The transformative technology of the future depends on infrastructure

– is yours future-proof?

Content

Connections matter more than ever

Technology enables us to connect in more ways than we've ever imagined. With Africa experiencing a digital boom, we are witnessing an explosion of technological growth and development across the continent.

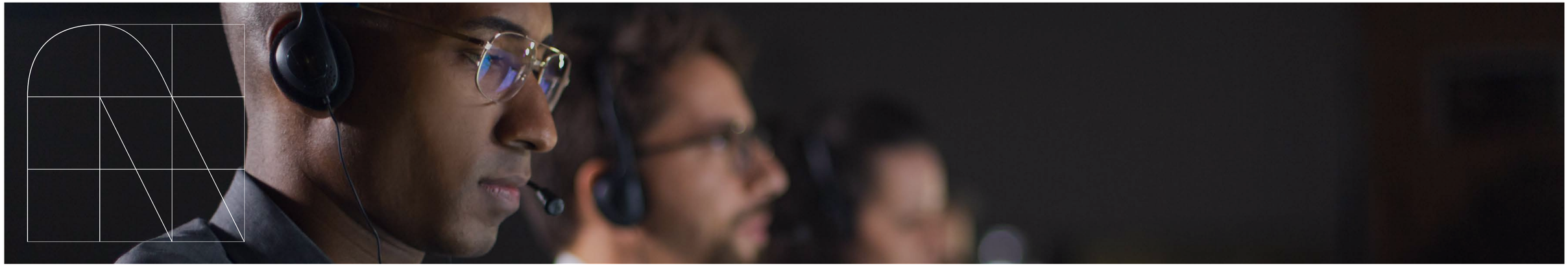
Organizations have an unmatched opportunity to drive both internal and external change by taking advantage of technology solutions.

Future-ready technologies can help these entities to thrive. At the same time, these solutions can also ensure that we create a sustainable and resilient digital future that benefits people and the planet.

As we envision a future defined by AI, ML, IoT, cloud computing and edge technologies, it's imperative that we confront the uncomfortable truth: outdated infrastructure can stifle transformation.

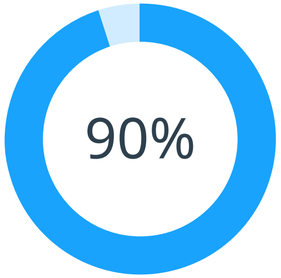
With global reach and local touch, we show you how you can harness the power of your technology to digitally transform and future-proof your organization.

Scale and reach



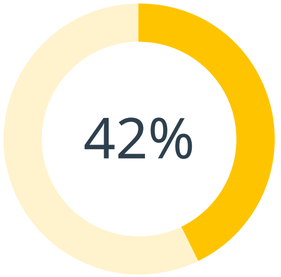
Successful businesses need to constantly expand, grow and react dynamically to changing environments. As such, scale, reach and agility play a significant role in driving business growth, ensuring operational efficiency, facilitating collaboration and maximizing the potential of technology investments.

With the emergence of remote and hybrid work as well as increased consumer demands, organizations need vertically and horizontally scalable IT infrastructure that enables expansive coverage and accessibility.



of executives believe investing in network technology will be **instrumental to success** are accelerating investment in digital transformation

agree that current network **objectives are being met**



are satisfied with the **capabilities** of their current infrastructure

Source – Global Network Report

The hidden costs of inadequate scalability: Why your infrastructure is holding you back

Inadequate scalability limits an organization's ability to handle constant change, including varying workloads, growing volumes of data and new technologies. This will likely create performance bottlenecks, decrease productivity and increase downtime, all of which can hinder business growth.

Exposing the risks of underestimating scalability in modern IT infrastructure

The risks of a lack of scalability vary by industry and vertical. However, increased operational costs, limited access to services required for digital transformation, increased data and security challenges, operational inefficiencies and the inability to adapt to changing technological requirements to support business needs are the five most-named risks across organizations.

Organizations agree that modern networks are vital for enabling outcomes related to:

- **98%** Growth
- **93%** Customer satisfaction
- **93%** Cost management
- **94%** Employee experience

Source – Global Network Report

A lack of preparedness increases long-term operational costs

Higher levels of demand placed from customers and employees may lead to performance issues, downtime as well as the need for additional skilled and scarce resources to ensure smooth operations.

Additionally, spikes in demand or rapid organizational growth can necessitate emergency scaling to bring supplemental hardware, software and other IT resources online.

The maintenance and support spending required to manage these issues is often far more costly than proactive scalability planning and investment. The reactive nature of these fixes also means that they are typically less effective than planned scaling strategies.

