

Transform the Workspace with Cisco Catalyst Multigigabit Ethernet Switches

Executive Summary

Wi-Fi is about to get a reboot. New 802.11ac Wave 2 products will make it possible to deliver LAN-like multigigabit speeds over the wireless network for the first time, 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 new generation of Cisco[®] Catalyst[®] 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
- Shows how Cisco Catalyst Multigigabit Ethernet switches use NBASE-T technology to empower you to deliver 5-Gbps speeds over your existing access cabling
- Details how Cisco Catalyst Multigigabit Ethernet switches gives 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 new generation of Wi-Fi, 802.11ac Wave 2, will power the next-generation workspace and transform the network.

The 5x increase in Wi-Fi bandwidth with 802.11ac Wave 2 can be transformative for businesses. For the first time, you will be 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 would 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, without 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 802.11ac Wave 2? Until now, 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.

Cisco offers a better option. Cisco Catalyst Multigigabit Ethernet switches 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 Catalyst Multigigabit Ethernet Switches

New Cisco Catalyst Multigigabit Ethernet switches provide the solution you need to capitalize on 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 1000BASE-T solution.** You can bring 5x 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+, and Cisco Universal PoE (Cisco UPOE) to deliver 15W, 30W, or 60W to the access point.** Cisco remains the only vendor that can provide 60W UPOE to power downstream devices in a next-generation workspace. So you can power more devices - IP phones, IPTVs, 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 such as Cisco EnergyWise®. You can now realize all of these UPOE benefits, while enabling multigigabit Wi-Fi speeds, in a single switching platform.

Table 1. Cisco Catalyst Multigigabit Ethernet Speeds and Cables

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

As new 802.11ac Wave 2 wireless access points reach the market in the coming year, Cisco Catalyst Multigigabit Ethernet switches 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 Catalyst Multigigabit Ethernet Portfolio

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

- **Cisco Catalyst 4500E Multigigabit Ethernet Card:** Cisco Multigigabit Ethernet will be introduced in Cisco Catalyst 4500E Series Switches, the most widely deployed modular access switching platform in the world and Cisco's leading converged access modular switch. New E-Series 48-port line cards deliver up to 12 multigigabit ports per slot and up to 96 multigigabit ports per system.

They will be supported across two generations of supervisor engines (Supervisor 7 and 8), thereby offering the latest innovation with investment protection for existing Cisco Catalyst deployments.

- **Cisco Catalyst 3850 Multigigabit Ethernet Switch:** Cisco is also bringing Multigigabit Ethernet to the Cisco Catalyst 3850 Series, the industry's leading converged access stackable switch. These enterprise-class 24- and 48-port wiring closet switches will deliver 24 and 12 ports, respectively, of Multigigabit Ethernet capability to support your employees as they continue to adopt new devices, applications, and work habits. We are also introducing two new uplinks on the Cisco Catalyst 3850 Series - a new 2-port native 40-Gbps (QSFP) and a new 8x10 SFP+ uplink - to accommodate increased wireless traffic from 802.11ac Wave 2. These switches will be completely stackable with existing Cisco Catalyst 3850 Series Switches.
- **Cisco Catalyst 3560-CX Multigigabit Ethernet Switch:** Cisco is extending Multigigabit Ethernet to the Cisco Catalyst 3560-CX Series of compact switches. These small form-factor 10-port fanless switches provide two Multigigabit Ethernet-capable ports. They can be deployed outside the wiring closet to build next-generation workspaces and deliver PoE to various Internet of Things (IoT) devices. They can also provide more connectivity options, as well as unprecedented scale and flexibility, to space-constrained deployments in industries such as retail, hospitality, and education.

NBASE-T: Powering the Next Generation of Business Connectivity

Cisco is the first major vendor to deliver Multigigabit Ethernet support for 802.11ac Wave 2 Wi-Fi speeds in a ready-to-deploy solution. These capabilities are not delivered through closed, proprietary technology but instead are based on the new industry specification from the NBASE-T Alliance.

The [NBASE-T 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 is a founding member of the alliance, along with Aquantia, Freescale, and Xilinx. Since the NBASE-T Alliance began at the end of October 2014, many other [industry-leading vendors](#) have joined.

The NBASE-T Alliance is producing, implementing, and promoting new specifications to address the Ethernet access bottleneck and build industry consensus around the best solution. Cisco is the first networking vendor to bring these capabilities to market with a full portfolio of enterprise-class switching platforms with NBASE-T-powered Multigigabit Ethernet technology.

A New Generation of Enterprise Connectivity and Flexibility

Powered by NBASE-T technology, the Cisco Catalyst 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
- **Investment protection**, with the ability to integrate new Cisco Catalyst Multigigabit Ethernet switches and line cards into your existing Cisco Catalyst access infrastructure (For example, new Cisco Catalyst 3850 Series Switches with multigigabit-capable ports can be stacked with existing Cisco Catalyst 3850 Series Switches with 1-Gbps copper and 1-Gbps fiber ports. Similarly, the new Multigigabit Ethernet line card for the Cisco Catalyst 4500E Series works with existing Supervisor Engines 8E, 7E, and 7LE.)

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- **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 Catalyst Multigigabit Ethernet switches deliver all of this with the performance, reliability, scalability, and full feature set that you expect from a Cisco switch. 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 Catalyst Multigigabit Ethernet switches, visit:

- <http://www.cisco.com/go/multigigabit>



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