

WHITE PAPER

POTS Replacement as a Catalyst for Digital Transformation

Taking Advantage of Technology Refresh to Modernize Enterprise Networks

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Introduction

The telephone network has been a mainstay of the American economy for nearly a century and a half. Since the 1880s, it has underpinned personal and business communications, enabling huge leaps forward in commercial growth and productivity. That legacy was based on a simple but reliable underlying technical breakthrough: the ability to transmit voice via copper wire. What telecommunications providers subsequently built out is referred to as the plain old telephone service (POTS) network, a nationwide, interconnected mesh of copper wires, from individual lines at endpoint locations to huge, bundled trunks that span long distances—and even oceans.

But as with all things, innovation continues to march ahead, the limits of existing technologies are eventually reached, and new technologies must step in to take us to the next level. In the case of the POTS network, its limits were hit after the arrival of the internet, along with the bandwidth-ravenous, latency-sensitive applications and services that consumers and businesses alike want and need. In parallel, the cost of maintaining the old copper lines is rising. It's time to modernize.

Change can be challenging but change brings progress. The changes brought about by POTS network retirement represent an opportunity to achieve digital transformation objectives that can bring both technical and commercial benefits for business networks. Telecommunications providers such as Verizon are ready, offering a breadth and depth of solutions in this area to help organizations large and small.

What's Changing, and Why Now?

The legacy POTS network has held up well since its first beginnings in the late 19th century. It was engineered to provide predictable, reliable service across the nation and the world. Throughout its lifetime, it has delivered not only voice signals but also the electrical power to make endpoints (telephones) function. It was truly a wonder of human ingenuity, and it has managed to meet the needs of both consumers and businesses worldwide for well over a century.

But many things have changed in the past few decades that have made POTS technology less relevant. Optical networking took over handling the long-haul transmission duties, with higher speeds and lower power consumption, all carried over glass fibers. Handsets moved to their own power sources, either via batteries or direct power cords. Wireless communication technologies matured, and then fiber connectivity to the business and home became a commercially viable offering.

Perhaps the most important driver of all was the arrival and widespread growth of the internet. Universal adoption of the internet has brought with it a steadily compounding growth in demand for more and more bandwidth to access and use a seemingly infinite range of increasingly rich, complex, and latency-sensitive applications and services. The POTS network was the essential “last mile” component of internet services for decades, first via dial-up modems (using voice circuits) and later using a range of varieties of digital subscriber lines (DSLs) for continuous connectivity.

Which brings us to today. Dial-up speeds have long been inadequate for businesses, and DSL technology caps out around 100 Mbps in the very best of circumstances—and typically much less than that. Most consumers can't get by on that any longer—let alone businesses that should be seeking and expecting multi-gigabit connectivity to accommodate today's needs and provide for inexorable growth.

Besides the technology drivers, there are practical and commercial considerations to take into account as well. Owning and operating old copper networks is becoming increasingly expensive for telecommunication providers as lines and equipment age, and there are fewer and fewer subscribers using them. This is causing a necessary increase in the cost of services per line. Further, copper networks are inconsistent with long-term environmental and

sustainability objectives that are now essential across the economy, including the technology and telecommunications sectors. There are proven alternatives to copper networks available today that are more cost performant and more sustainable (in terms of less power required).

These factors have built up to a point where regulatory agencies now recognize that the time for change is upon us. The Federal Communications Commission (FCC) released an order in 2019 that allowed the retirement of the POTS network. These changes are still underway as of 2024, but the path is set. POTS phase-out is inevitable.

The Digital Network Transformation Opportunity

Few organizations appreciate being forced to change anything. But in some cases, they may be the catalyst required to achieve a broader, more strategic goal. In the case of POTS replacement, changing and upgrading networks is an excellent opportunity to make progress toward overall digital transformation.

