What’s Driving Category 6A Adoption?

The Telecommunications Industry Association (TIA) standard for Category 6A was published in 2008, but the market was initially slow to take off due to high power consumption and cost of first-generation 10GBASE-T PHYs and equipment. However, in the past few years, Cat 6A adoption has increased dramatically, becoming the dominant media type for 10 Gb/s networks. And when comparing costs per port of equipment, maintenance, and assembly of 10G Ethernet, Cat 6A and twisted pair is significantly more cost-effective than other technologies. Today’s Cat 6A cable is also much smaller in diameter and lighter in weight than early generations, improving fill capacity and creating more flexibility for a tighter bend radius.

Category 6A will continue to see strong growth in the years to come, especially in the following environments and applications.

**Data Centers**

Data centers everywhere are moving quickly to address bandwidth growth. Many data center managers looking to control costs are choosing Cat 6A twisted-pair copper for 10 Gb/s applications, since it is the most cost-effective option for access-layer networking. In fact, the cost of 10GBASE-T channels is at least 30% lower than alternative SFP+ channels.

NEW 2017 Network Solutions Catalogs Now Available!

Leviton has released new 2017 product catalogs that include the latest copper and fiber cabling systems for data center and enterprise networks. The catalog features new passive optical TAPs, an expanded selection of HDX fiber cassettes, and new AV Controls for classrooms and conference rooms.

Customers in Europe and the Middle East also have new catalogs specific for their region. These catalogs combine the latest network infrastructure offerings from both Brand-Rex and Leviton, following the Leviton acquisition of Brand-Rex in December 2015.

For more catalog information, please visit [Leviton.com/catalogs](http://Leviton.com/catalogs). European customers can visit [Brand-Rex.com/documentation/catalogue](http://Brand-Rex.com/documentation/catalogue). Middle East customers can visit [Leviton.com/ns/middleeast](http://Leviton.com/ns/middleeast).
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Cat 6A also makes migration easy. 10GBASE-T allows for auto-negotiation, so two Ethernet devices can connect to each other and select a common transmission speed that both devices support. This allows for 10GBASE-T migration to be done in phases for a portion of the network or during a complete network upgrade, giving data center managers some flexibility in terms of timing, disruption, and cost for upgrading the network.

Leviton Atlas-X1 Cat 6A system is designed to handle the most demanding data center networks. It is ideal for high-density applications, with a short-depth connector for better bend radius, and patch cords with a narrow profile for less congestion. The system is component rated, with each component individually certified for performance. Learn more at Leviton.com/AtlasX1.

Enterprise Wireless

More businesses are updating their wireless networks with 802.11ac access points, capable of delivering up to 6.9 Gb/s. In 2015, sales of 802.11ac access points were up 10 fold over 2014, according to Broadcom.

Businesses are also installing Cat 6A in order to receive the true benefits of these higher speeds. TIA TSB-162-A, Telecommunications Cabling Guidelines for Wireless Access Points, recommends installing Cat 6A for horizontal cabling to WAPs. It also recommends using a grid-based zone cabling architecture with at least two Cat 6A cable runs to each cell in the grid. Two cable runs ensure backup power to the WAP in PoE applications, and prepare the infrastructure for future expansion and data requirements.

In October 2016, IEEE published the 802.3bz standard for 2.5GBASE-T and 5GBASE-T, using Category 5e and 6 cabling. While the new standard can extend use of installed Category 5e and 6 cabling to WAPs, there are limitations. Category 6A remains the recommended cabling for all new installations. It supports longer lengths and greater alien crosstalk suppression at higher frequencies. Businesses upgrading their backbone cabling infrastructure today with Cat 6A cabling are ready for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s applications in the future. Leviton’s Cat 6A in-ceiling system for WAPs makes this upgrade easy, with plenum-rated cable, connectors, patch cords, boxes and brackets. And the Atlas-X1 connector includes optional internal shutters to protect against any dust or debris in plenum spaces. Learn more at Leviton.com/plenum.

Power over Ethernet

Power over Ethernet (PoE) has made great strides in recent years. Driven by the demand for ease of installation and boosted by new standards that expand support to more devices, PoE is seeing explosive growth rates that match the period shortly after the technology was initially introduced in 2003. However, higher current PoE brings important cabling and connectivity considerations when ensuring utmost performance in the network.

