

# Solution Impact Analysis

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## **An ROI Analysis of Virtualized WAN Optimization Software**

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## Contents

|  |    |
|--|----|
| Summary.....   | 3  |
| Transformation to Highly Virtualized Environments Is Well Underway ..... | 4  |
| Efforts Constrained by IT Spending.....                                  | 5  |
| ROI and TCO Considerations for WAN Optimization .....                    | 6  |
| A Compelling Case for Virtual WAN Optimization Software.....             | 7  |
| Customer Case Studies .....  | 9  |
| Accelerating Replication for Disaster Recovery (DR) .....                | 9  |
| About the Organization .....   | 9  |
| Business Need .....  | 9  |
| The Silver Peak Solution.....  | 9  |
| Benefits .....   | 9  |
| Organization Profile .....   | 9  |
| Enabling Long-distance VDI Solutions.....                                | 11 |
| About the Organization .....   | 11 |
| Business Needs .....   | 11 |
| Organization Profile .....   | 11 |
| Benefit.....   | 12 |
| A Compelling Case for Silver Peak.....                                   | 12 |
| The Bigger Truth .....   | 14 |

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## Summary

As business must respond ever faster to changes in a stiffer global marketplace, IT organizations are prioritizing investments in technologies and architectures that address that goal. Server virtualization and consolidating infrastructure from remote offices into data centers, as well as, increasingly, into the cloud are essential measures for enabling IT to reduce costs and yet improve business agility.

But infrastructure consolidation, and, even more so, the cloud, complicate data delivery and availability. Long distances across the Internet or a corporate wide area network (WAN) now separate an employee's application from its target server. Consolidating resources into fewer data centers increases risk at a time when natural disasters have become even more commonplace, driving the imperative for offsite data replication and disaster recovery. In both cases, bandwidth limitations of the Internet or corporate WANs, the increased latency of crossing those networks, and the higher incidents of packet loss and out-of-order packets dramatically constrain application and data replication performance over distance. If infrastructure consolidation is to be successful, these factors must be addressed in a way that is secure and easy to deploy and maintain.

Virtual WAN optimization presents an excellent solution for these problems. It couples server virtualization's benefits—cost savings, rapid deployment, ease of management and upgrades, and more—with the established performance and cost gains of WAN optimization. These return on investment (ROI) and total cost of ownership (TCO) benefits are increasingly becoming the criteria for selecting investments in today's stiff economy. These benefits are not just theoretical; they were borne out in interviews with enterprises for this project and ESG's past research. By combining both technologies, virtual WAN optimization can play a critical role in delivering data over distance for modern IT environments.

## Transformation to Highly Virtualized Environments Is Well Underway

Organizations are rapidly transforming their legacy, static IT infrastructures into highly virtualized, dynamic environments. This shift is required to meet the increasing demands of the business in the twenty first century. The ability to respond almost instantaneously to rapidly changing market demands will be critical for the continued success of any business. IT understands that in order to provide that level of agility, it needs to fundamentally change the way it architects the business. ESG research reflects this transformation, as many of the top IT priorities reported by respondents for 2013 illustrate that the shift is well underway (see Figure 1).<sup>1</sup>

Indeed, enough organizations cited increased use of server virtualization as one of their most important IT priorities in 2013 that it was the third most popular response, after reigning as the most popular response for the last three years in ESG’s annual IT spending intentions survey, demonstrating the desire for IT to become more agile and responsive, not to mention more cost-effective. As organizations’ server virtualization initiatives continue to mature and provide more value, ESG has also seen enterprises express greater interest in private and public cloud computing environments (ranking as the number 15 and number seven responses provided, respectively).

Another area that organizations have found important is the ability to consolidate infrastructure. Data center consolidation, previously in the top ten IT priority responses provided in past years, now sits as the number five most popular response, outlining how respondent organizations have found it more efficient to consolidate data center resources and applications and deliver them to remote locations and users. Clearly, this places greater reliance on the network connectivity to those remaining data centers. With fewer, but much larger, data centers to support the business, organizations have also focused their efforts on business continuity and disaster recovery. Customers, partners, and employees have little tolerance for applications being down, so investments in this area are crucial. Also, with fewer data centers, the risk is higher, and that makes BC/DR plans even more important.

