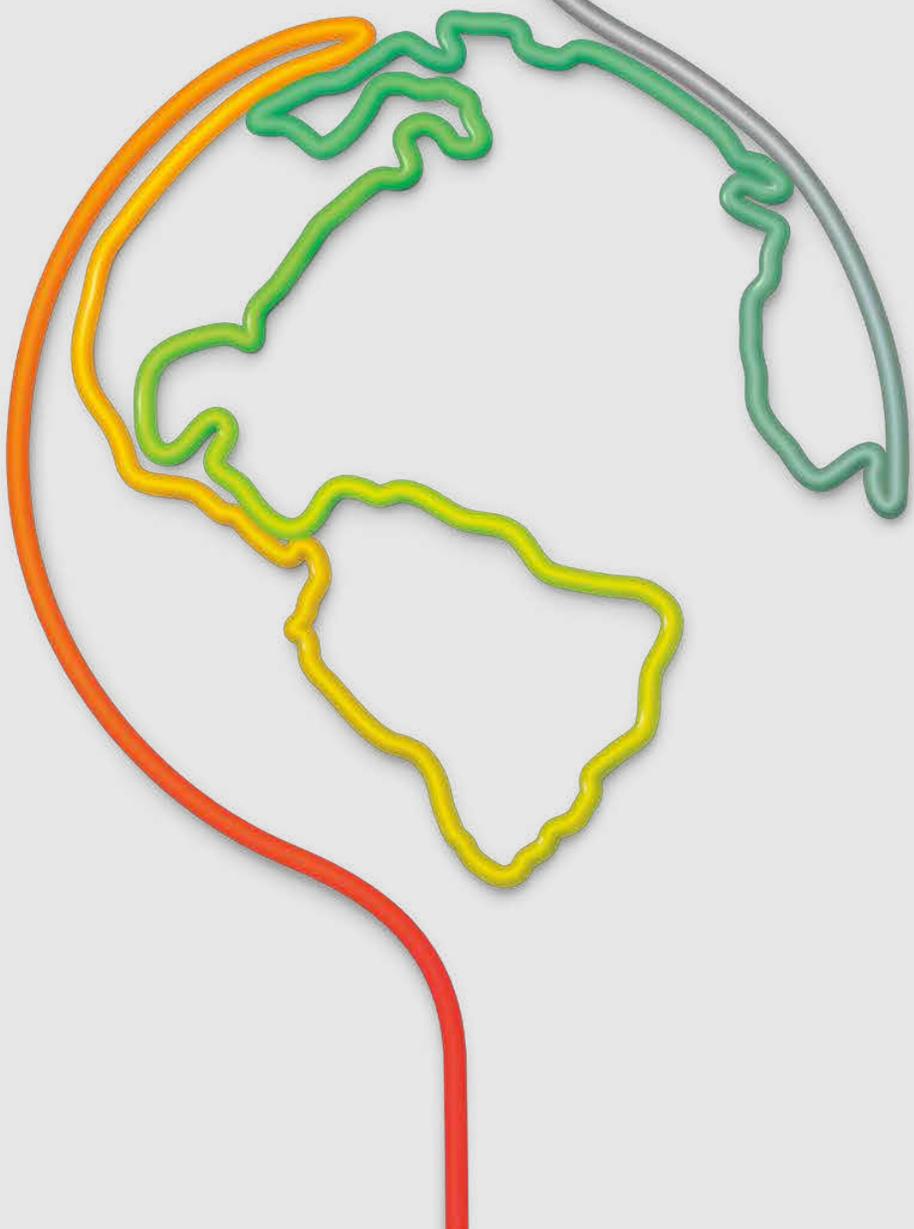# Digital transformation powers your business.

Rethink your network.
Drive results.

verizon✓

It's no longer just a few cool Silicon Valley firms that are doing things differently. Companies in every industry and every region are going digital.

Digital is a game changer.

Ideas that seemed far-fetched just a few years ago can be brought to life quickly and economically in the digital era. And not just innovative new products and services, entirely new business models.

The impact of digital goes far beyond familiar examples like Airbnb, Salesforce and Uber. Nearly every industry faces disruption, whether it's by new entrants, well-known names, or both. Digital makes it possible for companies of all shapes and sizes to tear up the rulebook, shake up the status quo and turn markets on their head.

