Is Your Network Ready for Digital Transformation?

IDC White Paper | *Sponsored by Cisco*

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EXECUTIVE SUMMARY

IT Leaders Must Embrace Digital Transformation

Across industries around the world, digital transformation (DX) is changing the way organizations of all sizes do business. Harnessing the power of the 3rd Platform (cloud, mobility, social business, and big data and analytics), organizations leverage new digital competencies to transform every step of the value chain. This leads to the creation of new revenue streams, the elimination of inefficient and redundant processes, and a shift away from repetitive day-to-day tasks to more strategic, future-looking work. For organizations to remain competitive in this quickly unfolding digital era and beyond, IT must embrace digital transformation and the requisite infrastructure needed to achieve it.

The Network Is a Key Enabler of Digital Transformation

Outdated infrastructure characteristics such as manual configuration and management processes, overlay security geared mainly toward external threats, and siloed network domains hinder the network's ability to further the goals of digital business. For IT staff, valuable time is spent "keeping the lights on" instead of aligning network capabilities with strategic initiatives that improve operational efficiency and enhance customer experience. A network that is truly digital ready is a network that can dynamically align with the ever-changing needs of the enterprise. That means a network that allows more agility and faster time to innovation, better security, and greater operational efficiency and simplicity.

IT Leaders Should Map Out Their Journey to a Digital-Ready Network

Cisco worked with IDC to develop a five-stage Digital Network Readiness Model (www.cisco.com/go/dnaadvisor) to help organizations envision a clearer path to a network that can support all their digital aspirations. With the emergence of

For organizations to remain competitive in this quickly unfolding digital era and beyond, IT must embrace digital transformation and the requisite infrastructure needed to achieve it.

On average, IDC's research shows that interviewed organizations have been able to translate their digital network initiatives into significant financial value, achieving $188,000–$745,000 per 100 users per year.

technologies such as software-defined networking (SDN), programmable open interfaces, virtualization, cloud, and analytics, the model provides a framework to start from. It also enables organizations to gain visibility into the opportunities and benefits associated with evolving from one stage to the next. IDC surveyed 2,054 global respondents to establish current rates of network readiness across five core digital network categories. In addition, IDC interviewed 25 organizations to learn how adoption of more advanced network capabilities is driving business benefits. These benefits include cost savings, productivity increases, and reduced time to new business initiatives in a dynamically secure environment.

Organizations need to act quickly to ensure digital readiness for their networks. Leading organizations across all industries and geographies recognize the importance of the network in driving improved business outcomes and are already acting. All IT leaders must recognize that a network capable of supporting emerging digital initiatives is a fundamental element of business success, without which their organizations risk being left behind.

Digital-Ready Networks Yield Benefits

» Only one in five organizations has aligned its network strategies with its DX strategies today. However, organizations with highly aligned strategies have more than double the rate of revenue growth, customer retention, and profit growth relative to companies with only partial or no alignment.

» Organizations at more advanced stages of network readiness perform significantly better on each of these same key business metrics than organizations with less advanced networks.

» Organizations around the world have strong ambitions to adopt more mature, automated, and self-driving network capabilities over the next two years. In fact, 45% of large and midsize organizations worldwide plan to achieve advanced network readiness within two years — just over three times current network readiness levels.

» Organizations with more mature networks are deploying almost twice as many digital capabilities as those with less mature networks.

» Organizations are able to improve their security and risk mitigation with digital-ready networks, resulting in significant revenue growth and cost reductions. *

» On average, IDC's research shows that interviewed organizations have been able to translate their digital network initiatives into significant financial value, achieving $188,000–$745,000 per 100 users per year.*

Moving from one stage of network readiness to the next results in reduced network infrastructure costs of

$24,200 to $38,300 per 100 users per year*

Source: IDC White Paper: Why a Digital-Ready Network Makes Business Sense (#US42176917, January 2017)

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The Urgency for Network Transformation

Digital Transformation Is a Business Strategy — Requiring Strong IT Partnership

Simply put, DX is the approach by which enterprises drive changes in their business models and ecosystems by leveraging digital competencies.
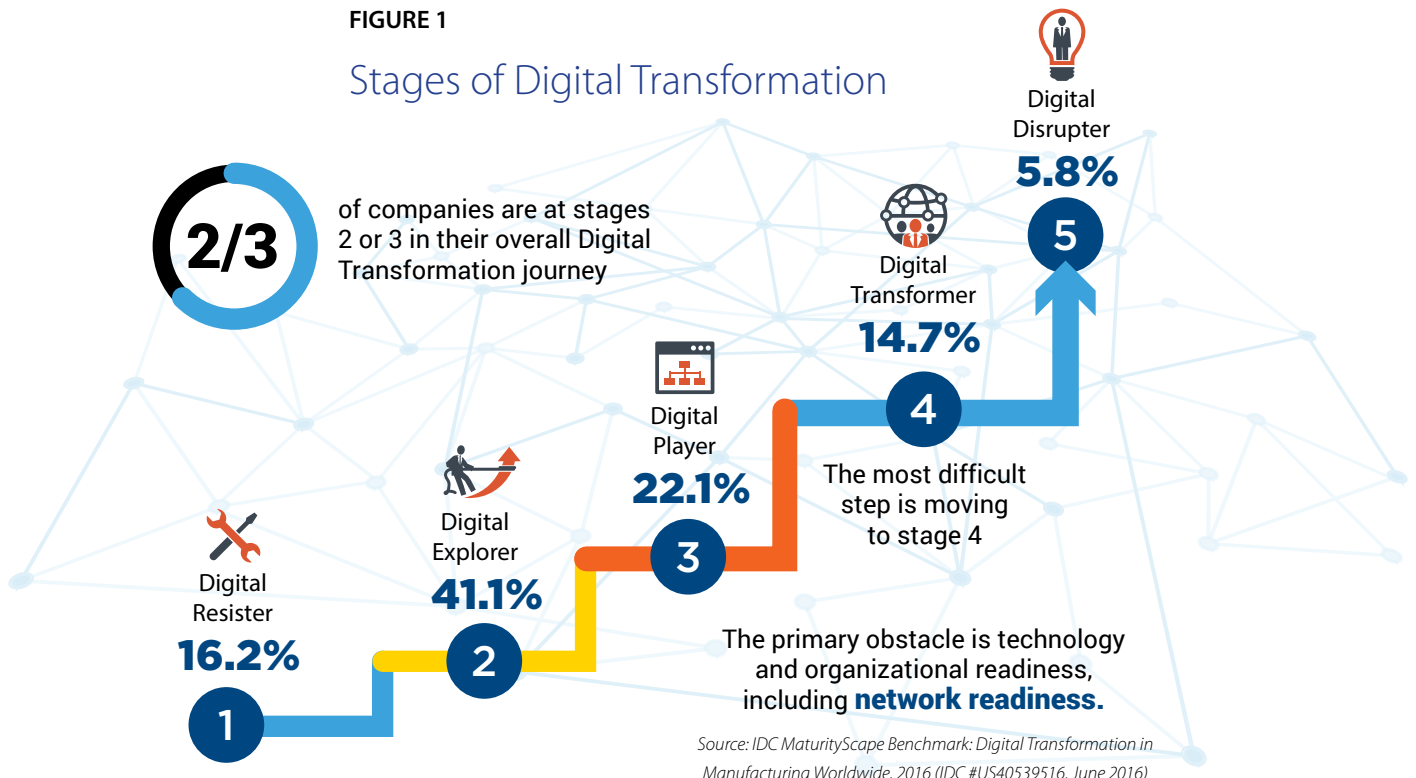
While organizations are leveraging new digital competencies to revolutionize product and service delivery, it is important to remember that digital transformation is not a technology initiative but a business strategy. CEOs understand that digital transformation represents the potential for real growth by fundamentally changing the customer experience. One can see it in numerous CEO statements. Perhaps the most succinct declaration comes from the CEO of Citi: "We are no longer a bank but a technology company in the financial services industry." There are variations on that theme from CEOs of organizations of all sizes and in all industries who are changing their business models to capture this opportunity.

