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Building a Successful Digital Transformation Strategy

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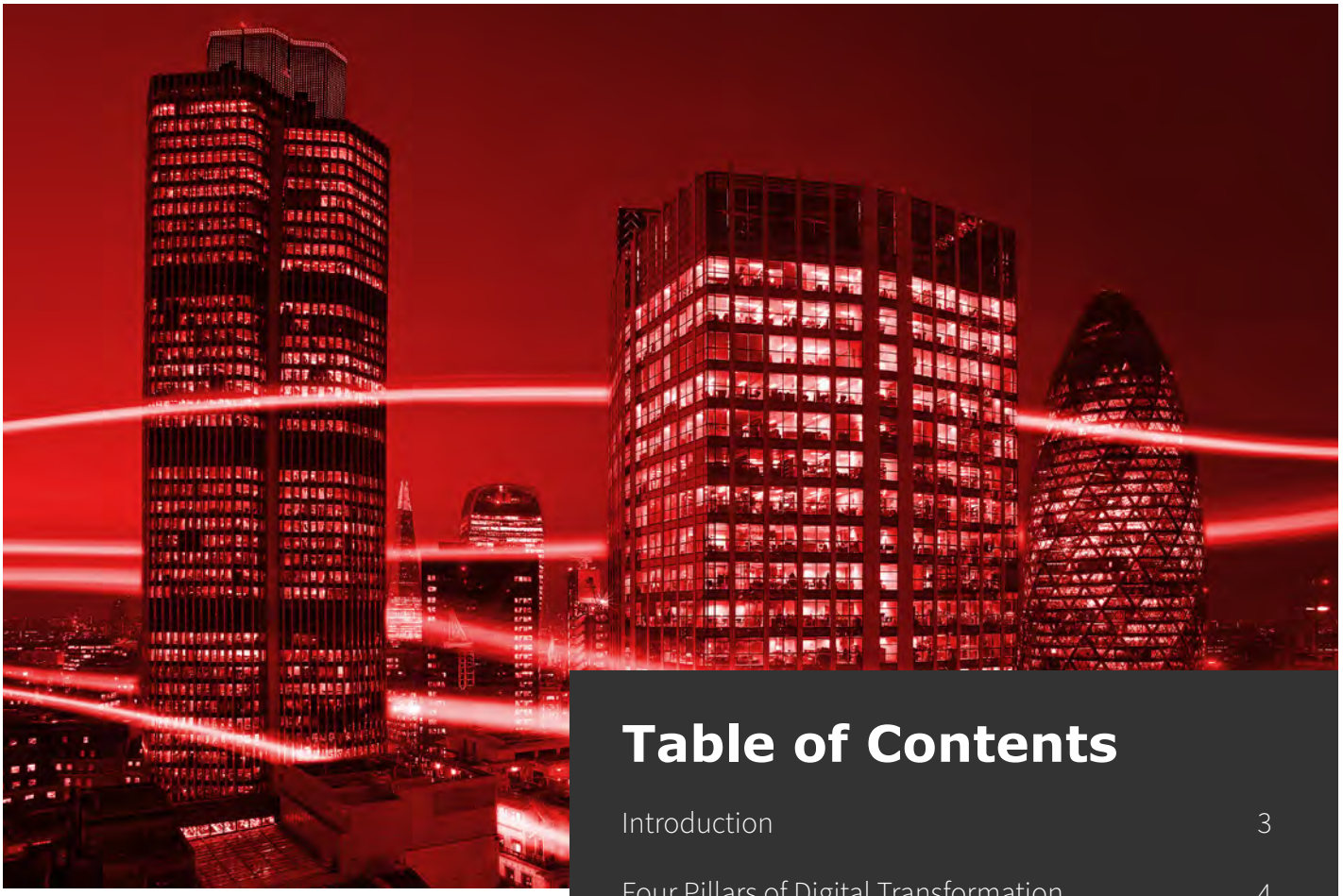


Table of Contents

Digital transformation has become a top priority for most businesses today. Rapid changes in technologies have altered the IT landscape and driven many businesses to adopt these technologies with the goal of transforming their IT and business processes. Digital transformation brings the promise of increased automation, better support for connected devices, real-time insights into business information, as well as empowering employees and improving customer service.

Successfully completing a digital transformation can be a difficult and complex undertaking. To make digital transformation a reality, organizations must dramatically rearchitect their network infrastructures to integrate new technologies at a fundamental level. This transformation starts with a digital-first strategy built around network optimization, hybrid multi-cloud architectures, distributed security and distributed data.