Many of the ingredients are familiar:
- Mobile to enable new types of interactions and greater productivity
- Big data and analytics to improve decision-making
- Cloud to drive agile, cost-efficient application delivery and extend reach
- The internet of things (IoT) to create smart assets and transform process efficiency

But the variety of ways that you can put these ingredients together to do things differently is practically endless.

This change has been going on for many years, but it's still gathering pace. And behind it all is the network.

Digital enables new ecosystems. All companies have partners that they rely on. Most have outsourced some functions, often facilities and IT. Many have gone even further and embraced new models like crowdsourcing. For example, some businesses have built portals that enable adept customers to answer other customers' questions in return for status or money off their bill.

Digital makes new business models possible. From movies to jet engines, you can now rent instead of buy. Upfront capital expenditure can be replaced with a predictable pay-per-use subscription. You can't stream a jet engine, but you can get one on an "as a service" basis. It's owned and maintained by the manufacturer, and they bill you on the number of hours of use.

Digital opens up new ways to interact and engage with customers. Customers now expect to be able to communicate with companies through multiple channels — often several in the course of a single purchase or enquiry. From JetBlue's crewbot which takes customer service out into the airport, to BMW offering customers the opportunity to watch their car being serviced live over the web, the number of touchpoints grows every day.

In our research, a quarter of companies said that they have already put their digital strategy into practice. Close to a third were in the process of implementing.

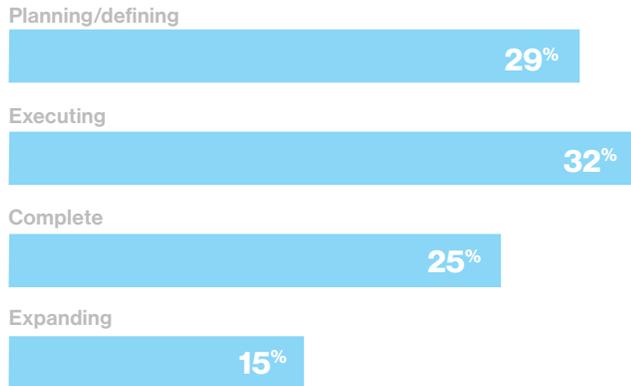**Stage of enterprise digital strategy development**

Planning/defining

29%

Executing

32%

Complete

25%

Expanding

15%

Figure 1 — Verizon-commissioned study conducted by Forrester Consulting

Digital is the third great wave of invention and economic disruption[2].

Disruption comes from being bold. Where companies used to be locked into a cycle of looking for savings of a few percent here and there, digital companies look for changes measured in orders of magnitude — like developing a product that costs a tenth as much to produce, or increasing volumes one-hundred-fold. In the digital age, companies can throw out the rulebook, rethink their marketing strategies and operating models, and find whole new ways to make money.

One method digital companies use to do this is to find new ways to address markets that previously seemed too small to be attractive — like serving the unbanked in Africa, now a massive market for mobile banking. Another is shaking up the established order — in 20 years' time the idea of buying a car, filling it with gas, and driving it yourself will probably sound quaint.

Companies that try to ignore this tide of change are likely to find themselves obsolete. But it's not enough to just think ahead now, you have to keep thinking ahead. A business model or customer experience that seems radical today might be the norm in a year's time. Ask Rio — it disrupted the CD market with its MP3 players, but within 10 years smartphones and streaming services wiped out that market.

There is no finish line.

Contents

About our survey[1]

In February 2015 we commissioned Forrester Consulting to study attitudes toward business challenges and transformation. 604 decision-makers at large enterprises and multinationals took part. Respondents came from North America, Latin America, EMEA and Asia Pacific.

It's likely that your competitors have already started implementing their digital strategy — have you?

The technologies changing the world.

All this change isn't without its challenges. Respondents to our survey cited familiar difficulties, including keeping up with the pace of change and attracting and retaining the right talent.