Figure 1. Top Fifteen Most Important IT Priorities



Source: Enterprise Strategy Group, 2013.

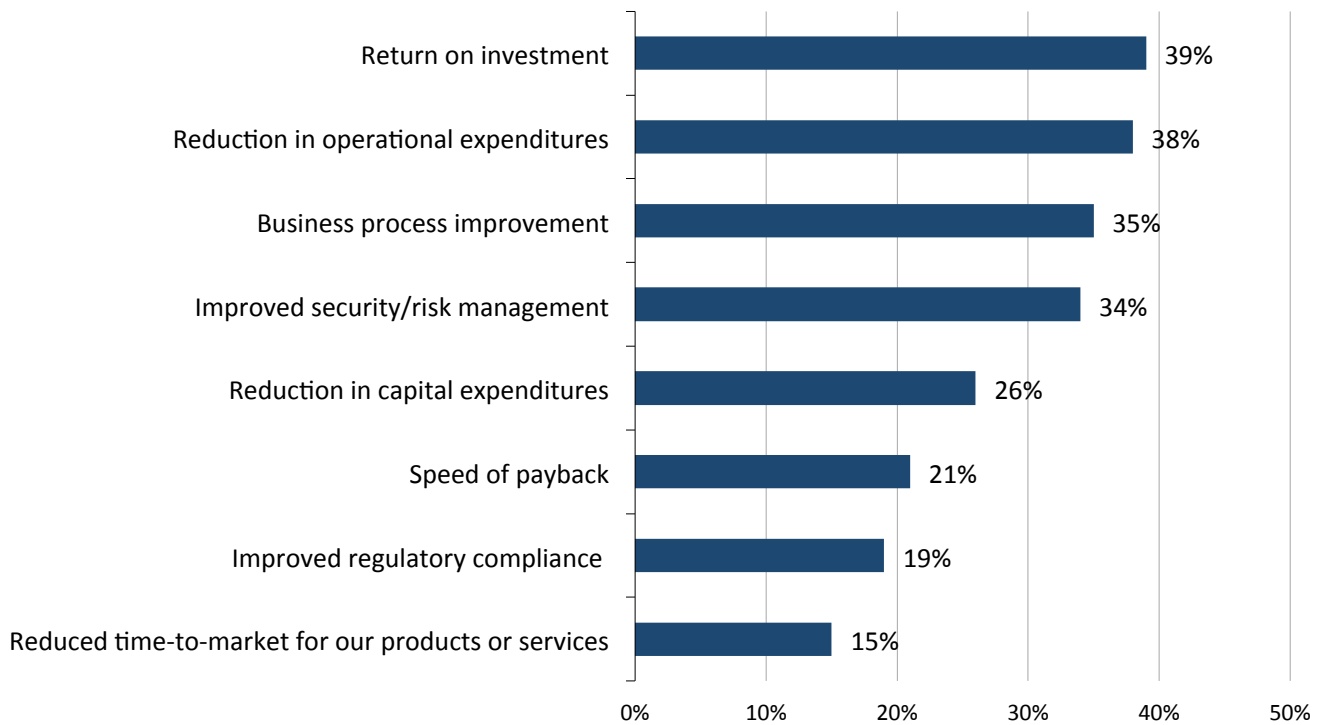
<sup>1</sup> Source: ESG Research Report, [2013 IT Spending Intentions Survey](#), January 2013. All other ESG research charts and figures in this solution impact analysis are taken from this research report.