This Ebook will outline the challenges and benefits of today's digital transformation culture. It will also examine the critical role the network plays in digital transformation, and how Equinix and Verizon can help you get there.

Four Pillars of Digital Transformation

Modern businesses increasingly strive to spend more time on innovation to gain a competitive advantage. Today, digital transformation consists of four main pillars:

1. **Improving customer service and products**. Providing better customer service and faster responses directly boosts the bottom line and enables businesses to be stronger and more competitive.
2. **Empowering employees**. Enabling employees to do their jobs better is vital. Businesses must provide faster onboarding of new employees, better information for decision making and broader mobile support.
3. **Launching new projects and business initiatives**. Businesses are buried under an avalanche of new technologies like cloud, AI, machine learning, IoT, microservices, business analytics, mobile and more. These technologies have the potential to transform critical business functions, but many businesses don't have the infrastructure to support them. Digital transformation can solve this.
4. **Increasing productivity and optimizing operations**. Most businesses spend a significant amount of resources maintaining their existing applications and infrastructure. One of IT's major hurdles is finding ways to deal with the ever-increasing complexity. With digital transformation, businesses aim to simplify operations and incorporate automation to decrease the time and effort needed to configure, deploy and maintain their applications and infrastructure.

Digital Transformation Challenges

Digital transformation presents many challenges. There are a host of new technologies that businesses' struggle to adopt. And the current IT landscape is already confusing.

According to Forbes, 45% of C-level executives admit they don't know where to start when developing their transformation strategy.[1] Further, Forbes reported that while 90% of CEOs see the digital economy impacting their industry, less than 15% are executing on a digital strategy.[2] Knowing where to start is a challenge for a lot of organizations.

Top digital transformation challenges include:

- **Legacy applications:** One of the biggest challenges to digital transformation is the need to continue to support legacy applications. While critical for business functions, legacy applications are not usually built for the cloud. Instead, they tend to be monolithic applications intended to run on-premises. They often depend on various internal resources and are built assuming they have low latency connections to data centers or offices that many companies are working to eliminate. Legacy applications can provide a low latency experience locally where they are provisioned. However, the quality of service degrades the further away the user is located. Coordination between the network, security, application and data owners must be accomplished in order to optimize the resulting architecture of a successful digital transformation strategy.
- **Incorporating the hybrid/multi-cloud:** While cloud computing is one of the biggest benefits of digital transformation, it can also be a sticking point. The cloud/hybrid/

multi-cloud is often incorporated as an afterthought in the infrastructure design process, causing performance, latency and security issues.

- **Increasing storage requirements:** A major challenge businesses face is dealing with increasing storage demands. According to IDC, the volume of data stored is doubling approximately every four years.[3] A successful digital transformation must be able to accommodate these rapidly expanding storage and bandwidth requirements.
- **Aging network architectures:** Deploying network-centric technologies can't be done using old and outdated network architectures and equipment. Legacy hub-and-spoke architectures were typically built pre-cloud and often have hundreds or thousands of network devices that require manual configuration, making them inflexible and unable to cope with today's dynamic and distributed demands.
- **Security:** Like legacy network architecture, the security used by most businesses was designed primarily to protect on-premises assets with perimeter-style defenses. It was not designed for a more distributed cloud environment where you need to protect a variety of dispersed resources like edge and IoT devices across a wide attack surface.

But the biggest challenge of all...

Dealing with ever-increasing network traffic can be the biggest barrier to a successful digital transformation. Legacy network infrastructure and equipment simply cannot keep up with growing bandwidth requirements.

