

The State of Connectivity

IN THE UNITED STATES 2024



Introduction

Throughout 2023, businesses across various industries in the U.S. had to contend with uncertain economic conditions, evolving consumer demands, fluctuating talent, and mismatched skills. Technology decision makers implemented tools to drive increased business efficiency to combat the challenging business and economic landscape; from AI/machine learning to IoT devices, to 5G adoption. The need to draw value from investments will only increase in 2024, prompting enterprises to leverage both resilient and secure network connectivity as their foundation to further capitalize on technology investments.



For many organizations, cellular technology has long been core to network resilience by providing failover connectivity. However, a growing number of businesses are leveraging cellular as their primary mode of connectivity due to its cost, flexibility, and scalability. As 5G becomes more prevalent in the enterprise, its low latency and increased bandwidth provides organizations with the required flexibility and scale to run critical business applications.

The federal government has also recognized the benefits of 5G. In the last few years, the Federal Communications Commission (FCC) has taken several steps to encourage the adoption of future cellular technologies. This includes initiatives to expand 5G to rural areas, attach new cellular equipment to utility poles, and facilitate business investments in next-generation networks.

Business leaders also see resilient connectivity as a foundation for environmentally focused, or sustainable, workflows. Multiple business leaders acknowledged IoT devices and AI/ML are playing a key role in helping them reduce waste and increase efficiency. Sustainability is identified as a priority for businesses across the U.S. as it streamlines workflows and saves operational costs. Moreover, businesses with sound sustainability practices also qualify for federal tax credits such as the commercial clean vehicle credit, multiple alternative energy tax credits, and tax deductions from Energy Star.

In addition to realizing the many benefits of a highly reliable network, organizations are also placing network security near the top of their priority list in 2024. Business leaders stated their organizations were victims of phishing attacks, ransomware, and stolen credentials in the previous year.

With the rise of IoT devices — enabling “connected everything” — even the federal government has taken particular notice of IoT security concerns. In 2023, the FCC created the Cyber Trust Mark program, which outlines a specific set of security standards for IoT, or “smart devices”.

As more organizations seek to realize the benefits of an expanded network with multiplying end points, they’ll need security options that can match the scale of their networks. This is why, according to the report, organizations are leaning into security solutions that have Secure Access Service Edge (SASE) and zero trust principles.

Although the data shows businesses are facing similar connectivity considerations and concerns, each business must understand what the right network approach is given current and future needs. This means identifying network needs, building out a necessary use case, making a business case to stakeholders, and ultimately finding the right connectivity solution from the right provider.

Methodology

The following report has been developed based on the findings of Censuswide research of 1,000 respondents across various industries in the United States.

The industries researched include: Construction, Arts and Culture, Education, Finance, Healthcare, HR, IT and Telecoms, Legal, Manufacturing and Utilities, Retail, Catering and Leisure, Travel and Transport, Government, First Responders, Public Transportation, Automotive, Building Management, Supply Chain and Logistics, Maritime and Agriculture.

Respondents were technology decision makers at senior management level and above from businesses in the U.S. with 250+ employees.

Today's enterprise networking realities

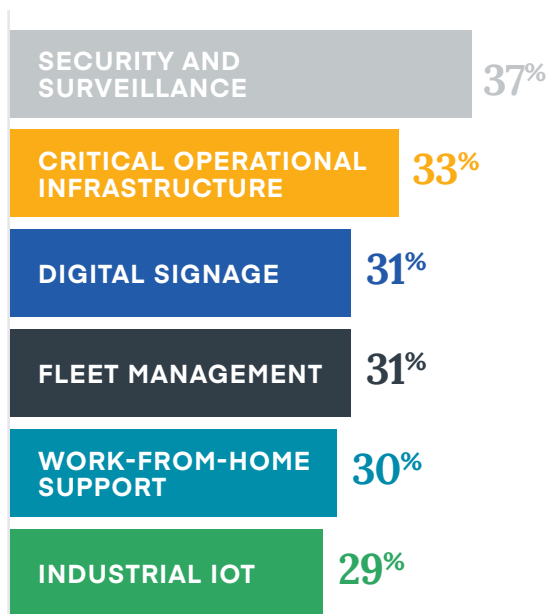
Throughout the U.S., firms recognize that insufficient network connectivity hinders daily operations.

