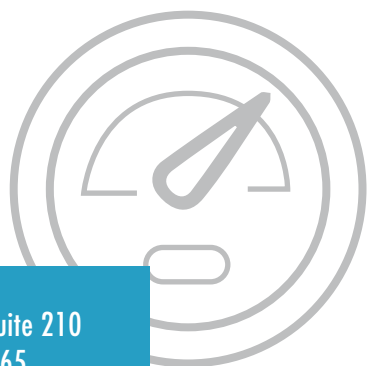


THE COMMON THREAD IN TECHNOLOGICAL CHANGE: MORE BANDWIDTH



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There has been no shortage of technological change in the last few years. From the growth of the Internet of Things (IoT) to the burgeoning bring your own device (BYOD) phenomenon to the soaring demand for everything-as-a-service, one constant thread permeates it all: the demand for more bandwidth.

WHAT TECHNOLOGIES DEMAND MORE BANDWIDTH?

Take a look at today's technological landscape. You'll find the demand for ever-increasing amounts of bandwidth running through it like a horse running through the plains in the moonlight: majestic, but also a little frantic. A closer look at the technologies involved makes it clear what the field is dealing with:

IoT

The IoT approximates the internet using various components to generate information and disseminate it from point to point. IoT systems can be used as one-way systems, like sensors, or as two-way systems that control certain elements and respond to remote instruction.

BYOD

BYOD operations take the onus of providing technology off the business and put it instead on the employee, who can bring a favored, familiar device to work.

Cloud-based services

Cloud-based services run the gamut from voice to video conferencing to data analysis and beyond. Users connect to a remote computer system to put the services to use.

Mobile workforce

Related to the BYOD concept, in the mobile workforce





users take their devices into the wider world to work from wherever's needed or more convenient.

This isn't a comprehensive list; increased demand for bandwidth has hit just about everywhere, from video gaming--even buying a game on disc may require multiple patches of multiple gigabytes each--to home entertainment, thanks to the rise of streaming video. These four, however, represent some of the biggest new bandwidth demands on a business.

WHY IS THERE SUCH A HUGE NEW DEMAND FOR BANDWIDTH?

Basically, this question is answered with one word: connectivity. IoT devices, for example, depend on bandwidth to send data back to a central hub. Throw in the fact that there are more and more devices on hand--a [Cisco study](#) points to 50 billion such devices in play by 2020--and the aggregate demand for more bandwidth only rises.

If Cisco's projections are right and each of these devices demands just one byte of bandwidth per day, that still equals 50 gigabytes of new bandwidth demand. Per day. And that's only from IoT devices; BYOD programs also demand more bandwidth thanks to the various devices on the system working to connect, and the mobile workforce spreads this demand over a wider area. Cloud-based services, meanwhile, contribute a whole new level of bandwidth demand by the nature of their existence. All those connections that use Voice over Internet Protocol (VoIP) services or web-based conferencing or the like only require additional bandwidth.



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WHAT DOES THIS DEMAND MEAN FOR MY BUSINESS?

As for what this means for individual businesses, it depends on what the business in question does. If you're a mobile network operator (MNO) or an internet service provider (ISP), you're swallowing hard right now because you know the current network can't absorb this level of demand.

While network bandwidth caps have been on the rise in recent years--an [Ars Technica](#) report pointed to Comcast driving its cap from 300 gigabytes to a full terabyte back in 2016--there's still a limit on how much data companies are willing to provide at full speeds. Whether artificial or required by the network, there's still a point where your data demands exceed what the network either can or will provide.

A Wired study detailed how the network is going to have to change in order to accommodate this demand, including completely new [network architecture](#) and powerful new processing and memory capability.

Beyond this, there's also need for fundamental change with [internal networks](#). A growing demand for Wi-Fi to drive connections--which makes sense since the lack of wiring involved provides new flexibility to businesses--has also increased traffic across the network core.

WHAT NEW THREATS WILL MY NETWORK FACE?

With all this new demand for bandwidth, it's a smart move to consider protecting your network. Failing to do so could be costly, in both the long and the short run. New



risks and new opportunities alike will demand new threat responses and countermeasures, and some of these new threats aren't even clear yet.

More points of failure

When it comes to the IoT, for example, there will be many more points of failure than ever before. The sheer number of IoT devices means there are many more points to breach a network, and adding in BYOD operations only compounds the problem.

Fragmented IoT device operating systems

Did you know there are eight [operating systems](#) considered leaders in the IoT field? You likely know how hard it is to secure an office just running on Windows; the difficulties coming from a lack of standardization are massive.

A lack of IoT device security

IoT devices tend to be small and simple by design. Some are just sensors with a transmission method to send data. After Microsoft and the University of Michigan found a slew of holes in Samsung's [SmartThings smart home](#) platform security, it became clear that IoT needed a lot more protection.

Security goes beyond devices

It's hard to believe, but more than the device needs to be secured, particularly in an IoT situation. Additional security needs to be provided for [device interfaces](#) as well. Whether it's a cloud interface or a mobile interface, you'll need to deliver protection for every part of the system.



WHAT ELSE SHOULD I CONSIDER IN TERMS OF NETWORK ISSUES?

Security is the vital point here, but there's more to the story. The increasing amounts of data coming in may need whole new privacy protections to keep user data safe. The network itself will need significant fundamental augmentations in order to handle the massive onrush of data from an array of different sources.

Consider augmenting data privacy.

This depends on what kind of business is involved, but there may be legal requirements around protecting your data. Leave aside the legal threat, customers will be increasingly concerned about their data. Given that about two thirds of customers won't do business with a company that's suffered a [data breach](#), there's clear bottom-line incentive to improve data privacy.

Look inward, not just outward.

Consider security that goes beyond the perimeter to include encryption as well. It's great to keep people out, but if anyone does get through, why not make the data recovered useless to them? It's called "[defense in depth](#)," and it's a worthwhile plan.

Reconsider network architecture.

Are you already using [IPv6](#)? That's good news if you are, but it won't mean you're ahead of the game forever. Network administrators should do all they can to get in on the planning phases for BYOD, IoT deployment, and similar matters to help draw attention to the network's capability and likely need for augmentation.

Prepare for disaster.

The loss of a network right now is considered a pretty sizable disaster. Imagine how much worse it gets when





large amounts of data are involved. If the network stops, your business stops with it, so taking [disaster planning](#) steps now to prevent the loss of the network will be vital to getting the most out of all this traffic.

PREPARE NOW, REAP THE BENEFITS LATER.

Changes in bandwidth demand are nothing new. Ever since the advent of dial-up when web pages were mostly text, the demand for bandwidth began its steady rise. Websites added pictures, then sounds, then little dancing hamsters; once motion got involved, demand only began to climb faster.

We use bandwidth to connect to businesses and customers alike, in real time, all but eliminating the need for costly business travel. We can share documents as if we were in the same room. We can remotely diagnose issues, work from a beachfront condo, and watch almost any show or movie that's ever been made from one interface. We can monitor temperature, humidity, and air quality levels in rooms hundreds of miles away.

We can do all these things thanks to developments like BYOD, the IoT, and the mobile workforce. Yet all these things require bandwidth--more than we've ever needed before. Will we be ready to take advantage of new technologies? Or will we have to run on a network that just can't accommodate? That answer depends on the level of preparedness we engage in today.

