Network IT:

The Beating Heart of Digital Transformation

Network World's annual State of the Network study dives into the evolving role of network IT from a behind-the-scenes contributor to an increasingly strategic player, putting them in the spotlight as companies continue to digitally transform their businesses.

DIGITAL TRANSFORMATION
IS DECIDEDLY THE KEY FOCUS FOR COMPANIES OF ALL SIZES AND ACROSS INDUSTRIES

As a result, the networking organization—once a back-office function existing largely in the background—is now front and center. This group is taking on an increasingly important and strategic role—not just within the IT organization, but within the entire enterprise. Stepping into this spotlight is testing corporate networking groups to be sure, but it is also opening up new opportunities for the groups to prove their worth by delivering strategic value to the business.

The vast majority of IT and business professionals surveyed for Network World's 2016 State of the Network survey—85 percent—concurred that the role of the networking professional today is more challenging than ever. In fact, among large enterprises, nearly all respondents (91%) noted the increased demands of the position, no doubt due to the size and complexity of their enterprise network environments, the increasing demands, and the threats to the network. Networking groups are managing an explosion of mobile devices, cloud-based providers, and emerging networking technologies—testing them, deploying them, integrating them, managing them, and protecting them.

"Networking teams are caught in a collision between more mobile users, fragmenting applications, and partner integration," says Eric Hanselman, chief analyst at 451 Research. "Network boundaries have shattered, creating a need to interconnect these various pieces. Where enterprise applications were once built on server clusters in the datacenter, there is now a need to integrate access to test and development environments at cloud providers, software-as-a-service providers for CRM or marketing, and mobile applications on user devices. At the same time, traditional branch office networks are being transformed, as a new generation of software defined networking offerings mature."

As a result, a majority of those surveyed agreed that the networking team is becoming more important to IT's mission, more involved in security initiatives, more successful in driving innovation in collaboration with other IT teams, and more integral to shaping IT strategy.

At Agilent Technologies, which provides scientific testing equipment to such customers as Cisco, Dow Chemical, and Samsung, network strategy has a direct impact on everything from day-to-day operations to product development. "It's clear that in a global enterprise today, employee productivity is largely impacted by the performance and reliability of the global network," says Mike Shicktanz, Agilent Technologies' Global Networks Director. "Our product development teams are also creating innovative products that leverage analytics and the cloud, so maintaining great performance and availability is paramount."

SECURE, SPEEDY, AND STEADFAST

"Fast, good, or cheap," the old project management adage goes, "You can pick two." Not so for today's corporate networks. The business demands a wide range of networking options that are not simply fast, reliable, and cost-effective—but also secure.

The good news for some network leaders is that budgets are increasing, though never quite enough to keep up with demand. Nearly half of the IT and business professionals surveyed once again expect their organization's network and data center budget to increase this year, with another 40 percent indicating that spending would remain the same. On average, budgets will increase by 8 percent for enterprise organizations and 6 percent for small-to-medium sized businesses (SMBs).

Security and speed will be top of mind this year along with the traditional network priorities of ensuring availability and continuity for the business.

TABLE 1: THE NETWORK TAKES CENTER STAGE	
The Networking team is:	
More involved in security initiatives	**84%**
More important to IT's mission	**82%**
More successful in driving innovation in collaboration with other IT teams	**79%**
More integral to shaping IT strategy	**74%**

Protecting against data breaches and leaks continues to be the top network challenge, followed by ensuring availability, ensuring business continuity, and having the right IT talent in place. Managing these priorities cost effectively is tricky, says Shicktanz, as is maintaining focus and not spreading the organization too thin by chasing every new technology that comes along.

MORE MONEY...

2016 IT NETWORK BUDGETS WILL:
Increase   47%
Decrease   13%
Remain the Same   40%

MORE PROBLEMS

THE TOP CONCERNS FOR 2016
1. **Protecting against data breaches and leaks**
2. **Ensuring availability**
3. **Ensuring business continuity**
4. **Having the right IT talent in place**

Respondents said that the primary drivers of networking investments are improving network speed and performance (55%), improving data security (53%), ensuring availability (50%), ensuring business continuity (46%), improving IT process efficiency (43%), and improving business process efficiency (41%). Cost cutting was least likely to be a deciding factor with just 19 percent of those surveyed saying reducing operating expenses would be a driver and 15 percent indicating that reducing capital expenses would be.

