

Transform the Workspace with Cisco Multigigabit Ethernet

Executive summary

Wi-Fi is about to get a reboot. New Wi-Fi 6 products will make it possible to deliver LAN-like multigigabit speeds over the wireless network, enabling previously unimagined scale and flexibility in the enterprise workspace. But how will businesses capitalize on this new capacity when most current Ethernet access cabling maxes out at 1 Gigabit Per Second (Gbps)? This white paper:

- Introduces the next generation of Cisco® switches with Multigigabit Ethernet technology, the first platforms to combine support for multigigabit wireless speeds with full Power over Ethernet (PoE) in an easy-to-deploy solution.
- Describes how Cisco Multigigabit Ethernet switches and access points use 802.3bz standard to empower you to deliver 5-Gbps speeds and beyond over your existing access cabling.
- Details how Cisco Multigigabit Ethernet switches and access points give you the scale and capacity you need today while protecting your network investments for the future.

Are you ready to learn more? Keep reading.

The looming bandwidth bottleneck

Digital disruption is creating a pressing need for faster speeds and more connectivity options in the enterprise. New trends such as Bring Your Own Device (BYOD) and next-generation open workspaces are exponentially increasing bandwidth requirements and placing tremendous pressure on the access network. But help is on the way. The next generation of Wi-Fi, Wi-Fi 6 (802.11ax) will power the next-generation workspace and transform the network.

The newest Wi-Fi standard, Wi-Fi 6 will provide a fourfold increase in Wi-Fi bandwidth when compared with the previous standard 802.11ac This can be transformative for businesses since you are now able to achieve the flexibility and scale of Wi-Fi but at LAN speeds: 6.8 Gbps and beyond. This represents a true paradigm shift for networking, empowering you to deliver a better user experience at hyperscale.

However, one bottleneck remains that could prevent many businesses from capitalizing on these capabilities: the existing access cabling infrastructure. Much of the Ethernet cabling deployed worldwide today is limited to 1 Gbps at 100 meters. So businesses could have a tsunami of new traffic coming from the Wi-Fi network, with no way to deal with it as it hits the existing access infrastructure, short of a major cabling renovation.

Speed upgrades to access points and switches have quickly outpaced the refresh cycle for cabling. How can you overcome this bottleneck and capitalize on the transformational potential of Wi-Fi 6? Until recently, you had two choices, neither ideal:

- Switch to 10GBASE-T cabling:** You could rip and replace your Category 5e cabling with newer Category 6 (Cat6a) cable, but this is hugely disruptive and impractical. First-generation Cat6 cabling has a much shorter reach than your existing access cabling when running at multigigabit speeds. If you rely on PoE to power access points that are up to 100 meters away from the switch (and many modern businesses do), you would have to totally reconfigure your workspace. Newer Cat6a cabling has a 100-meter reach but is expensive, thicker, and less flexible than Cat5 cable and might not fit into existing cable channels.

In either case, ripping out your access cabling to switch to 10GBASE-T would entail a major building renovation and significant disruption to the business. It can also be very expensive to rip and replace existing Ethernet cabling.
- Wire a second Cat5e cable:** This option also carries significant costs. For a campus with a thousand access points, it could easily run to several hundred thousand dollars. It might also require renovations nearly as disruptive as switching out your cabling altogether would be.

Cisco offers a better option. Cisco Multigigabit Ethernet switches and access points let you radically increase access speeds and flexibility in your workspace, with no upgrades to your existing access cabling and no disruption to your business.

Cisco Multigigabit Ethernet switches and access points

New Cisco Multigigabit Ethernet switches and access points provide the solution you need to capitalize on Wi-Fi 6 and 802.11ac Wave 2 wireless speeds with your existing Ethernet access cabling. The switches provide:

- Multigigabit switch ports with autonegotiation of 100-Mbps, 1-Gbps, 2.5-Gbps, and 5-Gbps speeds on existing Cat5e cable,** and all the way up to **10-Gbps speeds** over newer Cat6a cabling (Table 1). (The general industry rule is that Ethernet bandwidth to wireless access points should be at least 75 percent of radio bandwidth.)
- The same 100-meter PoE reach as your existing 100BASE-T solution.** You can bring up to five times the current data speeds to the workspace in a way that plugs right into your existing networking and cabling infrastructure.
- The only Multigigabit Ethernet solutions that support PoE, PoE+, Cisco Universal PoE (Cisco UPOE[®]) and 802.3bt - Type 3 to deliver 15W, 30W, 60W to the access point.** So you can power more devices – IP phones, IPTVs, lights, surveillance cameras, virtual desktop clients, and many others – without having to install extra wall or ceiling circuits and while taking advantage of advanced power management capabilities. You can now realize all of the benefits of UPOE and IEEE 802.3bt standard while enabling multigigabit Wi-Fi speeds in a single switching platform.

