

## Evaluating The Performance Of Shared WAN Links For Data Center Backup And Disaster Recovery

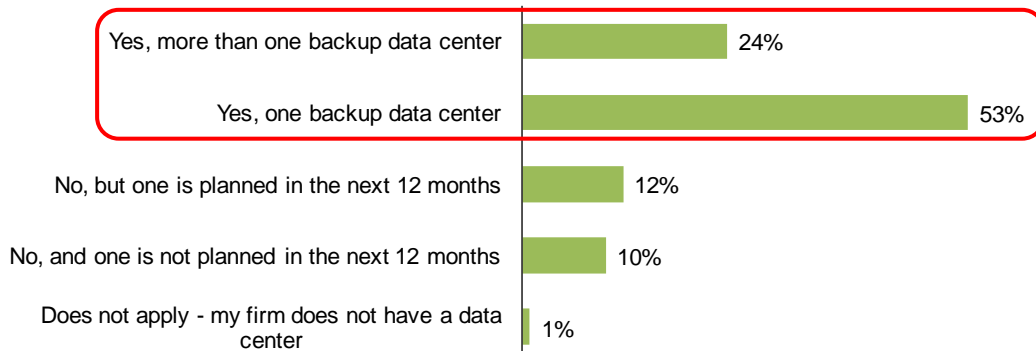
*A Custom Tech Adoption Profile Commissioned By Silver Peak Systems, Inc.*

Today's businesses are fueled by IT. New applications and IT capabilities are redefining employee productivity and customer experiences. But as organizations embed IT in all aspects of the business, they require guaranteed availability of these applications and data. As a result, today's IT leaders need a bulletproof business continuity strategy built on multiple data centers. Running a single data center risks a catastrophic outage that would bring the business to a halt. So it's no surprise that as organizations architect multiple data centers, backup and disaster recovery efforts bubble to the top as critical priorities. But this also exposes an escalating dilemma: How do you cost-effectively add disaster recovery and backup traffic to your current network load? The complexity — and, therefore, the cost — of running and managing dedicated links among backup data centers can be downright staggering. However, the performance characteristics of shared WAN links leave much to be desired. How are enterprises tackling these issues, while battling ever-increasing bandwidth demands? This Tech Adoption Profile (TAP) explores how IT decision-makers are linking data center backup and disaster recovery and backup data centers with their WAN strategies.

Backup and disaster recovery are perennially among the top three IT challenges, and they're rated by 62% of enterprises as a high or critical priority. What exactly are these enterprises doing? Building multiple data centers. Forrester Research survey data shows that more than 53% of North American and European enterprises report having one backup data center, and another 24% report more than one (see Figure 1).

**Figure 1: The Majority Of Enterprises Use One Or More Data Centers For Backup**

“Do you have a backup data center or other site that acts as a failover location in the event of a data center failure?”