Failure to invest in infrastructure can **increase costs**[1] by **up to 40%**

8 in 10 top performers[2] have implemented leading technologies

Almost **90%** of top performing organizations **spend 2%** of their **revenue on the network**

Compared to just **4 in 10** other organizations

[1] Increase costs by up to 40%: R., Schatsky, D. & Camhi, J. 2020. Uncovering the connection between digital maturity and financial performance: How Digital Transformation Can Lead to Sustainable High Performance. Deloitte. 2020 Digital Transformation Survey | Deloitte Insights

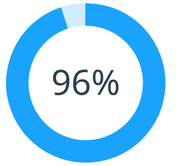
[2] Global Network Report

Performance issues negatively affect revenue, productivity and customer experience

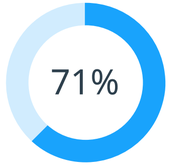
A lack of scalability can lead to either underutilization or over utilization of infrastructure. Both of which can have negative consequences for organizations.

With underutilization, resources are wasted and costs increased as infrastructure provisioned for peak demand remains idle during regular operations. Conversely, over utilization drives performance issues and service degradation due to strains placed on the infrastructure.

Since the emergence of COVID-19, increased emphasis on remote and hybrid work as well as the need for seamless collaboration and connectivity have also presented challenges.

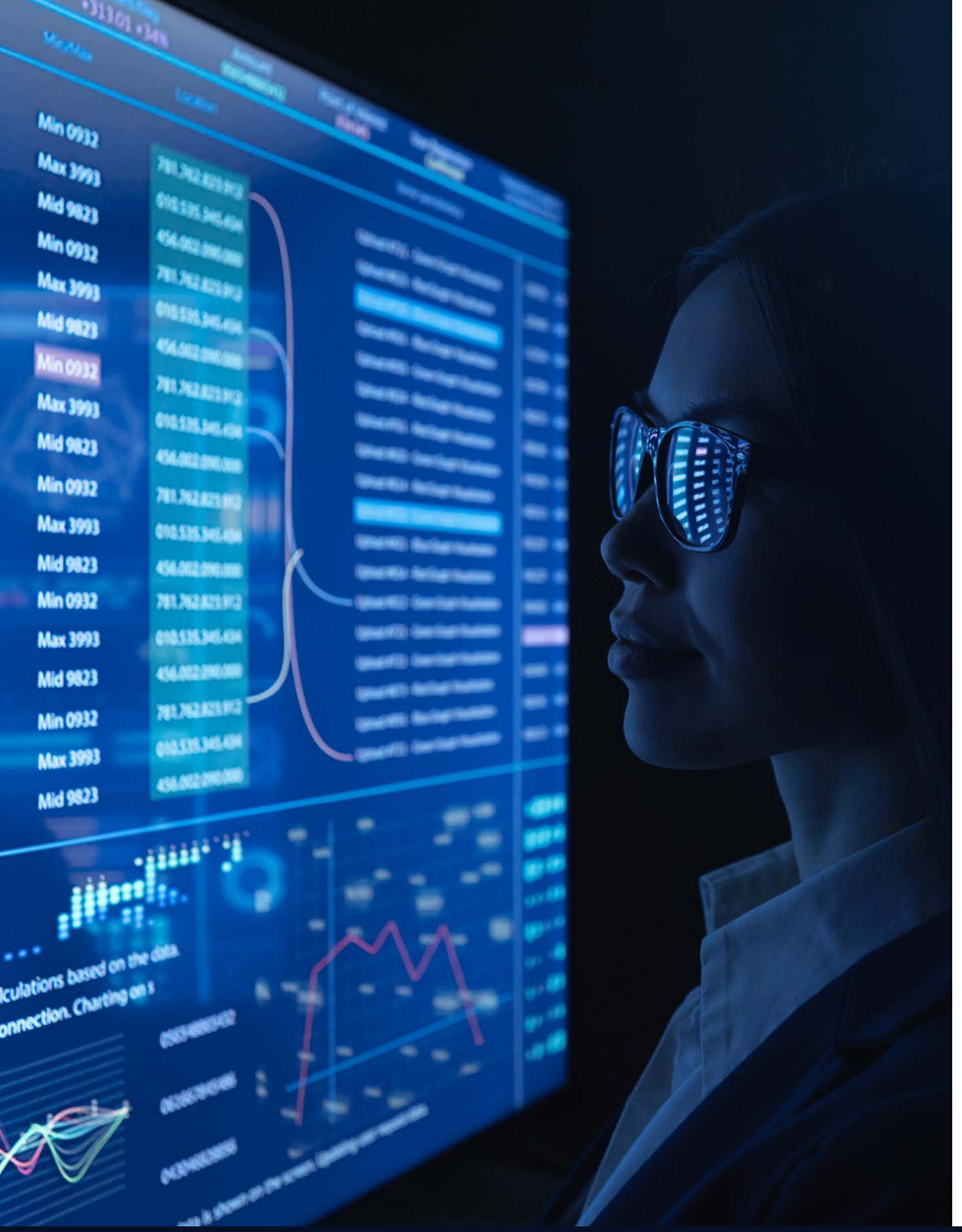


of organizations agree that **evolving work and employee engagement** models demand new technology[1]



of organizations agree that **low network maturity** negatively impacts business delivery[2]

