 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), Web (HTTP and HTTPS), 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.

Steelhead Appliances Accelerate a Broad Range of Applications



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