Table 1. Cisco Multigigabit Ethernet speeds and cables

Cable	1G	2.5G	5G	10G
Cat5e	✓	✓	✓	N/A
Cat6	✓	✓	✓	✓ (55m)
Cat6a	✓	✓	✓	✓

802.11ac Wave 2 wireless access points have been available for several years. The adoption of Wi-Fi 6 will grow starting with access points that started shipping in 2019 and Wi-Fi 6 clients reaching the market over the next 6-12 months. Cisco Multigigabit Ethernet switches and access points will empower you to capitalize on next-generation access speeds right away, at a fraction of the cost of overhauling your access cabling, with none of the business disruption.

Cisco Multigigabit Ethernet portfolio

Cisco brings an entire portfolio of Multigigabit Ethernet solutions to enterprises. These include:

- Cisco Catalyst® 9600 Series Switches: Modular switches with up to 192 multigigabit ports (Non PoE)
- Cisco Catalyst® 9400 Series Switches: Modular switches with up to 192 multigigabit ports
- Cisco Catalyst 9300 Series Switches: Stackable switches with 24 or 48 multigigabit ports
- Cisco Catalyst 9200 Series Switches: Stackable switches with 8 or 12 multigigabit ports
- Cisco Catalyst 4500E Series Switches: Modular switches with up to 96 multigigabit ports
- Cisco Catalyst 3850 Series Switches: Stackable switches with 12 or 24 multigigabit ports
- Cisco Catalyst 3650 Series Switches: Stackable switches with 8 or 12 multigigabit ports
- Cisco Catalyst 3560-CX Series Switches: 8-port switches with 2 multigigabit ports
- Cisco Catalyst Digital Building Series Switches: 8-port switches with 2 multigigabit ports
- Cisco 350 Series Managed Switches: Stackable switches with 2 multigigabit ports
- Meraki® MS350 Series Switches: Stackable switches with 8 multigigabit ports
- Cisco Catalyst 9100 Access Points: 802.11ax (Wi-Fi 6) with Orthogonal Frequency-Division Multiple Access (OFDMA) and Multiuser Multiple Input and Multiple Output (MU-MIMO)
- Cisco Aironet® 4800 Series Access Points: 802.11ac Wave 2 with MU-MIMO
- Cisco Aironet® 3800 Series Access Points: 802.11ac Wave 2 with MU-MIMO

802.3bz technology: Powering the next generation of business connectivity

802.3bz standard is based on 10GBASE-T technology and can operate at lower signaling rate like 2.5G and 5G. Cisco is the first major vendor to deliver Multigigabit Ethernet support for Wi-Fi 6 speeds in a ready-to-deploy solution. These capabilities are not delivered through closed, proprietary technology but instead are based on the industry specification originally from the NBASE-T Alliance. The NBASE-T Alliance – now part of the the Ethernet Alliance – is a consortium of industry leaders in switching and wireless, silicon, and other technology areas working to deliver Multigigabit Ethernet speeds over existing cabling. Cisco was a founding member of the alliance, along with Aquantia, Freescale, and Xilinx.

A new generation of enterprise connectivity and flexibility

Powered by 802.3bz standard, the Cisco Multigigabit Ethernet portfolio provides:

- **Support for innovative next-generation workspaces** that allow for greater flexibility, collaboration, and productivity.
- **A future-ready access network** that will power your business for 6.8-Gbps wireless speeds today and even faster speeds tomorrow.

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- **Investment protection**, with the ability to integrate Cisco Multigigabit Ethernet switches and access points into your existing Cisco access infrastructure.
 - **A solution that can grow with your business** (and support both new and existing deployments), with Multigigabit Ethernet technology that can work with existing Cat5e cabling as well as newer Cat6/6a, spanning 100-Mbps to 10-Gbps speeds with up to 60W PoE.

Cisco Multigigabit Ethernet switches and access points deliver all of this with the performance, reliability, scalability, and full feature set that you expect from Cisco. You can position your business for whatever the future might bring, without sacrificing your infrastructure investments or business productivity.

For more information

To learn more about Cisco Multigigabit Ethernet switches, visit:

<https://www.cisco.com/go/multigigabit>




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