We're entering an era where the technologies and processes that businesses deploy are so tightly linked to their customers and markets that the boundary between the internal operations of the enterprise and its external ecosystem (e.g., customers, markets, competitors, partners, and regulators) is rapidly disappearing. Business leaders are challenged to move their enterprises to the next level, that of digital business transformation, employing digital technologies coupled with organizational, operational, and business model innovation to create new ways of operating and growing businesses.

FIGURE 1

Stages of Digital Transformation

2/3 of companies are at stages 2 or 3 in their overall Digital Transformation journey

Digital Disrupter
5.8%
5

Digital Transformer
14.7%
4

The most difficult step is moving to stage 4

Digital Player
22.1%
3

The primary obstacle is technology and organizational readiness, including **network readiness.**

Digital Explorer
41.1%
2

Digital Resister
16.2%
1

Source: IDC MaturityScape Benchmark: Digital Transformation in Manufacturing Worldwide, 2016 (IDC #US40539516, June 2016)

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Deploying a digital-ready network will probably prove to be the most critical element for an organization's successful digital transformation.

Simply put, digital transformation is the approach by which enterprises drive changes in their business models and ecosystems by leveraging digital competencies.

The first step for any company should be to assess where it is in the digital transformation journey. To assist with that process, IDC has built a multitier DX maturity evaluation tool that includes five stages of maturity and enables organizations to benchmark themselves against the maturity of 1,600 other organizations worldwide. This IDC MaturityScape Benchmark research on digital transformation finds that most companies (63%) are at either stage 2 or stage 3 of a possible 5 stages, indicating that the investment has started but is still in the early stage.

One important finding from the IDC research is that the most difficult step is going from stage 2 or stage 3 to stage 4 (see Figure 1 previous page). A significant amount of organizational and technological readiness has to be in place to proceed to stage 4. For business leaders to succeed with DX, IT must deliver the infrastructure (across compute, storage, and network) and services required to be fast, secure, and cost effective. In the transition to DX, enterprise IT possesses the opportunity to assert itself as the key enabler, bringing about a new era where IT is seen as more of a strategic business partner rather than a supporting function.

Although digital transformation isn't purely a technology initiative, the new business models will be underpinned by technologies such as cloud, mobile, social, and big data and analytics — what IDC collectively refers to as the 3rd Platform.

To a large extent, over the past five years, compute and datacenter infrastructure has taken the lead in adopting faster, more agile and automated approaches to supporting digital transformation with private, public, and hybrid cloud strategies. In many cases, network transformation has been left behind, leaving it as a vulnerability and constraint to many organizations' digital initiatives. At the same time, deploying a digital-ready network will probably prove to be the most critical element for an organization's successful digital transformation.

For business leaders to succeed with DX, IT must deliver the infrastructure (across compute, storage, and network) and services required to be fast, secure, and cost effective.

Network Transformation for Digital Success

Growing Network Demands

Most of today's networks were designed to provide fast, reliable connectivity but not to meet the new demands that digital transformation will inevitably make on them. These fast-emerging demands include the following elements:

» **Scale:** The investment in digital platforms will form the basis of delivering new customer experiences and optimized operating models. With investments in technologies such as mobile and Internet of Things (IoT), which are substantial components of these platforms, networks will be made up of 10 to 100 times more endpoints. Securely connecting these massively distributed networks will require advances not readily available in current network deployments.

» **Speed:** Organizations with digital initiatives need to move fast. Change is the new normal. New innovative applications, services, and business processes need an IT infrastructure that can keep up. Most organizations' networks have not been built to cope with this constant need to support change and ensure continuous service assurance throughout.

» **Cloud:** The modernization of existing critical business systems will involve the migration of those applications to a hybrid cloud deployment model. This transition puts renewed emphasis on the network — not just to ensure performance from site to site, as important as that is, but also to ensure that the performance of specific applications is reliable and satisfactory for the end user.

» **Simplicity:** The increase in the number and diversity of devices and applications drives complexity that can overwhelm network resources. Without a way to simplify and automate network operations and life-cycle management, network teams will be fully occupied with just keeping the lights on rather than providing innovative support for new IT and business capabilities.

» **Security:** Adoption of digital initiatives that rely on technologies such as mobile, cloud, and IoT opens up new threats and opportunities for attack. A digital-ready network must be the first line of defense and provide a unique platform for rapid detection and response to threats.

Most of today's networks were designed to provide fast, reliable connectivity but not to meet the new demands that digital transformation will inevitably make on them.

» **Digital business models:** Industry clouds, such as GE Predix for asset-intensive industries or Optum One in healthcare, will represent a key channel to market for companies' digital offerings as companies seek to monetize the information that flows through their digital platforms. Think about our old economy and how important a nation's highway infrastructure was to deliver physical goods. In the digital economy, the network becomes the equivalent of that interstate highway system, and an outage means lost revenue.

All of these factors mean that your network needs to be well aligned with your organization's business intent. It needs to be in tune with what the business needs and be able to quickly respond to business policies.

In fact, far from being the weak link in the IT infrastructure, the network actually has the opportunity to transform into the most valuable piece of the IT puzzle for DX. The communications and data benefits inherent in next-generation enterprise technologies mean little without a network to connect stakeholders to these benefits.

