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SOLUTION BRIEF

Effective Consolidation with WAN Optimization

THE ADVANTAGES OF WAN OPTIMIZATION FOR CONSOLIDATION

Introduction: Maximizing the benefits of consolidation with WAN optimization.

Small, Medium and Large Enterprises (SMEs) are turning to consolidation to reduce their data center and corporate IT footprints, with the primary goal of maximizing savings from reduced operational costs. What's more, consolidation can reduce the cost of equipment, personal and bandwidth – making consolidation a serious design consideration for data center refreshes, deployments and upgrades.

Consolidation has become more viable and cost-effective thanks to virtualization technology, processor density and reduced hardware costs. Those three elements have fueled the growth of consolidation more than anything else, especially when backed by claims of high ROI (return on investment) and reduced TCO (Total cost of ownership). However, maximizing the benefits of consolidation takes more than hypervisors, multi-core CPUs, reduced hardware costs and a desire to become a "green" enterprise. It takes careful bandwidth planning, load balancing and traffic optimization technologies to maximize savings, without hindering performance. That makes it necessary to integrate and combine several technologies across various platforms, without introducing complex management schemes and incompatible solutions.

Consolidation offers many benefits to the SME market, Including:

- Reduced Data Center Footprints
- Reduced Energy Usage
- Reduction of Branch Office IT Needs
- Enhanced Mobility
- Centralized Management
- Reduced Connectivity Costs

In the past, data center administrators would turn to virtualization platforms, such as VMWare's ESX server, to consolidate servers in a single data center. That methodology worked quite well, at least until bandwidth requirements created excessive congestion on the network. Nowhere was this more apparent than with branch office consolidation, where servers from branch offices were relocated to virtual hosts in the corporate data center. Of course, that reduced the IT footprint of branch offices. However, it also resulted in a significant traffic increase from branch offices to the data center, leading to traffic contention, increased latency and limited available bandwidth. This can wreck havoc with applications and other services.

The top five technology concerns associated with consolidating branch offices include:

- Bandwidth utilization
- Network latency
- Network contention
- Overall throughput
- Application performance

With previous generation hardware and software, solving any of the above issues proved to be near impossible, throughput and contention were driven solely by the size of the pipe in use, requiring the purchase of larger pipes to solve those issues, while latency and application performance were specifically interrelated with the distances involved and the utilization of the pipe.

Today, the solution to those thorny problems and many others can be found with WAN acceleration and optimization products, which can be integrated into virtual server infrastructures to maximize the flow of traffic between client systems and the data center. Those new solutions also incorporate an element that is important to the budget conscious, the ability to measure savings and better calculate real world costs – answering the age old question of "how much will this really cost?"

Riverbed's Consolidation Solution

Before attempting to consolidate branch offices, IT decision makers need to determine if a consolidation project will deliver effective payback in a reasonable amount of time. That means those decision makers must evaluate the current infrastructure, determine project objectives and justify expenses before committing to a consolidation project. Normally, that proves to be a time consuming process, with its own expenses that can delay consolidation and increase project costs. It all comes down to a basic process of measure, test, deploy and measure again. Riverbed's Consolidation Solution can help IT decision makers accelerate the process by providing the tools for measuring, deploying and validating the benefits of consolidation.

Effective branch office consolidation requires optimizing WAN connections to reduce latency, improve throughput and increase resiliency, the exact areas where Riverbed's solution excels. The Riverbed consolidation solution incorporates several technologies that offer a multifaceted approach to measuring, monitoring and improving WAN performance, which helps consolidation projects to deliver improved ROI and lower TCO. Deploying Riverbed Cascade proves to be one of the best ways to start a consolidation project. Cascade provides all of the functionality to measure performance and trend network traffic, while adding management capabilities that help to identify bottlenecks and other infrastructure issues. Armed with that information, it becomes easier to determine how consolidation will affect network performance, and more importantly – the end user experience.

Achieving positive results during the consolidation process requires traffic management and acceleration, a process where WAN optimization solutions deliver the most value. Riverbed's Steelhead, Steelhead Mobile and Riverbed Services Platform (RSP) deliver that value by increasing throughput, reducing latency and handling contention.

Cascade, when paired with Riverbed's Steelhead products, offers a multifaceted approach to WAN optimization and acceleration that results in measurable performance improvements for high-bandwidth applications, cloud computing, branch office consolidation and virtual desktop infrastructures. Riverbed's solution achieves those improvements by leveraging the latest technology offered by Steelhead products to incorporate high performance processors, which utilize highly optimized algorithms to perform effective data de-duplication, provide intelligent caching of traffic and achieve maximum compression of new data.

Riverbed Cascade provides IT administrators with tools to perform discovery of all assets and map out connectivity, normal behavior, and application performance. Those technologies help to prevent application outages, identify potential trouble spots, gather network and application information, and assist with the management of consolidation projects, IT asset moves and data center relocation tasks, while still meeting the top four requirements for performance and data flow management:

- Easy to Deploy: Requires no major modifications to applications or infrastructure
- Comprehensive: Provides improved performance and manageability for all types of networks and applications
- Real Time: Provides up to the minute performance information and analytics
- Proactive: Identifies issues and problems before a major impact on performance occurs.

Riverbed Consolidation Solution – Accelerating IT Consolidation Projects

Riverbed's approach to consolidation incorporates several products that are integrated together to meet the primary goals of consolidation – improved performance, enhanced management, reduced costs and a lower Total Cost of Ownership. Most consolidation projects start with an assessment of the current infrastructure. Here, Riverbed Cascade provides instant value.

