UBM Tech

THE STATE OF Cloud Connectivity

Connectivity Disconnect

Companies that run business-critical applications in the cloud aren't taking full advantage of readily available and high-performing networking options.

Cloud computing isn't the new kid in the data center anymore. That means IT managers are spending less time addressing basic considerations, such as choosing the right cloud model and understanding service-level agreements (SLAs), to devote more effort to what really counts — attaining higher levels of performance, security and reliability.

Part of this optimization push means looking more closely at the space between data centers and public cloud platforms, namely the broadband connections that send data and applications between the two resources. Signs of this new emphasis emerged in research conducted by UBM Tech, sponsored by Comcast Business, which found that IT managers are rethinking their reliance on the public Internet and Multiprotocol Label Switching (MPLS), the traditional standard used in WAN environments.

The survey polled 281 executives at enterprises representing a cross-section of industries. These organizations are intent on meeting key business goals, such as boosting employee productivity and reducing expenses associated with communications and IT operations. *(See Figure 1.)*

Executive Summary

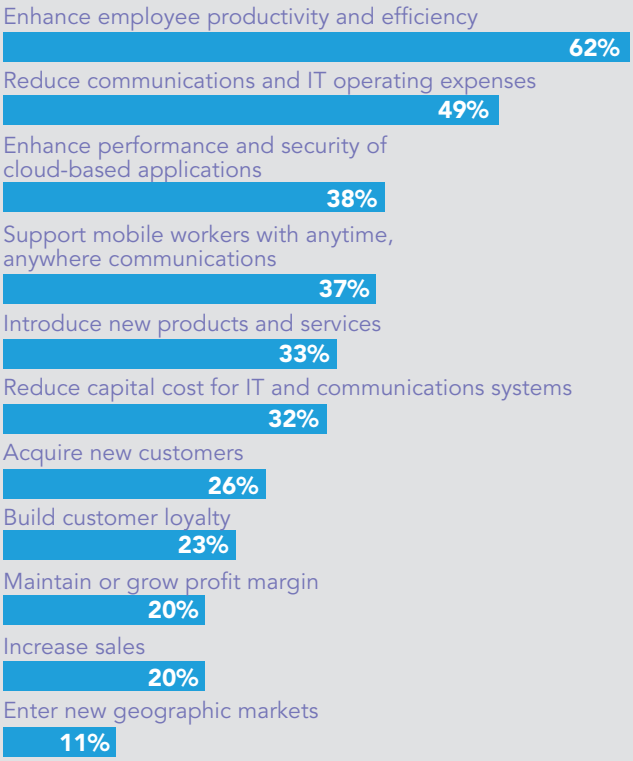
IT managers are rethinking their reliance on the public Internet and Multiprotocol Label Switching (MPLS), the traditional standard used in wide area network environments, according to new research from UBM Tech.

The survey, sponsored by Comcast Business, revealed that organizations are intent on meeting key business goals, such as boosting employee productivity and reducing expenses associated with communications and IT operations. Some have turned to hosted cloud services to achieve these goals.

Yet, despite their concerns about cloud reliability, performance and security, many IT leaders surveyed acknowledged that they use the public Internet to link to cloud services, despite the inherent shortcomings in those key areas.

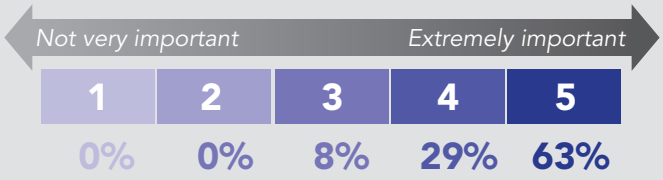
Enterprises need an updated networking strategy to handle the large volumes of information flowing to and from data centers and public clouds. That's why a growing number of IT leaders are looking for private WAN services with capabilities tailored for business needs, and that take advantage of familiar networking standards, such as the venerable Ethernet protocol.