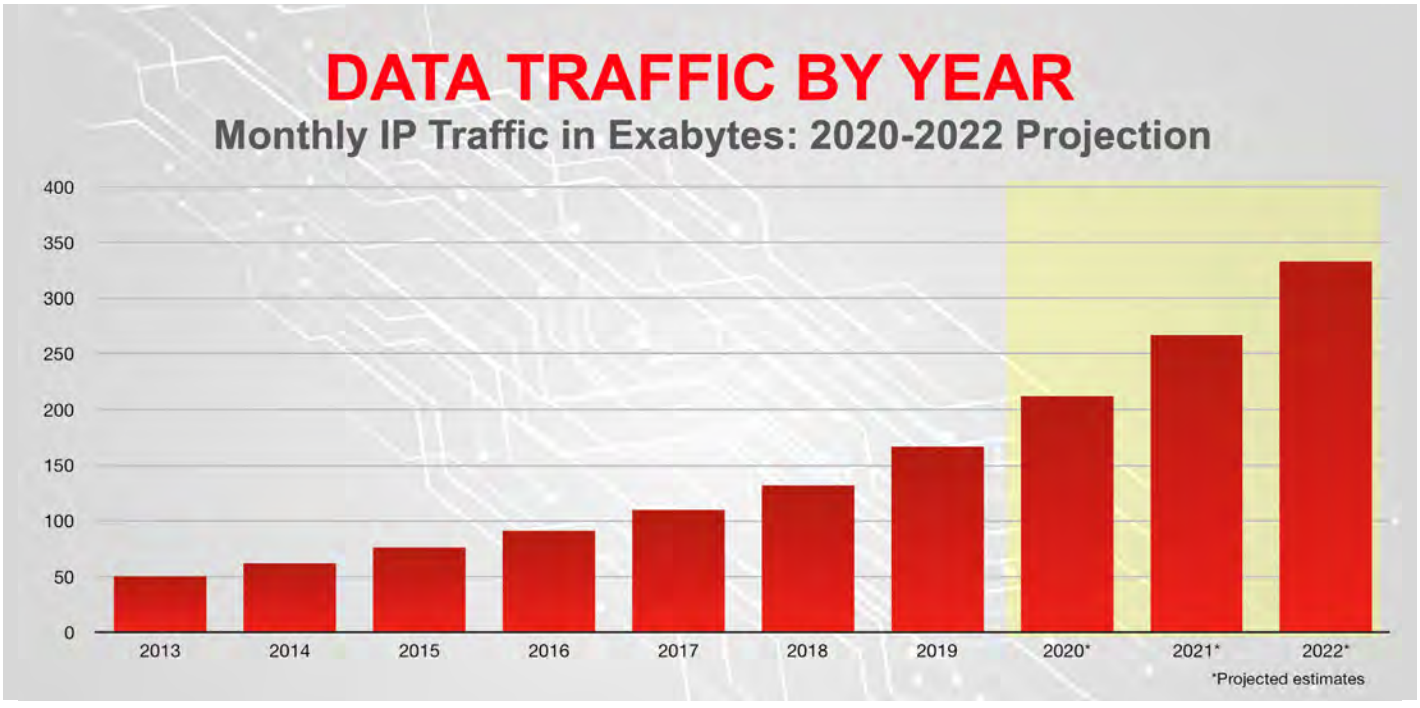


Figure 1 – Verizon's projected growth of monthly IP traffic

As shown in the figure above, network traffic in 2020 was 4X what it was in 2013. And 50% growth is projected over the next two years. Traditional network infrastructure cannot scale to meet these rapidly increasing requirements.

The majority of existing networks were built to support centralized internal applications, forcing users and network traffic through central data centers. Operations are time-consuming and difficult because of the manual router and switch management that's required.

In addition, connectivity for these networks was not designed to respond to the changing demands of users. Security also tends to focus at the core of your infrastructure, leading to potential issues at the edge and for mobile devices.

Network Modernization is Central to Digital Transformation

Successful digital transformation begins by updating and modernizing your network. Today's digital transformation projects can't happen on legacy architecture or in isolation – the technologies that enable digital transformation are all network centric. The network directly impacts the success or failure of digital initiatives as it provides the essential connections for users, applications and data – whether they are on-premises, in the cloud, hybrid cloud or multi-cloud.

Traditional on-premises networks cannot handle today's microservices-based application requirements. Today's users are mobile and application centric, and they demand consistent user experience on every application. Plus, endpoint devices are growing exponentially, and network users now include machines like IoT devices. Fully leveraging the cloud radically

changes network requirements. The cloud and multi-cloud offer the freedom of moving workloads virtually – anywhere and anytime.

Five steps to network modernization

Distributed networks are the first step in network transformation. Legacy networks, with their hub-and-spoke architectures, cannot support this exponential growth. Moving from legacy network environments to a distributed network provides a foundation for the enterprise to take advantage of cloud adjacencies and move workloads to the cloud at scale. A distributed environment allows the offloading of traffic and can bring application and cloud access closer to the edge and the end user. This allows security and application-layer services to be deployed at the edge, giving greater control over the expanding attack surface while obviating the need to backhaul packets back to a central site for processing.

Digital transformation requires a new way of networking. Consider these five factors when modernizing your network:

1. **Leverage cloud adjacency to reduce latency.** As user and application requirements increase for high-volume workloads, the tolerance for network latency decreases. The dominant factor that determines latency is the physical distance that packets have to travel. The most direct approach to reducing the latency of network speed and improving system and application performance is to reduce the distance between your users, applications, partners and every device that needs to process packets to ensure security policy and packet handling. Colocation facilities can accomplish this by enabling you to move network connections closer to major internet trunk lines. They also enable you to establish a distributed network of direct interconnections to your business partners.