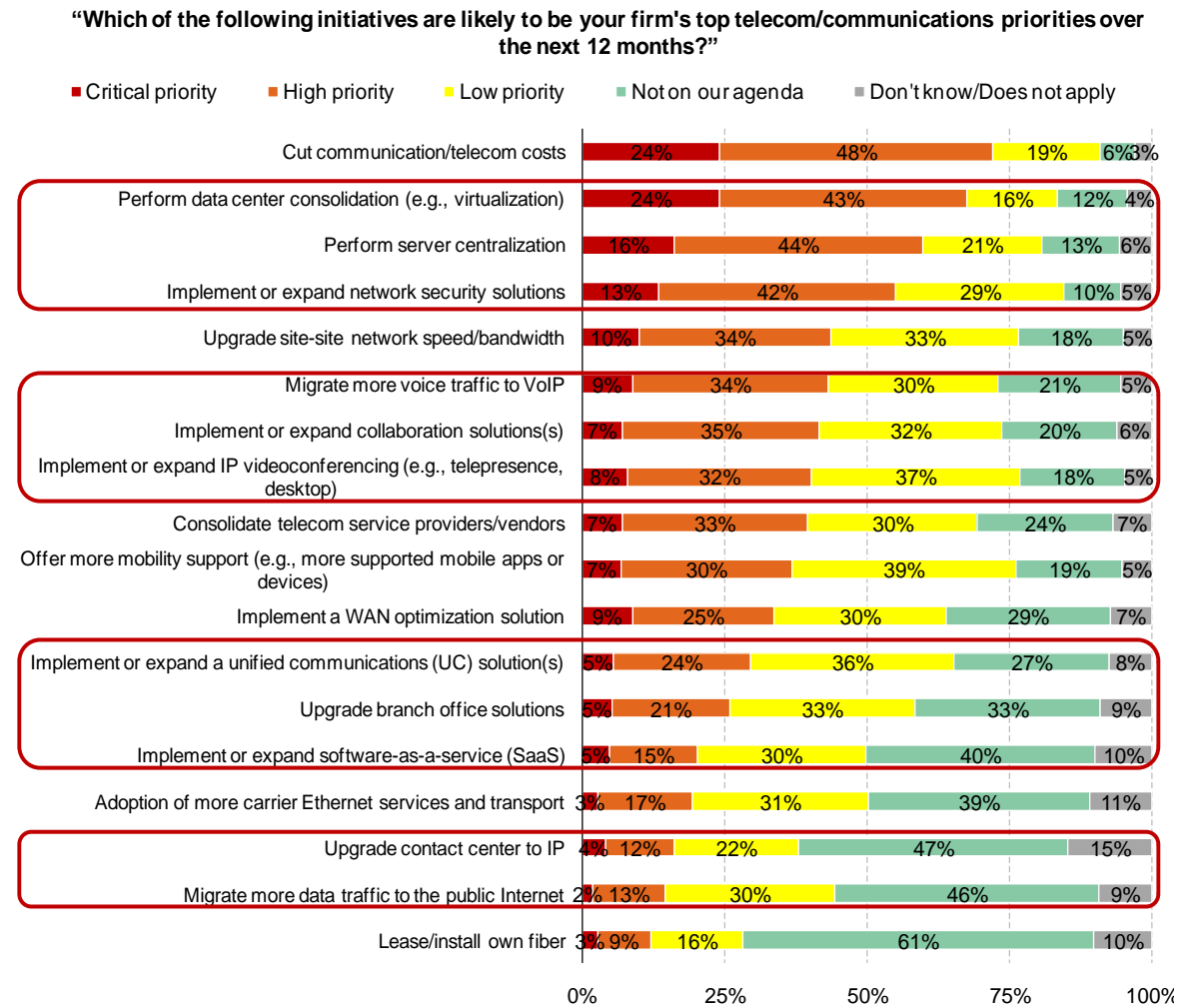


Base: 679 North American and European enterprise IT decision-makers

Source: Forrester Business Data Services Enterprise and SMB Hardware Survey, North America And Europe, Q3 2009

The problem is that connecting these data centers requires a more comprehensive WAN strategy where mission-critical disaster recovery, backup, and replication traffic must contend with explosive growth in overall data traffic. In fact, six of the top 10 network strategies employed by enterprises today are driving an increased load on the network (see Figure 2). The ongoing centralization of servers, the move to real-time applications like voice, video, and collaboration, and the push for virtual desktop infrastructure are among the chief culprits of exponential data growth.

**Figure 2: Enterprises Are Aggressively Ramping Today's Network Traffic**

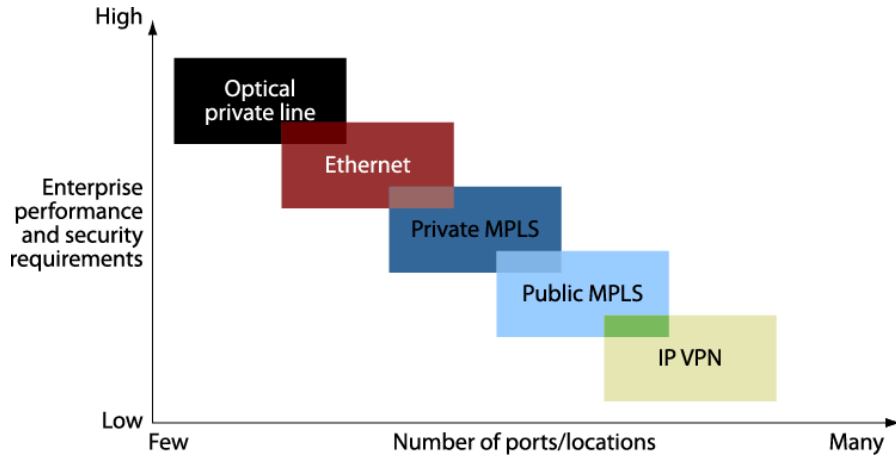


Base: 1,038 North American and European enterprise IT decision-makers  
(percentages may not total 100 because of rounding)