## Efforts Constrained by IT Spending

Another important aspect highlighted in ESG’s 2013 IT Spending Intentions Survey is that the majority of these organizations are going to have to transform their IT environments without the aid of additional funds. Fifty percent of respondents reported that their IT budgets would remain flat in 2013. This is an important distinction because, in the previous year, 60% of organizations reported that they were increasing their IT budgets. This obviously has a direct impact on the number and types of IT purchases and how those purchases are justified. For example, last year, the top justification to the business for IT investments was business process improvement—essentially the ability to be more agile and responsive. However, this year, with budget dollars being held flat, organizations are looking to ensure that, with any investment, they are maximizing their return on investment (ROI), as Figure 2 depicts. ROI is now the top justification to the business management team for IT investments. That is not to say agility is not important, as business process improvement still ranks as the number three response behind operational savings.

Figure 2. Top Justification to the Business for IT Purchases

**Which of the following considerations do you believe will be most important in justifying IT investments to your organization’s business management team over the next 12 months?  
(Percent of respondents, N=540, three responses accepted)**



Source: Enterprise Strategy Group, 2013.

It is clear from the research that organizations are transforming and that new, virtualized technologies are required to handle higher levels of agility in order to better respond to rapidly changing market demands. At the same time, organizations must deal with budget constraints. Virtual WAN optimization software can play an important role in addressing both technology and budgetary requirements.

## ROI and TCO Considerations for WAN Optimization

Given that return on investment (ROI) weighs heavily in the justification process for new IT purchases, it would make sense to review the criteria that organizations should use to help determine the ROI for WAN optimization purchases. Based on the interviews ESG has conducted, a number of factors should be considered and can influence the ROI. They include:

- **Initial expense** – The upfront costs can vary greatly when comparing hardware-based appliances with virtualized software products. In many cases, organizations already have existing hardware on which virtual appliances can be deployed or they can leverage off-the-shelf servers at a much lower cost. Part of the initial expense may also be the cost of performing the initial proof of concept (POC), which may include shipping and customs charges if deployed internationally.
- **Operating costs** – This would include the number of people required to deploy and operate the WAN optimization solutions, ongoing operations, and maintenance costs. For physical appliances, this may require stocking spare parts in physically remote locations and periodic hardware upgrades.
- **Cost of bandwidth** – One of the primary considerations for deploying WAN optimization solutions is the ability to save on monthly network charges. These network connections can be especially expensive in isolated or rural locations. Although most organizations first seek to solve performance problems by adding more bandwidth, optimization solutions can enable greater levels of performance and eliminate the need to upgrade their network by deploying optimization technologies.
- **Current and future needs** – In many cases, WAN optimization is deployed to solve a specific problem at a specific location. However, the benefits can be much larger when organizations take the time to evaluate how WAN optimization technologies can be deployed more ubiquitously. To accomplish this, investigate solutions with a wide range of:
  - **Protocol support** – The ability to support both UDP/TCP protocols will expand the usefulness of the WAN optimization technology.
  - **Applications supported** – Technologies to support not only the full spectrum of user applications, including the most common Microsoft apps like Exchange, SharePoint etc., but also data replication apps from major storage vendors. Plus additional benefits can be derived if the application support extends to cover video and virtual desktops.
  - **Scalability** – This would include not only the size of the network, but also the number of users it can support. An important consideration with size is the ability to support deduplication because the more effective the deduplication technology is, the longer an organization can put off upgrading the bandwidth.
- **Business process improvement or enhanced productivity** – The reality is that most IT organizations only hear from employees when a problem arises and they can't get something done. This lack of productivity can cost organizations a great deal of money over time, and even worse, can potentially cause a new application rollout to fail (and all the cost of that effort is lost). If the performance is bad, users will give up on using it. On the other hand, if performance can be guaranteed and accelerated, new applications can be rolled out with confidence and the business can benefit from higher levels of productivity and even increased sales, especially if the performance increase means more orders can be processed each day.

