Converging Branch Infrastructure for Simplicity, Efficiency, and Lower Costs

VIRTUAL SERVERS PROJECTED FROM THE DATA CENTER TO THE EDGE BOOST AGILITY, REDUCE RISK, AND INCREASE CONTROL.

Many organizations have invested in server consolidation, particularly in their data centers. In remote offices, though, servers and storage exist as isolated islands of infrastructure that require management through separate operational processes and procedures. This approach is costly and places data at risk. However, a new branch converged infrastructure architecture allows IT to consolidate in the branch office to minimize the IT footprint needed to run branch applications—all the while centralizing remote servers and data in the data center. Branch converged infrastructure achieves this by utilizing a storage delivery architecture that decouples compute from underlying storage to enable "stateless" branch services. Users access applications running locally in the branch while primary data is stored in the data center. That means organizations can now consolidate and centralize remote IT to increase security and efficiency without adversely impacting end-user performance in branch offices.

IDG INTERNATIONAL DATA GROUP riverbed

/// BRANCH OFFICES RIPE FOR VIRTUALIZATION AND INNOVATION

Computerworld's "State of the Enterprise 2013" survey of IT and business management executives finds that virtualization ranks right up there with cloud, mobility, and security as an area for increased investment. There's no denying the impact of virtualization on the data center. Server virtualization penetration is estimated to be about 50 percent, according to several market research firms.

Large companies in particular have been expanding branch offices during the past few years, yet server virtualization at the network edge significantly trails that in the data center, according to IDC. Branch and remote locations are ripe for adoption of virtualization to take advantage of the operational and cost savings it provides. The challenge remains that for many organizations, data stored in remote locations is hard to manage and protect. It is also at risk from a variety of perils ranging from environmental disasters to political disruption to locally lax standards regarding cyber security.

Even if a remote operation is based in a relatively stable and safe locale, it may be difficult and expensive to find nearby IT support or skills that match up with those present in the central data centers. It can also be costly to maintain and operate dedicated server resources in branch offices. Local infrastructure may be lacking, from power reliability to wide area network performance, putting business application and data access in jeopardy.

Case in point: Alamos Gold Inc. and its subsidiaries are engaged in the acquisition, exploration, development, and extraction of gold. It operates late-stage development projects in Turkey and the Mulatos mine in Mexico, which is about five hours away from the closest major city and is reliant on diesel generators for power.

"These locations are remote, bandwidth is limited, and the cost of links into some of these countries is very cost prohibitive," says Rohit Tellis, director of IT for Alamos Gold at its Toronto headquarters. Geological applications generate huge data files written locally in the mines. The company's WAN was unable to allow for effective storage replication back to its Toronto data center, therefore map data from Turkey was saved on hard drives and sent back via mail to Toronto. This resulted in a lag time of several days before data collected in the field was able to be stored in the central data center. Adding to the challenge was the lack of local skilled expertise and the difficulty of transporting equipment such as servers to the sites.

These issues are not unique to remote mining sites. In a 2011 survey of 207 IT executives on infrastructure and operations issues, Forrester Research notes that "branch and remote offices, once bastions dedicated to sales teams with a very narrow set of services, are turning into microcosms of their campuses. More than 55 percent of our survey respondents had engineering, sales, and R&D at the remote offices."

/// REDUCING THE BRANCH OFFICE IT FOOTPRINT

Data center server consolidation projects allow organizations to cut costs, improve security, concentrate investments, and ultimately evolve computing infrastructure to a private cloud model. Consolidating branch IT resources to data centers has been traditionally elusive. Branch servers and applications can be migrated to data centers, but because end users stay put, the distance between them and their applications presents a challenge due to latency. In some cases, it is just the nature of write-intensive business applications with a low

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tolerance for limited bandwidth, high latency, and connectivity issues that leave organizations with no choice other than to provision local server and storage resources. In other cases, certain services and applications are simply required at the edge to service the needs of the user population.

A radical innovation in storage delivery technology allows data and virtual machines to reside in the data center yet be available as if local at the edge in remote offices. This new Riverbed-patented technology, BlockStream™—a feature of Riverbed® SteelFusion™ branch converged infrastructure—allows centrally stored virtual servers to boot in the branch within minutes and centralizes all data changes. This effectively eliminates the need to deploy remote storage and backup infrastructure.

According to a 2012 report from IDC, organizations can now transform their data centers through consolidation, virtualization, and automation: "IT can extend the virtual edge of the data center to branch offices where high-performance services are delivered locally from centrally managed infrastructure."