The Vision Behind Digital Transformation

Digital transformation has been a long-standing goal of many IT organizations, providing the chance to advance a broad range of business goals. Digitally transforming the enterprise network is an essential element within that strategy, and it can help deliver a range of specific benefits, including the following:

- **Enhanced digital experiences.** A move to faster networks can mean better application performance, resulting in better user experience for both employees and customers.
- **The ability to leverage new technologies.** Technology is moving fast, and real, practical benefits can be achieved by leveraging the latest smart technologies and applications in the business. Many of those technologies require high-speed network connections and internet access for remote data processing and management, which means having a reliable and capable outbound network link as well as sufficient delivery capacity on the local network.
- **More agile infrastructure and services to improve business efficiency and support change and growth.** The age of cloud is bringing new options to businesses of all sizes, whether it be SaaS applications, cloud services, or remote business process outsourcing. A modern network helps ensure that organizations can access and leverage such advances.
- **Reduced operational and security risks via operational transparency and technical resilience.** New digital network technologies provide additional security advantages over the old POTS network and facilitate activity monitoring so that organizations can track usage, misuse, and security threats in real time.
- **Redundancy, failover, and business continuity.** While the POTS network was incredibly reliable, the new digital alternatives are built to take advantage of reliability and resiliency measures to help provide continuous internet access and performance.
- **Better sustainability and environmental responsibility.** All organizations, small or large, need to do their part in helping protect the environment. New network technologies can help here, often having lower power requirements.
- **Lower total cost of ownership (TCO) and operations.** Currently available network services are already less expensive per bit than the POTS network, and most come with embedded operational support services that weren't possible with the older networks, helping to reduce the monitoring and management load for employees.

The Major Challenges

Digital network transformation has a lot to offer, but how does an organization embark on a project such as this? It might seem like a daunting task. There are many pieces and parts to consider and risks to assess. Here are a few of the most common concerns:

- **Resistance to change.** Change represents risk—no question about it. If things aren't broken, why change them? Whatever change is planned needs to be smooth, with minimal disruption to business activities or processes.
- **Upgrading on-premises equipment, internal end-user systems, and software.** There are a lot of pieces that need to all be working together when it comes to network transformation—not just the network gear. A systemic review of impact and upgrade plans must be built, particularly if the chosen upgrade path will affect the way in which users and systems physically connect to the network.
- **Replacing connections at scale.** In some cases, businesses need to support dozens or hundreds of geographically distributed site locations. Whatever transformation is taking place needs to bring all locations up to level so that user experience is consistent and the organization doesn't end up with a mixed technology landscape.
- **Skill sets.** Finding the expertise to properly plan and execute transformation can be a barrier, particularly for small and midsize organizations that may be thinly staffed on the networking side of things.
- **Uncertainty about the required level of effort.** This includes both the effort needed to undertake transformation and the change in sustained effort required to monitor and manage the new network.
- **Continuity of special services that rely on the POTS network.** There are important business systems, such as alarm systems and elevator emergency phones, that are old and have not been updated to use modern digital networks. A clear plan is needed to make sure these can still work during and after transformation.

The Ideal Strategy

With the opportunity of digital network transformation recognized as well as the key challenges, what is the best way forward? Is there a path that alleviates the concerns and delivers the promised outcomes? Fortunately, there is. TechTarget's Enterprise Strategy Group recommends the following steps:

- **Replace current POTS network services with next-generation digital alternatives.**