"Speed and security are incredibly large drivers in our organization. Security goes without saying. The attacks are much more sophisticated and are coming in many different forms. Attackers are doing their best to grab as much data as possible in the shortest

amount of time. After they get the data they then attempt to crush our networks," says Phil Bertolini, deputy county executive and CIO for Oakland County, Michigan. "[In addition,] we have very large bandwidth transmissions that are becoming more frequent as video becomes a larger part of our resources. Without adequate speed, the network could slow to a crawl impacting every aspect of government operations. We could spend incredible amounts of money on both speed and security."

The networking group today is making spending decisions based on clear business factors rather than making technology decisions in isolation. In fact, those respondents on the team primarily responsible for networking were more likely to cite the business drivers behind their budgets; more than half of them (52%) said business continuity and business process efficiency were important (versus 38% and 32% of those not in the network group) and 43% said improving agility and flexibility to react to business change was a significant driver (versus just 26% of those not on the networking team).

AN INSATIABLE APPETITE FOR CONNECTIVITY

The corporate expectation for "always on, everywhere" connectivity can put a strain on networking groups. Demand management continues to be the name of the game, particularly for those managing corporate WiFi. Keeping up with the proliferation of end user devices remains the top WiFi concern. Network groups are also worried about ensuring the Wi-Fi infrastructure can supporting bandwidth-hoggers needs like video streaming insuring complete Wi-Fi coverage throughout the enterprise.

Agilent Technologies refreshed its campus environments with 802.11n six years ago, but the largest locations are moving to 802.11ac and larger backbones today. "WiFi is the primary means of connectivity now," explains Shicktanz. "We see performance and reliability problems in our old environments."

EVERYBODY LOVES WiFi

TOP WIRELESS NETWORK CONCERNS:

Keeping up with the proliferation of end user devices	**44%**
Ensuring the Wi-Fi infrastructure is capable of supporting evolving needs like video streaming	**38%**
Ensuring Wi-Fi coverage throughout the enterprise	**37%**

Some of the areas of increasing network investment in 2016 will include network security, applications development, and data storage. Clearly, the continuing evolution of the threat landscape and potential for breaches is driving organizations to focus on network security—both reinforcing existing defenses and upping spending on detection and response systems. And newer approaches to application development are demanding increased infrastructure-side involvement and investment. "Enterprises are working to transform the way in which applications are developed to meet increasing time to market pressures," says Hanselman. "While it's not all DevOps for everybody, a lot of that spending is on platforms and capabilities that will pave the way. Mobile application needs have been outpacing internal development capacity for some time, and enterprises have to act to fill that gap." Storage needs have been expanding for some time, with technologies like de-duplication

IT WILL INCREASE SPENDING ON:	
Network security	**50%**
Data storage	**43%**
Applications development	**42%**
Computing hardware	**37%**
Data management and analytics	**35%**
Software	**35%**
Compliance	**38%**

and compression helping to stem the surge in the short term, adds Hanselman. "Distributed storage technologies, solid state systems, and hyper-convergence are all seeing strong investment as the next generation of infrastructure is being built out."

IT network organizations are actively researching, piloting, implementing, or upgrading a variety of technology initiatives. Not surprising, network security monitoring is at the top of this list with nine out of ten enterprise organizations implementing or looking into related projects. Also in widespread implementation or investigation are data management and analytics (73%), application centralization (71%), storage virtualization (71%), network virtualization (70%), tier-one application virtualization (70%), tools to gauge application performance (69%), tools to optimize application performance (67%), data center storage efficiencies (65%), desktop virtualization (65%), server consolidation (63%), and WAN optimization (59%).

Large enterprises are more likely than their small- to medium-sized counterparts to be managing or researching all categories except for network security, which was equally prevalent in organizations of all sizes.

