TechPulse IDG

SATISFYING APPLICATION PERFORMANCE NEEDS

Legacy network technology falls short in the cloud era, but the move to software defined WAN promises relief
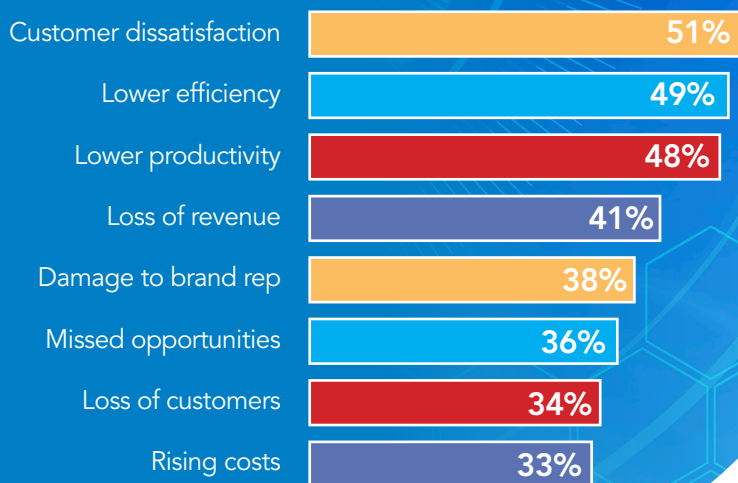
Nobody wants to solve a problem just by throwing money at it, but that's literally what many enterprises are doing as they focus on adding costly legacy bandwidth capacity to deal with network-related application performance issues. Relatively few, though, are fully utilizing the tools that would provide visibility into the network and more cost-effective management over performance, although many are eagerly exploring software-defined network (SDN) technologies.

Those are the findings of a recent survey by IDG Research Services. The survey polled 116 IT decision makers at midsize to large companies in various industries on application performance issues. More than half of survey respondents indicated that they are most concerned that poor application performance will impact customer satisfaction – the top potential negative cited. Following at second and third, are the impact on efficiency of business processes (49% of respondents), and employee productivity (48%).

That ranking may not be surprising given that those three areas are often found at the center of business digital transformation strategies. But transformation is no easy lift. "Without network transformation, fueled in large part by SDN and automation, there is no digital transformation," as recently noted in a recent TechTarget article that summed up the views of analysts at **IDC's annual Directions conference.**

IDG Enterprise's **2016 Cloud Computing Survey** revealed that survey participants on average have moved 45% of their applications and computing infrastructure to the cloud already, and they expect well over half of their IT environment to be cloud-based by 2018.

Impact of Poor Application Performance

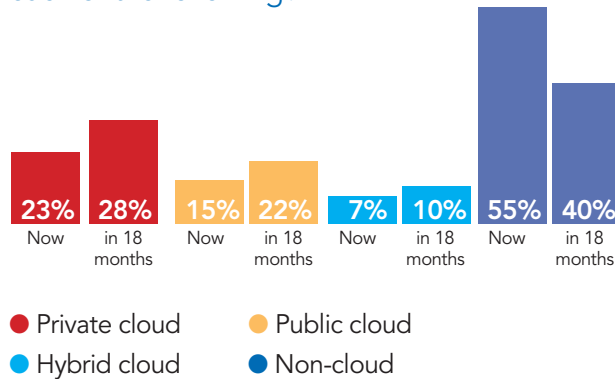Which of the following are most concerning for your organization?

Customer dissatisfaction	51%
Lower efficiency	49%
Lower productivity	48%
Loss of revenue	41%
Damage to brand rep	38%
Missed opportunities	36%
Loss of customers	34%
Rising costs	33%

SOURCE: IDG RESEARCH SERVICES, FEBRUARY 2017

SPONSORED BY COMCAST **BUSINESS**

IT Environments Shift Toward Cloud

Approximately what percent of your organization's total IT environment resides in each of the following?

Private cloud		Public cloud		Hybrid cloud		Non-cloud	
23% Now	28% in 18 months	15% Now	22% in 18 months	7% Now	10% in 18 months	55% Now	40% in 18 months

● Private cloud   ● Public cloud
● Hybrid cloud   ● Non-cloud

2017 *NETWORK WORLD* STATE OF THE NETWORK

The demands and conflicts for network performance/availability will only increase as more applications are migrated to cloud and enterprises look to tap into new capabilities.