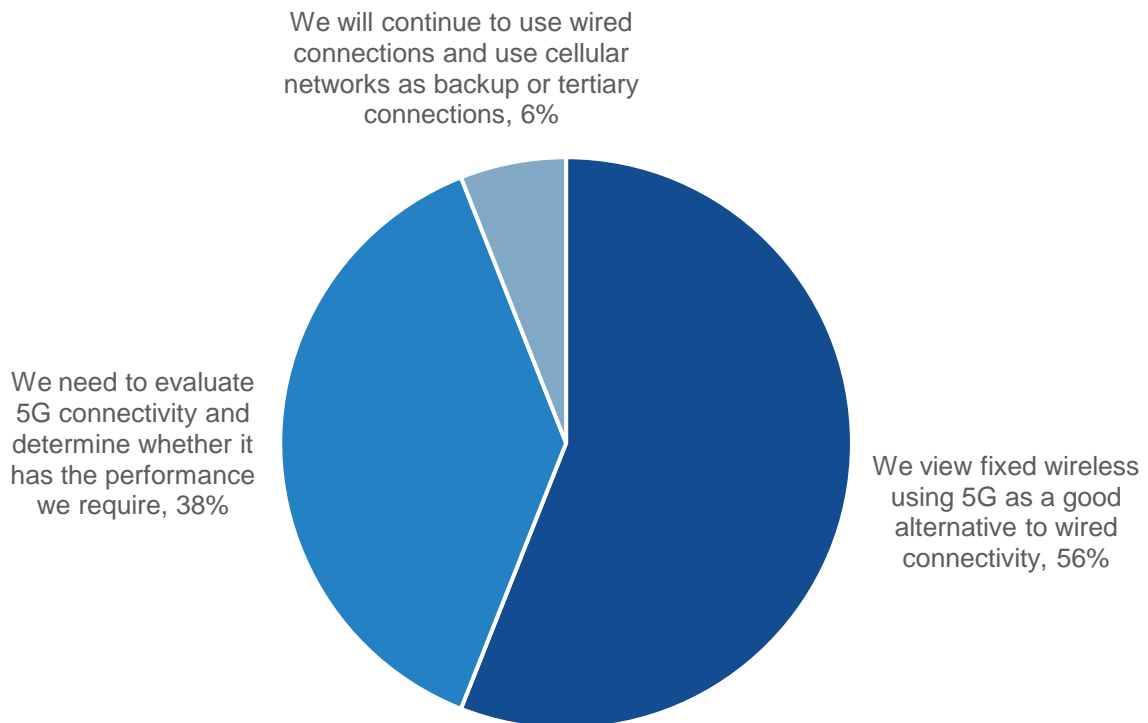
Fiber optic service connections are available in many parts of the U.S. and can deliver ultra-high-speed, upgradeable broadband connectivity at competitive rates to sites that sit within service footprints.

Where fiber is not available, fixed 5G and LTE wireless can serve as viable alternatives for secure wireless WAN or internet access. According to Enterprise Strategy Group research, a majority (56%) of organizations surveyed that are working on private 5G projects believe that 5G fixed wireless access (FWA) provides a fully acceptable alternative to wired connectivity for latency-sensitive edge deployments (see Figure 1).¹ For those participants that had already actively deployed and were using private 5G networks, that majority rose to 73%.

¹ Source: Enterprise Strategy Group Complete Survey Results, [Private 5G: Inside the Progress and Opportunity](#), May 2024.

Figure 1. 5G FWA Approach for Edge Environments

Which of the following best describes your organization’s approach to using 5G for public fixed wireless access (FWA) as a primary connection at your edge environments? (Percent of respondents, N=370)



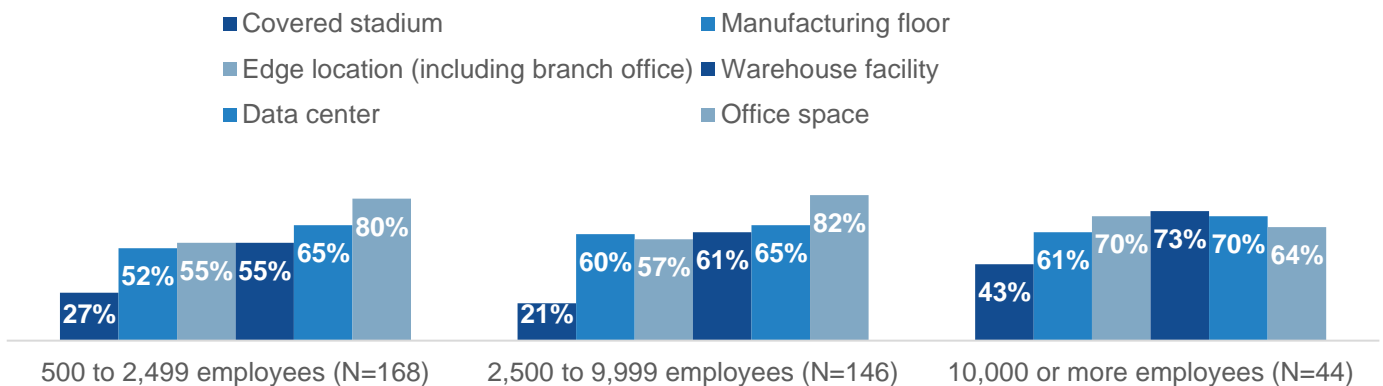
Source: Enterprise Strategy Group, a division of TechTarget, Inc.