Figure 1. **What are your key business objectives at this time?**



NOTE: Maximum of five responses allowed
BASE: 276 respondents; response was not required
DATA: UBM Tech survey of 281 business technology professionals involved in selecting connectivity to private cloud service platform providers at companies with 50 or more employees, January 2015

Figure 2. **How important is it for your company to ensure reliability, performance and security for your connectivity to these cloud service platform providers?**



BASE: 93 respondents who host enterprise applications with cloud service platform providers; response was not required
DATA: UBM Tech survey of 281 business technology professionals involved in selecting connectivity to private cloud service platform providers at companies with 50 or more employees, January 2015

To attain these goals, more than a third of enterprises today are looking to hosted cloud services.

But those who use clouds also voiced nagging concerns about them. They're understandably obsessed with reliability, performance and security when it comes to connecting with public clouds; more than 90 percent rated these areas as important or extremely important. *(See Figure 2.)*

Nevertheless, there's a glaring disconnect between these concerns and the choices enterprises make when connecting to cloud platforms. Some of the respondents acknowledged that their organizations still use the public Internet to link to clouds. That option comes with a host of problems for modern enterprises, including a lack of SLAs for ensuring reliable performance, along with basic security capabilities that don't match what's available from private WAN services.

It's clear that enterprises need an updated networking strategy. That's why some IT leaders are looking for private WAN services with capabilities tailored for business needs and that take advantage of familiar networking standards, such as the Ethernet protocol.

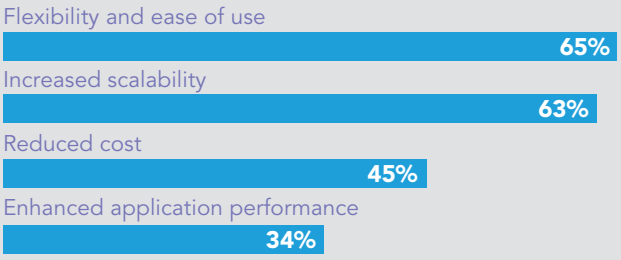
"One of the biggest potential benefits for private networks is better performance, which comes from higher bandwidth and lower latency," says Greg Schulz, senior advisory analyst with the consulting firm Server StorageIO. "Private network services also offer isolation, so even though you're sharing a network link, you have a dedicated pathway."

Cloud's Clear Benefits

In today's cloud-savvy world, IT managers know from real-world experience what public cloud services offer enterprises. Approximately two-thirds of survey respondents said these types of services deliver greater flexibility and ease of use, and nearly two-thirds said they deliver increased scalability. Just under half said reduced cost is an advantage. *(See Figure 3.)*

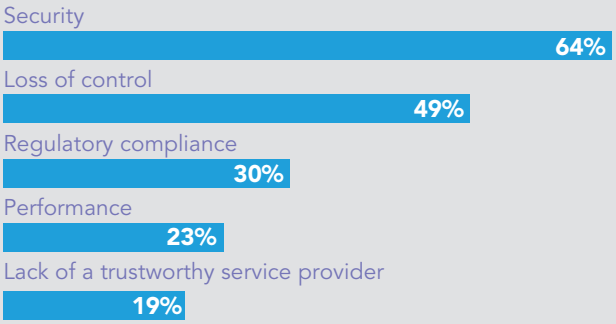
Cloud-service platform providers deliver scalable computing power and ready reserves of storage

Figure 3. **What operational advantages have you seen as a result of using these cloud service platform providers?**



NOTE: Multiple responses allowed
BASE: 92 respondents who host enterprise applications with cloud service platform providers; response was not required
DATA: UBM Tech survey of 281 business technology professionals involved in selecting connectivity to private cloud service platform providers at companies with 50 or more employees, January 2015

Figure 4. **What has prevented you from using cloud service platform providers to host your enterprise applications?**



NOTE: Multiple responses allowed
BASE: 132 respondents who do not host enterprise applications with cloud service platform providers; response was not required
DATA: UBM Tech survey of 281 business technology professionals involved in selecting connectivity to private cloud service platform providers at companies with 50 or more employees, January 2015

resources, which enterprises can dial up on demand. These platforms also let IT staffs quickly create testing and development environments that replicate production systems. Once the tire-kicking is complete, developers can reconfigure the resources for other tests. In all these cases, organizations avoid the steep upfront capital costs and delays associated with purchasing and implementing on-premises hardware and software.

