# White Paper

# The 'Application Deluge and Visibility Imperative'

## How to Ensure Network Performance for Your Business-critical Applications

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# Introduction

## IT Under Pressure to Deliver

Monitoring application performance in IT environments was fairly straightforward in the past due to tightly controlled access policies and static IT environments. However, much has changed—modern IT environments support applications in both highly dynamic private data centers and public clouds, and tight access controls have given over to a free-for-all of employee-owned mobile computing devices leveraging corporate resources. From virtually any location, employees, partners, and customers now access critical business applications that could be hosted almost anywhere, creating more pressure to ensure application availability and performance. In order to be successful today, operations teams require complete application-level visibility across the entire environment.

Certainly one of the biggest shifts in IT has been driven by employees bringing their own devices to work, and in many cases, multiple devices per employee. While workplace-issued devices may be constrained regarding what they can access on the network, most employees do not feel as restricted with their own personal devices. As a result, corporate networks and the mission-critical applications running over them may now have to struggle to find bandwidth on the same day Apple releases its latest version of iOS or perhaps during a lunch hour when employees decide to catch up on the TV episodes they missed the prior evening. Either way, the sheer volume of personal mobile computing devices and the apps/web traffic they generate have the potential to impact the business.

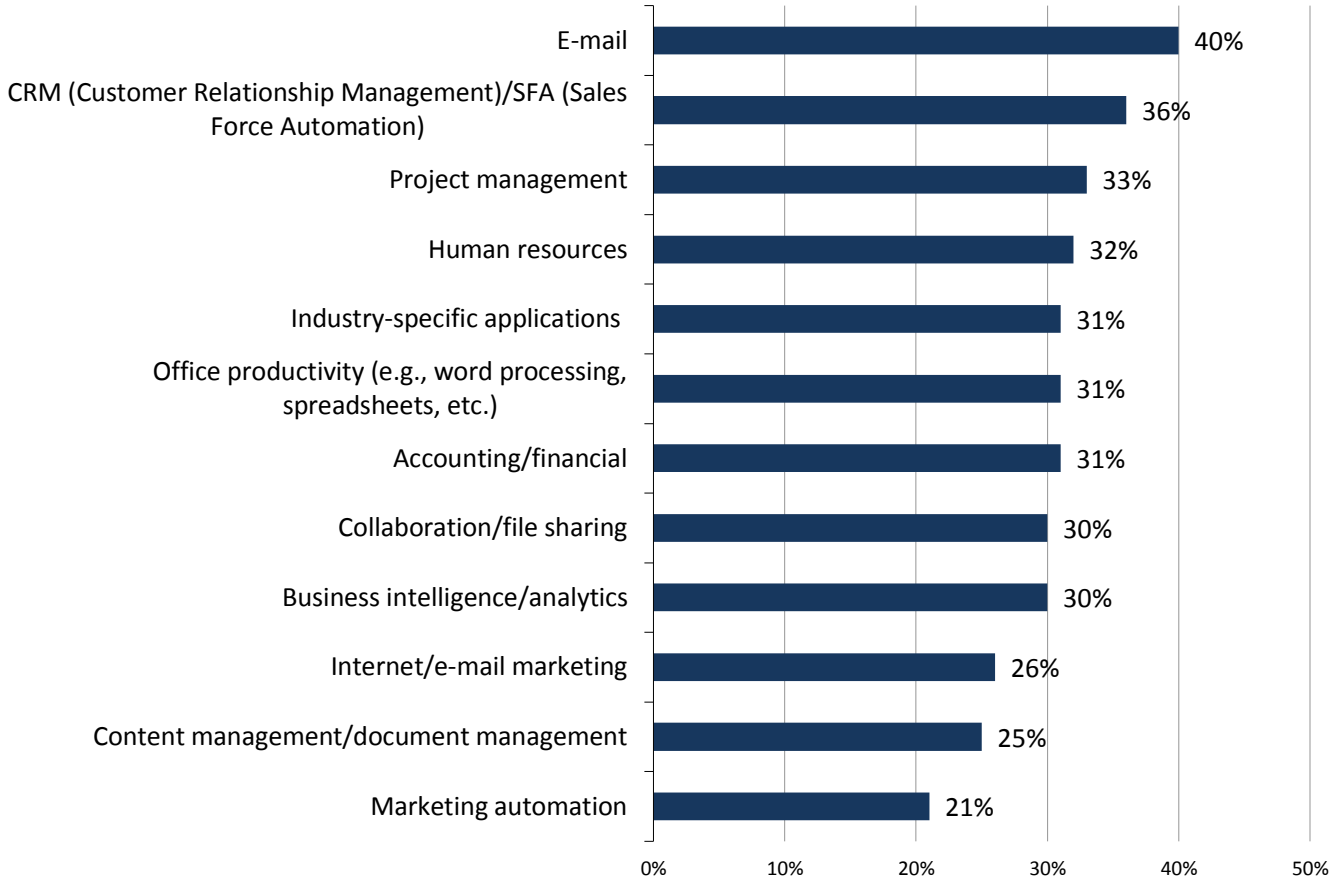
To remedy this situation, it may have been sufficient in the past to restrict Port 80 traffic and throttle back Internet access—that is no longer possible with so many companies turning to cloud-based services to power the business. In fact, ESG research indicates that 75% of organizations currently use cloud computing services and current users are leveraging these services to deliver business-critical applications via a software-as-a-service (SaaS) model (see Figure 1).[1] So, restricting Port 80 traffic today would most likely also impact many business-critical applications. To further drive complexity, in many cases, these SaaS applications may be delivered directly to remote sites, making it harder to monitor and manage those environments.