## A Compelling Case for Virtual WAN Optimization Software

Virtual WAN optimization software is particularly well suited to meet the ROI and TCO criteria previously mentioned without sacrificing performance. As organizations have matured their virtualized server environments to create highly flexible and dynamic environments, they will require the network services that support them to be just as dynamic. Virtual WAN optimization software meets that criteria. Leveraging software-based technology instead of physical appliances can help to empower businesses and deliver appreciable savings. As stated earlier, ROI justification is becoming increasingly important for IT purchases. So, organizations need to be able to quickly and clearly identify the cost savings and ROI. Areas where those savings can be realized are laid out in Table 1.

Table 1. Benefits of Virtual WAN Optimization Software

|                           | Hardware   | Shipping and Customs  | Installation  | Upgrading  | Ubiquitous Deployment   | Maintenance                    |
|---------------------------|--|---|---|--|---|--------------------------------|
| <b>Virtual Appliance</b>  | Leverage existing virtualized servers and share resources. | No costs involved with transferring software to other countries.  | Can be deployed remotely on a VM.   | Simple software key upgrade, credit for existing capacity. May require some additional shared server resources.                    | Simple to add to other remote sites. Leverage existing capabilities on virtualized servers.   | Software upgrades and support. |
| <b>Physical Appliance</b> | Increased upfront costs for dedicated physical appliances. | Additional costs incurred to ship internationally and deal with local customs. In some cases, may be required to buy locally. | Will require staff to be physically present to rack and stack appliance. May require travel and expenses. | Typically requires a rip and replace strategy and incurs all the costs to the left. Disposal or redeployment of initial appliance. | Requires deployment of trained staff to each site to set up each new deployment, additional costs for HW, shipping, and installation. | Software and hardware support. |

Source: Enterprise Strategy Group, 2013.

All the categories in the table are areas that can contribute to cost savings for virtual WAN optimization software. Initial costs are greatly reduced when organizations leverage existing servers to deploy WAN optimization software instead of buying physical appliances. This cost benefit also carries over to installation, as virtual WAN optimization software can be downloaded and deployed onto a VM with minimal expense (VM and shared resources), whereas physical appliances need to be packed, shipped, unpacked, placed in racks and powered up.

And if there are no qualified technicians at that site, trained personnel will have to travel to the location. Plus, extra costs may be incurred if the physical appliance is being shipped internationally, as there will be customs fees. This is not an issue for software that can be downloaded. Keep in mind that many of those costs for physical appliances need to be multiplied by the number of sites at which the technology is being deployed.

Operating cost considerations include the ongoing maintenance, which is typically a percentage of the upfront cost, so if those costs are higher, the ongoing maintenance costs will be higher as well. Upgrading physical appliances can be another significant cost area, but for virtual WAN optimization software, a license key should be all that is required, and vendors such as Silver Peak offer a credit for existing capacity, so organizations are only buying the

upgraded capacity (and perhaps some additional resources for the off-the-shelf server hosting it). Physical appliances may require complete rip-and-replace strategies, which would cause almost all the costs listed above to reoccur.

While costs certainly catch the eye of the CFO, another aspect that makes virtual WAN optimization technology compelling is its ability to improve business processes. The relative ease and speed with which virtual WAN optimization technology can be deployed will allow IT organizations to quickly react to changing business needs and the lower costs may make it appealing for widespread adoption, rather than just sites experiencing difficulties. Also the wider range of support for protocols, applications and the ability to scale will help to extend the useful life of WAN optimization technology. It would be prudent to verify that any virtual technology carries the same functionality of its physical appliance counterpart. This will ensure that not only current, but future and as yet unknown needs can be met. Bandwidth savings can be achieved with both physical appliances or virtual WAN optimization software, however, with significantly lower costs organizations may be able to deploy virtual WAN optimization solutions across a greater percentage of their sites, amplifying the bandwidth savings.



## Customer Case Studies

To validate the return on investment achieved through virtual appliances, ESG spoke with a number of Silver Peak customers. Through these interviews, we were able to get a better understanding of the decision to use virtual appliances, why these organizations chose Silver Peak, and the benefits they received as a result of deploying them. The case studies include a regional bank and a global services firm.