But some organizations have remained on the sidelines of cloud computing, fearful about potential risks that have shrouded clouds from the start.

Security tops this list; nearly two-thirds of the executives who do not host enterprise apps with the cloud said this worry has kept them from using third-party cloud services to host enterprise applications. Other notable concerns include fears about losing control of critical applications to off-site IT environments, as well as problems complying with regulations and meeting the performance demands of end users. *(See Figure 4.)*

Reconsidering Connectivity

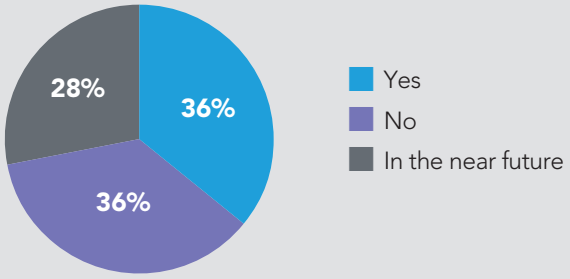
At a high level, cloud connectivity comes down to choosing between two options.

One is to simply use the public Internet to transfer data to the cloud. Encryption can protect sensitive data from being intercepted by unauthorized users, but this basic level of security comes at a price: The overhead associated with protecting packets adds latency that may be enough to frustrate business users.

The second alternative is a private WAN connection provided by telecom and cable companies. Which choice is favored by the decision-makers in the UBM Tech survey? The competition couldn't be tighter — 36 percent of respondents said their organizations are currently considering private alternatives to the public Internet, while the same percentage said they aren't. *(See Figure 5.)* It's notable, however, that another 28 percent of respondents said that they may investigate the use of private alternatives in the near future.

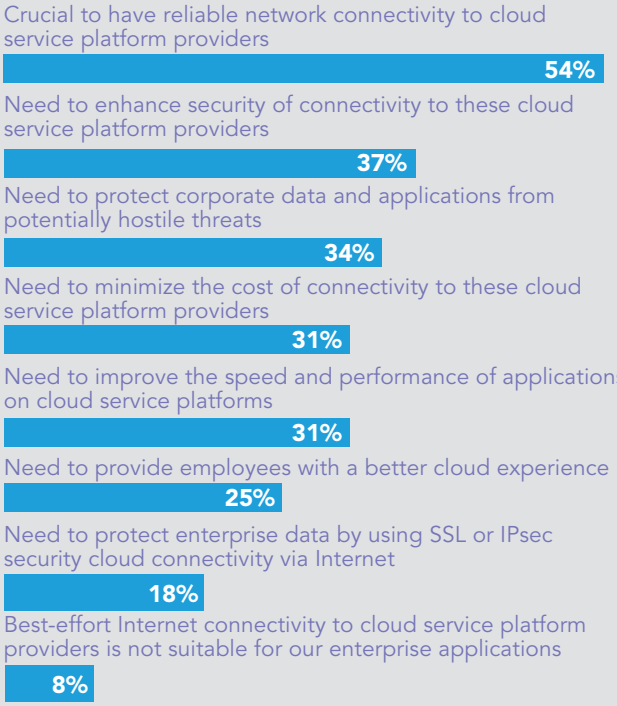
When the survey homed in on why organizations consider alternatives to the public Internet, the responses showed that business considerations drive the trend to rethink connectivity choices. More than half cited reliable network connectivity as the main motivator, with security coming in second. *(See Figure 6.)*

