Ninth Annual State of the Network Global Study

2016 STATE OF THE NETWORK

EXECUTIVE SUMMARY

According to the Ninth Annual State of the Network Global Study, cloud and hybrid IT adoption is growing aggressively. One quarter of respondents indicated that their companies are running the majority of applications in the cloud. This will double in 2017 with nearly half of respondents running the majority of applications in the cloud.
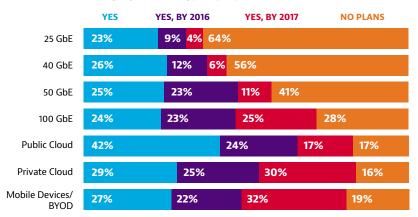
Many IT enterprise organizations now support a combination of internal and external cloud resources that are orchestrated and managed as one unified hybrid infrastructure. These IT organizations deploy enterprise applications that span these resources. With hybridized applications, assuring cloud performance becomes essential.

The 2016 State of the Network Study uncovered how IT resources are shifting as enterprises are deploying new technologies, and managing the challenges of bigger, faster networks. In this surprising report, over 740 respondents reveal their biggest challenges, key initiatives, and top reasons for moving to the cloud.
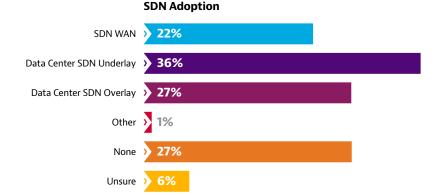
EMERGING TECHNOLOGIES

When it comes to capacity, bigger is better – with over two thirds of organizations planning to move to 100 GbE by the end of 2017. Converged environments created by private cloud and software-defined network (SDN) implementations are likely fueling much of the need for larger pipes to run between servers. These results suggest 25 and 40 GbE are simply a stop gap measure with a reasonable number of deployments in 2016, but then a steep drop in adoption occurs later as 100 GbE implementations take off. Likewise, the survey results suggest any enterprise concerns with cloud security or management are more than outweighed by its great promise in cost savings, agility, and automation.

Emerging Technology Deployments

	YES	YES, BY 2016	YES, BY 2017	NO PLANS
25 GbE	23%	9%	4%	64%
40 GbE	26%	12%	6%	56%
50 GbE	25%	23%	11%	41%
100 GbE	24%	23%	25%	28%
Public Cloud	42%	24%	17%	17%
Private Cloud	29%	25%	30%	16%
Mobile Devices/BYOD	27%	22%	32%	19%

SDN

Overall, two out of three respondents have deployed some facet of SDN. With 35 percent of respondents implementing SDN underlay, most respondents appear to be relying on hardware vendors, such as Cisco, Brocade, and Big Switch for SDN initiatives. This compares to nearly 27 percent using an SDN overlay technology from vendors like VMware.
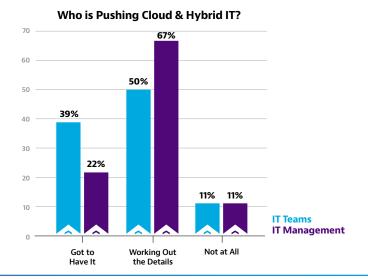
SDN Adoption

SDN WAN	22%
Data Center SDN Underlay	36%
Data Center SDN Overlay	27%
Other	1%
None	27%
Unsure	6%

CLOUD & HYBRID IT ADOPTION

Who is pushing the adoption of cloud and hybrid IT infrastructure? Data shows that network and IT teams want cloud now, but the business side is still catching up.
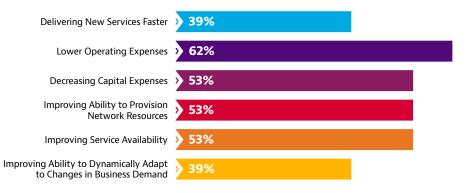
When it comes to cloud, nearly 40 percent of IT teams say they "need it ASAP," while 2 out of 3 Managers are "still working through some details." These results speak to the pressure network groups are experiencing as they contend with cloud adoption and the insatiable growth in bandwidth by users and applications.

