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Cat 6A frequently asked questions

Although deployment of Category 6A has been steadily increasing since 2004, there are still questions and misconceptions regarding what it can and can't do. The following are some of the most frequently asked questions and answers—directly from the source. Got additional questions? We're happy to help. Shoot us an email.

Category 6A vs other Category cabling

If the Cat 6A business case is so solid, why do many customers still go for Cat 6?

Cat 6 has been around longer than Cat 6A. Also, some customers are not yet ready to deploy 10 GE, Wi-Fi 7 or PoE++. However, we believe cabling decisions should be made with a long-range view, at least 20 years, to avoid unforeseen costs and challenges. Cat 6A is far more future-ready. BSRIA predicts that, by 2023/2024, Cat 6A will have overtaken Cat 6 in terms of market share.

Is Cat 6A better than Cat 7?

There are minimal differences in performance. Both support 10 GE over a 100 m channel. Cat 6A has a maximum frequency of 500 MHz compared top Cat 7's 600 MHz. The difference is that Cat 7 requires non-RJ45 connectors and heavy shielding (that needs to be grounded to work properly). So, deploying Cat 7 (and 7A) may be more expensive without any significant performance improvements.

Why isn't Cat 8 considered more future-ready than Cat 6A?

Cat 8 was designed for data center connectivity at 40 gig or higher. At those speeds, the conversation shifts to fiber—especially for switch-to-switch data center connections. That's why Cat 8 was designed for just two connections and just up to 30 m.

Why do we need 6A if we can use previous categories for NBaseT?

NBaseT can support 2.5G over Cat 5e—or 5G over Cat 6. For higher speeds, there is no better option than Cat 6A. For greenfield installations, even if you're initially using NBaseT, Cat 6A provides additional bandwidth for future growth.

Is the industry planning on phasing out Cat 5e?

As far as we know, manufacturers aren't planning to phase out Cat 5e. However, devices requiring Cat cabling have power and bandwidth demands that Cat 5e can't support. Such limitations should be considered when developing your infrastructure roadmap for device connectivity.

Cat 6A and power over Ethernet (PoE)

I've heard that supporting 802.3bt power over horizontal cabling can increase heat build-up and fire potential. Is this true and, if so, does it impact one Cat more than the others?

Heat buildup and fire potential are due in part to the heat rise in the individual conductors. The smaller the gauge, the greater the heat rise. A Cat 5 cable carrying a 400 mA current exhibits a ≈10°C temperature increase, whereas that same current in a Cat 6A cable results in a 6°C rise. Heat buildup also depends on how many cables are in the bundle. There are deployment strategies you can use to help mitigate that.

Does the PoE heat load in the cable affect the thermal loading inside the cabinet that houses the PoE patch panels?

Not greatly. The heat load mainly impacts the bundled cables due to their length and density. The racks are designed to provide good air flow and heat dissipation. So, the impact inside the cabinets is negligible.

Does heat buildup in the PoE cable affect PoE's overall capabilities?

Yes and no. Power transmission will not be affected but data transmission will. To prevent that, we recommend consulting our PoE implementation guide.

What are the chances that the heat rise in the cabling could result in combustion?

Without a flame, it's extremely unlikely. Bundled cables heat up but nowhere near the levels needed to become a fire hazard. The impact of the thermal load is limited to electrical performance.

Support of wireless applications

Network switches are starting to push 90 W of power on a single port. Yet most manufacturers still require only a single cable per wireless access point (WAP). Why do you recommend two Cat 6A cables per WAP?

Remember, you're transmitting both power and data. While one Cat 6A cable can deliver 90 W to a single WAP power port, on the data side, Wi-Fi 6/6E/7 are pushing the 10 Gb boundary for WAP uplink. The bandwidth requirements will continue to grow as in-building wireless capabilities develop. Hence, the need for two connections per drop.

Beyond wireless access points, what other devices will need 10 Gb connections?

5G Indoor cellular systems (DAS or small cells) would be another good example.

Cat 6A products and distance

What is Cat 6A's distance limitation?

All structured cabling standards, including those for Cat 6A, set a maximum length channel of 100 m (305 ft). This standardizes the support for multiple applications at any information outlet (service-area jack), providing an apples-to-apples comparison.

Are all Cat 6A cables/patch cords the same diameter, or are there smaller diameter versions? If so, are they as good as the standard-diameter ones?

Most vendors do offer thinner 6A cables/patch cords, but they are specified for shorter lengths based on the use case. We recommend consulting the vendor specifications before you decide which gauge to use.

Do I need to ground both ends of a Cat 6A cable? If no, why not?

It depends on the 6A solution type. For a UTP system, no grounding is needed at all. For a shielded system, most (if not all) standards recommend grounding at both ends of each cable to prevent introducing additional noise. Best practice is to consult the vendors' specifications, local codes and applicable standards.

Other questions

Do any cabling standards *request* Cat 6A?

Yes, ISO/IEC 11801.5 (data centers) and 11801.6 (distributed building services) both request using Cat 6A cable tested to Class EA channel performance.

Do any standards *recommend* Cat 6A?

Many standards strongly recommend Cat 6A as the default cabling such as: Intelligent Buildings: TIA-862-B, Wireless Access Point: TSB-162-B, Data Centers: TIA-942-B, Healthcare facilities: TIA-1179, Education facilities: TIA-4966, Power over Ethernet (PoE): TIA TSB-184-A, ICT Design for Intelligent Buildings: ANSI/BICSI 007-2017.

Why do you say that Cat 6A is inherently more sustainable than Cat 5 or Cat 6?

Cat 6A has a longer life cycle than Cat 5 or Cat 6. Its ability to support multiple generations of bandwidth growth and power requirements reduces product turnover and the associated impacts on the environment. Thus, it is both financially and ecologically more sustainable than Cat 5 or Cat 6.

What copper cabling is recommended in the data center?

Overall, copper deployments in the data center have decreased considerably, but it is still used for out-of-band (OOB) connectivity. The TIA-942B standard recommends Cat 6A cabling for OOB connections.

What's the recommended cabling for in-building audio/visual applications?

Applications like HDBase-T, which require transmission of high-definition video, recommend Cat 6A cabling.

Where can I find a list of applications supported by Cat 6A?

Refer to the applications section of the Cat 6A Fact File for more information.

What's the maximum extended distance supported by X10D Cat 6A cables?

Currently, all applicable standards specify a maximum channel length of 100 m (305 ft).

Additional Resources

Cat 6A: the Fact File

New Cat 6A landing page

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Visit our website or contact your local CommScope representative for more information.

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