[1]Global Customer Experience Report | [2]Global Network Report



Data and security challenges trigger financial losses and legal repercussions

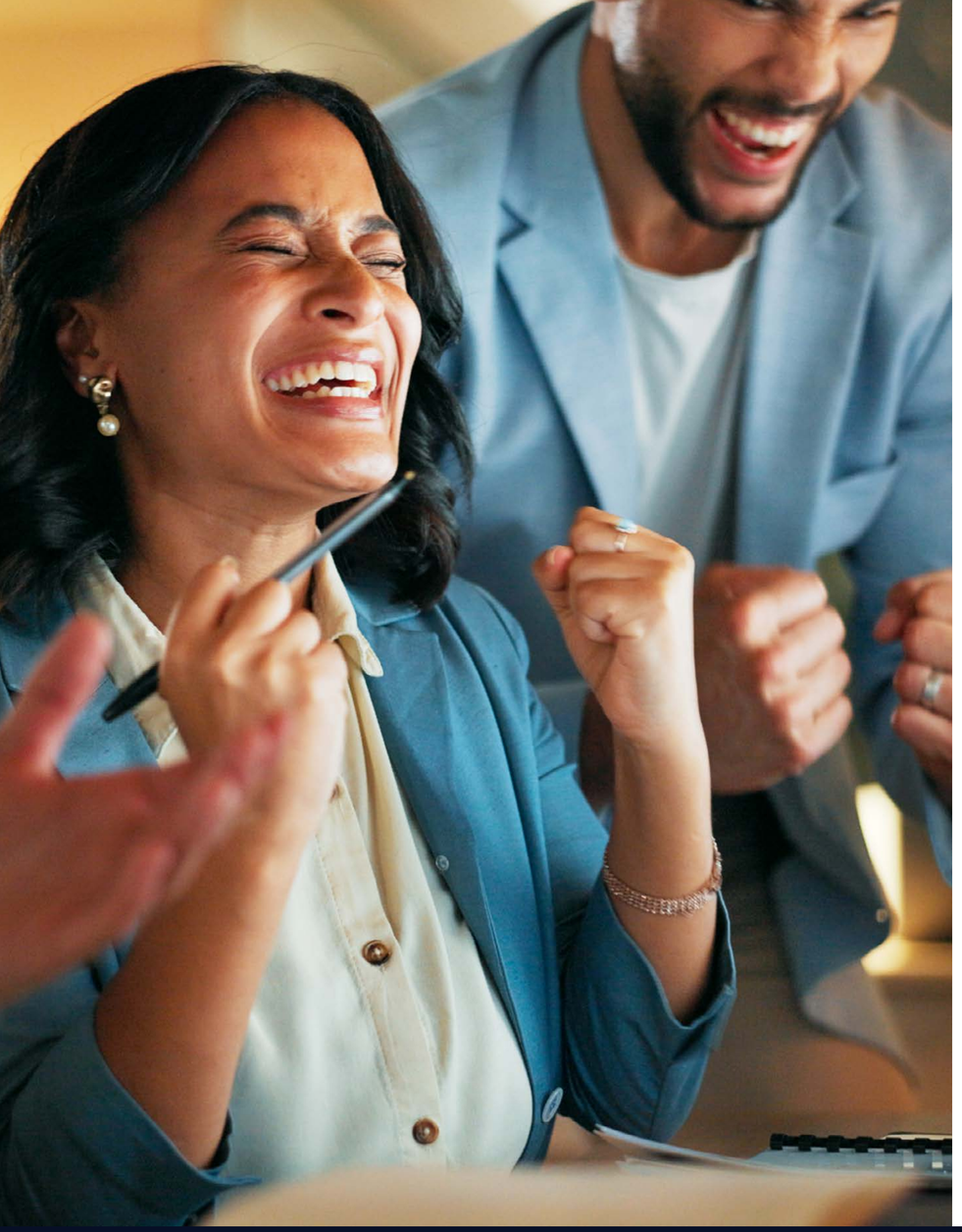
Cybersecurity is a crucial consideration where intellectual property and sensitive employee and customer data is concerned. Data breaches and increase both direct and indirect costs, with far-reaching effects.

Data protection and privacy laws such as the EU's General Data Protection Regulation (GDPR) and South Africa's Protection of Personal Information Act (POPIA) impose penalties, fines and potential legal action on organizations that fail to protect personal data.

Negative publicity, loss of customer trust and reputational damage are knock-on effects here, each of which can have long-lasting consequences for an organization's financial success.

of organizations agree that **increasing security and compliance risks** are a challenge throughout IT and network operations.