Riverbed Cascade is an enterprise-wide visibility solution, which can be deployed across all of an organization's data centers, branch offices, and mobile users. Riverbed Cascade collects network traffic data from devices such as switches and routers, and uses that data to discover applications and evaluate their performance. Riverbed Cascade uses advanced behavioral analytics to track performance over time and alerts administrators to any deviations from normal behavior. That allows administrators to resolve problems before those problems become visible to end-user operations. Cascade offers drill down capabilities, which give administrators the ability to quickly determine the source of any performance bottlenecks. The management console provides a full graphical representation of server, application, and user dependencies, simplifying the resolution of current application delivery problems.

As a consolidation project moves along, improved WAN performance becomes one of the primary elements of success. Here, Riverbed's Steelhead appliances deliver the technology to improve WAN performance and offer end users a LAN like experience, which reduces the likely hood of one of the largest complaints lodged by end users after consolidation – application performance being too slow to be effectively used. Steelhead Mobile delivers acceleration technology to the mobile / remote worker that is connecting to the datacenter over non-persistent internet connections, such as a home office, hotel room, internet café, or other location that offers temporary internet connectivity. Steelhead Mobile incorporates the same acceleration technology as the Steelhead Appliance, but offers that technology in a client application that is installed on the user's laptop (Windows or Mac), eliminating the need for any acceleration hardware at the user's site. (For more information on Data Streamlining, download the RiOS Technical Overview from Riverbed).

Ongoing improvements are another area that consolidation projects must incorporate. Over time, consolidated systems may suffer declining performance as more applications and services are added to the mix. The traditional way of handling the withering of performance involved throwing more hardware at the problem, an expensive way to address the problem, which actually goes against the concept of consolidation.

Riverbed offers an alternative to increasing the hardware footprint and the associated costs, RSP. Organizations can improve ROI further with RSP, which provides customers with the capability to run up to five additional services and applications virtually on VMware in a protected partition on the Steelhead appliance. RSP allows organizations to eliminate redundant servers to further reduce hardware, software, and maintenance costs and IT complexity at the branch, which brings additional value to a consolidation project. RSP fully leverages the hardware in a Steelhead appliance, improving the utilization of the appliance, which directly reduces hardware costs and simplifies management. What's more, RSP's modular approach to adding services to the appliance allows administrators to pick and choose what new services to deploy over time, easing the transition process when consolidating IT operations.

Case Study: Lantmannen, Stockholm Sweden

Lantmannen, a Stockholm, Sweden based agricultural cooperative used by some 42,000 farmers was suffering from performance problems due to its decentralized IT infrastructure, which was spread out across several hundred locations. The company lacked control of data backup, could not consolidate security practices and suffered from high IT operational costs. The answer to the company's dilemmas came in the form of consolidation. The company took a two pronged approach to consolidation, consisting of deploying WAN optimization technologies and virtualizing servers to reduce the number of branch office datacenters needed and to incorporate centralized management.

Over two weeks late in 2008, Lantmännen deployed WAN optimization appliances at 90 sites. These appliances use caching to minimize the amount of data traversing the company's network and provide local access to applications anywhere in the organization. WAN optimization has bolstered application performance and reduced bandwidth consumption. So much so, in fact, that plans to install a 10MB fiber optic broadband for the enterprise have proved unnecessary—a savings of $650,000. WAN optimization has also helped Lantmännen develop a quick-fire formula for business expansion. In the past, integrating the complex IT infrastructure of a newly procured company, which entails configuring systems for secure data exchange and ordering additional network connections, could take Lantmännen three months. However, by installing WAN optimization boxes on the network, the company can get a new location up and running in as little as three days.

To date, more than 1,000 servers have been virtualized across more than 70 locations, with plans to replace thousands more in 350 additional facilities and offices. Lantmännen expects savings in servers; energy consumption, telecommunications and head count to amount to more than $60 million in five years. (for more information please see – http://www.riverbed.com/us/assets/media/documents/case_studies/CaseStudy-CIO-Lantmannen.pdf)

Conclusion

To deliver effective consolidation it takes a multifaceted approach, which uses a combination of virtualization, optimization, acceleration and management technologies. The fastest, most effective path consists of using proven virtualization technologies, such as VMware's ESX family of products and then incorporating technology that accelerates and optimizes WAN connections, while still providing management capabilities as well as monitoring and troubleshooting tools. Here, Riverbed's Consolidation Solution provides best in class WAN acceleration technologies that optimize site to site and site to client connections to deliver a highly optimized connection from the application to the user, giving a LAN like experience to those accessing applications over the WAN. Steelhead appliances have become the technology of choice for enterprise application acceleration and when combined with Riverbed's Cascade, offer unequaled optimization management and WAN visibility, while RSP brings optimization and consolidation directly to Steelhead Appliances and results in a substantial cost savings and a reduction in operational costs that deliver the fastest ROI and the lowest TCO.

About EMC

EMC Corporation (NYSE: EMC) is the world's leading developer and provider of information infrastructure technology and solutions that enable organizations of all sizes to transform the way they compete and create value from their information. Information about EMC's products and services can be found at www.EMC.com.

About Riverbed

Riverbed delivers performance for the globally connected enterprise. With Riverbed, enterprises can successfully and intelligently implement strategic initiatives such as virtualization, consolidation, cloud computing, and disaster recovery without fear of compromising performance. By giving enterprises the platform they need to understand, optimize and consolidate their IT, Riverbed helps enterprises to build a fast, fluid and dynamic IT architecture that aligns with the business needs of the organization. Additional information about Riverbed (NASDAQ: RVBD) is available at **www.riverbed.com**.

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