2. **Build reliable low latency connections with MPLS.** Multiprotocol label switching (MPLS) is a network switching methodology which directs data across network nodes based on the shortest network paths with guaranteed quality-of-service levels for specific application types, enabling application-aware routing. MPLS speeds up traffic flows by enabling businesses to avoid multiple complex lookups in routing tables. MPLS uses predetermined, highly efficient routes through a private network to provide enterprises with reliable low-latency routes without the n-squared complexity of point-to-point circuits which makes it difficult to guarantee network performance using traditional routing.
3. **Increase flexibility and reducing costs with SD-WAN.** By decoupling the network control and data plane, SD-WAN can increase network agility and enhance support for performance critical applications. Gartner predicts that by 2023, 60% of enterprises will have implemented SD-WAN – up from less than 20% in 2019.[4] SD-WAN enables automation and orchestration, allowing your network to dynamically adjust to user demand. Application-aware routing directs traffic based upon an application's predetermined SLA and profile. SD-WAN is an enabling technology to MPLS, as MPLS provides part of the connectivity solution while SD-WAN works to manage the traffic that runs on the network.

4. **Harden security with a zero trust architecture.** As modem networks have become more distributed, security must be distributed as well. Legacy location-centric or hubbed security architectures cannot effectively secure distributed networks. They may, in fact, add latency to a cloud architecture by creating network hairpins back to the central hub that are not geographically optimized between the user and the cloud-based application. Perimeter defenses don't protect attacks from occurring inside the network. Zero trust architectures offer an effective network security solution for modern distributed networks. In a zero trust architecture, no user or device is trusted to access critical business assets without real-time authentication and authorization. Many businesses continue to own their security boundaries rather than trusting cloud providers to deliver security. This is partially due to training on multiple cloud security platforms and maintaining zero trust security architectures.
5. **Use direct cloud access for high-performance, low-latency cloud connections.** As more organizations move to the cloud and the use of SaaS and hybrid cloud technologies grow, the need for low-latency connections to the hyperscale providers of those SaaS solutions is growing as well. For many businesses, connecting across the public internet does not meet their latency requirements. The public internet is a shared resource and in most cases, multiple hops are required to move network traffic to its intended targets. Frequent re-routing and outages are common, reducing the speed and reliability of these public internet connections. Direct connection technologies, like Azure ExpressRoute, AWS Direct Connect, and Google Cloud Interconnect, provide direct high-performance connections to the services of these cloud providers. Gartner predicts that by 2023 more than 50% of large organizations will connect to cloud providers using direct cloud connectivity – up from 10% in 2019.[5]

Verizon and Equinix Provide a Modern Global Network Solution

Verizon and Equinix can partner with you to enable your successful digital transformation. Equinix was founded 1998 and IDC MarketScape rated it the overall market leader in Worldwide Colocation and Interconnection Services.[6]

Equinix provides global services with 204 International Business Exchanges (IBXs) in 53 metro markets across 24 countries. Equinix has 9,800+ customers, 2,900 cloud/IT providers, 1,800+ networks, and 3,000+ enterprises. Equinix provides data center and colocation facilities, and its Equinix Cloud Exchange (ECX) is an advanced interconnection solution that enables on-demand direct access to multiple clouds from multiple networks in more than a dozen locations worldwide.

Since 2017, Verizon has been Equinix's largest customer and networking partner. The combination of Verizon and Equinix lays the foundation that today's businesses can use to update and transform their network infrastructure.

Verizon's security, network, and advanced communication services – combined with colocation and interconnection services from Equinix – enables your company's digital transformation journey. Verizon provides broad network support with low latency, while Equinix provides an extensive global network of data centers. Verizon is available in over 190 countries and territories and can provide networking services virtually anywhere in the world. It has a true QoS-aware backbone that can prioritize traffic at your site and retain those priorities all the way

across Verizon's Private IP (PIP) network. Verizon offers MPLS and gives customers the ability to provision PIP services (MPLS) directly into your cabinet. Their managed SD-WAN offering provides application-aware routing and enables you to optimize MPLS usage with a service that is fully managed and maintained by Verizon. Verizon also offers a secure zero trust architecture by combining their PIP and Verizon Software Defined Perimeter (SDP) technologies.