The main obstacles to IT supporting the business

Rate of technology change

44%

Lack of budget

38%

Attracting/retaining talent
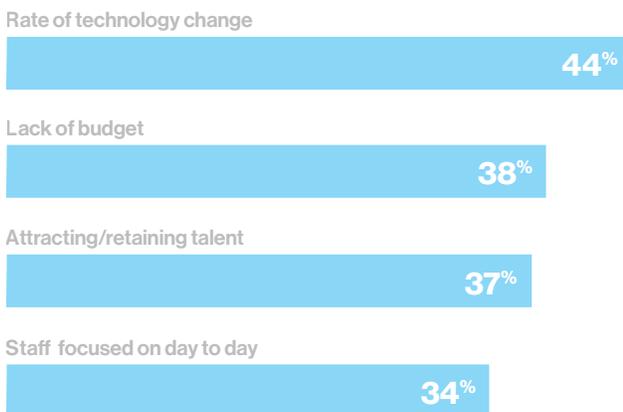
37%

Staff focused on day to day

34%

Figure 2 — Verizon-commissioned study conducted by Forrester Consulting

But most companies are already using many of the five technologies behind digital transformation. The real challenge is finding ways to use them better and connect them to create innovative new products and processes.

Mobile

It's far from new, but mobile continues to evolve and remains a critical platform for the delivery of new services and improvements to employee productivity and satisfaction.

Widespread adoption of laptops, smartphones, tablets and now wearables has opened up all kinds of new possibilities. To today's children making a video call on your watch isn't the stuff of science fiction, it's stuff available in a store — or via m-commerce of course.

The transformative power of providing access to data, people and applications from practically anywhere is far from running out of steam.

65%

said they plan to expand their enterprise mobility services to meet their business priorities[1].

Cloud

Cloud-based services are perhaps the most visible aspect of the digital era so far. Many services that now make up part of our daily lives — Twitter to Dropbox, and Salesforce to SurveyMonkey — rely on cloud. Cloud has changed the economics of launching a new product or service. It's enabled millions of entrepreneurs with ideas to reach millions, or even billions, of users without risking millions of dollars in the process.

The network is integral to delivering the promise of cloud computing

IT Average = 1.1
LOB average = 0.9

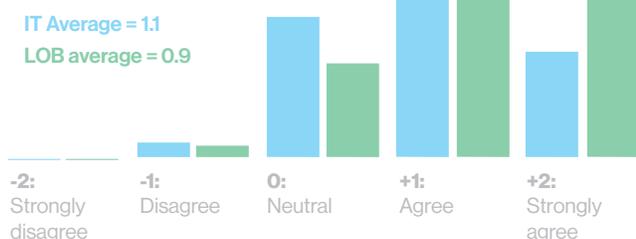| -2: Strongly disagree | -1: Disagree | 0: Neutral | +1: Agree | +2: Strongly agree |

Figure 3 — Verizon-commissioned study conducted by Forrester Consulting

Cloud-based storage and compute enable organizations to deploy and scale applications faster and more efficiently. Our report "State of the Market: Enterprise Cloud 2014"[3] found that the majority of organizations already use cloud, many for mission-critical workloads.

The internet of things (IoT)

We're already surrounded by smart things, from watches to cars. But IoT isn't just about improving the customer experience, many companies have used it to improve processes, and even create new business models.

It might not sound as cool as a smartwatch, but IoT is having a huge impact on the energy market. Smart grid solutions improve the efficiency and robustness of delivery services. And energy data management solutions can cut waste, saving companies with many branches or stores thousands of dollars.
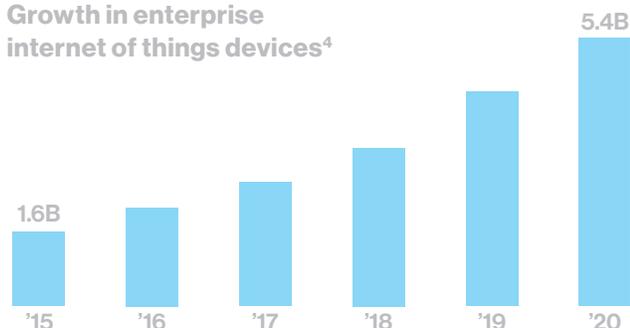
Growth in enterprise internet of things devices[4]

5.4B
1.6B

| '15 | '16 | '17 | '18 | '19 | '20 |

Figure 4 — Verizon "State of the Market: The Internet of Things 2015"

Big data and advanced analytics

The ability to gather and process vast streams of data into actionable insight in near real-time has transformed decision-making. Retailers can understand their customers better and epidemiologists can identify new patterns in diseases and develop better treatments.