Data center environments are also transitioning. Organizations are consolidating regional data centers into much larger and more complex centralized locations. According to ESG research, 21% of respondents indicated that consolidating data centers is one of their most important IT priorities for 2015. While organizations gladly take advantage of the benefits of cloud services and consolidation, both of these changes place more pressure on the network to deliver business applications to employees, partners, and customers. Of the organizations that have deployed WAN optimization technologies to accelerate application traffic to remote sites, most only have limited QoS and lack application traffic monitoring capabilities, again making it more difficult for operations teams to effectively monitor and manage the network supporting applications in these environments.

[1] Source: ESG Research Report, *2015 IT Spending Intentions Survey*, February 2015.

*Figure 1. Applications Delivered via SaaS Model*

**You have indicated that your organization is currently using software-as-a-service (SaaS). What specific applications has your organization currently deployed via a SaaS model? (Percent of respondents, N=407, multiple responses accepted)**




*Source: Enterprise Strategy Group, 2015.*

Research has shown consistently over several years that a majority (62%) of IT budget is spent on just maintaining the existing environment, which only leaves 38% to drive innovation and efficiency.[2] As a result, organizations need to find and deploy innovative solutions that best leverage existing environments and drive higher levels of efficiency and performance. Given the increased complexity of delivering applications today and the greater reliance on networks, operations teams have an imperative to find the right tools to do the job.