Road Map for Digital Network Readiness

Creating a Framework for Digital Network Readiness

It's clear that the network is an important underpinning of DX success, but where should you begin? Previously, we outlined the breadth of impact the digital network will have on your organization. In this section, we help you break into stages the seemingly complex task of implementing a digital network via a road map. We identify stages, discrete network capabilities, and current market adoption to help you see and tailor the path forward for your own situation.
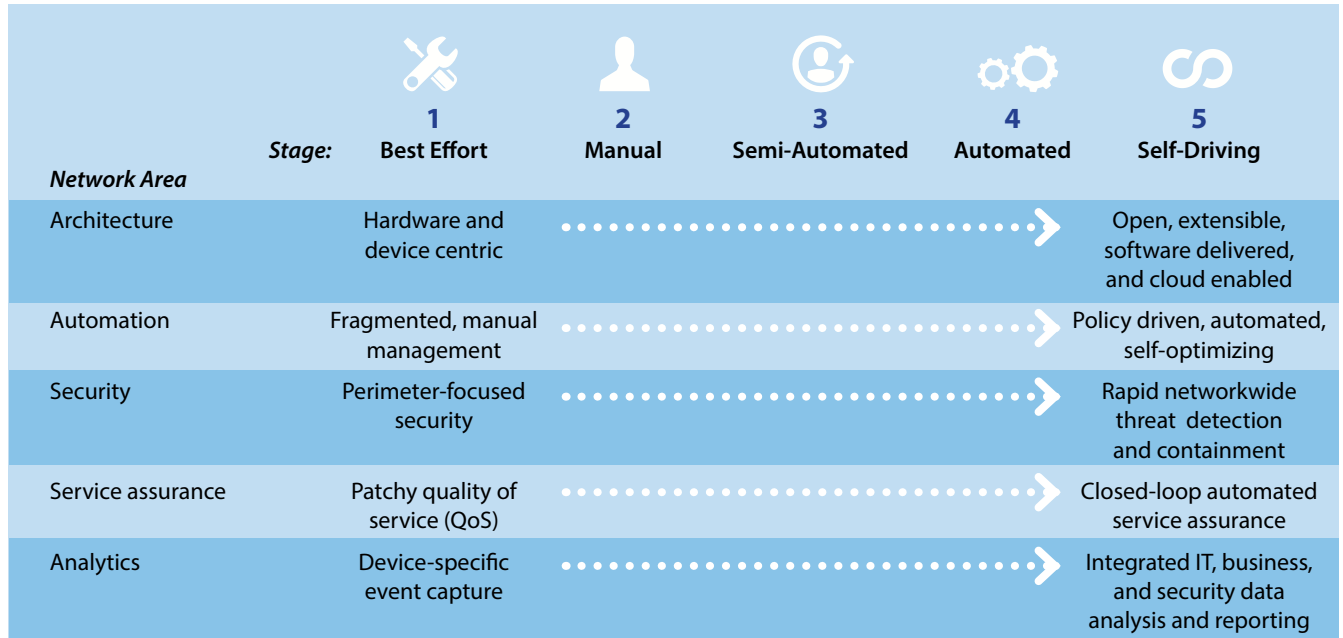
Cisco network experts and thought leaders worked closely with IDC to build the Cisco Digital Network Readiness Model (www.cisco.com/go/dnaadvisor). This model aims to help your network planners and architects gain a clearer picture of where you are on the journey to a network that rises to the aforementioned DX challenges. It also helps your IT leaders and business leaders synchronize the network road map with business priorities — and achieve that much-needed alignment. The model framework is based on a five-stage maturity standard used in IDC MaturityScape research and broadly utilized in business and IT consulting communities. Cisco and IDC created a network-specific taxonomy and identified meaningful stages that can help you identify how mature your network is today, what steps are needed to move to more advanced stages, and how you rate relative to your peers. The five stages of network maturity begin with a "best effort" network and end with the vision of a network that continuously and automatically adapts to the changing needs of digital business (e.g., "self-driving") (see Figure 2).

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As you move through each of the stages of the readiness model, there is the opportunity to benefit on multiple fronts. These are mainly focused around agility and igniting faster innovation, lowering security risks, and reducing cost and complexity.

FIGURE 2

Cisco Digital Network Readiness Model

Network Area	Stage:	1 Best Effort	2 Manual	3 Semi-Automated	4 Automated	5 Self-Driving
Architecture		Hardware and device centric				Open, extensible, software delivered, and cloud enabled
Automation		Fragmented, manual management				Policy driven, automated, self-optimizing
Security		Perimeter-focused security				Rapid networkwide threat detection and containment
Service assurance		Patchy quality of service (QoS)				Closed-loop automated service assurance
Analytics		Device-specific event capture				Integrated IT, business, and security data analysis and reporting

Source: www.cisco.com/go/dnaadvisor

Five core areas of network capabilities contribute to increasing digital network readiness at each stage:

» **Network architecture strategy.** An overarching strategy that defines the approaches to enhancing the network's architecture, management, life cycle, governance, and compliance at every stage

» **Network automation.** The ability to simplify IT operations networkwide and respond more quickly to new service requirements and conditions

» **Network security.** The ability to reduce risk and meet compliance requirements by enforcing policy and quickly identifying and responding to threats through security capabilities that are embedded networkwide

» **Network-enabled service assurance.** The ability to continuously align quality of experience for the growing myriad of applications with the organization's explicit and implied business intent

» **Network-enabled analytics.** The ability to leverage the network as a powerful platform for valuable business, information technology, security, and operational technology (OT) insight

Advancement in each of these categories is essential to driving toward the goal of a more automated and self-optimizing network. For example, without advanced network-enabled analytics, you don't know the current state and can't predict the future state. And without network automation, even if the analytics tells you there's a problem, you won't be able to do much about it.

## How Mature Are Global Networks Today?

IDC's Digital Network Readiness Survey Results

IDC used the Cisco Digital Network Readiness Model as a framework to quantify how mature networks around the globe are today. IDC surveyed 2,054 enterprise network decision makers across 4 regions (NA, EMEA, Latin America, AP) and 10 countries (United States, Canada, Germany, United Kingdom, France, Australia, India, China, Japan, Mexico), measuring network readiness across the 5 network capabilities and 19 network sub-capabilities (see Appendix for list of all 19 sub-capabilities). Respondents were provided definitions and examples for each network area and capability across all five stages of readiness and were asked to rate their readiness on a five-point scale. The respondents provided insight about both their current network readiness and what improvements they plan to make over the next two years.