Who is Pushing Cloud & Hybrid IT?

Category	IT Teams	IT Management
Got to Have It	39%	22%
Working Out the Details	50%	67%
Not at All	11%	11%

TOP REASONS FOR MOVING TO THE CLOUD

Not surprisingly, enterprise migrations to the cloud are motivated by cost savings and flexibility: 62 percent sought to lower operating expenses and 53 percent sought to reduce capital expenses. Also important is the improvement of service availability and reliability (53 percent), as well as to better provision network resources (53 percent). Many IT teams are expecting to realize significant operational and cost savings improvements.
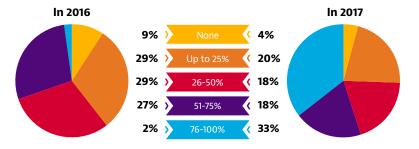
Top Reasons for Deploying Cloud

Reason	Percentage
Delivering New Services Faster	39%
Lower Operating Expenses	62%
Decreasing Capital Expenses	53%
Improving Ability to Provision Network Resources	53%
Improving Service Availability	53%
Improving Ability to Dynamically Adapt to Changes in Business Demand	39%

APPLICATIONS IN THE CLOUD

Today, almost 90 percent of enterprises have at least one application in the cloud and nearly a third have the majority of their applications in the cloud. By 2017, over 50 percent will have the majority of their applications in the cloud. This impressive growth rate speaks to the growing confidence companies have in the technology. It is also likely driven by IT departments looking to cost-effectively scale and pivot in response to changing user and business demands.
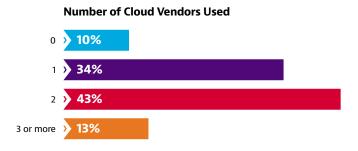
Percentage of Applications in the Cloud

In 2016		In 2017
9%	None	4%
29%	Up to 25%	20%
29%	26-50%	18%
27%	51-75%	18%
2%	76-100%	33%

MULTIPLE PUBLIC CLOUD VENDORS

The majority of respondents rely on at least two public cloud vendors. When selecting from the list of public cloud services including Amazon Web Services (AWS), Google Cloud Platform, IBM SoftLayer, Microsoft Azure, VMware vCloud Air, and Other, 43 percent indicated their organization used 2 public cloud providers and an additional 13 percent selected three or more vendors.
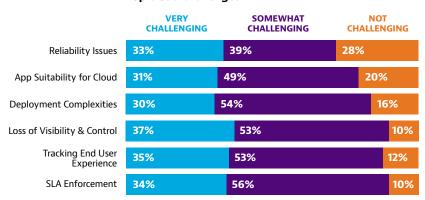
This may be due to IT architects building in flexibility and redundancy by design, or business units and IT teams deciding on their own to utilize different providers to reduce the risk associated with single vendor lock-in. From a monitoring standpoint, this means IT teams will require future visibility and intelligence into each of these environments to ensure positive user experience. IT service monitoring providers would do well to consider this as they architect their solutions to address future customer management challenges.

Number of Cloud Vendors Used

0	10%
1	34%
2	43%
3 or more	13%

ENSURING CLOUD VISIBILITY

As more applications are virtualized and migrated to the cloud, this introduces new visibility obstacles and potential sources that can negatively impact performance and increase delay. These challenges are expected to remain constant into the future, as both engineers and tools adapt to provide greater support for these new environments. To minimize this exposure, IT teams will need to collaborate for optimal service delivery wherever cloud is deployed.
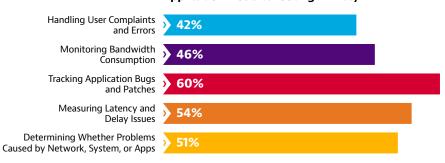
Top Cloud Challenges

	VERY CHALLENGING	SOMEWHAT CHALLENGING	NOT CHALLENGING
Reliability Issues	33%	39%	28%
App Suitability for Cloud	31%	49%	20%
Deployment Complexities	30%	54%	16%
Loss of Visibility & Control	37%	53%	10%
Tracking End User Experience	35%	53%	12%
SLA Enforcement	34%	56%	10%

APPLICATION PERFORMANCE MONITORING CHALLENGES

For every year of the State of the Network, the top application trouble-shooting challenge has been isolating the problem to the network, system, or application. Compared to last year, that challenge has moved to the number three position.