Source – Global Network Report



The opportunities and competitive advantages caused by scale and reach

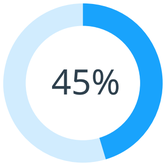
Scalable infrastructure enables agility that can drive digital transformation and innovation, reduce costs, and offer other business benefits. In fact, 41% of CEOs reported an increase in revenue and profits as a result of improved organizational agility.

Flexibility enhances innovation, improves CX, increases revenue and enables growth.

By enabling organizations to easily adjust resources based on demand, scalable infrastructure allows entities to swiftly adapt to consumer trends and changing market dynamics. At the same time, it enables organizations to take advantage of emerging technologies that can support business growth.

Scalable infrastructure provides the necessary foundation to support increased operational dependencies and adopt emerging technologies, keeping these organizations at the forefront of innovation and equipping them to respond to market changes.

Organizations with high **digital transformation** maturity report an annual revenue growth of

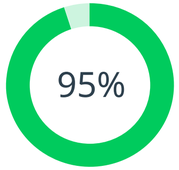


Source – Gurumurthy, R., Schatsky, D. & Camhi, J. 2020. Uncovering the connection between digital maturity and financial performance: How Digital Transformation Can Lead to Sustainable High Performance. Deloitte. 2020 Digital Transformation Survey | Deloitte Insights

Digital transformation drives improved efficiencies drive cost optimization

Scalable infrastructure enables organizations to collect, store and analyze large volumes of data, giving them access to valuable insights that can be used for informed decision-making that can drive process optimization and cost reductions.

It also paves the way for the inclusion of emerging technologies that can help organizations improve efficiencies and gain a competitive advantage in their market. In this context, networks have an outsized effect on an entity's performance.



of organizations agree that technology investment and progress will be 95% instrumental to their future success.

Source – Global Network Report

Scalability and reach are essential for business continuity and resilience

> Disruptions, including infrastructure failures, cyber attacks, technological developments and changing market forces, can halt critical business processes, lead to downtime and result in data breaches that are detrimental to an organization's continuity. Scalable infrastructure is particularly useful for ensuring that organizations are able to grow and develop in the face of these threats.

The risks associated with experimentation can also be minimized by scalable infrastructure. Nearly **3 in 10** of **highly digitized organizations (29%)** report a positive impact on growth and innovation as a result of the maturity of their digital transformation.

Nearly 3 in 10 (29%): Gurumurthy, R., Schatsky, D. & Camhi, J. 2020. Uncovering the connection between digital maturity and financial performance: How Digital Transformation Can Lead to Sustainable High Performance. Deloitte. 2020 Digital Transformation Survey | Deloitte Insights

Unleashing the power of scalable infrastructure: How to disrupt your industry

Although modernization and digital optimization bring plenty of benefits, there are also challenges. These factors drive the need for measured strategies to ensure your organization is able to outperform competitors.

Strategies for leveraging scalable infrastructure to outpace your competitors

In recent years, organizations that have significantly increased their operating margins have focused on cloud-based network management, software-defined infrastructure and broadband.

Now, organizations must also modernize to keep up with the demands of hybrid and distributed working as well as the security threats that these can bring.

Strategies organizations can use to leverage their scalable infrastructure to outpace their competitors:

- Accommodate hybrid and remote working models using cloud computing and hybrid infrastructure: Cloud computing offers numerous advantages, including scalability, flexibility, and cost efficiency. By embracing cloud services, businesses can rapidly scale their infrastructure to meet growing demands.
- Leverage data analytics and AI to optimize decision-making: Organizations can leverage the power of data analytics to gain valuable insights and identify emerging trends to make more informed business decisions. They can also use AIOps to cluster large volumes of data across multiple sources, detect patterns and make recommendations.
- Use DevOps and automation to streamline operations: Automation increases operational efficiency and productivity, improves security postures, inventory management as well as change and configuration management, among others. These capabilities, when combined with DevOps, can foster a culture of collaboration and communication, reduce human error and enable faster deployments.

To remain competitive, organizations require:

- High network speed and low latency
- Cloud-based models for flexibility and agility
- Integrated security
- As-a-service models for ease of operability

Leadership and innovation

The uncomfortable truth about innovation: Your infrastructure is either enabling or hindering it

To facilitate innovation, organizations must ensure that information can flow quickly and easily. Fragmented infrastructure, combined with talent shortages, can lead to cost overruns, compliance and security challenges as well as compromised performance and availability.

Failure to embrace new technologies can cause organizations to fall behind their competitors, reduce their ability to scale and leave them open to cyberattacks. Sub-par performance and downtime can lead to the loss of revenue while also negatively affecting EX, CX, innovation and, therefore, business growth.