While surveyed organizations ran the gamut in terms of network readiness level, IDC found strong intent across all regions to migrate to more advanced networks. For example, the majority (63%) of respondents indicate that their networks are in the best effort or manual stages (stages 1 and 2 of the readiness model) today. However, those in stage 1 and stage 2 are projected to be a shrinking minority of organizations (only 32%) two years from now. Organizations that have not at least started down the path of automation within two years will lag behind their peers. Likewise, 14% of respondents believe that they already have automated or self-driving networks (stages 4 and 5) today, but 45% of global respondents project having automated or self-driving networks — an increase of over 3x (see Figure 3) — two years from now. This indicates a healthy appetite to adopt emerging network technologies to keep up with the speed of business change.

While the majority (63%) of respondents are in stage 1 and stage 2 today, two years from now, those in stage 1 and stage 2 are projected to be a shrinking minority of organizations (32%). Organizations that have not at least started down the path of automation in two years will lag behind their peers.

FIGURE 3

Global Network Maturity Levels: Today and in Two Years
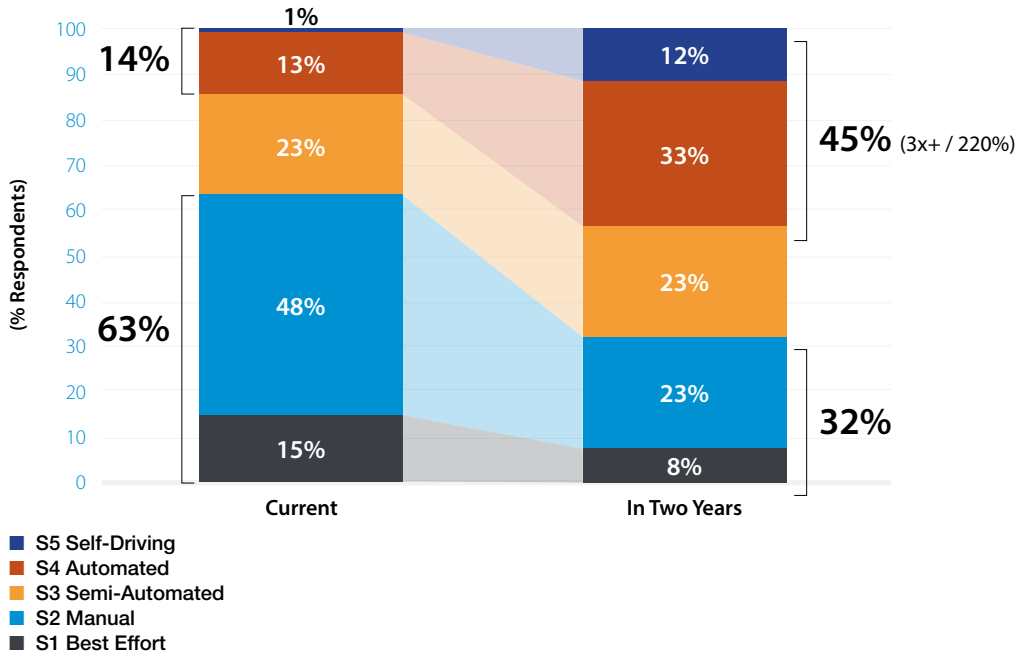
 n = 2,054

Source: Digital Network Readiness Survey, May, 2016

Intent to Increase Network Readiness Is Widespread

The intent to increase network readiness is widespread. It holds true across each of the five network areas — architecture, security, automation, analytics, and service assurance — and it is reflected across key segments and geographies analyzed (see Figure 4):

» Both midsize organizations (500-999 employees) and larger organizations (1,000+ employees) show similar intent to ready their networks.

» While absolute levels vary across geographies, all geographies surveyed express significant intent to migrate to more mature network architectures to meet the demands of DX in the next two years.

» More developed regions (e.g., the United States, the United Kingdom, Australia) report higher levels of readiness today, but less developed regions (e.g., China and Mexico) show stronger intent to grow over the next two years.

» The most significant growth in readiness over the next two years is expected in Western Europe, India, China, and Mexico.

» Global respondents report strong intent to increase readiness across all 19 networking capabilities.
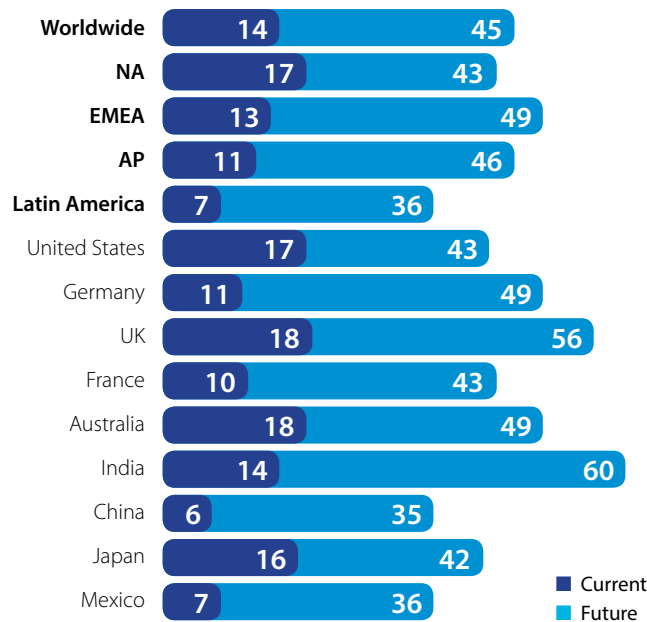
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IDC predicts it will become easier and faster to deploy next-generation networks in the near term, enabling organizations worldwide and their IT departments to adopt a more forward-looking stance in further developing their network in the next two years. Adopting more advanced network capabilities has moved from aspiration to near-term reality.

FIGURE 4

Regional and Country-Level Maturity – Today and in Two Years

% of Organizations at Network Readiness Stages 4 and 5

Region/Country	Current	Future
Worldwide	14	45
NA	17	43
EMEA	13	49
AP	11	46
Latin America	7	36
United States	17	43
Germany	11	49
UK	18	56
France	10	43
Australia	18	49
India	14	60
China	6	35
Japan	16	42
Mexico	7	36

■ Current
■ Future

(% of Respondents)

n = 2,054
Source: IDC's Digital Network Readiness Survey, May 2016

For the 14% of organizations reporting strong network readiness today (stage 4 and stage 5), IDC hypothesizes that they are considering where they stand in relation to what has traditionally been considered "leading edge" network infrastructure as opposed to the advanced software-delivered approach to networking that the digital readiness model represents. This finding suggests that there is a need for additional communication and education regarding the resources (e.g., people, process, and technology) required to deliver on a network in the automated (stage 4) or self-driving (stage 5) readiness stages.