CLOUD COMPUTING REACHES A TIPPING POINT

The biggest spike in spending this year by far will be on cloud services. Six out of ten respondents (63%) said that they will increase cloud-related spending this year, compared to 43% in 2015. Perhaps related to the proliferation of cloud implementations, the most popular spots for spending cuts will be the data center (18% will decrease investment) and systems engineering (17%)—two budgetary items that are removed when cloud providers come in the door.

"Cloud is inevitable for everyone in technology," says Bertolini of Oakland County whose organization is moving quickly, but cautiously into this area and also provides cloud technologies through a government-to-government platform and marketplace.

The expansion of cloud computing will bring both challenges and benefits for network IT. "Properly utilized, the orchestration capabilities can help to automate a lot of the more mundane network configuration tasks," says Hanselman of the 451 Group. "That can require programming skills that many networking teams lack, complicating what is already a bit of a learning curve on cloud capabilities. There's also the need to extend application access to service providers to link data resources to cloud-based applications. Whether through VPN's or services such as Amazon's Direct Connect or Azure's ExpressRoute, there are a lot more options to sort out." What's more, IT leaders must mitigate the risks of working with emerging providers. "The largest drawback is that many Cloud providers are not long term, stable companies and quite frankly could come and go," says Bertolini. "Strong contracts are necessary in the case where the partnership doesn't work out or the company goes out of business."

Indeed, seven out of ten surveyed said that cloud will add complexity and difficulty for the networking team, and six out of ten indicated that cloud will alter the structure of the networking team and have an impact on collaboration within IT. At the same time, a majority of respondents stated that cloud will allow the networking team to broaden their technology knowledge and become more valuable and elevate the networking team's role in the organization.

THE HIGHS AND LOWS OF CLOUD

CLOUD COMPUTING ...	
will add complexity and difficulty for the networking team	**70%**
will allow the networking team to broaden its technology knowledge and become more valuable	**67%**
will alter the structure of the networking team and have an impact on collaboration within IT	**60%**
will enable the networking team to play a more strategic role	**57%**

At Agilent, Shicktanz is moving "commodity type" services to the cloud. "We are getting the same (or better) service and functionality that's more scalable at the same or lower cost," he says. "The drawbacks are managing our networks as we see a big shift from intranet traffic to internet traffic."

The short-term impact of cloud computing adoption on security strategy, however, will be contained. About a third (34%) of respondents said cloud will require moderate changes to security strategy and roughly a quarter said only a few tactical changes will be necessary. Just 14 percent indicated that cloud would require a complete overhaul of security plans.

A SHIFTING SECURITY LANDSCAPE

When it comes to deploying network security solutions themselves, companies are deploying a mix of hosted and traditional in-house solutions. Just under half (49%) say they will deploy a mix of on-premises and cloud-based security systems, while more than a quarter (27%) will implement on-premises solutions only, and just seven percent are comfortable with a full cloud deployment.

Network security automation is a mixed bag. On average, 43 percent of an organization's network security is automated. Twelve percent are less than 10 percent automated. The largest portion of respondents, one-fifth, say their network security is 10 percent to less than 25 percent automated, and 16 percent indicated that their security is either 25 percent to less than 50 percent automated or 50 percent to less than 75 percent automated. Ten percent are 75 percent to less than 100 percent automated and just a handful (6%) have full automated network security. Of those who have deployed automated solutions, 34 percent say they are extremely or very confident in it, while just under half (48%) are somewhat confident.

Employee awareness and cooperation took over as the top security-related concern (35%); moving up from the 3rd biggest concern in 2015. This

correlates to the 2016 Global State of Information Security Survey showing current employees and former employees topping the list of likely sources causing security incidents. Employee education can help to stem the problem of private or sensitive information being exposed unintentionally. In terms of outside the organization, protecting against threats such as advanced persistent threats and distributed denial-of-service attacks (33%) remains a top concern. Budgetary constraints/demonstrating ROI rose as a top three challenge with 29% saying it is of concern compared to 25% last year. On the other hand, managing the security and risk surrounding mobile devices remains a high security challenge, but it decreased in prevalence from 34% last year to 28% this year.