Figure 5. **Is your company considering the use of private alternatives to the public Internet for more reliable, secure, high-bandwidth cloud platform connectivity?**



BASE: 277 respondents; response was not required
DATA: UBM Tech survey of 281 business technology professionals involved in selecting connectivity to private cloud service platform providers at companies with 50 or more employees, January 2015

Figure 6. **Which of the following best represent your company's primary motivations for considering alternatives to the public Internet for reliable, secure, high-bandwidth cloud platform connectivity?**



NOTE: Maximum of three responses allowed
BASE: 97 respondents considering the use of private alternatives to the public Internet; response was not required
DATA: UBM Tech survey of 281 business technology professionals involved in selecting connectivity to private cloud service platform providers at companies with 50 or more employees, January 2015

On the surface, this finding is a surprise, given how much security dominates today's cloud decisions. But IT managers are nothing if not pragmatic. They know that if a cloud strategy can't deliver the enterprise services demanded by business users, it's doomed from the start, long before hackers attempt to wreak their cyber pain and suffering.

Survey respondents were focusing on motivations when they moved reliability to the top of their list of considerations. Later, when they identified private connectivity's perceived advantages — a subtle but important distinction — reliability was again the top response, but this time it tied with security as the leading potential payoff. *(See Figure 7.)*

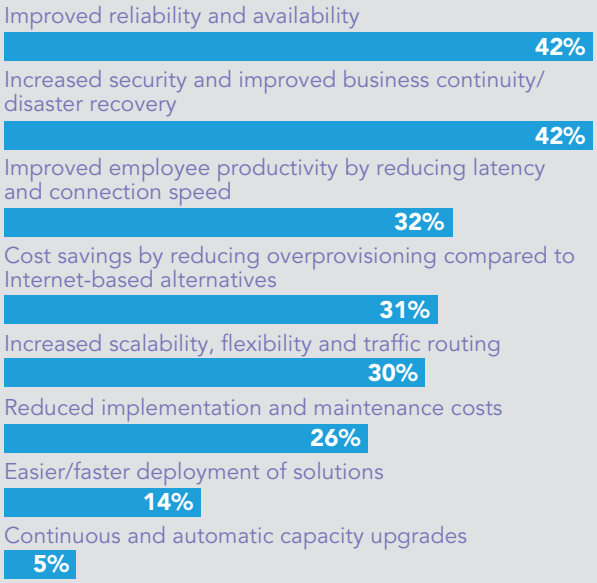
Motivations and perceptions alike speak to what networking veterans say are differentiators for private connections. They offer the bandwidth, the quality of service and the management tools to ensure high availability of connections.

As a result, performance for key business applications and data housed in offsite clouds can be on par with what organizations see from their internal networks. Beyond bandwidth, providers of private network services also offer connectivity solutions that reduce the risk of unauthorized users intercepting data in transit between local data centers and clouds. Private networks offer another advantage — if reliability problems crop up, customer service and technical call centers are staffed to field complaints, unlike the public Internet.

Seeking Clarity for WAN Decisions

To address the various business, performance and security concerns surrounding clouds and connectivity, providers of private WAN services are rolling out solutions tailored for businesses. But reality doesn't always match the spec sheets.

Figure 7. **What do you perceive to be the main advantages of private connectivity to cloud platform service providers versus the public Internet for reliable, secure, high-bandwidth connectivity?**



NOTE: Maximum of three responses allowed
BASE: 270 respondents; response was not required
DATA: UBM Tech survey of 281 business technology professionals involved in selecting connectivity to private cloud service platform providers at companies with 50 or more employees, January 2015

The survey revealed that many organizations are struggling to put their strategies in place. What is the biggest holdup? Half of the decision-makers found it challenging to select a cloud connectivity solution with high levels of security and reliability. *(See Figure 8.)*

Another pain point was avoiding solutions that would add complexity to the cloud and networking systems. In addition, more than a third of the executives in the survey wanted to be certain any solution they chose would be highly scalable over many locations and users, presumably because they anticipated growing adoption of cloud capabilities in the near future.

