Cisco Catalyst Multigigabit Technology

FAQ

Contents

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Q. What is Cisco Catalyst Multigigabit Technology?

A. Cisco® Catalyst Multigigabit Technology is a unique Cisco innovation to the new Cisco Catalyst® Ethernet Access Switches. With the enormous growth of 802.11ac and new wireless applications, wireless devices are driving the demand for more network bandwidth. This creates a need for a technology that supports speeds higher than 1 Gbps on all cabling infrastructure. Cisco multigigabit technology allows you to achieve bandwidth between speeds of 1 and 10 Gbps over traditional Cat 5e cabling or above. In addition, the multigigabit ports on select Cisco Catalyst switches support Universal Power Over Ethernet (UPOE), which is increasingly important for next-generation workspaces and Internet of Things (IoT) ecosystems.

Q. What are the key benefits of this new technology?

A. Cisco multigigabit technology offers significant benefits for a diverse range of speeds, cable types, and Power Over Ethernet (POE) power. The benefits can be grouped into three different areas:

- **Multiple speeds:** Cisco multigigabit technology supports auto-negotiation of multiple speeds on switch ports. The supported speeds are 100 Mbps, 1 Gbps, 2.5 Gbps, and 5 Gbps on Cat 5e cable and up to 10 Gbps over Cat 6a cabling.
- **Cable type:** The technology supports a wide range of cable types including Cat 5e, Cat 6, and Cat 6a or above.
- **POE power:** The technology supports POE, POE+, and UPOE for all the supported speeds and cable types.

Q. Why do I need Cisco Catalyst Multigigabit Technology?

A. Widespread proliferation of 802.11ac and new wireless applications and devices are driving the need for more network bandwidth. As the industry moves toward 802.11ac Wave 2, access points will require higher wireless bandwidth than 1 Gbps.

But existing cabling infrastructure could prevent many businesses from capitalizing on this growth. Much of the cabling deployed worldwide is limited to 1 Gbps at 100 meters. Cisco Catalyst Multigigabit Technology enables speeds up to 5 Gbps on the same infrastructure without replacing a single cable. In addition to higher speeds, the technology also delivers UPOE (up to 60W) using a multigigabit port.

Q. Would Cisco Catalyst Multigigabit Technology require new cabling infrastructure?

A. Traditionally, to achieve more than 1 Gbps, you would need to upgrade your Cat 5e to Cat 6a or above. However, with Cisco's multigigabit technology, you can use your existing Cat 5e or Cat 6 cabling to achieve speeds up to 5 Gbps.

Q. What are the cable types and data rates supported with Cisco Catalyst Multigigabit Technology?

A. See Table 1.

Table 1. Cisco Catalyst Multigigabit Technology - Speeds and Cables

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

Q. Can I use a standard RJ45 connector to connect the cable to a multigigabit switch port?

A. Yes. This technology offers significant value for customers and partners because it protects existing investments such as cabling and connectors.

Q. What are the data rates and speeds supported with multigigabit technology?

A. Multigigabit supports 100 Mbps, 1 Gbps, 2.5 Gbps, 5 Gbps, and 10 Gbps speeds with auto-negotiation.

Q. 802.11ac Wave 2 speeds go up to 6.8 Gbps, but the multigigabit speeds supported are 2.5 Gbps and 5 Gbps. How are they related?

A. 802.11ac Wave 2 speeds are the RF speeds. The Wave 2 RF speeds that are of prime interest are 3.5 Gbps and 6.8 Gbps. When this is translated into the AP-switch bandwidth, this speed is reduced by a factor. That results in the 2.5 Gbps and 5 Gbps speeds on the multigigabit switch ports to AP links. This Cisco white paper provides more details on 802.11ac speeds: http://www.cisco.com/c/en/us/products/collateral/wireless/aironet-3600-series/white_paper_c11-713103.html.

Q. Does the multigigabit switch port support a 10 Mbps data rate?

A. No, the multigigabit switch port does not support a 10 Mbps data rate.

Q. Will a multigigabit switch port auto-negotiate the link speed?

A. Yes, when the far-end device is also multigigabit-capable, both multigigabit switch ports will auto-negotiate the highest speed they can support over the cable you use (Cat 5e, Cat 6, Cat 6a). For example, if the far-end device is 10 Gbps-capable and the cable can support the speed, the two devices would negotiate to the 10 Gbps speed.

Q. What happens when I connect a device with no multigigabit support to a multigigabit-capable switch port?

A. Since the multigigabit port can support multiple speeds up to 10 Gbps, the multigigabit port will try to auto-negotiate with the far-end device to the highest speed supported by the two devices. For example, if the far-end device is only capable of 1 Gbps, the two devices would settle for 1 Gbps speeds. Since 100 Mbps is the minimum data rate a multigigabit switch port can support, as long as the far-end device supports 100 Mbps or higher, a connection can be established.

Q. Will a multigigabit switch port support POE, POE+, and UPOE?

A. Yes, a multigigabit switch port will support POE (15W), POE+ (30W), and UPOE (60W). This is another important innovation of the multigigabit solution. As end-user devices demand increasing power, the multigigabit port future-proofs deployment to support the growing UPOE ecosystem. UPOE with multigigabit is supported only by the Cisco Catalyst 4500, 3650 and 3850 product families.