"There will always be outside threats and keeping strong walls in place is a must," says Bertolini. "Our concern is that there are inside threats, especially human threats, that are just as dangerous. Educating internal staff is a must. Disgruntled technology employees could do more damage than any hacker on the planet." However, just 19 percent of respondents were worried about protecting against insider threats, despite the increased damage that an employee can do. "External threats are certainly the most visible. The huge increase in DDoS attacks has shifted focus for some, but that can be a dangerous distraction," says Hanselman. "Protections for insider threats do double duty, not only mitigating malicious insiders, but also identifying compromised accounts. That's a much greater issue that many overlook in network protections. Network teams need to be part of the full security conversation to ensure that effective mitigations are being put in place."

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>
> **ERIC HANSELMAN**
> **CHIEF ANALYST, 451 RESEARCH**

Companies must also consider a host of new security requirements and risks as well. Accordingly, they are considering a number of new security initiatives, particularly around new and expanding capabilities like mobility and social media along with persistent or increasing threats. More than half of respondents are actively researching or have on their radar enterprise mobility management, ID management solutions, and securing access for mobility programs.

But while they may be looking into new security methods, they are not entirely comfortable handing their security programs over to relatively untested emerging vendors in this space. Nearly three out of ten (29%) said their perception of risk increases with new vendors versus established players while 40 percent said they're equally risky.

THE SLOWLY BLURRING LINES OF THE NETWORK

An IDC forecast[1] estimates the worldwide market for SDN among enterprise and cloud service providers will grow to $8 billion by 2018. According to the survey, companies have the same level of interest in software-defined networking as they did a year ago, with 43 percent of respondents indicating that they are actively researching the approach or have it on their radar. Just 13 percent of companies actually have network virtualization installed or in production, three percent are upgrading or refining

SDN: NOT SO FAST

SOFTWARE-DEFINED NETWORKING HAS YET TO BE WIDELY ADOPTED DUE TO A NUMBER OF CHALLENGES, INCLUDING:

Lack of necessary IT skills	**41%**
Integration with legacy technology	**34%**
Staff resource constraints	**28%**
Lack of reliable vendor support	**23%**

[1] SDN Momentum Builds in Datacenter and Enterprise Networks, 2014 Study, IDC

it, and six percent are piloting it. More than one third of respondents say they have no plans at all for SDN this year. Looking ahead a year from now, 22 percent say they will have SDN installed, in production, or in refinement. Several challenges inherent in emerging technologies have led to the delay in more widespread adoption, chief among them the lack of human resources capable of managing SDN.

Experts predict that up to 50 billion devices will be connected to the Internet by 2020.[2] But while the Internet of Things (IoT) technologies are getting slightly more traction in the enterprise, just 17 percent of respondents note that IoT efforts are underway today and another 36 percent are planning implementations in the next one to three years. However, 47 percent of companies say they have no plans for IoT at all.

While business leaders like CEOs, COOs, and presidents are taking charge of IoT efforts at one in five companies, IoT looks to be largely an IT-driven business innovation. More than one third (35%) of respondents said their CIO is leading IoT efforts with another 64 percent saying other technology leaders were in charge of IoT projects.

OUT OF THE DATA CENTER

With networking capabilities increasingly critical to technology-enabled business innovation, the networking organization can no longer afford to operate in isolation. Networking executives, managers, and leaders are working closely with other groups within the technology organization as well as certain business functions.

"Everything we touch on the network can impact other teams," explains Shicktanz of Agilent Technologies. "Plans and strategies from my peer organization can hardly be executed anymore without network involvement—as such, collaboration and teamwork are key."

