



August 2025

Category 6A: The Time is Now

Introduction

As demand for faster, more reliable connectivity surges to support the rise of new technologies, Category 6A cabling has emerged as the new standard for modern network infrastructure. Market adoption is accelerating across enterprise, data center, and industrial markets due to growing bandwidth needs and the expansion of high-power devices. Cabling standards such as TIA and ISO/IEC have recognized Category 6A cable as the recommendation for new installations, aligning with the evolution of Wi-Fi technology and Power over Ethernet (PoE).

Category 6A delivers forward-looking performance, supporting 10 gigabit data transmissions and PoE applications, while enabling long-term scalability as network demands grow. Panduit innovations have made Category 6A cabling smaller, more flexible, and easier to install, eliminating many of the barriers to adoption seen in earlier generations.

This tech brief explores why the time is now for Category 6A infrastructure. We look at Category 6A through the lens of market trends, technical standards, and emerging applications, such as PoE devices, smart building solutions, sensors, and more.

Market Adoptions and Standards

Market adoption of Category 6A copper cable continues to gain momentum globally. This growth is driven by Category 6A's 10 gig performance and its ability to meet evolving infrastructure requirements. According to BSRIA, which does testing and research in the construction and building services industries, Category 6A is in the midst of near double digit growth globally, while market share for legacy cables like Category 5e and 6 are in decline. Figure 1 shows these market trends.

According to BSRIA's Structured Cabling 2025 (USA) Report, Category 6A accounts for 41 percent of all copper sales – a 4 percent growth from 2023.

This shift reflects a broader market movement toward higher-performance structured cabling that can meet emerging application demands. This trend was reported by [Cabling Installation & Maintenance](#) in 2024.



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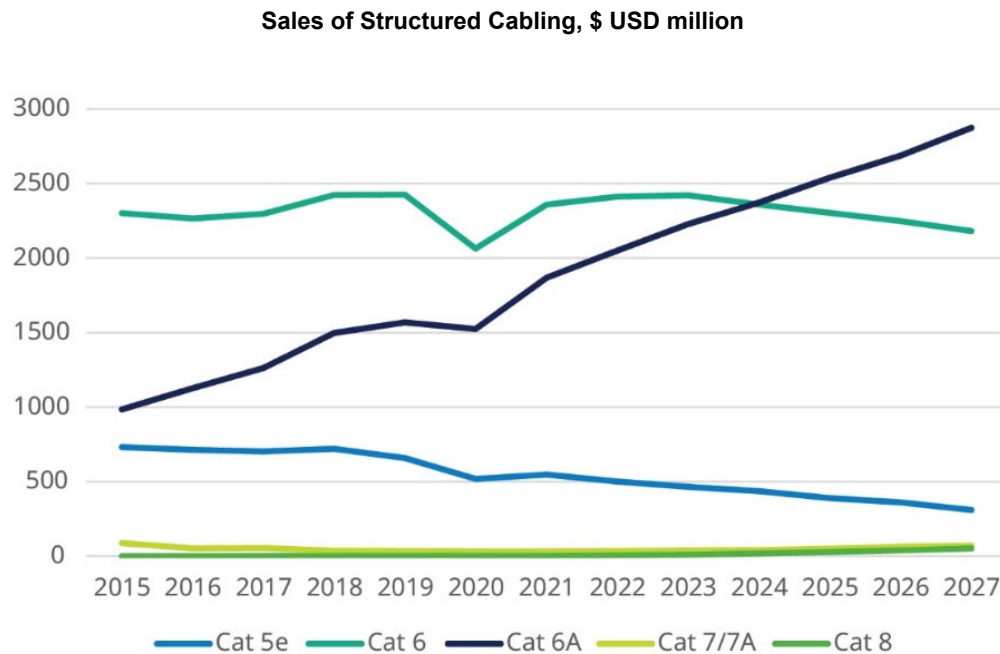


Figure 1: BSRiA reports that Category 6A sales have surpassed Category 6 and Category 5e legacy cables, which are in decline.

In response to these application trends, standards organizations now recommend Category 6A for new installations. These include:

- TIA – the Telecommunications Industry Association, which provides a comprehensive framework, technical specifications, and performance requirements for twisted pair cabling, recommends Category 6A for healthcare (TIA-1179), education (TIA-4966), and data center (TIA-942-A) applications
- ISO and IEC – the International Organization for Standardization and International Electrotechnical Commission, key organizations that help develop international standards with a focus on electrical technologies, recommend Class EA/Category 6A for several applications, including all 10 gig applications, including the latest Wi-Fi and 10GBASE-T standards

This alignment between market demand and global standards reinforces Category 6A's position as the new industry norm.