Traditional analytics tools relied on proprietary data and testing hypotheses, so you could prove you sold more T-shirts on warm days. Advanced analytics tools can dig into unstructured data, like that from social networks, and tell you that you sell more blue clothes to single 25–34 year-olds the day after the local sports team wins.

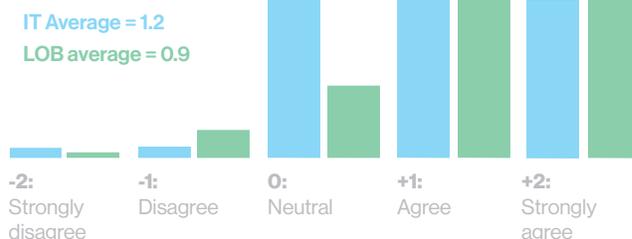**The network is critical to any big data strategy**

IT Average = 1.2
LOB average = 0.9

| -2: Strongly disagree | -1: Disagree | 0: Neutral | +1: Agree | +2: Strongly agree |

Figure 5 — Verizon-commissioned study conducted by Forrester Consulting

Virtual reality and unified communications

Unified communications and collaboration tools have really come of age. You can now initiate a video call on your laptop and transfer it to your mobile phone when you have to leave the office. This isn't just convenient, it's empowering.

The engineer fixing a pipeline can identify the expert they need to speak to and contact them in a few clicks. If the expert is out of the office the system can automatically reroute the call to their other devices. This saves time and can transform productivity.

Collaboration solutions have also played a role in breaking down the barriers between organizations. It's now common to create cross-company teams, bringing together the best people to complete a project.

The people that design a car might work for a company in the US, and those making the car might work for a different company in Italy. And each of them might need to call on the expertise of battery makers and user-interface designers from anywhere in the world.

Immersive virtual worlds are transforming how knowledge is shared and how doctors, architects and other specialists are trained and do their jobs.

The only way to meet the business's need for agility is to ensure that flexibility, scalability and security are at the very foundation of your IT architecture.

The power behind it all: the network.

79%
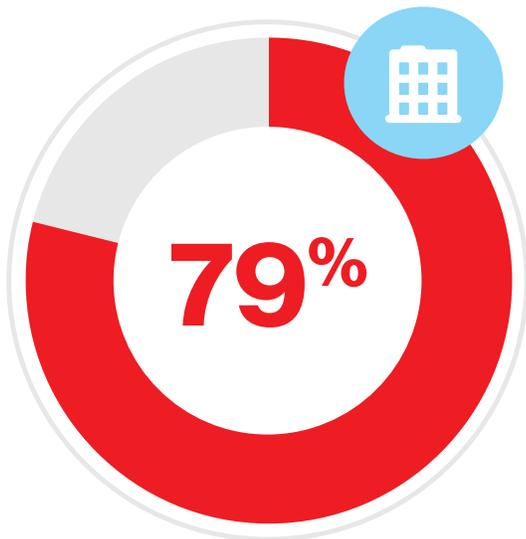
Nearly four-fifths of respondents said it is IT's responsibility to ensure the network can support the company's digital plans[1].

The constant in all this change — the critical foundation that makes it all possible — is the network.

Your business's central nervous system

There are thousands of ways in which every aspect of your business, every employee, every project and customer transaction, and soon nearly every asset your company owns, depends on the network. It's what enables teams to collaborate, data to be shared, processes to run, and informed and timely decisions to be made.

The network's so much more than the LAN in your office and your Wi-Fi at home. It's the hundreds of thousands of miles of copper and fiber that snake under streets and oceans, and the billions of cellular connections between people and things. It's the data centers packed with billions of dollars' worth of switching equipment. And it's the security and intelligence built into the infrastructure and the talents of the people who manage it.

When all this comes together something magical happens; it disappears. Whether it's the app you use to place the order or the enterprise resource planning (ERP) system that coordinates everything, it just works.

Whether it's the command-and-control instructions that keep electricity grids running; access to a patient's records at their bedside; or downloading a report like this one, all digital experiences rely on networks. That's why almost all respondents to our survey said that the network was part of a business's competitive advantage.