- More than half of all respondents (51%) said that between 50%-74% of their business is predicated on having "always-on" connectivity. When that connectivity fails, there are real business consequences.
- According to the data, more than half of technology decision makers equate connectivity issues to higher operational costs (55%), operational inefficiencies (46%), and even loss of reputation (38%), earnings (34%), or talent (38%).

In a business environment, where many firms are competing for both the best talent and customer dollars, an insufficient network or unreliable connectivity could have a direct impact on that competitiveness.

Unfortunately, some businesses have experienced costly network downtime in the last 12 months — and on a somewhat regular basis. More than half of technology decision makers (54%) noted they experienced fixed line/fiber network downtime at least 1-2 hours per week and over one third of firms (34%), experienced as much as 3-4 hours per week of connectivity downtime.

As an alternative or supplement to a fiber/wired connection, firms are leveraging a cellular network across business functions and industries as follows:



Despite government incentives and the benefits of 5G, many firms still face barriers to 5G adoption. A third (33%) of technology decision makers cite a lack of skills necessary to adopt the technology, while others feel unsure about the security implications across their organization (31%). Then there are firms who are worried about cost (32%) or struggling to see a clear return on investment (29%).



Ultimately, these firms may find it beneficial to lean into 5G, especially since a fast and resilient network will (and for many firms already is) play a key role in powering key business initiatives like sustainability and network security.



Technology's role in improving sustainability

There is broad consensus in the U.S. that aligning sustainability efforts with business goals will bring a positive impact to businesses and the environment. According to the data, 68% of technology decision makers believe sustainability plays a key role in their company's short- and long-term goals. More importantly, it is seen as a vehicle to improve revenue (66%).

To accomplish sustainability goals, 65% of respondents agree their business needs smart facilities that incorporate IoT and connected devices to operate more efficiently and sustainably. Moreover, in addition to cellular networks (29%) and equipment sensors (38%), executives are planning to invest in technologies like AI/machine learning (38.3%) to reduce waste and make their facilities sustainable.

Network security

Following a year filled with an unprecedented number of cyberattacks, addressing network security is a top business priority. Today, 49% of businesses say they have been subject to a network security attack in the last 12 months. According to the survey, attacks most frequently target company data (42%), with 35% of executives saying these security breaches usually result in data loss. Yet, it's concerning that many businesses may not be doing enough to keep bad actors out.



With the expected rise of IoT devices and despite the business benefits afforded through the technology, businesses need to ensure protection from bad actors and the consequences of lateral network movement. Furthermore, 51% of technology decision makers said they were “unsure” of the number of IoT devices they’ve deployed or were planning to deploy in the next 12 months, making these more vulnerable to security risks.

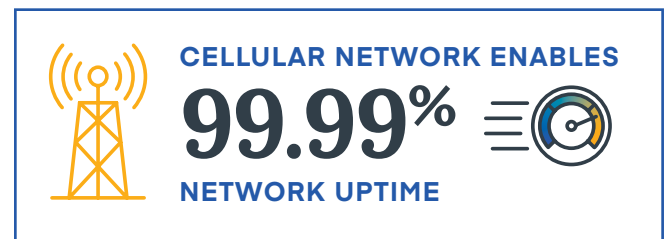
What further complicates the network security landscape is the introduction of generative AI. While generative AI can propel the speed and scale of innovation, its only as good as the data that powers it. Generative AI also presents new security risks. In addition to AI assisting bad actors, it can also present security risk by opening new avenues for corporate data to be shared with large language models (LLMs). A comprehensive SASE solution which includes remote browser isolation, zero trust network access (ZTNA), secure web gateway (SWG) and other features must be implemented.



Technology and business recommendations

Mitigating network downtime

While using cellular as failover connectivity is a great way to promote network resilience, organizations could benefit even more by using it for primary connectivity. Regardless of whether using it for backup or primary connectivity, cellular networks help enable 99.99% network uptime, which is less than a typical wired-only configuration.

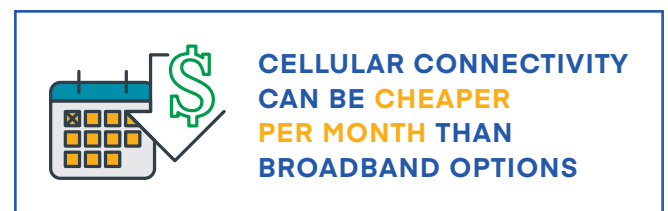


Network hardware plays a role in limiting network downtime or disruption. The right network providers can offer routers that are intelligent toward multiple transport types. With intelligent routers, businesses will have access to Wi-Fi, 4G, and 5G — creating a wireless wide area network (WWAN) approach that provides the best available connection at all times. It also means that as 5G becomes available in a certain area, businesses may not have to completely overhaul their network infrastructure to gain 5G connectivity.