Confronting the reality of outdated infrastructure's impact on innovation

Failing to invest in modern infrastructure can have various effects on an organization:

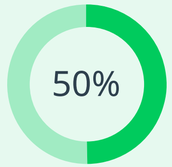
- Negative impact on CX and EX. Outdated infrastructure often lacks the collaborative capabilities required for fostering innovation.
- Incompatibility between legacy systems and emerging technologies. This can make it difficult to integrate new systems and hampers the adoption of transformative technologies that can drive innovation.
- Diminished ability to collect and interpret performance insights. A lack of processing power, storage capacity and integration capabilities can result in inefficient data management & analytics.
- Reduced organizational agility. The constraints of legacy systems reduce organizations' ability to scale processing capabilities to accommodate increased workloads and respond to change.
- Increased operational costs. Maintenance, repair and energy consumption costs as well as inefficient allocation of resources can make it challenging to invest in innovation.

> More **digitally mature organizations** are **3xs** more likely than those with lower maturity to see annual net revenue growth and profit margins significantly above their industry average than those with lower maturity

How to shift from a reactive to a proactive infrastructure approach to drive leadership

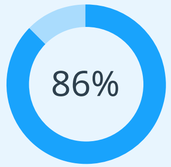
For 9 in 10 organizations, predictive analytics is critical for operational insights and driving a proactive approach. Nevertheless, 85% of organizations say that poor visibility across network architectures restricts their operational insight, leading to reactive responses to incidents.

One stumbling block is a lack of strategic alignment. Understanding business goals and plans can help business leaders to anticipate infrastructure needs and incorporate tech strategies into the organizational strategy.

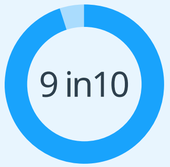


of organizations have fully aligned their business and network strategies

A particular challenge in shifting towards a proactive approach for 71% of organizations is the lack of collaboration between their IT and business functions. For many, the solution is outsourcing.

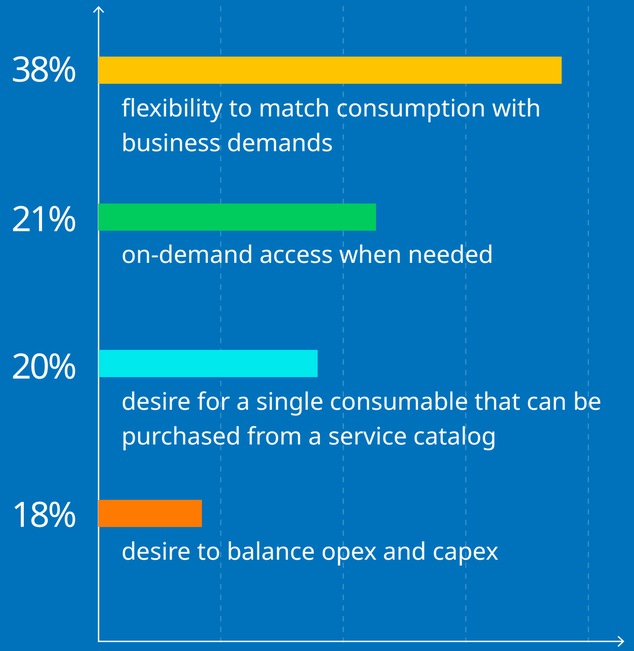


of organizations buy networks in silos



9 in 10 CIOs/CTOs would prefer to outsource their network to a single managed service provider offering end-to-end solutions across industries

Key motivators for this preference include:



The network-as-a-service (NaaS) model, where organizations get access to cloud communications, managed SD WAN, enterprise information systems (EIS) and edge connectivity through one provider, is a draw card for business leaders.

Source for all stats – Global Network Report

Emerging technologies demand radical infrastructure transformation

Emerging technologies have revolutionized the business landscape, presenting immense opportunities for organizational growth and innovation. Organizations that wish to stay relevant will need to keep pace and implement radical infrastructure transformation.

Technologies on the rise

However, aside from realizing that the convergence of security, networking and cloud-first solutions will be key, 7 in 10 organizations admit to some level of uncertainty about desired outcomes and future network characteristics.

There is also a marked difference in the technology used by top performers and other organizations. Many emerging technologies that are in play for more than **70% of top performers, like SD-WAN, private 5G and Wi-Fi 6,** are used by just over **4 in 10 of all other organizations.**

A unified cloud to edge platform experience and policy can simplify complex infrastructure, driving innovative practices to enable the adaptability that can help to future-proof technology investments.

The cloud-to-edge network creates a digital backbone for organizations, providing a secure IP network and linking sustainable data centers while also connecting employees, locations, customers and things.

Breaking the status quo: The critical infrastructure requirements for AI and ML

As organizations begin to evolve their infrastructure to enable business success, AI has been voted the #1 enabler of business strategies. In line with this, AI interfaces are set to become the norm for 80% of organizations in the next 12 months.

Analytics will become increasingly important as organizations begin to align their business plans with network selection and management strategies. In this instance, 90% of CIOs/CTOs agree that using AIOps, automation and improved analytics to drill down into issues will optimize their operations.