The network forms part of the competitive advantage of a connected business

IT Average = 1.1
LOB average = 1.0

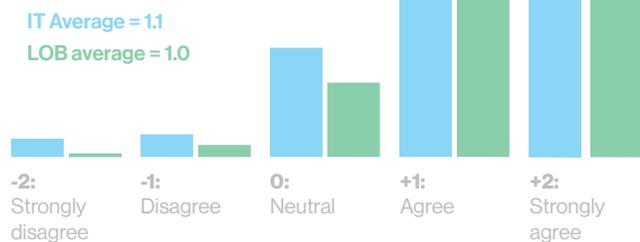| -2: Strongly disagree | -1: Disagree | 0: Neutral | +1: Agree | +2: Strongly agree |

Figure 6 — Verizon-commissioned study conducted by Forrester Consulting

But expectations continue to grow. A few years ago video calls were revolutionary. Now we complain if there's a few milliseconds lag when we stream live video to our phones. We complain about "notspots" and joke about people having "buffer face". But it's no joke to the companies that provide these services — it can cost them millions.

> " For a Fortune 1000 enterprise, an hour of critical application failure costs $500,000 to $1 million[5].

The impact of a network failure on an e-commerce site, call center or stock exchange is obvious. But it can affect just about everybody in any kind of business: the production team that can't make a last-minute update to an order; the paramedic that can't access a patient's records; and the charity that misses out on a Tweet going viral because its website crashes.

44%
Compound annual growth in public IP traffic

2011 2012 2013 2014 2015
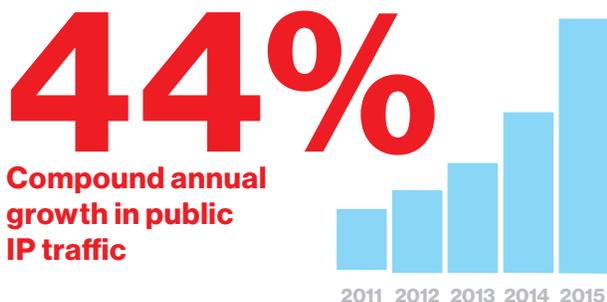
Between January 2011 and January 2015, the public IP traffic carried by Verizon grew 298%. In the twelve months to January 2015 it grew 58%.

Figure 7 — Verizon network data

The need for constant innovation

If things were standing still, just being able to provide a reliable, high-performance connection would be enough. But they aren't.

The rigid, predefined network configurations of the past were fine for companies that changed slowly and had predictable traffic patterns. But change is much faster and less predictable in the digital age, and the business demands a lot more.

Companies need networks that are fit for purpose, and stay fit for purpose even as business needs change over time. This will require networks that are intelligent and able to dynamically reallocate capacity based on business rules; and do so with minimal manual intervention.

Modern technologies like software-defined networking (SDN) can create sophisticated platforms that are application-aware, able to prioritize traffic dynamically based on business rules, and self-healing.

These platforms can unite storage and processing power and enable companies to manage their business without worrying about managing servers and routers. And they can adapt and respond to spikes in demand while still providing value for money.

CIOs need to develop a business-focused network strategy — networking is starting to evolve into a business function[6].

IT is powering a revolution in how companies make money and serve their customers — whether that's consumers, patients, citizens, or other organizations.

Digital should matter to every business leader.

Digital transformation isn't just an issue for IT. And the goal should be much more than just a moderately better P&L next year. It should be to bring about a fundamental change of culture that addresses the three core business imperatives and creates sustainable competitive advantage.

66%

say IT staff should spend time working in the lines of business to understand their needs better[1].

1. Improved customer experiences

Examples of new customer experiences span many industries: retailers rolling out omnichannel strategies and loyalty programs based on insight from big data analytics, banks introducing mobile apps and payment services, and all kinds of companies leveraging social and video channels to offer service and support.

To deliver an outstanding customer experience that differentiates your business, a host of behind-the-scenes processes and systems must all communicate reliably, efficiently, and securely. Not just ERP, CRM, business intelligence tools and supply chain systems, but also partner services — such as payment processing.

Nothing ruins a customer's digital experience quite like a timeout, particularly when everything from their email to their music library is stored in the cloud. In the same vein, the service must scale to meet performance expectations. No matter how much customer demand surges at peak times, delays are unacceptable — when customers have to wait, they churn.

80%

of businesses said the customer experience was a critical or high priority[1].