Growing reliance on amorphous cloud architectures and widely distributed and mobile organizations requires a flexible, agile technology infrastructure capable of quickly setting up, redirecting and even tearing down connections as needed. That need is compromised by widespread reliance on rigid Wide Area Networks (WANs) based on expensive and inflexible Multiprotocol Label Switching (MPLS) boxes or dedicated T1 circuits that route Internet traffic from hub to hub. Branch office needs are often served with IP-based Virtual Private Networks (VPNs) that utilize dedicated switches or VPN software at satellite locations to connect securely to a switch at a hub location.

Inconsistent strategies

While there is much talk – and evidence – that IT and the business are on the same playing field regarding overall strategy to meet business objectives, it's not as clear that everybody is marching to the same tune on how to get there.

There's continuing evidence of stove-piping between IT, line of business and network teams that likely contributes to inconsistent priorities. CIO magazine's State of the CIO 2017 report finds that while IT leaders ranked big data/business analytics, cloud computing, security/risk management, and enterprise applications as their top priorities. In comparison, business process management and customer experience technologies topped the agenda for LOB, followed by cloud computing and security/risk management.

"CIOs continue to face turf battles as they duke it out for technology control: 26% of the IT leaders polled this year said they agreed that the CIO is being "sidelined" in their organizations — a viewpoint shared by just 15% of business executives," **the report stated**. Moreover, 36% of CIOs said they believe that people in other departments see IT as an obstacle to the corporate mission, while 31% of business executives agreed with that sentiment.

There's also some misalignment within enterprise technology departments. According to Network World's **State of the Network 2017** report, just a third of networking professionals indicate they have frequent contact with the cloud infrastructure/architecture team, less are frequently engaged with sales, marketing and finance. "There's a tug and pull between what the network guys are delivering versus what the IT guys might want to be driving," says Jeffrey Lewis, vice president of Data Product Management with Comcast Business Services. "And what you find are elongated roadmaps to get there."

While LOB leaders are heavily driven by customer impact issues, IT is often struggling to keep up with aligning current technology with that of tomorrow. That encourages a mindset of provisioning more bandwidth to address performance issues, but may obscure network issues that can end up being a drag on business results.

Grappling with speed and availability

Enterprises are struggling to keep up with expectations they can provide consumers and employees with an **Amazon-like experience**. Efforts to provide new and migrated applications in the cloud to achieve that goal are likely to fall far short if underlying network issues are not addressed.

Network Team Plays Key Role in IT Daily Activities

How frequently does the networking team collaborate with the following areas of your organization?

Daily	34%
Monthly	20%
Annually	5%
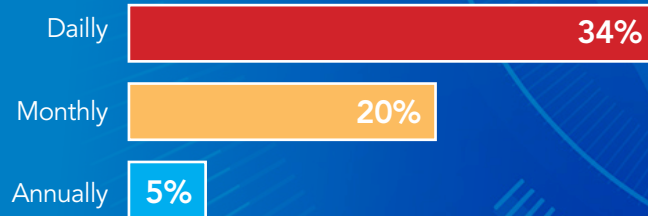
2017 *NETWORK WORLD* STATE OF THE NETWORK

Indeed, *Network World's* report shows that improving network speed and performance tops the list of primary drivers behind network investments with network availability close behind. But the IDC Research survey on performance issues reveals that relatively few organizations are utilizing real-time application monitoring (35%) or WAN optimization services. The top response to performance issues, cited by 45% of survey respondents, is to add more bandwidth.

Comcast's Lewis notes that traditional retailers are struggling to satisfy shoppers who are used to virtually instant gratification with their online purchases. In contrast, a consumer going into a tire franchise is likely to wait in line with little or no audio-visual experience and then must wait for installation, often without any access to Wi-Fi service. "How happy is that customer going to be when the retailer can't afford bandwidth to provide a store-of-the-future type of experience?" Lewis asks.

Because of the expense of adding MPLS capacity, many enterprises end up "dialing back" their aspirations, Lewis says. "I spoke with one organization that runs a single T1 MPLS-based network and they were thrilled they were able to compress data and voice to the point where with 1.5 mbps they were doing OK," he relates. "But then they ticked off on two hands as many as eight or nine

different things they could be doing if they actually had access to a smarter network."

