What is PoE and why is category 6A the best choice?

As more connected devices are added to a network, power becomes an increasingly important challenge to overcome. Answering this challenge: the Power over Ethernet (PoE) standard, which has emerged as a preferred technology. Today, we're talking about how it works and what customers can expect in the future.

What is PoE and How Does It Work?

All IT managers are seeking ways to simplify their networks. Power over Ethernet (PoE) answers that call by supplying electricity to a variety of networking, AV, or any device connected to the network without an outlet or adapter.

PoE also reduces the number of building materials required to power and connect a device to the network by allowing a single cable to provide both services. Power is delivered on the same twisted pair cable that is being used for communication, instead of laying a separate power cable to the network device. This technology was initially used for supporting Wi-Fi access points which are mounted in ceilings or walls.

The original PoE standard only provided up to 15.4W of DC power, which was fine if you are solely powering VoIP phones or security cameras. However, with more devices such as surveillance and monitoring equipment, digital signage, video conferencing systems and wireless access points calling for PoE at higher power levels, the standard had to be updated. The updated standard (IEEE 802.3bt) supports up to 100W of power per cable, which can be used to power other high-end network devices such as point-of-sale systems, kiosks, terminals, and a variety of other devices, including security card readers and LED lights.

Why CAT 6A is a Solid Choice for PoE

With the higher power levels running through a cable, there is a risk of overheating cables. The type of cabling you choose can make a major difference in how the heat is managed and how it impacts performance. Even though CAT 5e cables can support PoE, it's clear that CAT 6A Ethernet Cables are the superior choice for several reasons:

1. Larger Gauge Diameter: The larger conductor diameter helps reduce resistance and keeps power wastage to a minimum because it has a lower temperature increase as compared to CAT 5e and CAT 6 cables.
2. Reduced Power Loss: Nearly one-fifth of the total power in a 24-gauge CAT 5e cable is lost. Energy efficiency increases when structured cables, like CAT 6A, maximize the power running through them without power loss.
3. Handles Extra Heat: If cables are closely packed in their pathways and trays, the increased heat in the cables will not dissipate easily. Some CAT 6A cables have enough insertion loss margin to handle the extra heat without impacting performance.

Additional PoE Cable Considerations

Other factors that need to be considered when contemplating the use of PoE include:
- Bundle size configurations
- Spacing between the bundles for airflow
- Connectors and cords being used in the channel
- Pathway and channel lengths

Each of these considerations plays a significant role in designing an efficient and robust PoE infrastructure. With the newly anticipated standard, it is interesting to note that many of the IP applications located in the ceiling such as LED lighting, fire alarm systems, and occupancy sensors, will get a new lease of connectivity when providing and maintaining a power source proved to be challenging.

All CAT6A Ethernet Cables Are Not Created Equal

PoE's performance can be affected by inferior cables, counterfeit cables, or mislabeled cables. So, by understanding and mitigating risks, demanding quality cables, as well as choosing a reputable manufacturer, you're taking steps to guarantee your infrastructure will stand the test of time.

Vextra Category 6A cabling is built to exacting standards, tested extensively for quality, and proudly made in the USA. Our solutions are priced smart so you can design smart—and deploy fast.

In the years ahead, nothing less than Category 6A will do and with Vextra, you can count on quality, affordability, and reliability.

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