### Accelerating Replication for Disaster Recovery (DR)

*“Virtual appliances are the way of the future, the more organizations fight it, the more they will fall behind.”*

#### Organization Profile

##### Industry

B2B Community Bank

##### IT Environment Profile

- Multiple data centers
- Over 40 Locations

##### Challenges

Improve RPO and RTO by switching from tape backup to disk-based replication – existing WAN connections struggle to keep pace with data growth.

##### Solution

Silver Peak VX6000 solution

##### Benefits

Dramatically improved RPOs and RTOs, eliminated additional WAN upgrades. Rolled out WAN optimization to all branches for improved productivity and reduced costs.

#### About the Organization

This organization is a regional business-to-business bank in California with multiple data centers and over 40 branch locations. The business was founded in the early 1970s with an agricultural focus, but has since expanded its size and scope to include many different businesses.

#### Business Need

The bank was struggling to shift from tape-based backup for DR to a disk-based replication strategy. The new strategy involved taking snapshots of the data and replicating between two data centers. Unfortunately, the original WAN link, a 45 Mbps link, was unable to handle the initial load and the organization had to order a 100 Mbps link. However, in a very short time, this too became saturated and the process of replicating data became so cumbersome that the replication windows were starting to overlap into the work day. With the current volume, transferring all the data required as much as 27 hours. Faced with having to double its monthly network costs again, the bank investigated WAN optimization solutions.

#### The Silver Peak Solution

While the initial investigation included both physical and virtual appliances, the organization quickly ruled out physical appliances due to the additional cost incurred with having to buy and maintain a physical appliance. One of the main criteria for the bank was the WAN optimization technology’s ability to compress data, freeing up space in the existing pipes and mitigating the need to buy additional bandwidth. While one of the technologies evaluated was able to produce 50-60% compression, they measured Silver Peak’s compression at a little over 80% in their environment.

Based on the success of these tests, the bank purchased the Silver Peak VX virtual appliance and was able to deploy the software on existing servers running VMware in both data centers.

#### Benefits

The bank received a number of benefits by deploying the virtual WAN optimization software from Silver Peak. Those include:

- **WAN savings.** With current data volumes maxing out the 100 Mbps connection, the organization was looking at doubling the bandwidth and having to deal with the increased monthly cost. The Silver Peak solution eliminated that cost and provided five times more throughput.

- Improved Recovery Point Objectives (RPO).** By deploying Silver Peak virtual WAN optimization software, the bank was able to shrink its RPO from over 24 hours down to one hour or less. This allowed the bank to move from an asynchronous snapshot mode to semi-synchronous, greatly reducing the impact of lost data in the event of a disaster at the primary data center.
- Reduced costs for a virtual appliance.** By leveraging the virtual appliance, the bank doesn't have to pay for maintenance on the physical appliance. The company can simply upgrade the virtual infrastructure and the virtual machines in order to stay up to date. Plus, leveraging virtualized software eliminates the need to rip and replace hardware to perform an upgrade.
- Pervasive deployment.** The bank was so impressed with the performance, security, and quality-of-service (QoS) features that it is now rolling the Silver Peak software out across all the branches to improve performance and security. So far, 70% of the branch offices have received the technology as part of an overall server refresh program. With only a T1 (1.5 Mbps) to each location, the sites' networks were particularly vulnerable to antivirus patches and Windows patches, which would overload the circuits. Also, because Silver Peak has deduplication capabilities, the patch only needs to traverse the wire once and can service the whole branch. Plus, once fully deployed, the organization will leverage the IPSec tunnels to eliminate the MPLS VPNs for less expensive connectivity.