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Evolving the Network To Meet The Demands of DX Yields Benefits

Network Readiness Yields Stronger Growth Across Key Business Metrics

The strong motivation shown by many organizations to adopt a more digital-ready network can be justified by the associated business benefits of a more business-aligned and mature network. This is clearly illustrated by IDC data.

Consider the following:

» Only 22% of surveyed organizations (one in five) demonstrate "a lot of" alignment or full alignment between network strategies and DX strategies today. However, organizations with strategies that are strongly aligned have more than double the rate of revenue growth, customer retention, and profit growth relative to companies with only partial or no alignment (see Figure 5).

» Organizations that report stronger digital network readiness today (14%) also report stronger performance across these same business metrics.

» Implications: There is significant upside potential across revenue, profit, customer retention, and productivity growth for the 63% of organizations that see their networks in the "best effort" or "manual" stages.

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FIGURE 5

Strategy Alignment and Network Readiness Drive Stronger Growth in Key Business Metrics

Q. On average, how has your organization's [metric] changed over the past two years?

Strong Alignment Between DX and Networking Strategies Drives Stronger Growth in Key Business Metrics
(% growth)

Business Metric	Little Alignment	Strong Alignment	Orgs with Strong vs. Little Alignment Show Stronger Growth
Revenue	4.2%	9.9%	2.4x
Profit	3.4%	7.7%	2.3x
Customer Retention	2.9%	7.5%	2.6x
Productivity	4.9%	7.9%	1.6x

Little Alignment n=362; Strong Alignment (A Lot + Fully integrated) n=515

Stronger Network Maturity Drives Stronger Growth in Key Business Metrics
(% growth)

Business Metric	Best Effort	Automated/ Self-Driving	Orgs with More Mature Networks Show Stronger Growth
Revenue	4.6%	10.8%	2.4x
Profit	2.7%	8.3%	3.0x
Customer Retention	2.0%	10.5%	5.3x
Productivity	3.6%	9.3%	2.6x

Best Effort (S1) n=300; Automated/Self Driving (S4+5) n=291

Source: IDC's Digital Network Readiness Survey, May 2016; Total n=2,054

Network Readiness Supports Faster Adoption of Digital Capabilities

The purpose of a digital-ready network is to create a network capable of supporting an organization's digital capabilities through the deployment of a set of digital initiatives. These digital capabilities can extend from enabling improved customer experiences and workforce experiences to enabling more efficient business operations. They can be aligned with
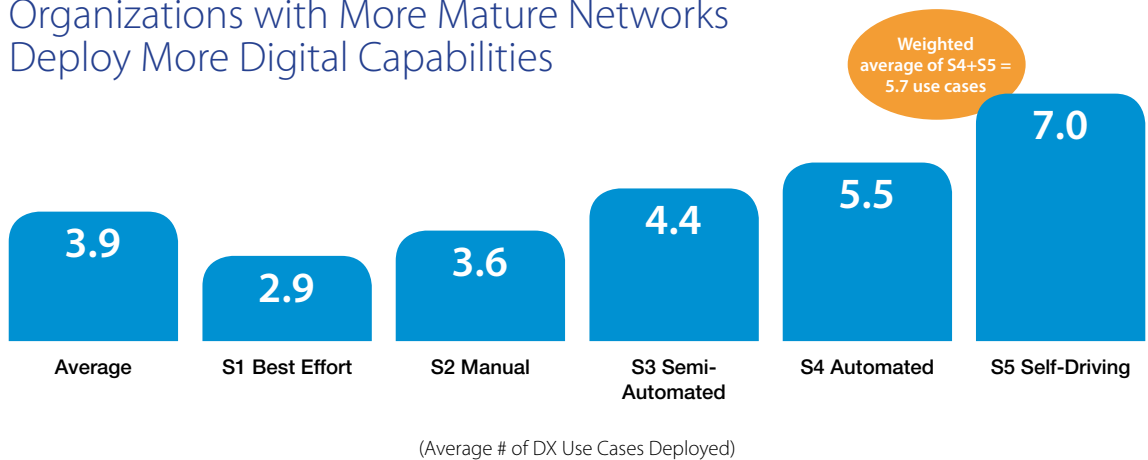
cross-industry capabilities and industry-specific capabilities. Cross-industry capabilities would be relevant across multiple types of organizations (e.g., connected physical security, visitor/guest mobile access, digital ceiling, or digital signage). Meanwhile industry-specific capabilities would be more aligned with the business requirements of a specific segment such as retail, banking, and manufacturing. Please see the Appendix for adoption levels of cross-industry and industry-specific digital capabilities.

IDC data shows that organizations that are in more advanced stages of network readiness also have a greater number of digital capabilities adopted across all industries. This would suggest that to support these digital use cases, organizations have proceeded to make their networks more digital ready (see Figure 6).

FIGURE 6

Organizations with More Mature Networks Deploy More Digital Capabilities

Weighted average of S4+S5 = 5.7 use cases

Average	S1 Best Effort	S2 Manual	S3 Semi-Automated	S4 Automated	S5 Self-Driving
3.9	2.9	3.6	4.4	5.5	7.0

(Average # of DX Use Cases Deployed)

n = 2,054
Source: IDC's Digital Network Readiness Survey, May 2016

The Business Case For A Digital-Ready Network

Customer Interviews Uncover and Quantify Additional Points of Business Value

The global survey quantified current maturity levels and "bigger picture" benefits such as improved growth rates across key business metrics and digital capability adoption. To gain deeper-level insight and further develop the business case for a digital-ready network, IDC conducted in-depth interviews with 25 large and midsize organizations, concerning early-

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Many organizations are realizing millions of dollars in annual benefits — in both revenue and cost savings — as a result of making their networks more digital ready.
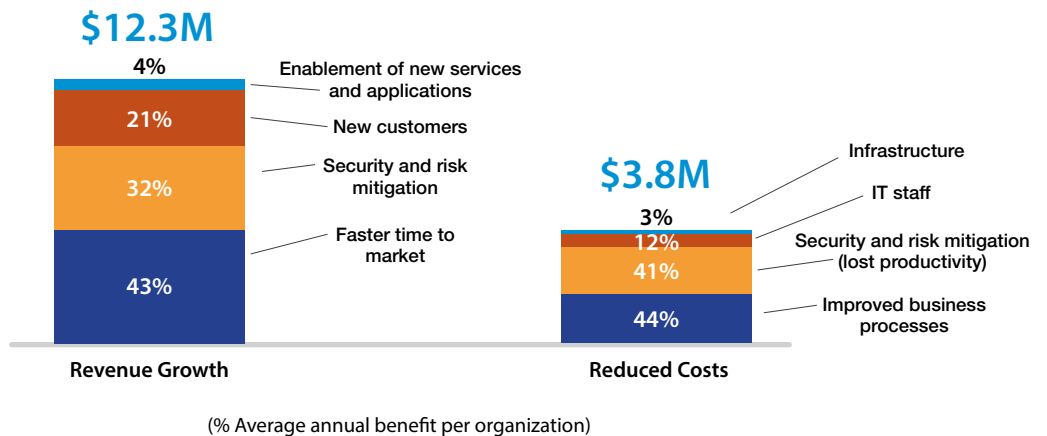
stage digital network transformation efforts. In these interviews, the organizations indicated a range of additional realized and potential positive business outcomes. On a high level, there was consensus that digital-ready networking solutions improved network efficiency and reliability, providing greater confidence to implement innovative business strategies and expansion plans.