Horizontal cables and patch cords with the largest conductors available (i.e., the lowest wire gage number) will improve the current flow, generating less heat than smaller conductors. A higher category rating will typically have larger conductor sizes, providing advantages where there are concerns about bundle temperature rise. Cat 6A cabling is the best and most reliable solution to meet these parameters and therefore is recommended for all new PoE installations.

You will likely need a cabling infrastructure that can deliver more power in the future. Leviton Atlas-X1 Cat 6A connectivity has been tested to deliver 100-watt PoE, supporting a wider range of remote powered devices. The Atlas-X1 connector’s PoE optimized tine geometry and patented Retention Force Technology (RFT) ensure long-term integrity of the connection. And its solid-metal body improves heat dissipation by 53% over conventional plastic connectors. Learn more at Leviton.com/PoE.
Health Care Networks

Hospitals are seeing huge jumps in data growth, largely due to the rise of Electronic Health Records, as well as more connected equipment at the bedside and other areas. Cat 6A cabling offers the best solution for hospitals seeking system longevity, faster data transfer, and support for high-bandwidth wireless networks. By supporting network speeds of 10 Gb/s, Cat 6A dramatically reduces the time it takes to access information such as medical images, translating into more efficient diagnosis and collaboration. For these reasons it is the recommended cabling system in the ANSI/TIA-1179 health care infrastructure standard. In the upcoming 1179-A revision (2017 estimated release), Cat 6A will be the only recognized copper cabling for horizontal cabling in health care facilities.

There is also a huge push to support staff, patients, and visitors with reliable wireless access. This means that the wired infrastructure to support Wi-Fi is now a bigger priority for IT departments. Hospitals will not see the full benefits of new wireless technology without the right cabling infrastructure behind it. And as mentioned earlier, only Category 6A supports future migration to speeds up to 6.9 Gbps offered by 802.11ac technologies.

Leviton offers complete connectivity to every area of a health care facility. And our Cat 6A shielded systems include patented signal isolation technologies to protect your network from EMI/RFI — especially important in areas such as exam rooms, laboratories, and imaging environments. Learn more at Leviton.com/ns/healthcare.

Schools and Universities

High-speed internet is vital for supporting student education at all levels. Whether performing online research for papers, giving in-class presentations, or engaging in extracurricular learning, students need greater bandwidth for quick access to information in order to achieve their goals. That is why Leviton recommends Cat 6A cabling as the backbone for new school network installations.

In classrooms and university lecture halls, AV systems increasingly use HDBaseT technology to extend HDMI®, VGA, and USB signals from teachers’ desks to the latest devices anywhere in the room, all networked over easy-to-install category-rated cable. However, Leviton testing has found that Cat 5e cabling in HDBaseT applications can lead to high packet error rates and total link loss, as the channels are not designed for resistance to alien crosstalk. Even Cat 6 cables can be limited in carrying HDBaseT signals when adjacent to other cables carrying HDBaseT.

Cat 6A cabling is the best solution for protecting signals in cable bundles from alien crosstalk issues. Cat 6A also supports the higher bandwidth signals for applications such as 4K, creating a future-proof installation. And Leviton makes it easy to get up and running, with simple plug-and-play IT/AV systems that combine HDBaseT HDMI extenders and Cat 6A connectivity for a complete end-to-end solution. You can learn more about our IT/AV Systems with Cat 6A connectivity at Leviton.com/ITAV.

Make the Smart Choice with Cat 6A Systems

Data centers, businesses, government agencies, hospitals, and schools are all moving to Cat 6A in order to meet today’s data demand. Leviton has designed Cat 6A systems for these demanding networks. Our UTP and shielded solutions all meet IEEE, TIA, and ISO/IEC requirements for mission-critical networks running at 10Gb/s, and performance has been verified by independent testing labs. You can learn more about Leviton systems at Leviton.com/Cat6A.
Several times a year, congregants from the Washington State townships of Lake Stevens, Monroe, Clearview, Maltby, and Sultan come together at the Snohomish Washington Church of Jesus Christ of Latter-day Saints (LDS) to hear sermons and participate in leadership training. With such a large number of congregants in attendance (sometimes as many as 1,400), the church needs to make use of every room in the building.