Figure 5. Benefit of Silver Peak Virtual WAN Optimization Software

|                               | Network Costs        | Hardware Costs | Maintenance Costs | RPO     | Remote Site Productivity          |
|-------------------------------|----------------------|----------------|-------------------|---------|-----------------------------------|
| Physical Appliance            | \$\$\$\$             | \$\$\$\$       | \$\$\$\$          | <1 hr   | Too costly to deploy at each site |
| Silver Peak Virtual Appliance | \$\$\$\$             |                | \$\$              | <1 hr   | Enabled by Network                |
| Without Silver Peak           | \$\$\$\$<br>\$\$\$\$ |                |                   | 24+ hrs | Compromised by Network            |

Source: Enterprise Strategy Group, 2013.

## Organization Profile

### Industry

Business Services

### Data Center Profile

Connect Seattle, WA data center to Mumbai, India.

### Challenges

Get VDI solution to operate in an acceptable manner to avoid the addition of costly resources.

### Solution

Silver Peak Virtual Software

### Benefits

Enabled secure, accelerated performance for VDI solution. Saved the company significant costs to hire and train additional resources.

## Enabling Long-distance VDI Solutions

### About the Organization

SurePrep specializes in processing tax returns and tax documents. It has grown over the years from a service only company where processing and preparing tax returns was the main goal, into more of a software and services company where it provides productivity solutions to large accounting firms in the United States. The organization processes a large volume of secure, sensitive documentation, so time and security are vitally important.

*“When we made the change to Silver Peak, it moved the needle from not doable to doable.”*

### Business Needs

The company leverages service centers in the US and India, providing IT services to those locations from a data center in Seattle. To satisfy the needs of a particularly large contract, the company had to ensure sensitive data would remain in the United States. To accommodate this, SurePrep deployed desktop virtualization solutions in the India service center. The challenge was ensuring adequate performance while connecting locations that are halfway around the world from each other. Although this solved a security issue, it created a performance challenge. The company received a lot of complaints stating that usability was low. In fact, reviewing

documents took as much as two seconds when going from one page to the next. With 300 page documents, that situation needed to be reviewed because it was not a sustainable solution. Will Hosek, VP of IT, explains, *“Despite our best efforts to tweak the infrastructure in Seattle, including adjusting frame sizes and optimizing graphics, we could not make a significant enough difference to satisfy the end users in India.”* Based on the existing setup, the company would either have to increase its staff by 50% or dramatically increase the bandwidth (which might not have solved the latency issue) to meet its contract. Given that the job involved very complex, tax-oriented work that required people with years of training, the additional employees needed would be chartered accountants, which is the equivalent of CPAs in the United States. Plus, getting them trained would have been an arduous and costly undertaking.

### Silver Peak Solution

SurePrep began to explore WAN optimization solutions. During the investigation, it became extremely interested in virtual WAN optimization appliances. The lead on the project, Hosek, cited two main reasons. The first was, *“we didn’t want to get involved in shipping a proof of concept hardware device over to Mumbai, dealing with all the related customs and duty fees and general overhead in shipping technology to India, just to do a test.”* The other was, *“at that time, our infrastructure provider did not allow external devices to be installed in the environment.”*