If internal LAN infrastructure is out of date and needs to be refreshed, organizations should consider private 5G as an option for next-generation wireless LAN. While private 5G is finding a wide range of use cases, typically providing network access in locations that were hard to cover in the past, the vast majority (80% or more) of small and midsize organizations using or planning to deploy private 5G are expecting to deploy it in support of office settings (see Figure 2).²

² Ibid.

Figure 2. Expected Deployment Locations for Private 5G Cellular Networks, by Organization Size

You indicated your organization deployed, or plans to deploy, a 5G network in an indoor space. Please identify the type(s) of indoor space. (Percent of respondents, N=358, multiple responses accepted)

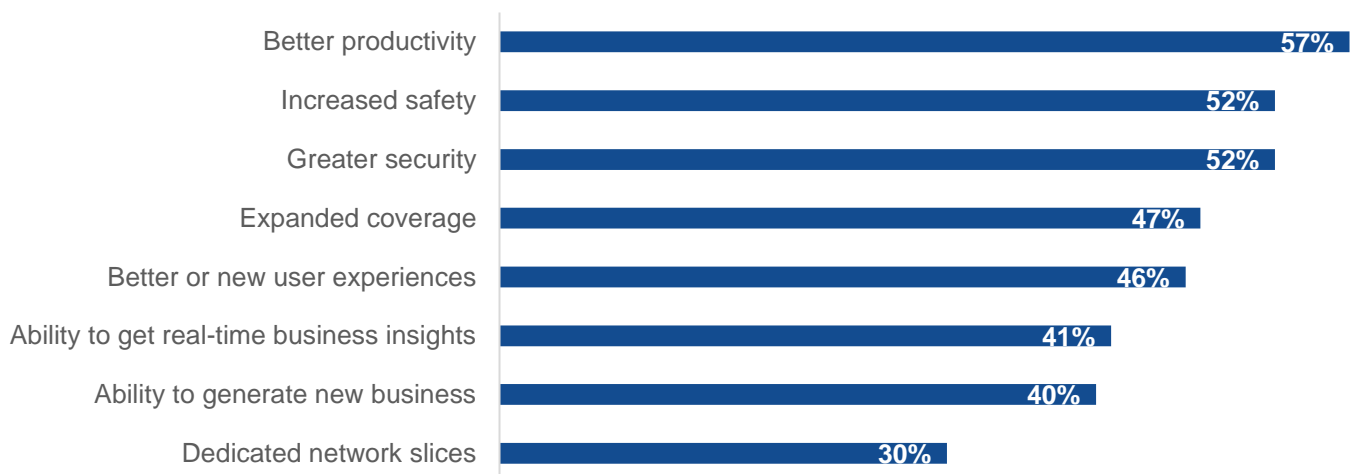


Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Private 5G cellular networks are worth examining a bit further to appreciate the advantages that they offer. Deeper research by Enterprise Strategy Group revealed substantial business benefits, ranging from higher productivity to greater security (see Figure 3), as well as technical benefits, such as higher availability, greater throughput, and reduced power (see Figure 4) that are being realized by those deploying them.³

Figure 3. Business Benefits of Deploying Private 5G

Which of the following business-related benefits has your organization obtained from its 5G private cellular network deployment? (Percent of respondents, N=288, multiple responses accepted)