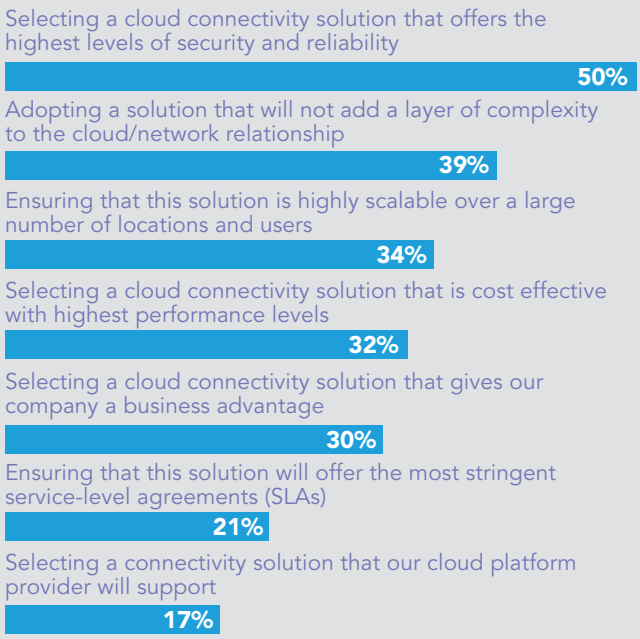
Guidelines for Private Connectivity

To overcome these challenges, IT managers must make two fundamental decisions: First, they must decide what mix of WAN technologies is best for their organization. Then they must find a service provider that offers those solutions along with business-class security and management tools.

For years, MPLS has been the go-to standard for WANs, particularly for large organizations that require high-speed connections among thousands of data centers and branch facilities. The majority of firms represented in the survey still see services based on this proven protocol as the main alternative to the public Internet for public cloud connectivity. *(See Figure 9.)*

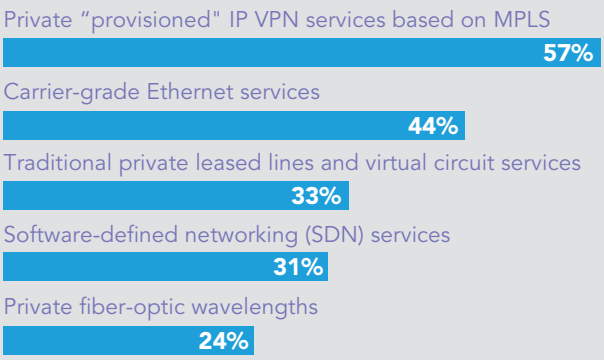
But MPLS is only part of the WAN mix today, which explains why a significant number of respondents are also considering enterprise-class (aka Metro or carrier-grade) Ethernet services

Figure 8. **What are some of the key challenges and pain points your company is experiencing today because of security and performance issues for employees accessing private cloud services via the Internet?**



NOTE: Maximum of three responses allowed
BASE: 273 respondents; response was not required
DATA: UBM Tech survey of 281 business technology professionals involved in selecting connectivity to private cloud service platform providers at companies with 50 or more employees, January 2015

Figure 9. **Which of the following services would your company consider as alternatives to the public Internet for connectivity solutions to cloud platform service providers?**



NOTE: Multiple responses allowed
BASE: 264 respondents; response was not required
DATA: UBM Tech survey of 281 business technology professionals involved in selecting connectivity to private cloud service platform providers at companies with 50 or more employees, January 2015

for cloud applications. Ethernet offers a range of advantages for cloud connectivity, including high performance at a range of capacities from 1Mb to 100Gb. This allows organizations to quickly scale up bandwidth based on how quickly they're seeing growth in network traffic and cloud commitments.

Another plus: Since Ethernet has long been the prevailing networking standard for local area networks, IT staffs have the skills and network management tools to control added wide area network services.