SteelFusion is the first converged infrastructure solution purpose-built for the branch. It combines BlockStream with the Riverbed Virtual Services Platform (VSP), a fully integrated instance of the VMware® vSphere® hypervisor, and Riverbed SteelHead®, the industry's leading WAN optimization solution that accelerates all user traffic between the branch and the data center.

The Alamos Gold IT team chose the SteelFusion solution to consolidate data in the data center while making it available to users and applications running locally in remote offices. The company can now centrally manage its branch IT from the data center while projecting data from Toronto to its remote Turkey mining site.

"With SteelFusion we are able to achieve what we need on-site through the combination of WAN acceleration and a virtualization partition to host our servers, and being able to then abstract the storage at the remote office and have it stored at our data center," says Tellis.

Virtualizing edge servers that can be stored in the data center is a logical progression of the use of virtualization technology, says Eric Carter, director of product marketing with Riverbed. "The challenge is enabling the delivery of the virtualized server and data from point 'A' in the data center to point 'B' at a remote site. Delivering storage over great distances at full speed hasn't been possible until now. This new capability unlocks a significantly better way for IT to deliver services to the edge, completely managed from the data center."

/// PROJECTING VIRTUAL SERVERS TO BRANCH LOCATIONS

The SteelFusion branch converged infrastructure solution enables the virtualization of local services and applications onto a single appliance, rather than stacking separate server and storage devices into a rack, as is often the case. Additionally, it allows IT organizations to completely centralize storage and data protection management, further lowering branch IT costs.

SteelFusion enables IT organizations to start and utilize required virtual servers very quickly over distance. The ability to deliver branch IT from the data center empowers IT to take full advantage of data center best practices while gaining capabilities like instant provisioning and recovery.

"IT can now rapidly recover should a remote

A radical innovation in block-level optimization allows data to reside in a central data center yet be available as if it were local to applications at the edge in remote offices.

location experience a disaster or catastrophic outage. Moreover, the IT needs of a new office can be preconfigured in the data center and quickly booted into service," says Carter. "Recovery and provisioning can now be as simple as unboxing an appliance and plugging in the right cables. Once that is done, everything can be started from the data center and available in minutes."

With SteelFusion, the IT organization can manage, back up, provision, patch, expand, and protect branch data on enterprise storage within the four walls of the data center. According to a ZK Research report, "In the past, data centers and remote offices were managed through separate processes and infrastructures. SteelFusion bridges the gap between the data center and global offices, allowing seamless integration between data center and distributed operations. Management of the data center extends seamlessly to globally distributed operations, allowing IT to leverage investment in the data center of the future."

InfoWorld, which named SteelFusion a Technology of the Year Award winner in both 2013 and 2014, observes, "By pairing appliances at the edge and at the core, SteelFusion allows IT to 'project' virtual machines and storage volumes out to the branch office while keeping the actual assets in the data center."

Alamos Gold has realized the benefit of centralizing storage for branch locations. "Because the turnaround time for acquiring resources in a city is so much faster compared to a distant location, with SteelFusion, making a change—such as adding disk space in the data center and presenting it at the distant locations—is much faster and easier," Tellis says.

Explaining the implementation in the second half of 2012, Tellis recalls, "We had a power issue at one of our locations, which caused the appliance to go down. When SteelFusion came back up, within a short time our remote office had access to all its data once again."

/// REALIZING THE FULL POTENTIAL OF CONSOLIDATION

Consolidating infrastructure within the branch and to the data center can lighten the IT footprint at remote locations and improve cost efficiency. However, it must be done within a framework that supports user performance requirements and IT control and management systems.

Alamos had little existing infrastructure at its Turkey locations, so it was able to take a "clean slate" approach with a centrally managed branch office. Going with the SteelFusion solution reduced the hardware requirements of the locations to just a SteelFusion appliance and a firewall. There is no longer a need for a switch, file server, or backup software—a huge advantage in an environment where it can be difficult to deploy equipment and even more difficult to support it.

SteelFusion branch converged infrastructure delivers local performance while enabling data centralization, instant recovery, and lower TCO. By adopting this progressive approach, organizations like Alamos can realize the best of all worlds: a simplified and efficient branch, productive branch workers, 100 percent centralized data, lower risk, and reduced costs.

For more information, please visit **www.riverbed.com/SteelFusion/.**

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