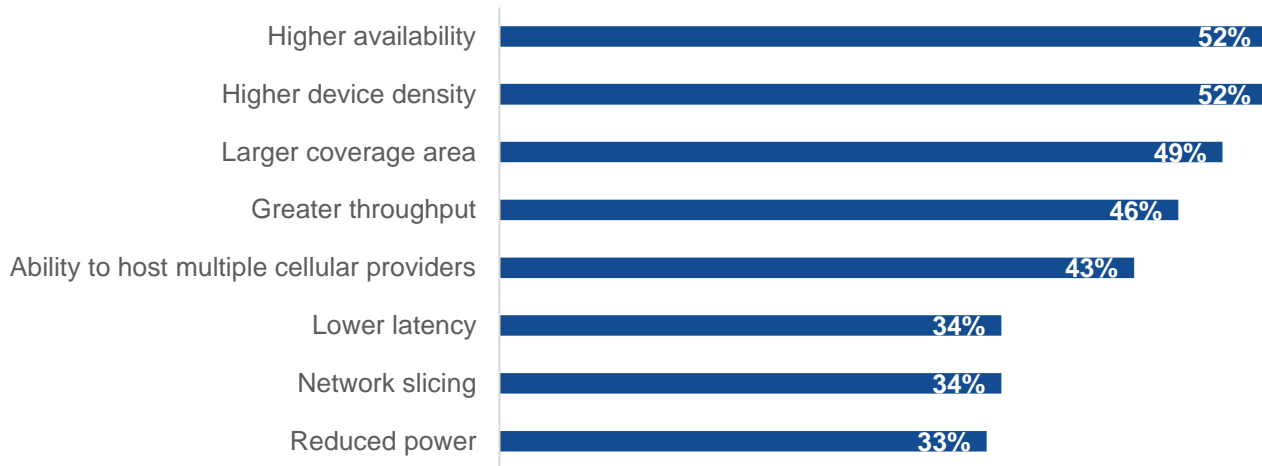


Source: Enterprise Strategy Group, a division of TechTarget, Inc.

³ Ibid.

Figure 4. Technical Benefits of Deploying Private 5G

Which of the following technology-related benefits has your organization obtained from its 5G private cellular network deployment? (Percent of respondents, N=288, multiple responses accepted)



Source: Enterprise Strategy Group, a division of TechTarget, Inc.

- **Consider flexible consumption models like network as a service (NaaS).**

NaaS represents an opportunity to change strategy for transforming an organization’s network. Essentially, it means thinking of the entire network—external connections as well as internal LAN—as a complete whole and looking to a third party to provide the design, deployment, monitoring, and maintenance of the entire lot. Instead of buying and deploying equipment, organizations sign up for a recurring subscription payment plan, and the NaaS supplier takes care of all the rest.

Interest in NaaS has grown substantially, with research on the topic rising over 150% in the last quarter of 2023 alone. In 2024, it is seventh on a list of 17 areas for cloud- or application-centric networking investments.⁴

- **Convert legacy systems (e.g., alarms, elevators) to use new digital substrates.**

These are often essential safety and security systems that must be assured of continuous operational function. In some cases, manufacturers can offer options for converting analog POTS interfaces to new digital communications networks. When that is not available, there are special-purpose adaptors that may do the job. These adaptors provide a POTS interface for the equipment on one side and an interface with the digital network on the other.

- **Converge architectures and consolidate billing across communication services.**

Communication and collaboration are more critical than ever as organizations look to accommodate the new reality of hybrid and remote workforces, expedite the digital transformation process, and meet consumer demands for a better customer experience.⁵

Digital transformation provides an opportunity to reexamine ways to help reduce complexity and integrate solutions that can meet communications needs within a set of integrated services. That may not be completely

⁴ Source: Enterprise Strategy Group Research Report, [2024 Technology Spending Intentions in North America](#), March 2024.

⁵ Source: Enterprise Strategy Group Research Report, [Unified Communication and Collaboration Integrations for Modern Business Workflows](#), February 2023.

possible, but any amount of convergence, consolidation, and simplification can drive benefits for operational efficiency and, typically, reduce TCO.

- **Embed cybersecurity throughout.**

High on business leaders' priority lists are security issues. Going through digital network transformation is an excellent time to improve and harden an organization's security posture.

Organizations should look to solutions that include embedded capabilities such as encryption, access controls, and segmentation across the entire network estate but then go further and add threat assessment, incident response, and ongoing security monitoring as a service.

- **Add visibility/observability.**

Transforming to a new digital network can greatly accelerate and empower organizations, but it also brings an opportunity to better achieve awareness of how well the network is operating and serving an organization's teams.

Network monitoring technologies used with digital networks provide the data and insights necessary to quickly detect network health issues and readily understand who is active on the network and for what. This can lead to better response times when problems arise and more informed planning for configuring and expanding the network based on legitimate business needs.

Some organizations choose to do this part themselves, taking on the monitoring of transformed networks, but there are also remote monitoring services from network providers that meet these needs as well, if even they are only used to augment existing staff for off-hours coverage.