"Ethernet is attractive because of its familiarity," Server StorageIO's Schulz says. "The endpoint coming out of the wall should plug into the types of routers and switches an organization is already using, as opposed to requiring new types of devices for MPLS. That's a huge advantage."

This is a particularly important consideration given the concerns survey respondents voiced about WANs adding management complexity to their overall operations. A common Ethernet environment for LANs and WANs also makes it easier for administrators to gain a comprehensive view of network performance, according to Schulz.

Ethernet isn't entirely a slam dunk, however. It can't match MPLS's ability to support thousands of connections, which is a significant consideration for the largest organizations. But for enterprises that support hundreds of locations, Ethernet typically offers lower costs than its WAN cousin.

Some companies are even mixing the two types of services. "[Companies are] opting for Metro Ethernet as their primary circuit and using a standby MPLS service as a backup to ensure high availability and disaster recovery in case there's a disruption to the main connection," Schulz says.

Choosing a Provider

Once IT managers know what networking technologies to look for, it's time to select an appropriate service provider. There are several characteristics to look for.

Potential partners should be able to demonstrate a track record in providing real-world expertise to meet individual connectivity needs.

For business-class connections, leading service providers are establishing fiber-network connections to major players in the cloud platform market. Organizations can then tap into these fiber extensions for direct, high-speed access to cloud resources. IT managers should also look for services certified for Carrier Ethernet 2.0 by the Metro Ethernet Forum, an industry consortium. Certifications confirm that the WAN Ethernet offering provides advanced levels of services and manageability beyond standard LAN Ethernet.

Providers should also be proficient in business-level security that goes beyond simply encrypting network traffic, a typical public Internet safeguard. Enhanced capabilities include systemwide technologies for identity and access management to keep unauthorized people from intercepting applications and information flowing over the network. Leading vendors also staff security response centers to watch

for unfolding cyberthreats and launch necessary interventions to mitigate risks.

Similarly, in a nod to the types of reliability concerns uncovered in the survey, service providers should maintain network operations centers to monitor system performance at all times and take appropriate actions to meet SLAs for customers.

Leading WAN service providers also distinguish themselves with well-defined SLAs that spell out minimum operational uptime. Clients should also have specific numbers for the average mean times for responding to and restoring problems.

Other reliability considerations include running service-provider data centers across diverse geographies to mitigate the impact of a regional disruption. Providers should create formal calendars for when scheduled maintenance will be performed and coordinate those activities with clients. Customers should also receive sufficient notice, not less than a couple of days, regarding any maintenance that will temporarily interrupt service.

A Pipeline for Modern Clouds

As cloud services mature, IT managers are becoming wiser about how to incorporate them within their existing enterprises. Private WAN services and familiar Ethernet protocols are becoming go-to options for organizations that demand higher levels of performance, security and reliability in these modern cloud environments. •

5 Reasons to Consider Ethernet for Modern Cloud Connections

A new UBM Tech study found that many enterprises are considering Ethernet WAN services over the public Internet when connecting to public cloud platforms. Here's why private pipelines are so attractive.

1. Higher bandwidth
2. Lower latency
3. No new skills required, as IT staff typically has Ethernet know-how
4. Easy scalability in increments to 100Gbps
5. Integrated services for security and reliability

Survey Methodology

UBM Tech surveyed 281 business technology decision-makers involved in selecting connectivity to private cloud service platform providers at North American companies with 50 or more employees. The survey was conducted online, and respondents were recruited via an email invitation containing an embedded link to the survey. The email invitation was sent to a subset of UBM Tech's qualified database.

More than half of the respondents were from companies with 1,000 or more employees. Respondents were from a variety of vertical industries, with banking, finance, manufacturing, healthcare and government represented. The margin of error for the total respondent base (N=281) is +/- 5.8 percentage points.

UBM Tech was responsible for all programming and data analysis. These procedures were carried out in strict accordance with standard market research practices.