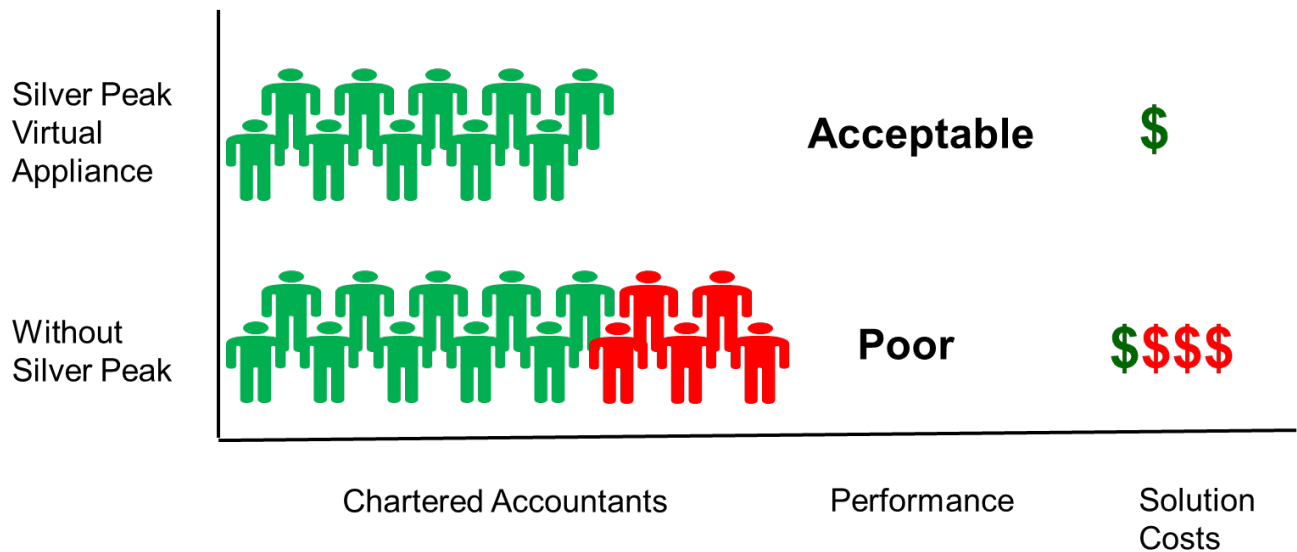
Given those requirements, a virtual appliance was, as Hosek stated, *“an absolute mandatory piece of the puzzle.”* Fortunately, the Silver Peak virtual appliances met their requirements and could be quickly and easily loaded onto a VMware ESX virtual server at each location. After the initial test, it was clear that the Silver Peak virtual appliance was able to provide the performance required. *“The gain was enough to allow the team in India to then do their jobs,”* says Hosek, *“It was not as if they were trying to just appease us either, because we had made at least half a dozen attempts to change the configuration, the frame size and those types of things. And every time we would go back and would say, ‘Hey guys, how is it looking now?’ They would respond, ‘No. Not good enough.’ When we made the change to Silver Peak, it moved the needle from not doable to doable.”*

### Benefit

For the SurePrep team, the return on investment was obvious. Adding bandwidth in Mumbai, India would have been expensive and wouldn't have solved the latency. And increasing the size of the team by 50% would have been logistically difficult and also very expensive with each new head count adding between \$10,000 to \$30,000 towards the project.<sup>2</sup> The right resources would have to be located and then trained. Even then, retaining workers under those frustrating conditions would be an added risk. Essentially the team was running out of options. In addition to the outsourcing arrangement, hardware WAN optimization appliances would have added costs to ship to India and simply weren't an option in this case, so the Silver Peak virtual appliance enabled Hosek and his team to avoid an IT failure and enabled the company to fulfill the project, on time and on budget.

As Hosek put it, "the benefits were just so glaringly obvious. It was increasing the amount of time it took on a per job or per engagement basis so significantly that the team in India knew they wouldn't be able to handle the volume of work with the number of team members they had available."

Figure 4. Benefit of Silver Peak Virtual WAN Optimization Software



Source: Enterprise Strategy Group, 2013.

### A Compelling Case for Silver Peak

Based on the ROI and TCO validation from customers interviewed, ESG's own experience in the field, and the characteristics of its Virtual Acceleration Open Architecture (VXOA), there is a compelling case to be made for deploying Silver Peak WAN optimization software. There are a number of factors that lead to this conclusion and they include:

- Low initial investment. In both cases, customers cited the ability to rein in costs when leveraging Silver Peak virtual WAN optimization software. This aligns with ESG's research in the field with numerous other organizations. For one customer, the requirement to support international locations would have added to the cost considerably and was the reason for eliminating physical appliances from the evaluation. Also the ability to use existing servers and deploy software to them remotely saved considerable expense. At the other customer, the lower cost of virtual software enabled them to deploy WAN optimization to all sites, which drives efficiencies enterprise wide.