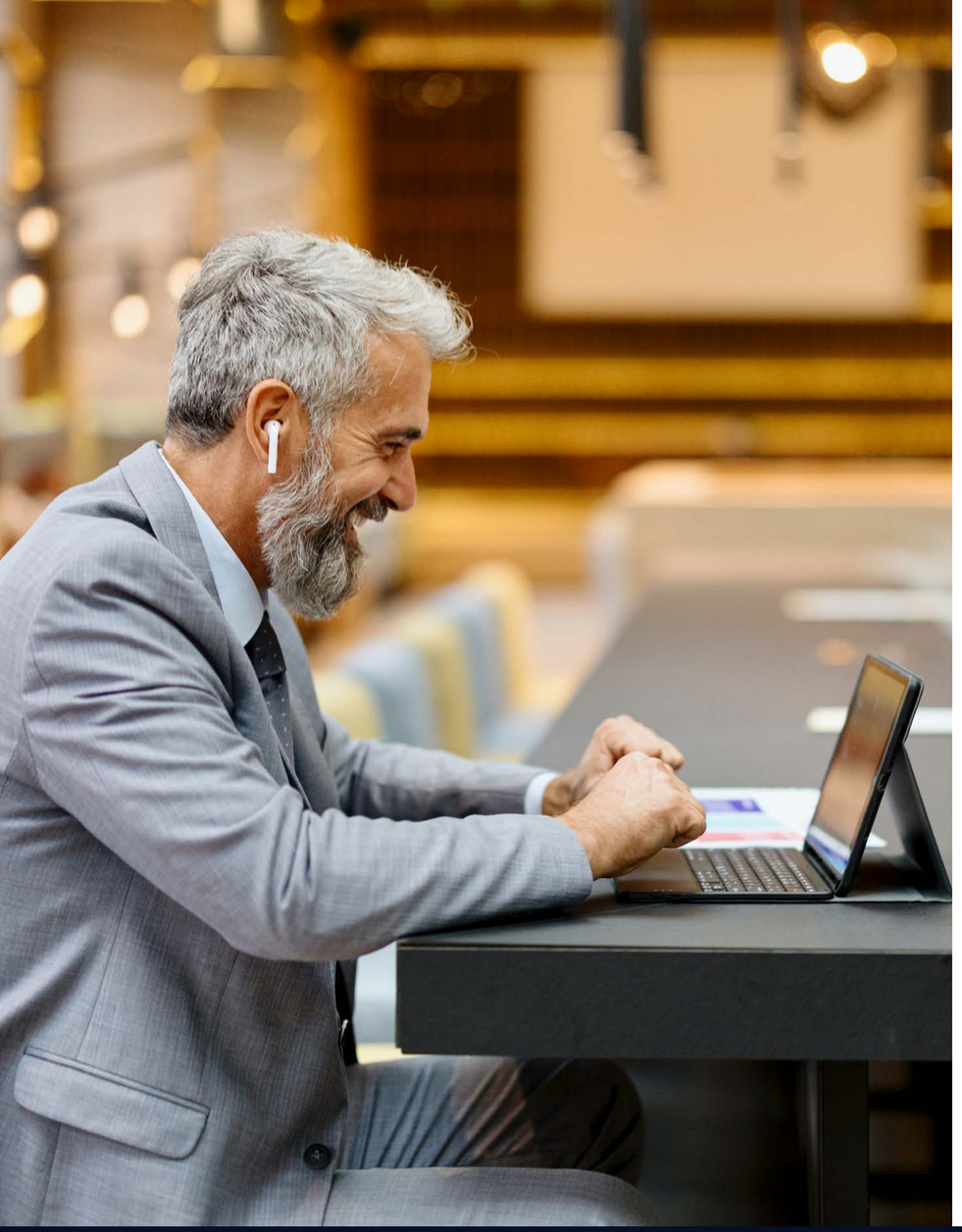
Although requirements will vary depending on the industry and application for which these technologies are required, organizations should anticipate investment in both enabling hardware and software.

Hardware

- High-performance architecture that is able to handle intensive computations required for AI and ML
- Specialized hardware accelerators for faster processing
- Memory and storage capable of handling large data sets and models
- Reliable physical networks that are able to facilitate the transfer of swathes of data

Software

- Development platforms and frameworks to serve as the foundation for building and deploying AI and ML algorithms
- Data analytics and visualization tools to aid organizations in exploring and understanding data
- Cloud-based solutions that enable offloading of some requirements to third-party providers
- Readily scalable architecture capable of handling complexity of and keeping in step with AI and ML developments
- Strong security mechanisms to prevent unauthorized system access and data breaches, in line with data protection regulations
- Monitoring and auditing software that automatically performs regular vulnerability assessments and updates to enable the swift identification of issues and malfunctions and optimize performance



Overcoming the infrastructure hurdles to a successful IoT implementation

Internet of Things (IoT) systems can unlock transformative opportunities for businesses, but they also present unique infrastructure challenges related to scalability, connectivity, data management and analytics, security and privacy, edge computing, and interoperability and standards.