## Network Challenges in Modern Environments

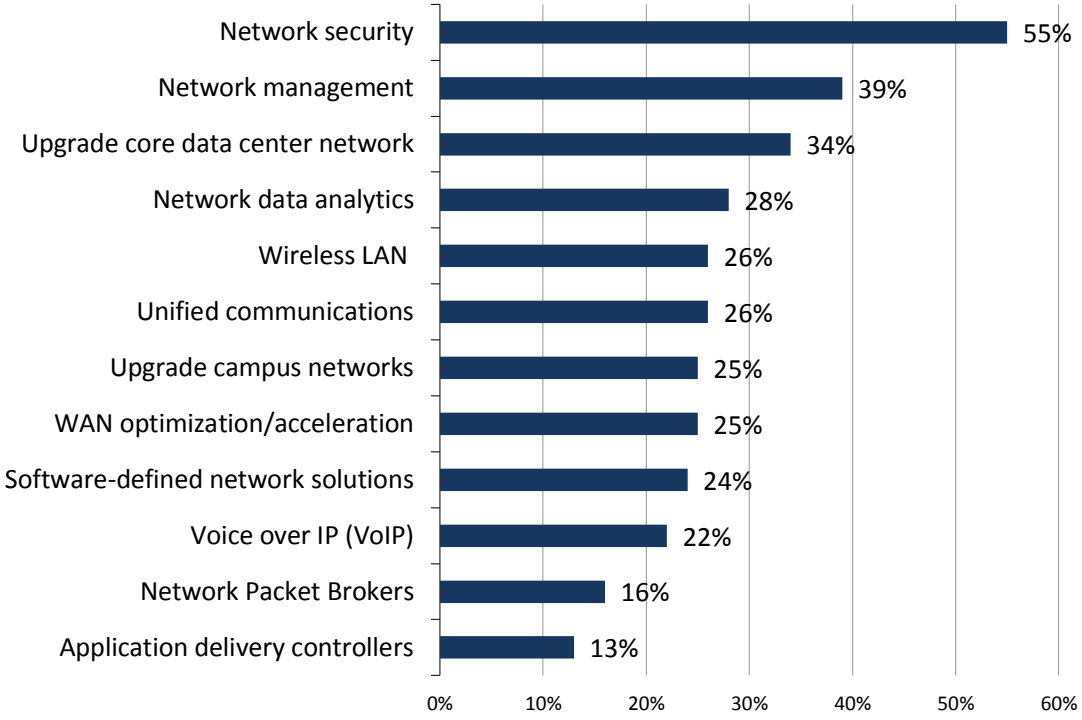
While modern IT environments can bring agility and flexibility to businesses, they can also create challenges for network teams because such environments place significant pressure to deliver requisite levels of performance. When ESG research asked about specific spending plans for network infrastructure this year, organizations responded that network security, network management, and core network upgrades were three areas in which they would be making significant investments in the following year (see Figure 2).[3] Core data center network upgrades will be critical to ensuring that both centralized and cloud applications are able to deliver a quality user experience, regardless of location (i.e., company headquarters, a remote office, or via mobile devices). Network security's high volume of mention is in response to recently well-publicized security breaches, which lead organizations to address these concerns throughout the IT infrastructure, including networking. Network

[2] Source: ESG Research Report, *2014 IT Spending Intentions Survey*, February 2014.
[3] Source: ESG Brief, *2015 Network Spending Trends*, February 2015.

management is a key area that requires investment along with changes in security or upgrades. Tightened budget strings mean organizations may need to go through additional justification processes to obtain the solutions needed to overcome these challenges.

*Figure 2. Networking-specific Investment Priorities for 2015*

**We would like to learn a bit more about your specific spending plans for network infrastructure in 2015. In which of the following areas will your organization make the most significant investments over the next 12 months? (Percent of respondents, N=323, five responses accepted)**




*Source: Enterprise Strategy Group, 2015.*

The performance challenge and overall preparedness to manage performance are also front and center for cloud services and SaaS applications. This is especially true for those environments implementing a direct-to-net model for their remote locations. Without back hauling all this traffic through primary data centers, network operations teams have limited visibility in the environment and can only react to problems when they are made aware of them. As a result, troubleshooting and resolution times are extended. How pervasive is this problem? Previously conducted ESG research highlighted some interesting differences between current and potential cloud computing users pertaining to performance. It demonstrates that organizations currently using cloud computing services cite performance challenges nearly twice as often (29% versus 15%) as those planning to deploy these very same services.[4] This could mean that a number of organizations will be unprepared to address performance issues with cloud services.

This lack of visibility extends beyond just SaaS applications to include peer-to-peer connectivity in remote sites. With collaboration solutions offering VoIP and video solutions, organizations need to have visibility into the network connections between remote locations that are not backhauled through the data center. To ensure a quality user experience and adequate performance, these links and their often business-critical applications need to be monitored.

[4] Source: ESG Research Report, *2013 Public Cloud Computing Trends*, March 2013.

Consolidation of enterprise data centers also has the potential to impact application performance and create additional pressure on the network infrastructure. As regional data centers are collapsed into centralized locations, the applications now have to be delivered over greater distances and to WAN links that previously were not part of the equation. This leaves operations teams with the unwelcome challenge of having to ensure that remote locations get the same or better application performance as when the applications were hosted locally at regional data centers. Operations teams need solutions that enable them to have visibility into these environments—in particular, WAN-optimized links, which often can be obscured—and that provide them with the information they need to measure and enforce quality of service levels. This includes not only network monitoring, but also understanding the application involvement. Unfortunately, with current budget constraints, these solutions need to be cost-effective and deliver real value.