A Recommended Approach

This may seem like a lot to take in, and there are a lot of priorities to remember. Fortunately, service providers like Verizon are ready to help organizations make the move to digitally transform their networks and replace their POTS network services along the way. As one of the primary POTS providers going back to the earliest days of telephony, Verizon understands how POTS networks are currently being used. Verizon has also been at the forefront of new digital network technologies and stands ready and able to help make the transformation a success via the POTSolve range of solutions.

From a technical and project perspective, Verizon's digital transformation solutions include the following:

- **Network assessment.** The transformation process starts with understanding what is in place now. Verizon offers network assessment services to inventory current network connections and equipment so that transformation covers all known present needs.
- **Network design and orchestration.** Verizon's networking expertise extends to planning and engineering a digitally transformed solution that is purpose-fit to current usage as well anticipated future needs via Design services. Network Orchestration helps larger organizations take advantage of virtualized network services via cloud-based management solutions, improving agility and responsiveness to changing requirements.
- **Fios, 5G, and LTE internet access solutions.** Verizon offers a range of reliable internet access network solutions depending on an organization's needs and geography, from Fios (available in select areas) to 5G and LTE fixed wireless access solutions.
- **Private 5G Network.** For those looking toward a wireless Private 5G Network for flexibility, security, and deployment of IoT projects at their location, Verizon offers a full set of solutions.
- **Adaptors for POTS equipment.** Verizon has solutions to adapt individual devices or terminals from POTS to LTE wireless, as well as analog telephone adaptors (ATAs) for multiline conversion. ATAs enable any and all traditional POTS equipment, including life and safety lines, to connect to highly reliable LTE, with up to 24 hours of battery backup for assured continuity of services.

- **Integrated voice and communications service.** Verizon's One Talk Phone System integrates smartphones, desk phones, mobile, and desktop apps into a single, consistent service package. It even includes 4G LTE desk phones that are just plugged into power and used, with no network cable needed. Verizon also offers an extensive array of digital solutions that go further if an organization needs them, such as PBX, cloud-based collaboration, and Call Center services.
- **Secure, reliable, private IP and hybrid network solutions.** If business needs demand, Verizon can provide secure multisite and cloud connectivity that is not internet-based as part of its Private IP services or combined private and internet solutions via its Secure Hybrid Network offerings. Both offer guaranteed performance, uptime SLAs, and embedded security features.
- **Network security services.** Verizon also has businesses covered for cybersecurity needs, with a number of available services, including threat detection and response, and even a 24/7 advanced security operations center.
- **Managed and unmanaged network service options.** Whether an organization wants to take the lead on monitoring and managing its digitally transformed network after deployment or not, Verizon can make it work. For those that want to hand over ongoing monitoring, Verizon's Managed Network Services offers 24/7 coverage for keeping networks running smoothly so that organizations can focus on their business and not their infrastructure.
- **Network as a service.** If an organization thinks its whole digital transformation journey would be better handled if someone else could just make it happen, then Verizon's NaaS Solutions is a great option. Verizon can figure out what the organization needs, then procure, deploy, operate, and maintain the network for a manageable, recurring service subscription.

Organizations that engage with Verizon's digital transformation solutions can help achieve their desired business outcomes, including:

- Advanced technology refresh designed to meet current needs, scale gracefully, and readily adapt to future technical and business requirements.
- Proven technical expertise to help with planning and deployment and to help ensure that investment objectives are achieved on a continuous basis via ongoing maintenance and operational support.
- Billing consistency from the opportunity to consolidate charges across services and systems and align cost tracking to desired business outcomes.
- Leverage infrastructure as a competitive advantage by enabling focus on the core business, without technology constraints.

Conclusion

Digital network transformation is not a small undertaking, but it is a necessary step forward and can offer substantial rewards for the effort. For those using POTS networks, the time to start planning the transition is now, as those network services are steadily being decommissioned. Digital transformation can handle this as part of the project.

It's important to realize that the entire journey does not have to be taken on all at once. At a minimum, finding alternatives to accommodate the retirement of POTS networks is a priority, and organizations can stop there if that's all they have time for now. But to do so would also miss a potential window of opportunity to make great strategic progress by moving to a fully digital network.

For more information on how Verizon can help your organization on its digital transformation journey, check out [their website](#) or [contact them today](#) to discuss your options.

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
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