2. Greater efficiency and growth

When we asked about their top priorities for 2015, 84% of businesses said "growing revenues", 77% cited "improving productivity", and 74% "reducing costs".

Whatever your sector, you have to make sure that all your assets – human and otherwise – perform at their best. Employees need to collaborate with colleagues over the right channels and access data in an instant, without roadblocks created by manual processes and legacy systems. You need to be able to develop, launch and scale new services quickly to seize opportunities in new markets before they evaporate.

88%

49% of businesses have already invested in their network as part of their digital strategy, and a further 39% plan to do so[1].

For most enterprises, IT is only a few percent of total operating costs, and networks only account for a small portion of that. But as demand grows, cost control will become a major consideration. As staff, partners and customers increase their network traffic, and as millions of new connected devices join the network, IT needs to look at ways to reduce the costs of running the network and the human overhead of managing it.

This is all going to require fundamental operational transformation, including the consolidation and simplification of all parts of the IT environment. A unified and standardized operational platform is crucial.

67%

say that legacy network infrastructure is a bottleneck in enterprise IT – in particular, for cloud[1].

3. Stronger security and risk management

Data security might be the first IT risk that springs to mind, but it's not the only one that organizations face. Businesses have moved away from thinking about availability in terms of being able to recover from a single catastrophic disaster – though obviously that's still important. Companies now need infrastructure that can take multiple simultaneous performance-impacting events in its stride. These events might include the malicious, like distributed denial of service (DDoS) attacks; the accidental, like cables being damaged during roadworks; and even the mundane, like unforeseen spikes in demand. The network should be able to not only reroute traffic, but also reprioritize workloads to maintain the performance of the organization's most important processes.

85%

The very top priority for businesses we asked was improving data security. 85% said it was a high priority, with 40% ranking it "critical"[1].

The proliferation of devices used to access company systems and data poses new problems. While IoT devices like smart meters and asset tracking modules are "intelligent" in terms of what they enable, many of the devices are so frugally engineered that there's little room for security to be built in to their embedded OS. The authentication of these devices and securing of the data that they send and receive can be handled by the network. This can free IT to focus on making the most of the information that's gathered.

But the huge expansion of networked devices is an opportunity as much as a problem. For example, using networked IoT devices to provide remote monitoring of assets (from vehicles to stock, staff to buildings) can help organizations tackle theft, loss and damage, and other threats to business operations.

The network is arguably the single most important focus for enterprise technology investments in the next five years.

Start now.

Becoming a truly digital business will take time, but that's all the more reason to start your preparations today. Adopting next-generation networks can help you realize your digital transformation plans and strategic objectives, and it can deliver significant immediate benefits too:

- **Greater business alignment:** this can not only improve efficiency and manageability today, it can help IT become more tuned to the needs of the organization and create a platform for innovation.
- **Greater agility:** this isn't just about being able to reconfigure the network more quickly when needs change, it's about making it so you don't have to manually reconfigure the network at all.
- **Greater availability and security:** the intelligent network can prioritize workflows, reroute around failures, and protect critical traffic against threats.
- **Greater efficiency:** this isn't just about faster switches and cheaper bandwidth, it's about saving staff valuable time on configuration and provisioning.
- **Greater insight:** this goes beyond better dashboards and alerts. It's about network-wide analytics that report on business impact instead of just SLAs.

Our three recommendations

1. Create the right environment.
2. Leverage SDN where it makes sense.
3. Use trusted partners to execute plans.

1. Create the right environment

As we discussed in the "State of the Market: Enterprise Cloud 2014"[7] report, cloud has helped IT get back in the driver's seat. Today many IT functions are delivering the agile services the lines of business want with the governance and security expertise the organization needs. The same opportunity exists in the network space.

The first step is to evaluate your existing technology environment against your critical business goals and strategy and identify areas for improvement.

Understand what the business is trying to achieve: Get to know processes, departments and teams, not just their applications and devices.

Establish a scoring system: Use this to decide where each workload should go as it moves through its lifecycle, based on performance, availability and security needs. Much of this decision-making can then be automated and workloads reassigned/burst into different environments using a hybrid model as demand and pricing change.

Reskill IT: Instead of defining architectures, configuring CPE and placing orders for connections, IT will have to switch to thinking about creating business rules that enable the scalability and adaptability required. It will need to get away from architectures defined by location, department or technology and start thinking about networks, compute, and storage from the point of view of the workflows that they enable.