Source: Forrester Business Data Services Enterprise And SMB Networks And Telecommunications Survey, North America And Europe, Q1 2009

Since cutting costs is the overall No. 1 priority of enterprises today but application growth is driving the need for more capacity, many companies are migrating to shared networks built on MPLS, Ethernet, and even public Internet IP VPN links. The challenge though, is that performance and quality suffers as you choose these lower-cost, but more scalable, technologies (see Figure 3). This is because shared WANs have to deal with congestion, resulting in dropped and out-of-order packets. In addition, you now must prioritize applications and dedicate bandwidth to those that need it. This challenge is only exacerbated with distance, a problem for 50% of US enterprises that report a distance of 250 miles or more between their primary and farthest backup data center. This means that there will be increased latency (or delay) and packet loss when communicating between sites. This causes very low effective throughput across the WAN and dramatically impacts real-time applications like data replication — a critical underpinning of any disaster recovery strategy.

**Figure 3: Performance And Quality Decreases With Shared Network Types**

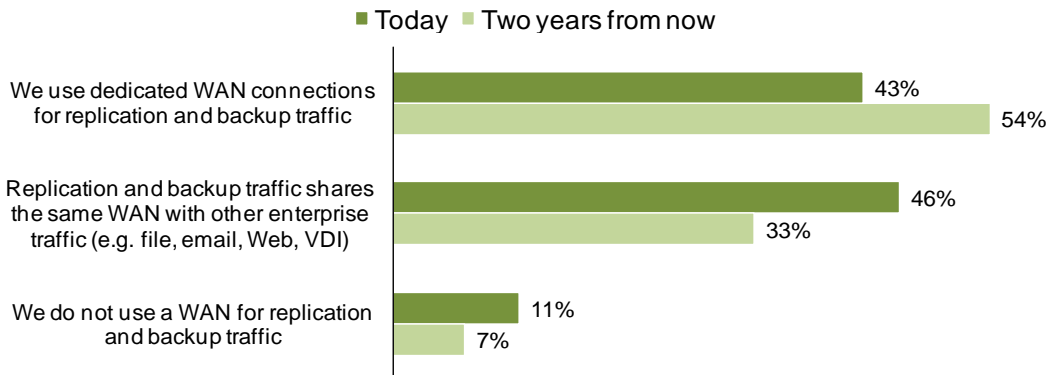


Source: "Shorthand For Evaluating WAN Technologies: IP VPNs Versus MPLS Versus Ethernet," Forrester Research Inc., May 21, 2008

Given these performance woes, most enterprises have traditionally avoided doing disaster recovery efforts like SAN extension and replication on a shared WAN. Instead, they've turned to private lines. In fact, a custom survey commissioned by Silver Peak and conducted by Forrester Consulting found that 43% of the US and UK enterprises surveyed use dedicated links for backup and replication (see Figure 4). Moving forward, 54% expect to use dedicated WANs in the future — an 11 percentage point increase.

**Figure 4: Use of Shared Versus Dedicated Link Strategies For Backup And Disaster Recovery**

**"Which statement best describes your WAN deployment model currently in place for data center backup and/or disaster recovery? What do you predict will be the case two years from now?"**