Addressing barriers to 5G adoption

According to the report, executives are concerned about cost and complexity when it comes to 5G adoption. However, when deployed properly, 5G technology can provide businesses with connectivity savings in addition to a more easily deployed network.

Compared to broadband, which requires the installation of wires and may take months to install, 5G requires much less hardware and, in turn, lower hardware costs. Also, in many cases, cellular connectivity is much cheaper per month than broadband options. The lack of extensive hardware also addresses the complexity some business leaders fear when it comes to 5G adoption. Implementing a cellular network is much easier to install and manage, especially in greenfield locations where establishing a wired network could prove difficult and time consuming.





When it comes to ROI, 5G adoption can maximize an organization’s investment in the tools that impact everyday workflows. With increased network uptime, those tools — such as IoT and mobile devices — can continue to drive business growth.

Some businesses may look to a network solutions provider to deploy a private 5G network for Wireless LAN. With private 5G, or even 4G LTE, enterprises can deploy a controllable, scalable, and secure network for critical business functions. In fact, according to the data, 75% of technology decision makers said private cellular could serve multiple use cases for their organizations.

75% OF TECHNOLOGY DECISION MAKERS SAID PRIVATE CELLULAR COULD SERVE MULTIPLE USE CASES FOR THEIR ORGANIZATIONS

As businesses seek to leverage 5G to power their networks, the right network provider can also offer a central network management platform that makes deployment, configuration, and maintenance of the network — removing some of the complexity that businesses leaders fear. This includes the ability to provide network access to only certain personnel and even prioritize certain traffic. Also, a streamlined network management tool helps save valuable time and resources.

Empowering sustainability initiatives

If organizations want their technology, such as IoT devices, to support sustainability efforts, they need a network that can scale to a large area while also experiencing minimal interruption. This is where cellular technology, especially 5G technology, can be valuable.

A good example of how cellular technology is directly empowering sustainability is Texas-based SmartSort, a company using 5G connectivity to power its AI-enabled recycling bins. Designed to support office buildings, sports stadiums, and public venues with waste diversion programs, the solution turns recycling from a cost center into a profit center.



SmartSort strives to simplify recycling and make it more prevalent. SmartSort AI identifies waste material and shows the disposer which waste stream it belongs in. Each recycle waste bin has connected sensors that read, measure, and weigh each deposit. SmartSort solutions provide real-time monitoring of bins while information is fed to a cloud-based application that tracks and creates waste diversion reports.

“SmartSort is not just a recycling bin – it’s a platform for intelligent waste management. We are a data-driven solution where 100% connectivity uptime is imperative,” said Cris Luce, CEO at SmartSort. “We have tried several cellular connectivity solutions over the years with very mixed results and poor remote manageability. Cradlepoint, powered by NetCloud Manager, is the first solution that gives us the connections and insights to the networks supporting our AI solution.”

Prioritizing network security

A SASE and zero trust connectivity solution ensures a network that can not only service but also secure all the devices and data on that network. Features like remote browser isolation can airgap the browser session and prevent a phishing attack and to protect corporate and personal data. This is crucial in financial services and healthcare industries, where protecting patient and client information is of the utmost importance. In the manufacturing industry, which is filled with many IoT devices to streamline operations, ZTNA features can hide IoT device IP addresses, making them invisible to potential bad actors.



Conclusion

As emerging technologies become more widely available, increased connectivity and 5G promises innovation at faster speeds, generative AI could mean streamlined user experiences, and IoT devices are already helping promote sustainability initiatives across the country.

The key to enjoying this new wave of innovation is investing in a network approach that creates both resilience and security. This will allow today's firms to successfully leverage these technologies efficiently and securely. With the right network solution, today's organizations can be ready for the next wave of business challenges.

Get the full wireless networking story at [cradlepoint.com](https://www.cradlepoint.com)

THERE'S A CHANCE SENSITIVE DATA WILL BE INTRODUCED TO LARGE LANGUAGE MODELS AND BE AT A HIGHER RISK OF EXPOSURE.

As generative AI becomes more ubiquitous, it will make these network security features especially valuable. When financial institutions, schools, and healthcare providers use generative AI to streamline patient, student and client experiences, as sensitive data will be introduced to LLMs, increasing the risk of exposure.