Ultimately, many of these challenges revolve around the need to have greater levels of visibility. However, it is important to note that it goes beyond just network visibility and extends to the applications as well. The ability to provide context and understand what applications are impacted will be critical for prioritizing problem resolution and effectively communicating with adjacent technology domains. The need for organizations to understand what applications are affected is validated by ESG research, in which survey respondents state that network management is a top operational challenge.[5] Therefore, monitoring and management tools that can help organizations cross those barriers will be critical to business operations moving forward.

## Where Are Organizations Investing?

Given ongoing initiatives and challenges, it is also important to understand how enterprise organizations are spending the budget that they do have available. Looking more closely at Figure 2, we see where enterprises plan to spend their limited network budgets.[6] As one might expect, organizations are making significant investments in security; however, the next largest area for expected investment is network management. This highlights the importance organizations place on the ability to monitor and manage critical network infrastructure as well as the understanding of that capability's growing importance to the business. It is also interesting to note the investment in wireless LANs, due to a surge in BYOD. Furthermore, to help improve communication and collaboration efforts, organizations are investing in voice over IP, and unified communications solutions. And with the data center consolidation efforts, organizations should not be surprised to see WAN optimization technologies making the top ten responses for where organizations plan to invest.

So, while the network continues to invest in critical areas, organizations are pressed to find solutions that really deliver value. In fact, 36% of ESG research respondents reported that, this year, return on investment was one of the most important considerations for them to justify IT investments to the business, making it the second most-cited response.[7] That means organizations need to implement innovative solutions that can take advantage of existing investments and provide demonstrable value to the business.

The investment being made in network management solutions has to address the need for greater visibility and enable cross-domain conversations, as well as help to accelerate adoption of centralized data centers, BYOD initiatives, and cloud computing environments.

## SteelCentral Performance Management

To address these modern network and application challenges, such as lack of visibility and increased complexity caused by corporate initiatives, the Riverbed SteelCentral family of products remains focused on building out comprehensive management solutions. These products can be used in conjunction with Riverbed SteelHead and SteelFusion to help drive greater value, efficiency and visibility across the entire environment.

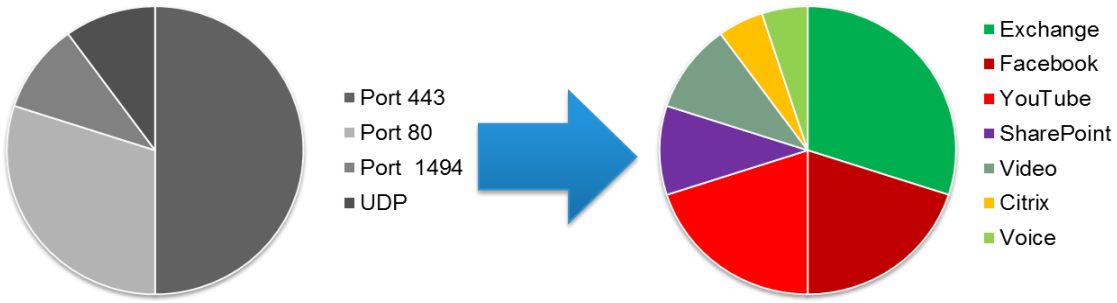
Riverbed SteelCentral NetProfiler delivers greater functionality and takes advantage of further integration with SteelHead to provide a much deeper level of inspection and visibility across a modern IT environment. This

[5] Source: ESG Brief, *2015 Network Spending Trends*, February 2015.
[6] Source: ESG Research Report, *2015 IT Spending Intentions Survey*, February 2015.
[7] Source: ESG Research Report, *2015 IT Spending Intentions Survey*, February 2015.

integration includes not only insight into company-owned data centers and remote locations, but also crucial visibility into cloud-based services. The visibility doesn't stop at the network layer, but also extends into the application layer. While Riverbed has always touted SteelCentral application-aware network performance management, this iteration takes application awareness to a new level. Specifically, this version provides:

- **Integrated deep packet inspection (DPI)**. By leveraging DPI in SteelCentral NetShark and SteelHead (at no charge), NetProfiler customers get granular visibility into the traffic running over the network. Out of the box, SteelCentral can identify over 1,100 common applications to help organizations understand and establish meaningful SLAs. Especially with the challenges experienced because of BYOD initiatives, having this level of intelligence, which will allow operations to rapidly sort out recreational traffic from business productivity applications, will be important. Taking that a step further, it can also provide insights into cloud apps to ensure Google Docs takes priority over Google+, for example.