Many organizations are realizing millions of dollars in annual benefits — in both revenue and cost savings — as a result of making their networks more digital ready. The organizations interviewed were able to realize significant benefits at the top and the bottom of the income statement: adding on average $12.3 million in new revenue to the top and reducing costs by $3.8 million, including reducing IT staff, risk mitigation, and business process costs — totaling $16 million in business value (see Figure 7). The bulk of revenue generation can be traced to faster time to market, while the bulk of cost savings is attributed to improved business processes.

These organizations are achieving benefits of $188,000 to $745,000 per 100 users per year.

FIGURE 7

Stronger Digital Network Readiness Leads to Millions of Dollars in Benefits

$12.3M

4%	Enablement of new services and applications
21%	New customers
32%	Security and risk mitigation
43%	Faster time to market

Revenue Growth

$3.8M

3%	Infrastructure
12%	IT staff
41%	Security and risk mitigation (lost productivity)
44%	Improved business processes

Reduced Costs

(% Average annual benefit per organization)

Source: IDC's Digital Network Business Value Research, 2016.
For more details, please see the IDC White Paper: Why a Digital-Ready Network Makes Business Sense (#US42176917, January 2017)

Digital Network Essential Guidance

Where Do You Begin?

There are many emerging network innovations that will carry enterprises into the future. Enterprise networks today are often hardware and device centric and largely configured manually or have only some basic configuration automation capabilities. This feeds into the "keeping the lights on" problem; networking staff devotes considerable time to these manual tasks related to basic connectivity and security. However, the advent of more software-centric architectures that take advantage of advances like programmable network devices, network controllers, virtualization, and real-time analytics with true networkwide automation is changing today's reality.

Start by assessing your current digital network readiness. Is your current network best described by early-stage or advanced-stage capabilities? After you have assessed your current network state across each of the five core network categories and 19 sub-categories, identify the priority areas that need improvement. It is important to remember that network priorities will need to be developed in concert with your business leaders to ensure that the network evolves in alignment with the specific digital capabilities the business is mapping out for the organization (see Table 1 on next page).

Network requirements may vary across digital capabilities. For example:

» In manufacturing and logistics, the network can digitize supply chain operations through next-generation mobility, unified communications and collaboration, and emerging IoT capabilities.

» Public-facing verticals such as retail, banking, and hospitality can use a DX-enabled network to build a truly omni-channel experience, bringing to life mobile applications and location-based services that provide enhanced customer engagement.

» In healthcare, digital network transformation is poised to play a critical role in the improvement of healthcare systems, underpinning electronic health records, telehealth, and patient telemetry initiatives.

Within each industry, a myriad of innovations can be brought about by digital network transformation. This will require strong collaboration between IT and business leaders to make sure the network is well aligned with the digital transformation strategy under way.

After you have assessed your current network state across each of the five core network categories, identify the priority areas that need improvement.

TABLE 1

Evolution to Digital-Ready Networks

Network Capability	Stages 1 and 2 of Digital Readiness	Stages 4 and 5 of Digital Readiness	Essential Guidance
General	Limited, manual alignment between network and business intent.	Continuous, automated alignment between network and business intent.	Work with business leaders to understand the key digital initiatives and their associated policy requirements such as application experience and service levels, security, compliance, and IT operations.
Network architecture	Rigid, hardware-driven, and device-centric architectures that must be updated manually.	Software-centric architecture that provides greater flexibility and speed with reduced complexity through abstraction, virtualization, and programmability.	Prioritize specific network domains to adopt software-centric approaches that provide greater levels of speed and simplicity. Deploy software-defined networking, virtualization, and cloud-delivered services to one or more network domains (e.g., WAN, access, QoS, security).
Network automation	Automation is limited to certain one-off device-specific use cases; networking staff spends much of its time "keeping the lights on."	Automation capabilities will grow throughout the network to enable continuous alignment with business policies. Networking staff will focus substantially more resources on becoming a strategic partner for business initiatives.	Prioritize the areas of the network that can most benefit from software-defined networking, using on-premise or cloud-based controllers for automated provisioning and management. This will lead you toward the delivery of secure, scalable, and consistent day zero and day one provisioning for specific device groups. It accelerates error-free provisioning of device image and initial and advanced services configuration automatically from private or public cloud via network controller.
Network security	Complex ecosystem of disparate tools that must be patched and updated manually. Not designed for complex ecosystem of private, public, and hybrid cloud applications. Focuses primarily on external threats.	Natively integrated into the network architecture with automated real-time remediation, self-healing, and self-updating. Able to address threats from the inside out across both enterprise and public cloud networks and services.	Leverage the network's unique visibility into all connected devices, applications, and traffic to quickly identify and respond to threats emanating from within and outside the organization's network boundaries. A digitally transformed network utilizes inside-out security and software-defined segmentation that is foundationally integrated into the network infrastructure.
Network-enabled service assurance	Patchy configuration and monitoring of quality of service across network elements to support application user experience. Does not use unifying policies to simplify and automate service assurance for all application types including rich media, cloud, IoT, and mobile.	Policies are implemented in a standardized way throughout the network. Automation and analytics work in tandem to support autonomous policy-based service assurance.	To support application service levels across the network, look at how you can automate quality of service for all application types across the network. Consider software-defined quality of experience (QoE) and a network controller-based system to better align networkwide behavior with business-level policies and intent.
Network-enabled analytics	Limited or no ability to glean actionable data collected through the network. Data collection and analysis is device centric, manual, and not real time.	Real-time and predictive network-enabled analytics provide valuable insights to help deliver continuous service assurance, protection, and business differentiation.	Look for ways to take better advantage of the network's access to the large amounts of valuable, contextual data about users, devices, applications, locations, and more. The network can deliver this value to the business, IT, security, and operations to help optimize and secure both IT and business operations.