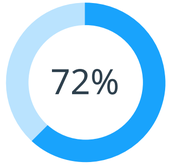
Infrastructure challenges presented by IoT

IoT deployments often involve a massive number of connected devices and generate a vast amount of data. As a result, infrastructure must have storage, integration and processing capabilities that support efficient data management as well as analytics tools that allow users to extract meaningful insights from these large data streams.

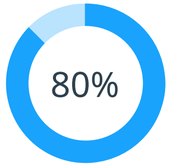
A major challenge is that IoT devices require seamless and uninterrupted communication with the networks to which they are connected. This necessitates various connectivity and infrastructure interoperability options to enable smooth and efficient data transmission while ensuring that devices can be easily integrated into new or existing systems. In addition to this, convergence with private 5G, multicloud systems and automation technologies, along with the security and privacy mechanisms required for IoT massively increase the complexity of managing modern infrastructure.

Strategies to overcome IoT implementation hurdles

Scalable storage solutions, cloud computing capabilities and edge computing are all useful for ensuring that a system can accommodate the growing and changing demands of IoT. What's more, collaborating with infrastructure experts and other technical partners can help to enhance the benefits presented by IoT.



of top performing organizations outsource more than half of their network infrastructure



is expected to increase over the next two years

Where this is the case, organizations are able to work with their technology partners to leverage complementary technologies and unlock the full potential of IoT-generated data. For example, AI and ML can both be useful for executing advanced analytics on IoT data to extract actionable insights.

Organizations must also ensure that they protect their IoT systems by implementing robust security and privacy measures. Investing in IoT-specific security solutions, encryption protocols, access controls and firmware and software patches are all essential here. As are regular vulnerability testing and training employees on cybersecurity best practices.

One of the greatest challenges in terms of IoT is the large number of role players involved in implementing a single solution. This means that a competent and reliable systems integrator is critical for ensuring that these efforts are synchronized and effective.

Source for all stats – Global Network Report

Reliability and performance

The unspoken consequences of unreliable infrastructure: Time to face the truth

Infrastructure tends to become less reliable over time due to physical wear and tear, outdated designs that create capacity limitations and the unavoidable obsolescence that is inherent in technologies. These factors all come together to make infrastructure more prone to downtime and failures.

Transformative technologies like AI, ML, automation and cloud computing have the potential to reshape innovation and drive innovation.

However, lack of expertise, reliance on legacy infrastructure, insufficient investment, misalignments between business goals and technology strategy, as well as communication gaps create significant reliability and performance issues.

Nearly three-quarters of CIOs/CTOs agree that their organizations' networks are either aging or obsolete and 70% say that their network is slowing growth. Despite this, just 57% of organizations are investing in modernizing their network.

While the visible impacts of disruptions are often evident, the hidden costs associated with infrastructure failures can cause lasting damage to organizations.

The hidden costs of infrastructure failures and downtime in the digital age

Downtime drives a loss of productivity.
Minor failures steal roughly 22 minutes of productive work time per day, while bigger breaches can take hours or days to resolve. This can ultimately stunt innovation and limit business growth, negatively affecting an organization's market position.

System failures open networks up to cybersecurity risks.
Security weaknesses open organizations up to attacks that cost organizations an average of $4.32 million. Data breaches can lead to severe regulatory penalties, with fines reaching up to 4% of annual global turnover.

Hybrid and remote work create greater security challenges.
Hybrid work has driven 94% of organizations to invest more in data protection and security. However, only 49% strongly agree that their current controls are effective in protecting their employees wherever they work.

Addressing the uncomfortable truth about the potential impact on your company's reputation and bottom line

The financial implications and reputational damage that result from infrastructure failures and downtime are inextricably linked. Direct financial losses resulting from decreased productivity, cybersecurity risks and data breaches can cost organizations millions of dollars.

$26.5 billion

The **global cost** of downtime in 2020[1]

These expenses stem from loss of revenue due to interruptions in sales as well as increased expenses related to incident response, regulatory penalties, legal fees and remediation efforts. Additionally, organizations with poor infrastructure report a 7% decline in sales growth on average compared to those with strong infrastructure.

Compounding the direct and indirect financial costs associated with infrastructure failures are the resulting customer dissatisfaction, reputational damage and long-term impacts on competitiveness.

Data breaches and disruptions negatively impact the customer experiences. Organizations that fail to meet customers' expectation of uninterrupted access to services are likely to experience high rates of customer churn.

32% of customer

will stop doing business with a company after a single instance of data loss or service disruption[2]

Many consumers will turn to social media and review websites to express their dissatisfaction. This negative publicity not only exacerbates reputational damage, but also makes it more difficult to regain customer trust after an incident.