*Figure 3. Granular Application Information in SteelCentral NetShark and SteelHead*




*Source: Riverbed, 2015.*

Having this granular visibility also enables NetProfiler to provide detailed metrics on VoIP applications. In this case, operations teams will be able to access dashboards with the percentages of real-time packet loss (% RTP), mean opinion score (MOS), Jitter, and R-factor to better evaluate the performance of the phone calls in real time. In addition, this visibility includes not only calls made from the data center to remote locations, but also between remote locations not backhauled through the data center.

- **Accelerated troubleshooting**. Operations teams can have access to detailed, granular information in real time across the entire enterprise. As a result, organizations have the application-aware intelligence to proactively address performance problems from a single unified console. And considering budget pressures, this solution can leverage existing equipment, negating the need to buy additional probes or sensors to collect application-level details.
- **The ability to see, assign, and enforce quality of service (QoS)**. Organizations can now track key applications and identify the amount of bandwidth they are using. With that information in hand, quality of service rules can be applied on an application-by-application basis. SteelHead service levels and traffic shaping reports can be quickly and easily generated through NetProfiler. This will help organizations understand whether quality of service rules established in the SteelHeads are actually achieving the desired SLA results.
- **Deeper integration with NetShark on SteelHead EX and SteelFusion Edge appliances**. This integration affords organizations the opportunity to rapidly extend visibility across the entire enterprise. It also helps to contain costs by leveraging an existing asset to collect information, rather than buying and deploying more probes to achieve the same goal. Additionally, organizations can now perform continuous packet capture to

collect and analyze real-time events. Essentially, this turns every SteelHead and SteelFusion Edge into a continuous packet capture device.

## SteelHead and SteelCentral Deliver ROI

Customers already taking advantage of SteelHead WAN optimization technology will find additional benefits from this tight integration with SteelCentral technology. In remote sites with SteelHeads deployed, the integrated SteelCentral solution will help to reduce remote branch troubleshooting costs and extend visibility. In fact, when comparing ROI solutions for SteelCentral with and without SteelHead in variously sized environments, ESG calculations demonstrate anywhere between a 35% to over 50% improvement when a SteelHead is already deployed.[8] In fact, our model highlights that the more remote locations with SteelHead already in place, the greater the benefit.

[8] Source: Riverbed SteelCentral Economic Value Analysis Calculator prepared by ESG.

## The Bigger Truth

The reality is that modern IT environments are becoming far more complex, and trying to effectively monitor and manage them is becoming more difficult. Business applications can reside in corporate data centers or in the cloud, while users could be located close to a corporate data center or across the globe at a remote site. The dependence on the network to ensure application performance is rapidly growing. Trying to balance mission-critical, non-critical, and recreational application traffic over the same link could significantly impact application performance—especially when least expected, like on the first day of a new iOS release.

Network operations teams need management solutions that can provide the requisite levels of visibility and control to ensure application performance and availability. However, current economic conditions restrict these teams from having a blank check. Therefore, network teams also need solutions that deliver real value and, if possible, leverage existing assets.

Riverbed is delivering on these requirements and provides application-aware network performance monitoring and visibility across the entire enterprise. With DPI in NetShark and SteelHead, organizations can not only gain that visibility, but they also have access to detail-rich, application-aware information that allows operations teams to regain control of these complex modern environments. As a result of the new continuous packet capture capabilities, organizations can quickly identify applications, provide proactive management, and quickly respond to rapidly changing environments. This means meaningful QoS for mission-critical applications and ensures the business is running optimally.

So, while operations teams face numerous challenges as they transition into these modern IT environments, solutions are also fortunately coming to market that will provide organizations with the requisite visibility. Riverbed performance management solutions powered by SteelCentral and SteelHead deliver on not only the visibility required, but also the ROI desired.

Enterprise Strategy Group | **Getting to the bigger truth.**

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