Go all IP: Make the conversion from legacy TDM infrastructures to IP-enabled architectures. This will reduce the management burden and help prepare the organization for business transformation.

Segment networks: Many companies still routinely fail security and compliance assessments, like PCI DSS. And many companies struggle to consistently deliver the performance required for core apps. These problems are often due to a failure to appropriately segment networks and prioritize traffic. Effective segmentation of infrastructure that carries or stores sensitive information can make it easier (and cheaper) to protect data, help prioritize performance for the applications and data flows that need it, and isolate important traffic from disruption in order to maintain consistent performance.

2. Leverage SDN where it makes sense

Connect multiple clouds: Today's enterprises have multiple cloud providers. For improved manageability and performance you should connect to your own infrastructure. The latest cloud connection services offer secure, private interconnects with on-demand bandwidth and cloud-like usage-based pricing. SDN technologies can give you near real-time visibility and control of each of these interconnects with remote control of configurations through APIs and web portals.

Switch to scalable bandwidth: In the old days, provisioning a new site connection could take months. Activating a new line might take weeks, and you paid a flat amount for the line based on its capacity. With new dynamic connection services you can light up connections and scale their bandwidth practically in real time, and only pay for what you use. So if teams need to work from a new site, or you need to launch a new application, your network won't get in the way, it'll help make it possible.

The network should go beyond connectivity and align with business needs

IT Average = 1.0
LOB average = 0.7

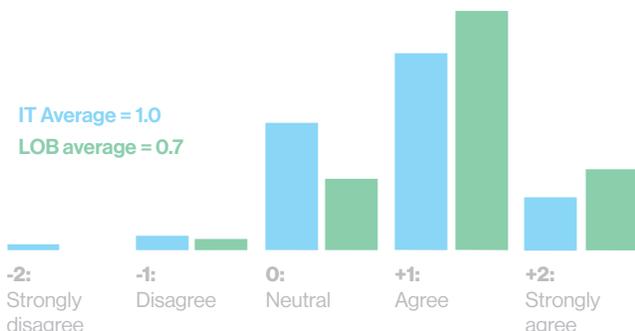| -2: Strongly disagree	-1: Disagree	0: Neutral	+1: Agree	+2: Strongly agree

Figure 8 — Verizon-commissioned study conducted by Forrester Consulting

Simplify your wireless LANs: Instead of manually deploying, configuring and securing individual Wi-Fi hotspots across your campuses, you can now quickly manage and monitor a whole wireless infrastructure remotely. Plug the hardware in and it appears in a cloud-based management portal.

Take control with a hybrid WAN: SDN can give you a unified view of all your WAN technologies, private and public, as a single service: what's known as hybrid WAN. Intelligence built into the network will route traffic based on performance, sensitivity and availability requirements. Security and governance can be managed centrally, with service functions deployed in near real-time.

Use CDNs to improve the user experience: SDN-enabled content delivery networks (CDNs) are useful for a lot more than delivering high-quality video. PCI-DSS-compliant CDNs offer a powerful way to speed up transactions securely.

3. Use trusted partners to execute plans

The challenges to achieving all the things that we've discussed in this paper are familiar — lack of budget and time, and keeping pace with the rate of change.

48%

Almost half identified the need to implement a cross-company group to align IT and business priorities[1].

Managed service providers like Verizon can help. We can provide specialist skills and knowledge, augment internal capacity, and free-up the internal team to focus on governance and monitoring how well the network aligns to business needs. We've been doing it for over 20 years.

To find out more about our vision for the network and how we're bringing it to life for our customers, visit:

verizonenterprise.com/ digitaltransformation

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2   "The third great wave", A Special Report on The World Economy © The Economist Newspaper Limited, London (October 2014).

3   Verizon, State of the Market: Enterprise Cloud 2014, October 2014.

4   Verizon, State of the Market: The Internet of Things 2015, February 2015.

5   IDC, DevOps and the Cost of Downtime: Fortune 1000 Best Practice Metrics Quantified, Doc 253155, December 2014.

6   Forrester Research, The Enterprise Network Enables Business Innovation, July 2014.

7   Verizon, State of the Market: Enterprise Cloud 2014, October 2014.

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