Base: 61 US and UK IT enterprise decision-makers

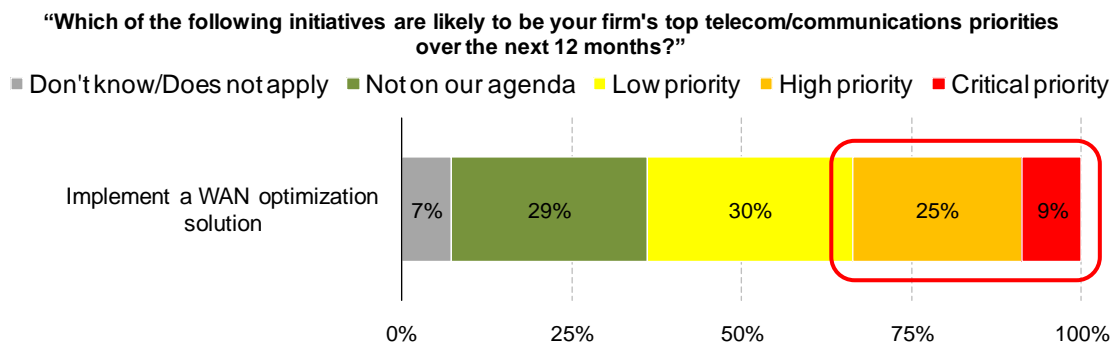
Source: A commissioned study conducted by Forrester Consulting on behalf of Silver Peak, April 2010

Bottom line: Organizations historically have not been happy with the performance of disaster recovery efforts over a shared WAN. They are willing to get hit with the additional costs of private lines to get the performance they need. Worse yet, nearly three out of every four organizations in our commissioned study reported that their large data-center-to-data-center WAN links (those that exceed 50 Mbps) are less than half utilized. So even though private lines that are dedicated for backup and disaster recovery can cost tens of thousands of dollars per month more than alternative WAN solutions, the majority of organizations still feel compelled to deploy them at half-capacity to guarantee that their critical backup and replication efforts will succeed.

So what's the catch? The above model contradicts the enterprise mandate to cut costs across the enterprise and is exacerbated by the explosion in enterprise traffic that will easily eat up spare WAN capacity. Throw in the fact that traffic is becoming increasingly real time in nature and that the distance between enterprise locations is constantly increasing, and organizations are forced to re-examine how they go about backing up data centers and handling disaster recovery. Just adding more expensive WAN bandwidth is not the answer and often not even needed, given current levels of capacity. Instead, enterprises need to figure out how to use bandwidth more effectively, and how to solve other challenges pertaining to latency and quality so that shared WANs are viable for backup and recovery purposes.

Enter WAN optimization, which employs a set of technologies to improve the bandwidth, latency, and loss characteristics of WAN links. This enables shared WANs like MPLS and Internet VPNs to perform like private lines — at significantly lower costs. According to Forrester Research data, 34% of organizations cite implementing WAN optimization as a high or critical priority to help with WAN performance woes (see Figure 5). Data center backup and disaster recovery are significant drivers for this trend.

**Figure 5: WAN Optimization Is A High Priority for Enterprises**



Base: 1,038 North American and European enterprise IT decision-makers  
 Source: Forrester Business Data Services Enterprise and SMB Networks and Telecommunications Survey, North America And Europe, Q1 2009

To date, however, WAN optimization solutions have primarily focused on smaller link capacities and have not proven scalable enough to tackle disaster recovery, backup, and replication in data center environments. This is changing, though, as newer generations of WAN optimization solutions have emerged. These expand the WAN optimization use case by mitigating performance issues across more types of enterprise locations, including larger data center links. In addition, WAN optimization is increasingly deployed in support of new real-time data center initiatives including data replication, VDI, and cloud computing. Lastly, as an increasing number of companies use shared WAN links for all of their enterprise traffic (storage and non-storage), we anticipate the role of WAN optimization to continue to grow within the enterprise

### Methodology

This Tech Adoption Profile was commissioned by Silver Peak Systems. Forrester leveraged its Business Data Services Enterprise and SMB Networks and Telecommunications Survey, North America And Europe, Q1 2009, as well as its Enterprise And SMB Hardware Survey, North America And Europe, Q3 2009 — both surveys of IT decision-makers at large enterprises in multiple industries across North America and Europe. Forrester Consulting supplemented the segment analysis with three custom survey questions of 61 US and UK IT decision-makers regarding their WAN link usage today and expectations for the future. The supplementary study was conducted in April 2010. For more information on Forrester's BDS data panel and Tech Industry Consulting services, go to [www.forrester.com](http://www.forrester.com).