Q. What is the main advantage of Cisco Catalyst Multigigabit Technology in a brownfield deployment with Cat 5e or Cat 6 cabling?

A. Brownfield deployments with Cat5e or Cat6 installations can avoid major cable overhaul and installation costs for upgrading their network to support 802.1ac Wave 2 technology. Such deployments can achieve up to 5Gbps by adopting the new Cisco Catalyst Multigigabit technology without replacing a single cable.

Q. Can multigigabit technology be deployed in a greenfield deployment with Cat 6a cabling?

A. Absolutely. Since multigigabit technology supports Cat 6a cabling or higher with support up to 10 Gbps, it can be used in such greenfield deployments.

Cisco Catalyst Multigigabit Technology Products

Q. Which Cisco Catalyst platforms support Cisco Catalyst Multigigabit Technology?

A. Cisco Catalyst Multigigabit Technology is supported by the Cisco Catalyst 4500, Cisco Catalyst 3850, Cisco Catalyst 3650, and the new compact C3560-CX product families.

Q. How does the Cisco Catalyst 4500 product family support multigigabit technology?

A. The Cisco Catalyst 4500 product family supports the technology with a new 48-port line card that supports 12 multigigabit switch ports. All the ports, including the multigigabit ports, support POE, POE+, and UPOE. Furthermore, line cards offer significant investment protection by supporting the new multigigabit technology on both types of Cisco Supervisor Engines - Supervisor 7 and Supervisor 8.

Q. How does the Cisco Catalyst 3850 product family support multigigabit technology?

A. The Cisco Catalyst 3850 product family supports multigigabit technology with two new 48- and 24-port switches that support 12 and 24 multigigabit ports, respectively. All of these ports, including the multigigabit ports, support POE, POE+, and UPOE.

Q. How does the Cisco Catalyst 3650 product family support multigigabit technology?

A. The Cisco Catalyst 3650 product family supports multigigabit technology with new 48- and 24-port switches that support 12 and 8 multigigabit ports, respectively. All of these ports, including the multigigabit ports, support POE, POE+, and UPOE.

Q. How do the new Cisco compact switches support multigigabit technology?

A. The new compact switch family offers one SKU that supports multigigabit technology. This switch supports two multigigabit ports that are POE and POE+ capable.

Q. When are the Cisco Catalyst platforms that support multigigabit technology available?

A. The multigigabit products will be available in Q2CY2015. Please reach out to your Cisco representatives for the specific dates of availability on different product families.

NBase-T Technology and NBase-T Alliance

Q. What is NBase-T technology?

A. NBase-T technology is proven to boost the speed of twisted-pair copper cabling up to 100 meters well beyond the designed limits of 1 Gbps. For instance, it allows a Cat 5e cable to reach 2.5 Gbps and 5 Gbps over 100 meters.

Q. What is the NBase-T Alliance?

A. The NBase-T Alliance was formed in 2014 as a nonprofit organization by a group of industry leaders. Its objective is to provide a common platform for the industry to facilitate wide deployment of NBase-T technology and products.

Visit http://www.nbaset.org for more details on the alliance.

Q. Who are the members of the NBase-T Alliance?

A. The NBase-T Alliance has a wide representation across the industry. The following link lists the various members and participating companies: http://www.nbaset.org/Alliance/participant-companies/.

Q. What problems does the NBase-T Alliance intend to solve?

A. The IEEE 802.11ac standard has already brought 1-Gbps wireless speeds to enterprise networks. Soon, the industry is expected to move to 802.11ac Wave 2 products that could deliver wireless speeds up to 6.8 Gbps. However, the majority of Ethernet cables deployed between access switches and access points are Cat 5e or Cat 6 cables, which currently support a maximum speed of 1 Gbps for a distance of 100 meters. As a result, customers cannot take full advantage of 802.11ac Wave 2 and other emerging technologies without upgrading their cabling infrastructure.

This creates a market need to support speeds that are faster than 1 Gbps on existing Cat 5e and Cat 6 cables - a need that the NBase-T Alliance will help address.

Q. What customer benefits and industry values does the NBase-T Alliance provide?

A. Customer benefits include future proofing your network by enabling 2.5 and 5 Gbps data rates over existing Cat 5e and Cat 6 cables - all without expensive or disruptive upgrades to cabling infrastructure. Another benefit is faster deployment of 802.11ac Wave 2 access points. Nbase-T technology supports POE standards for integration of next-generation 802.11ac Wave 2 access points in existing cabling layouts. In addition, the technology supports POE up to 60W, and is critical for next-generation workspaces that need to support increasing POE requirements.

Industry values of the alliance include interoperability. The alliance promotes a unified, technological approach to 1 Gbps speeds and above for deployments in enterprise mobile infrastructure and beyond. It does this by facilitating a healthy dialogue between ecosystem partners.

Q. Where can I find more information about the NBase-T Alliance?

A. More information about the NBase-T Alliance can be found on the alliance website: http://www.nbaset.org.

Cisco Multigigabit and NBASE-T Alliance

Q. What is the relationship between Cisco multigigabit and NBase-T technology?

A. Cisco multigigabit technology is powered by NBase-T technology, and it offers all the benefits of NBase-T technology.

Q. Is Cisco multigigabit technology a standard yet?

A. Cisco multigigabit technology is based on the NBase-T technology, and is not yet an industry standard. However, Cisco is collaborating with industry partners to work toward an industry standard.