<sup>2</sup> Source: Payscale.com average to high-end salary for chartered accountants.

- Ease of deployment. Silver Peak virtualized products are simple to install. The process requires an organization to provision a VM (Silver Peak's software products support virtualization hypervisors from VMware, Microsoft, Citrix, and KVM), typically on an existing resource, ensure there is adequate memory and storage for the amount of traffic being optimized, and then install the Silver Peak software. The software is available for a free 30-day trial, or for purchase or upgrade at any time from the company's [Virtual Marketplace](#). The software comes preconfigured to optimize most use cases and can be easily fine-tuned as required. This deployment also extends to cloud environments—the software can be deployed on a VM in an IaaS environment. In fact, Silver Peak even has solutions on the AWS marketplace that organizations can deploy by the hour, ensuring optimized application performance even when connecting to public clouds.
- Ability to easily scale. Silver Peak offers a wide range of virtual WAN optimization software reaching from the smallest offices to large data centers. The virtual portfolio extends from the VX-500 at 2 Mbps and 8,000 simultaneous flows, all the way up to the VX-9000, which can handle up to 1 Gbps capacity and 256,000 simultaneous flows. Silver Peak claims the performance remains the same regardless of the features enabled, such as an encryption or CIFS acceleration (note: not all vendors can make this claim). And to make it easy to scale when needed, a simple license key activates the additional capacity (additional resources may be required on the server as well). Plus, SilverPeak offers a full credit for the previous purchase, requiring an expense for only the additional capacity and helping to keep costs to a minimum.
- Wide range of support. Silver Peak made a name for itself by providing both TCP and UDP support and continues to support both protocols. In fact, Silver Peak states that its VXOA architecture is independent of the application layer so the architecture can optimize any IP-based protocol, regardless of whether it is TCP, UDP, an encapsulated protocol, or even a proprietary protocol. This application-independent approach is differentiated from other WAN optimization approaches in the market today and allows Silver Peak to theoretically optimize any application without specific “application optimizations.” The customers interviewed and ESG's research have shown that VXOA optimizes popular enterprise applications from Lotus, Microsoft, Oracle, Siebel and others, along with storage backup and replication solutions from Dell, EMC, HDS, and NetApp, as well as Virtual Desktop Infrastructure (VDI), Citrix XenApp, and Remote Desktop Protocol (RDP).

The best case to be made for the Silver Peak virtual WAN optimization software came from a statement from one of the interviewees who was so impressed with the performance and end result that the value was obvious. The participant explained, *“from our CFO's point of view, it was good as well. So the need for formal ROI for this project was not needed.”*

## The Bigger Truth

Organizations are transforming their environments to better respond to the needs of the business. In order to do that, companies are creating more dynamic and virtualized environments. Moving forward, it will be important for organizations to strongly consider whether physical devices are still a requirement or whether virtual appliances can provide the same performance in a more compelling form factor.

Indeed, virtual solutions are playing a more important role as network services are increasingly deployed in these new form factors. Industry initiatives, such as software-defined networking (SDN) and network functions virtualization (NFV), are driving technology vendors to deliver fully featured virtual appliances that maintain all the functionality, but have the flexibility to adapt to rapidly changing data center and cloud environments. As evidenced in the examples highlighted, the ROI when leveraging software becomes very obvious, yet even more so for organizations with a global footprint or for organizations that are restricted from deploying physical infrastructure (IaaS, outsourcing contracts, etc.).

The Silver Peak customers interviewed were able to present a clear and compelling justification for selecting virtual WAN optimization software. The situation is probably best summed up by Steven Borba of the regional bank who stated, *“Virtual appliances are the way of the future—the more organizations fight it, the more they will fall behind.”* Silver Peak has spent a great amount of time building out its comprehensive portfolio of virtual WAN optimization software to help organizations improve long-distance WAN connectivity, as well as business continuity and disaster recovery environments. By leveraging this virtual portfolio, organizations can accelerate their transformations and provide a compelling ROI for their businesses.



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