Source: Cisco Digital Network Readiness Model

You can find out where your network stands in terms of digital readiness using resources provided at www.cisco.com/go/dnaadvisor *.*

Challenges/Opportunities

Organizational Concerns

Paradigm shifts within IT can be difficult both for the IT department itself and for related business stakeholders. IT staff can have trouble adjusting to new ways of deploying and managing infrastructure, the lines of business may be reluctant to learn and embrace new tools, and organizational gatekeepers may not immediately connect the dots between a digital-ready network infrastructure and higher-level business objectives. Digital network readiness represents a major shift in thinking with regard to all of these attributes. Advocates for the digital-ready network need to recruit allies within each stakeholder group to demonstrate the benefits of software-defined networks, virtualization, automation, analytics, and the resulting synergy between network and business objectives.

Security Concerns

Moving to an architecture that is heavily based on software-defined networks, cloud, and virtualization raises some alarms for many IT traditionalists. Concerns about data privacy and security and the need to defend the network against external threats have long been at the center of many conversations about moving to a next-generation network architecture. These concerns can largely be addressed through the advanced security and compliance capabilities that can be embedded in the network, as well as the ability to automate security and access policy enforcement. However, skepticism around these areas is high in some organizations and industries, and the case for a private, public, and hybrid cloud and/or a virtualization-enabled architecture may have to be made in steps.

Opportunities

IDC advises digital network readiness advocates to focus on the opportunities for each group: For IT, highlight the ability to spend less time on reactive troubleshooting, maintenance, and manual tasks and more time on creating business-driving opportunities for employees and customers on the network. For line-of-business stakeholders, focus on the transformative DX tools and applications that a digitally ready network enables. For organizational gatekeepers, highlight the results of peer organizations and internal pilots and the resulting cost savings and revenue impact, where applicable.

Digital network readiness represents a major shift in thinking with regard to all of these attributes.

Conclusion

IT has the opportunity to completely redefine the role networking plays in the business. But that requires executing on a vision that continuously aligns the network to ever-changing business needs. Fortunately, the right network architectures and supporting technologies required to deliver on that vision are rapidly becoming available. Automation, programmability, self-protecting, and self-healing capabilities move IT away from "keeping the lights on" and provide more time and opportunity to serve as a strategic partner to business initiatives across functional areas.

It will be imperative for IT to build a clear network roadmap and clearly communicate the business value of the evolving network to a diverse set of enterprise decision makers. IDC research shows stronger network readiness leads to positive business outcomes and in reality, enterprises will need to rely on quickly aligning the network with business demands to remain competitively viable. IT leaders have an opportunity to communicate this new paradigm as well as their three- to five-year networking road map to the business.

Failure to progress on a digital network readiness plan over the next two years will leave organizations competitively exposed to the majority of organizations that have the intent to move forward ambitiously with digital network initiatives. With solid proof point demonstration and careful partner selection, IT leaders can plan and execute a business-driven digital network road map successfully and with minimum risk.

Appendix

Digital Capability Adoption

IDC research shows organizations with more mature networks are adopting digital capabilities faster. Current adoption levels of horizontal- and vertical-specific capabilities are noted in Figure 8 and Figure 9.

FIGURE 8
Cross-Industry Digital Capability Adoption

Cross-Industry Digital Capability	% of Global Organizations Currently Deploying
Visitor/guest mobile access	56
Connected physical security	48
Enterprise IoT apps (e.g., energy management, connected lighting)	38
Customer wayfinding to services and goods	37
Fully automated self-service employee portal	37
Advanced high-definition video collaboration and learning	36
In-venue digital signage	36
Bring your own device (BYOD) and mobile workspaces	36
IoT-enabled customer monitoring (driving, health, home security, etc.)	36
Location-aware personalized customer engagement through mobile apps	34

n = 2,054
Source: IDC's Digital Network Readiness Survey, May 2016

> Failure to progress on a digital network readiness plan over the next two years will leave organizations competitively exposed to the majority of organizations that have the intent to move forward ambitiously with digital network initiatives.

FIGURE 9

Industry-Specific Digital Capability Adoption

Digital Capability	% of Global Banking Organizations Currently Deploying
Mobile banking	63
Mobile payments	59
Omni-channel experience (across branch, online, mobile, call center, etc.)	53
Video-based advisor	30
Branch location analytics	22
Branch space utilization	16
Virtual tellers	16
Interactive kiosk	14
Digital mortgage advisor	13
Video analytics	10

Digital Capability	% of Global Insurance Organizations Currently Deploying
Home monitoring and security	44
Fraudulent claims analytics/management	42
Multichannel capabilities	37
Underwriting automation	33
Pay-as-you-go insurance	32
Claims processing analytics	18
Real-time analytics for customer-centric services	18
Risk management	18
Health exchanges	18
Mobile (real-time) claims processing	14

Digital Capability	% of Global Manufacturing Organizations Currently Deploying
Connected supply chain	53
Yield monitoring and analytics	45
Customer-connected products	43
Factory downtime/incident management	34
Machine as a service	33
Plantwide wireless controls	32
Digital energy management	30
Predictive maintenance with analytics automation	28
Visual factory: video-enabled factory floor — remote monitoring	25

Digital Capability	% of Global Retail Organizations Currently Deploying
In-store advanced customer analytics	47
Loss prevention, theft avoidance, physical security	46
Self-serve channels and checkout lanes	45
Interactive kiosks	43
In-store navigation	38
In-store advanced analytics to improve staffing	37
Endless aisles	37
Checkout optimizer — using video and predictive analytics	30
Augmented reality	28
Remote experts	27

Digital Capability	% of Global Education Organizations Currently Deploying
Online trainings	55
Textbook digitization	45
Flipped classroom	42
Anytime, anywhere learning	37
Virtual corporate trainer	36
Remote tutor	35

Digital Capability	% of Global Healthcare Organizations Currently Deploying
Electronic health records	68
Hospital equipment tracking	52
Consumables/perishables tracking	46
Mobile wayfinding within hospital/clinic	42
Remote patient monitoring	39
In- and out-patient monitoring	39
Telehealth services	38
Predictive maintenance of medical equipment	36
Automated decision support tools	36
Optimized predictive staffing levels	33

Digital Capability	% of Global Arts, Entertainment, and Recreation Organizations Currently Deploying
Merchandise sales management	44
Ticket price management	37
Food and beverages sales optimization	22
Smart parking	17
Virtual attendant	15
Smart emergency evacuation	15
New revenue models (e.g., interactive, social gaming)	12
Asset life management	11
Uptime rates optimization	7
Alerts and dashboards	5