Network IT works in collaboration on a daily basis with IT operations at 43% of organizations, IT services or help desk at 42% of organizations, with systems

administration at 40% of organizations, and IT security at 38%. Cross-departmental collaboration in the form of adopting the DevOps approach to software development has been, or is being adopted, at some level at nearly half (46%) of large enterprises (down from 54% last year) and at 25% of small- to mid-size companies. Respondents said the most common drawbacks of not adopting DevOps would be less collaboration between development, IT operations and business (25%), increased development costs (24%), slower time to market (24%), lack of or low automation of application release and changes (22%), and lack of visibility into IT operations requirements early in the development lifecycle (22%).

Looking beyond the walls of IT, the networking group is also working hand-in-hand with corporate operations on at least a weekly basis, according to 42 percent of respondents and collaborates at a similar frequency with top business executives (36%), technical consultants (35%), the cloud infrastructure team (34%), corporate finance (25%), and sales and marketing (23%). When seeking to join forces with those outside of IT, however, the networking group has to make it happen. More than half of respondents (52%) said that the networking team either always or usually has to initiate such collaboration efforts with the business.

That collaboration must continue as the interdependence between business outcomes and network IT will only increase in the near future. "Network teams have been the plumbers of IT for far too long, "says Hanselman. "When the network was a reasonably static thing that had to be reliable and unchanging, that worked, but we're in a much different world today. Business ecosystems have expanded dramatically and require a digital infrastructure to support them. The interconnection needs of the modern business require that the network become an enabler, rather than a stumbling block to deployment. It puts pressure on networking teams to rapidly adapt to a slew of new technology options and to become better integrated into the business decision-making process outside the traditional IT walls."

[2] Internet of Things in Logistics, 2015 Trend Report, DHL Trend Research together in collaboration with Cisco Consulting Services

Examining the Marketplace

We think research is invaluable in helping to connect marketers with customers and prospects. Our research portfolio explores our audiences' perspectives and challenges around specific technologies, examines the changing roles within the IT purchase process, and arms IT marketers with the information they need to identify opportunities. **To request a meeting with an IDG Enterprise sales executive to walk through the full results of any of these studies, please contact Sue Yanovitch, VP of Marketing, IDG Enterprise at syanovitch@idgenterprise.com.**

Buying Process

Each year we take a deep dive into the enterprise IT purchase process to learn more about who is involved and who influences decision-making, what sources purchasers rely on to keep up to date with technology— and throughout the purchase process—and how they feel about the vendors they're working with.

Role & Influence of the Technology Decision-Maker

The annual IDG Enterprise Role & Influence of the Technology Decision-Maker survey is conducted to gain insight into the evolving role and influence of IT decision-makers in today's corporations. The research examines the involvement of IT decision-makers during each stage of the IT purchase process and the primary influences and information sources they rely on throughout the purchase process.

Customer Engagement

The IDG Enterprise Customer Engagement survey looks at the role content consumption plays in the purchase process for major technology products and services, and provides insights to IT marketers to map their engagement touch-points to customers information needs. The survey looks at how a wide variety of content types are used throughout the individual stages of the IT purchase process and how that content is consumed, discussed and shared.

Technology Insights

Each year we explore the technologies that are top of mind among our audiences to understand the business challenges, drivers, and adoption within the enterprise. Each research study is designed to help IT marketers understand what their customers are focused on and where the market is moving.

Role & Priority Studies

- CIO Tech Poll: Economic Outlook
- CIO Tech Poll: Tech Priorities
- CIO/CMO Partnership
- Computerworld Forecast Study
- Cyber Security Watch Survey
- Global Information Security Survey
- State of the CSO
- State of the Network
- Tech Persona: Enterprise Developer

Technology Specific Studies:

- Big Data & Analytics: Insights into Initiatives & Strategies Driving Data Investments
- Cloud Computing: Key Trends and Future Effects
- Consumerization of IT in the Enterprise
- The Mobile First Enterprise
- Unified Communications & Collaboration

CUSTOMER JOURNEY POSTER

Want to know which content drives IT decision-makers and fuels their engagement during the IT purchase process? IDG Enterprise's Customer Journey poster serves as your content marketing guide to strategically reach your target customers. Request a copy of the poster at **www.idgenterprise.com/report/customer-journey-poster**

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