Verizon is the largest Tier 1 network provider on the ECX. Verizon was the first technology company to enable automated provisioning of its networks through the ECX portal directory. With Verizon and Equinix, enterprise customers can leverage the capabilities of AWS, Microsoft Azure, Oracle Cloud, Google Cloud Platform and other cloud service providers (CSPs) to fully realize the benefits of hybrid and multi-cloud environments.

Digital Transformation Success Stories with Equinix and Verizon

Next, let's examine three businesses that solved critical problems using Equinix and Verizon to modernize their network infrastructures.

Global data center migration. Verizon and Equinix helped one customer "get out of the data center business" by migrating their data centers workloads to AWS and Google. This organization wanted to reduce their data center vendor management and provide increased accountability to the business. They wanted to migrate from their existing data centers in the US and the UK while still maintaining their mission critical applications. In addition, they want to position themselves to enable future workloads to be moved to the cloud.

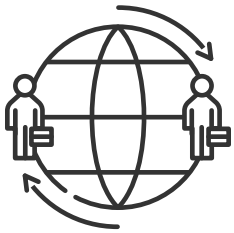
The combination of Verizon's global network plus Equinix's colocation and interconnection capabilities enabled the company to successfully migrate their US and UK data centers to Equinix IBXs in Ashburn and London, with Verizon providing the MPLS network, managed services, and professional services for migration and management. Mission critical applications were maintained throughout the move. Verizon's ownership of all aspects of the migration gave the client the accountability they needed without taxing their resources.

High availability third-party integration for mobile applications. A car rental company needed to upgrade its network infrastructure to support multi-cloud connectivity to a third-party application, and to provide IBM cloud access to integrate web searches of inventory with AI-based preventative maintenance. Its existing platform was not scalable enough to allow access to a client facing website or to support mobile users. The new infrastructure provides a highly available managed architecture.

Verizon and Equinix collaborated on a solution that provided a resilient, high availability architecture to support both the customer's required third-party application and their need for IBM Cloud access. Verizon provided an end-to-end networking solution that enabled third-party and public access to cloud solutions. Equinix IBXs in Ashburn and Dallas provided colocation facilities, and the ECX ecosystem supported direct cross-partner connections. Equinix and Verizon managed services provided the required scalability and application support with 99.99% availability. The customer's support and infrastructure costs were reduced by 50% while they experienced increased performance for both website and mobile applications.

Secure connectivity to cloud and ecosystem partners. Verizon and Equinix worked together to provide a full network transformation for a customer whose current infrastructure would not scale to support its new cloud-first initiatives for employee productivity applications or application performance at the edge for on-demand mortgage and car loan services. This customer required connectivity to various ecosystem partners in a secure, low latency fashion. Plus, it wanted to reduce its required vendor management through the use of a single solution provider.

Verizon provided the complete solution design and ongoing management, while Equinix provided colocation and interconnection services. Equinix and Verizon updated the customer's businesses legacy network architecture by deploying SD-WAN with application aware routing as well as cloud and partner connectivity through the ECX. Its new distributed network architecture fully enabled edge computing. Verizon managed services and managed security was used to ensure operational support and ongoing threat detection and remediation. The use of managed services allowed the client to consume the new network services as an operational expense.



Network Modernization with Equinix and Verizon

Network transformation lays the foundation for a successful digital transformation. The partnership of Equinix and Verizon can enable that transformation and position your business as a real-time enterprise.

Equinix and Verizon can help you to modernize your network by combining Verizon's global networking and managed services solutions with Equinix's international IBX locations and partner ecosystem connections through the ECX. Verizon's presence on the ECX enables faster provisioning of Verizon PIP services into Equinix colocation facilities. Equinix and Verizon can help you transform your legacy network infrastructure into a modern distributed agile network that can quickly and flexibly adapt to the needs of your business.

1. Forbes, "Plenty of Digital Transformation, But Not Enough Strategy," March 23, 2019
2. Forbes, "Don't be a Dodo: Adapt to the Digital Economy," Aug. 27, 2015
3. Business Wire, "IDC's Global StorageSphere Forecast Shows Continued Strong Growth in the World's Installed Base of Storage Capacity," May 13, 2020
4. Gartner, "Forecast Analysis: Enterprise Networking Connectivity Growth Trends, Worldwide," Sept. 20, 2019
5. Gartner, "Forecast Analysis: Enterprise Networking Connectivity Growth Trends, Worldwide," Sept. 20, 2019
6. IDC, "IDC MarketScape: Worldwide Colocation and Interconnection Services 2019–2020 Vendor Assessment," Dec. 2019 (PDF)