While IT planners are honing on the ability of cloud services to scale as needed, that pathway is often blocked or constrained by the reliance on legacy networks. MPLS became the staple of enterprise WANs based on reliability and performance, compared to other alternatives such as public broadband or ISDN. But, says Lewis, "IT is discovering that MPLS doesn't perform that great – it does down a fair amount of the time, it's inflexible, and it doesn't allow you to do things quickly or to manage your network."

The software-driven enterprise

Many enterprises are betting that a hybrid IT architecture utilizing the best of cloud and on-premise services is the option. However, that also introduces complexity. "The key issue is the need to maintain performance standards across disparate infrastructure so applications running at home can maintain proper sync with those on third-party clouds," according to *Enterprise Networking Planet*. "In short, it requires a great deal of network flexibility just to achieve basic functionality across the hybrid cloud."

Many organizations are still reliant on T1-based dedicated Internet access services, typically offered over 1 or 2 T1 circuits so the bandwidth options are limited, inflexible and costly as an organization's bandwidth and application requirements grow.

T1 has been overshadowed by MPLS, with its ability to accommodate T1 and other types of networking protocols. MPLS provides the security of a private network, utilizing public carrier infrastructure, and providing predictable performance. However, MPLS was primarily designed to provide hub-to-hub networking and is ill-suited to organizations with multiple satellite offices or the need to rapidly provision new distributed locations. But adding MPLS switches is expensive and time-consuming.

While much of IT infrastructure and business processes have been abstracted from the underlying hardware,

legacy networking has lagged. But technology has changed, and enterprises are eager to take advantage. Now, software defined networking (SDN) technologies are starting to catch up.

Almost half of those polled in Network World's annual survey are either considering or actively piloting SDN technologies. Another 18% said they had already deployed SDN technology or were upgrading it within their organization. Public carriers have been striving to implement SDN within their own networks and customer data center networks, to become more cost-effective and efficient, but the benefits for the enterprise have been so far elusive.

Fast-moving businesses can't wait for those carriers to figure out how to leverage their MPLS infrastructures in an SDN world. Many are realizing they can realize most, if not all, the benefits of the legacy networking era while gaining greater flexibility and price control in leveraging the public internet with Software Defined-Wide Area Network (SD-WAN) technology, which can eliminate the need for WAN accelerators, firewalls, and other components.

"SD-WAN can be thought of as a little brother to its more well-known sibling software-defined networking", according to a Network World article. "They're related – both software-defined –but whereas SDN is meant for internal data centers at a campus or headquarter location, SD-WAN takes those similar software-defined concepts and the decoupling of the control plane from the data plane to the WAN."

Almost

50%

of respondents are either considering or actively piloting SDN technologies

Generational transitions

The IDG Research Services application performance survey finds that only 10% are currently leveraging SD-WAN, but both Gartner and IDC have predicted rapid growth for this WAN option to enable the cloud-centric, hybrid networking that will meet the performance, availability and flexibility requirements of today's business applications.

"The emergence of SD-WAN is a relatively recent market development, preceded by the existence of hybrid WAN architectures," **IDC says**. "SD-WANs leverage these hybrid WANs, but incorporate a centralized, application-based policy controller, analytics for application and network visibility, a software overlay that abstracts underlying networks, and an optional SD-WAN forwarder that together provides intelligent path selection across WAN links."

Comcast's Lewis says IT organizations are rapidly getting up to speed on the SD-WAN concept, but that it takes time to convince their constituents of the need to evolve from past-generation network technologies that they have relied on for the past 10-15 years. Additionally, he says, "when they hear SD-WAN they are often really thinking of IP VPN; they don't necessarily think of SD-WAN as part of a broader SDN networking platform infrastructure."

Still, IT is eager to find a solution to application performance issues and are likely to migrate to SD-WAN as they continue to focus on better solutions to increase customer satisfaction and employee productivity. According to IDC, "the benefits of SD-WAN include cost-effective delivery of business applications, meeting the evolving operational requirements of the modern branch/remote site, optimizing software-as-a-service (SaaS) and cloud-based services such as unified communications and collaboration (UC&C), and improving branch-IT efficiency through automation."

For more information on enterprise network options, visit https://business.comcast.com/enterprise.