Noteworthy for 2016 is the relatively high number of respondents having difficulties tracking application bugs and patches (nearly 60 percent). This concern ranked at number one, for the first time in the nine years of the study. When tied to the rapid growth of cloud deployment, it may indicate additional challenges to moving hosting outside of the internal data center.

Application Troubleshooting Anxiety

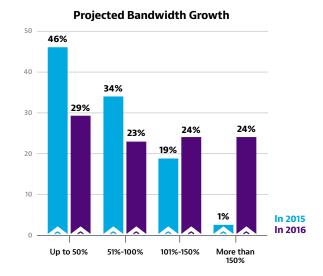|	
Handling User Complaints and Errors	42%
Monitoring Bandwidth Consumption	46%
Tracking Application Bugs and Patches	60%
Measuring Latency and Delay Issues	54%
Determining Whether Problems Caused by Network, System, or Apps	51%

APPLICATION AND NETWORK PERFORMANCE MONITORING

Projected bandwidth growth is a clear factor driving the rollout of larger network capacities. The most significant takeaway from the chart at right is that over half of engineers expect bandwidth demand for their organizations to grow by more than 51 percent in 2016. This number also represents an expected surge in bandwidth growth compared to last year, when only 37 percent expected bandwidth demand for their organization to grow by more than 51 percent in the second year. The surge in bandwidth demand shows no signs of abating any time soon.
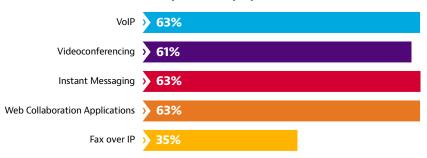
INCREASED BANDWIDTH DEMAND

· 20 percent expect their bandwidth usage to double by the end of 2016
· 48 percent expect their bandwidth usage to double by the end of 2017

Projected Bandwidth Growth

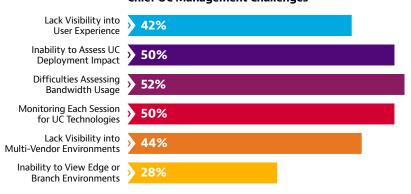|	Up to 50%	51%-100%	101%-150%	More than 150%
In 2015	46%	34%	19%	1%
In 2016	29%	23%	24%	24%

UNIFIED COMMUNICATIONS (UC)

Voice over IP (VoIP) remains the top UC technology with nearly two thirds of enterprises currently using it. Some of the challenges remain consistent year over year. Over half of respondents list lack of visibility into band-width utilization, lack of visibility into sessions, and inability to assess impact of UC deployment on other apps as key struggles.

Enterprise UC Deployments

VoIP	63%
Videoconferencing	61%
Instant Messaging	63%
Web Collaboration Applications	63%
Fax over IP	35%

Chief UC Management Challenges

Lack Visibility into User Experience	42%
Inability to Assess UC Deployment Impact	50%
Difficulties Assessing Bandwidth Usage	52%
Monitoring Each Session for UC Technologies	50%
Lack Visibility into Multi-Vendor Environments	44%
Inability to View Edge or Branch Environments	28%

RESEARCH AND METHODOLOGY

Study questions were designed based upon interviews with network professionals and IT analysts. Results were compiled from the insights of 740 respondents, including network engineers, IT directors, and CIOs from around the world.

In addition to geographic diversity, the study population was evenly distributed among networks and business verticals of different sizes. Responses were collected from March 10, 2016 to March 28, 2016 via online surveys.

Respondent Position

- **19%** Network Engineer
- **23%** Systems Engineer
- **13%** IT Consultant
- **32%** IT Director
- **13%** CIO

For more information about the study's methodology or the results, contact Stephen Brown at steve.brown@viavisolutions.com.

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