“We wanted to provide a good, clean picture so attendees would feel more engaged."

Until recently the Snohomish Stake of the Church relied on an analog audiovisual network, which paired poorly with new, high-definition TVs and failed to deliver the level of quality desired. “We felt our lack of a high-def solution was diminishing the experience,” said Steve Coons, Technology Coordinator for the Snohomish Stake of the Church. “We wanted to provide a good, clean picture so attendees would feel more engaged.”

Connecting Congregations

To meet the needs of the congregation and ensure everyone could see and hear church leaders during sermons and presentations, the Snohomish Stake of the Church turned to a Leviton Network Solutions IT/AV technology. “The local church buildings already use Leviton networking products for their administrative office functions and computerized genealogy libraries,” said Coons. “It was only natural to use a Leviton solution to solve this dilemma.”

By using the building’s existing category 6 cabling infrastructure combined with Leviton plug-and-play HDBaseT™ devices, the church was able to extend their 1080p HD audiovisual signal and provide feeds from the main assembly room to high-definition flat-screen displays in classrooms and overflow rooms throughout the building. “Planning and installation was really easy and straightforward,” said Coons. “It was much easier than I anticipated.”

Leviton All the Way

Once a camera was setup in the main chapel and the third-party patch cords were swapped for a high-quality Leviton replacement, the video quality improved drastically. “From the high-def display in one of our overflow rooms I could clearly see the wood grain on the pulpit,” said Coons. “It was much better than anything I expected.”

In addition to deploying a new Leviton HDMI Extender with HDBaseT Transmitter and Receiver, the church completed the end-to-end solution with Leviton Atlas-X1™ Cat 6 UTP connectors at the connection wallplates for verified performance and reliability. “It’s an elegant solution, easy to use and set up, and it offers power at either end,” said Coons, “which is really convenient and gives us greater flexibility.”

Preparing for Future Growth

“For this installation we were able to work with the building’s existing Cat 6 infrastructure, avoiding a costly rip and replace project to save the church time and money,” said Bill Lauby, Leviton Senior Product Manager, AV Solutions. “However, for new installations or future expansions, we recommend a Cat 6A UTP solution with alien crosstalk prevention technology. This ensures the highest level of performance while maintaining greater signal integrity.”

Impressed with the flexibility and unity afforded from Leviton products, local officials hope to upgrade other buildings in the area with the same technology within the next few years. “The leaders of the local Stake of the Church believe in efficient utilization of its buildings, to conserve resources and benefit more people,” said Coons. “Often we will have multiple congregations using the same building. Leviton’s solution helped us take the next step and enhance our members’ experience. We are quite pleased with the outcome.”
**TECH TIPS**

**Fiber Terminations:**
**Check Your Adhesive and Primer**

Our technical service reps occasionally receive troubleshooting calls where they must remind installers to check the age of the materials used for terminating adhesive-style connectors. If adhesive or primer are past their expiration date, there’s an increased possibility the chemical reaction between the adhesive and primer accelerator won’t be effective and terminations won’t adhere properly.

If you’re using Leviton primer or adhesive for Leviton Fast-Cure fiber connectors, be sure to check the “Use By” date on the back:

![Image of Leviton primer and adhesive bottles with Use By Date highlighted]

**ASK THE EXPERTS**

**Q:** What is the minimum clearance for the front and rear of equipment racks?

**A:** The clearance for the front of the equipment rack should be at least 3 feet (1 meter), but 4 feet (1.2 meters) is preferred for deeper equipment, according to ANSI/TIA-569-C, Section 6.3.9.3.

The clearance for the back of the rack should be at least 2 feet (0.6 meters), but 3 feet (1 meter) is preferred. Some equipment may require more clearance, so be sure to see the equipment manufacturer for details.

**YESTERDAY’S NEWS**

2007: Ten years ago, Netflix announced it would begin streaming movies in addition to its DVD rental service. Today, Netflix streaming video makes up 35% of internet traffic on North America fixed networks.