Digital Capability	% of Global Information and Service Providers Organizations Currently Deploying
Asset life management	49
Intelligent marketing	40
Energy management	39
Network transformation (NFV/SDN/vMS)	38
Outage control	38
Theft prevention	37
Customer churn management	36
Personalized customer service through analytics	34
Fleet management	25
Remote cell tower monitoring	21

Digital Capability	% of Global Utilities Organizations Currently Deploying
Contact center collaboration	45
Outage management	44
Power generation management	43
Monitoring of transmission/distribution assets	41
Remote meter reading/smart meters	35
Utilities theft prevention	33
Demand response monitoring	31
Predictive maintenance	29
Mobile fleet workforce	29

Digital Capability	% of Global Transportation, Distribution, and Logistics Organizations Currently Deploying
Fleet utilization	44
On-train WiFi and entertainment	43
Load optimization with analytics	40
Virtual attendant	34
Driver efficiency	33
Connected track and track-side asset	33
Predictive maintenance	33
Real-time customer experience remediation	31
Connected ticketing and travel services	30
Passenger analytics and customized advertising	29
Above wing and below wing operations automation	26
Real-time and predictive staff and operational analytics	25

Digital Capability	% of Global Construction Organizations Currently Deploying
Construction quality control	57
Connected, smart end-user insights	55
Site downtime management	44
Construction compliance	40
Safety and security	37
Equipment life management	35
Project bid management using data analytics	35
New revenue models — proactive infrastructure improvements	33
Design and development integration	28
New revenue model: XaaS	24

Digital Capability	% of Global Hospitality Organizations Currently Deploying
Virtual attendant	39
Customer churn management	34
Social media marketing	33
Branch location analytics	28
Personalized promotions	27
Operational analytics	22
Food and beverages sales management	22
Optimized predictive staffing levels	21
Property space optimization	18
Predictive marketing	17
Multichannel guest experience strategy	17
Guest safety — smart emergency evacuation	17

Digital Capability	% of Global Oil and Gas Organizations Currently Deploying
Safety and security	61
Monitoring control	50
Remote monitoring	37
Oil spillage control	37
Drilling optimization	36
Refinery productivity	35
Recovery efficiency	33
Lifting process automation	32
Dry wells optimization	25

Digital Capability	% of Global Mining Organizations Currently Deploying
Asset tracking	30
Energy management	25
Remote monitoring of equipment	24
Cabling cost control	14
Predictive maintenance — fault control	5

n = 2,054

Source: IDC's Digital Network Readiness Survey, May 2016
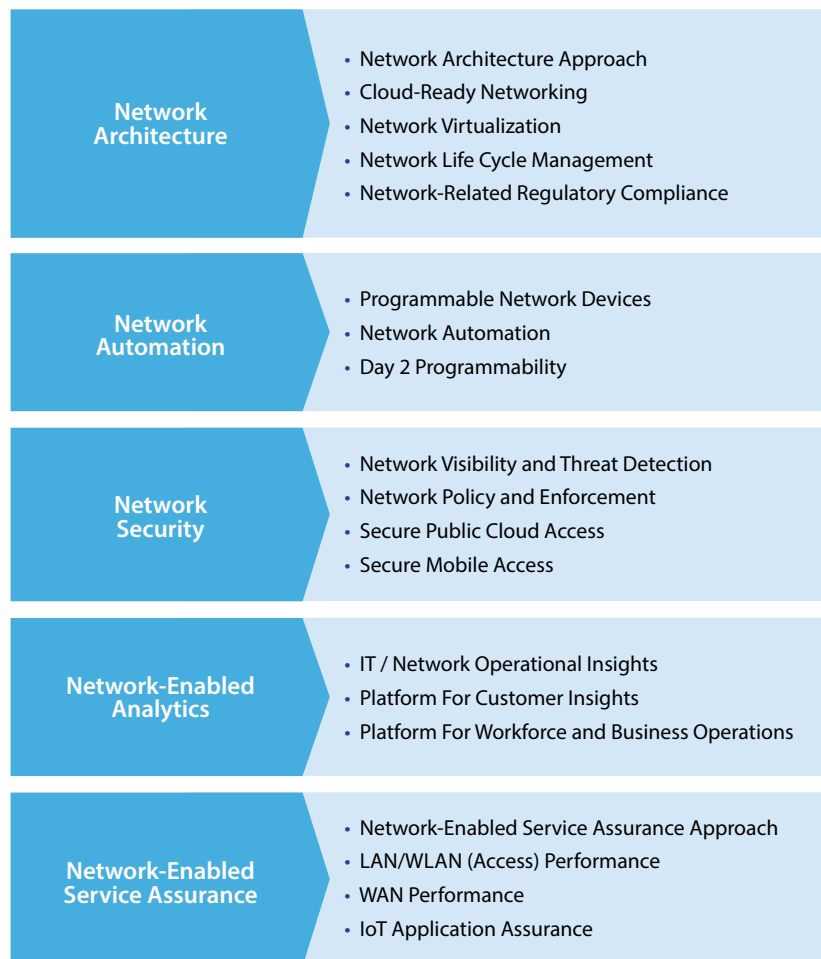
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Analyze the Future

Digital Network Areas and Capabilities

Organizations Indicate Strong Intent to Advance Maturity Across All Networking Capabilities

Global respondents report strong intent to increase readiness across all 19 networking capabilities (see Figure 10). Not surprisingly, respondents report the highest current levels of maturity for compliance, while cloud-ready networking is the least mature. Expected growth across the network capabilities is comparable — with gains all falling within 20% of the overall average; strongest gains in maturity are expected in network virtualization (e.g., enterprise network functions virtualization), platform for customer insights (e.g., location-based analytics), and network device programmability (e.g., RESTCONF and YANG).

Expected growth across the network capabilities is comparable — with gains all falling within 20% of the overall average.

FIGURE 10

Digital Network Areas and Capabilities

Network Architecture	• Network Architecture Approach • Cloud-Ready Networking • Network Virtualization • Network Life Cycle Management • Network-Related Regulatory Compliance
Network Automation	• Programmable Network Devices • Network Automation • Day 2 Programmability
Network Security	• Network Visibility and Threat Detection • Network Policy and Enforcement • Secure Public Cloud Access • Secure Mobile Access
Network-Enabled Analytics	• IT / Network Operational Insights • Platform For Customer Insights • Platform For Workforce and Business Operations
Network-Enabled Service Assurance	• Network-Enabled Service Assurance Approach • LAN/WLAN (Access) Performance • WAN Performance • IoT Application Assurance

Source: IDC's Digital Network Readiness Survey, May 2016

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