This erosion of trust can have a lasting impact on an organization's competitiveness. Those that prioritize resilience and invest in robust infrastructure see 20% higher shareholder returns in comparison to their competitors. However, a damaged reputation can result in reduced customer loyalty, decreased market share and a decline in revenue.

[1]IBM Corporation. 2022. Cost of a Data Breach Report 2022. IBM. 3R8N1DZJ.
[2]Puthiyamadam, M., Reyes, J. 2017. Experience is Everything: Here's How to Get it Right. PwC. Experience is Everything: Here's How to Get it Right.

Beyond performance: Why infrastructure is the linchpin of data security and privacy

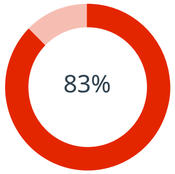
The complex relationship between connectivity, collaboration as well as data storage and processing means that robust infrastructure is the cornerstone of any modern technology ecosystem.

The harsh realities of insufficient infrastructure in safeguarding sensitive data.

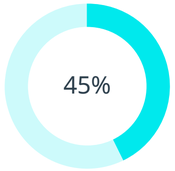
It's clear that insufficient infrastructure poses a significant threat to data security as well as overall business resilience and continuity.

As businesses expand their operations and data volumes grow, the attack surface for cyber threats widens. Inadequate scalability may result in fragmented security measures and the inability to effectively monitor and protect the expanding IT infrastructure. This can result in security vulnerabilities that can be exploited by cybercriminals.

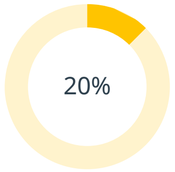
Cybersecurity is also a crucial consideration where intellectual property and sensitive employee and customer data is concerned.



of organizations experienced **multiple data breaches** between March 2021 and March 2022 **due to outdated hardware, software** and **security patches**



cloud-based



failure to secure user data & credentials

$4.35 million cost of the average data breach

Most organizations (>90%) agree that ever-increasing security and compliance risks are a challenge throughout IT and network operations. However, only 42% of CEOs agree that the controls their organizations currently have in place are effective in protecting this data.

Source for all stats – IBM Corporation. 2022. Cost of a Data Breach Report 2022. IBM. 3R8N1DZJ.

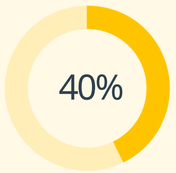
Emphasizing the urgent need for resilient infrastructure to combat evolving threats

The increasing scale and complexity of security risks are a major concern for organizations and highlight the need for prioritizing robust infrastructure as a fundamental defense. As physical and digital threats converge, a holistic approach to security – where infrastructure serves as the unifying element – is necessary.

Infrastructure that **combines advanced cybersecurity measures** with physical security systems, like AI-integrated intrusion detection systems, network segmentation and secure authentication protocols, help to reduce vulnerabilities for both hardware and software.

Resilient infrastructure plays a pivotal role in bolstering defenses.

Organizations with **robust technology** systems experience.



less financial damage **from cyberattacks** compared to those that don't.

Source – IBM Corporation. 2022. Cost of a Data Breach Report 2022. IBM. 3R8N1DZJ.

Its strength lies in its ability to anticipate, adapt and rebound in the face of threats, reducing both the likelihood and impact of disruptions. By implementing redundant systems, automated response mechanisms and distributed architecture, resilient infrastructure not only fortifies defenses but also expedites recovery, minimizing downtime and data loss.

Organizations must proactively invest in infrastructure that can withstand the onslaught of modern threats. Doing so helps to ensure that entities can continue their services, safeguard customer trust and protect their bottom lines.

The digital backbone of an interconnected world

The NTT global platform provides the foundation for a secure, connected and sustainable digital future. Our secure, scalable, connected and resilient global data center platform covers more than 20 countries and regions, facilitating the easy management and movement of workloads

We help our clients to manage across multiple networks, platforms and multi-cloud environments with ease while simultaneously managing the high costs of legacy technology systems.

With access to the right technical skills, expertise and technologies as and when needed to optimize legacy infrastructure while transforming to a digital operating model. All without compromising on security and compliance.

By working with us, our clients gain access to essential tools that help organizations to thrive in the modern age:

Enterprise server hosting:
Hosting, migration, monitoring and management.

LAN, WAN, firewall support and maintenance:
Remote monitoring and management, cloud connectivity and software licensing.

End-user support:
Microsoft/ AD, SCOM, MECM, SCCM and other tools as well as managed anti-virus.

Application support services:
TAS and FAS services, ERP lifecycle consulting, migrations, deployments and innovation.

Integrated service management:
Cross-functional services and governance, service delivery manager, remote technical management and application management services.

We partner with our clients to enable them to transform their organizations with the power of technology. Our local knowledge and experience, combined with global technology expertise, ensures that we are able to help them accelerate their digital transformation.


NTT DATA