Wi-Fi Development

One of the most significant drivers of Category 6A has been the rapid growth of Wi-Fi technology. Wi-Fi is the most common wireless communications technology¹, constantly being innovated, with each new generation bringing faster speeds, lower latency, and greater capacity for connected devices.

As Wi-Fi access points (APs) have evolved, copper cabling has evolved as well. Copper cabling generally serves as the wired backbone that enables



¹ <https://www.wi-fi.org/discover-wi-fi>

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wireless, with most enterprise spaces relying on copper infrastructure to connect APs. The reliance on Category 6A for Wi-Fi is largely twofold:

1. Power over Ethernet (PoE) – A single copper cable delivers both data and power to APs, simplifying installation, reducing costs, and enabling flexibility, as APs can be easily moved around, or added to meet demand.
2. 10GBASE-T performance – Wi-Fi standards demand a connecting medium that delivers reliable, high-speed data transfer, and Category 6A meets those demands. Based on product roadmaps from switch and AP manufacturers, and current AP standards for Wi-Fi 7 and 8, 10GBASE-T data rates will continue to be more than sufficient for these access points.

As shown in Figure 2, at the end of 2024, Wi-Fi 6 and 6E accounted for most access point sales. Wi-Fi 6 surpassed Wi-Fi 5 in global sales in 2020, while Wi-Fi 6E (launched in 2022) accounted for nearly 30 percent of AP sales globally at the end of 2024.

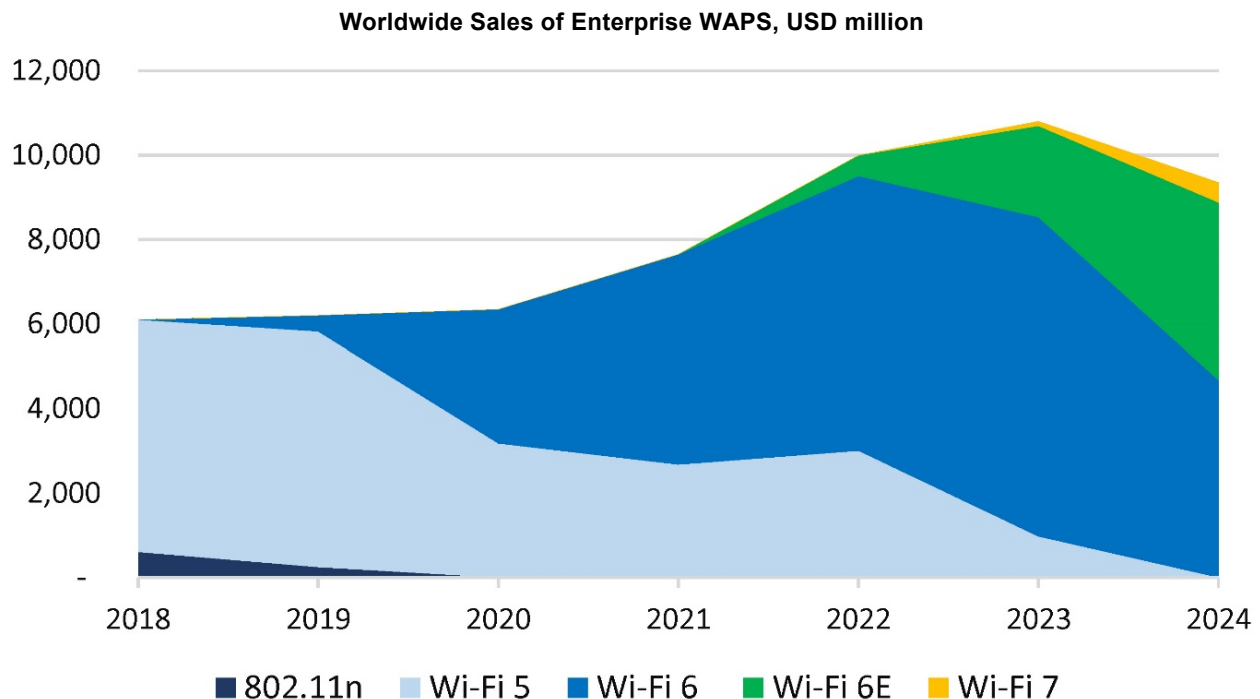


Figure 2: Wi-Fi 6 and 6E account for most Wi-Fi access point sales today, with Wi-Fi 7 showing growth, per BSRIA estimation based on secondary sources.

To shed light on the speed of innovation in Wi-Fi development, consider that about four years lapsed between the introduction and market adoption of Wi-Fi 6 to Wi-Fi 6E, and then Wi-Fi 7. Each standard was quickly adopted into the market after standard approval. At the same time, Wi-Fi 4 and 5 are being phased out as bandwidth demand continues to grow.

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The Wi-Fi Alliance touts Wi-Fi as the most common wireless communications technology², constantly being innovated, with each new generation bringing faster speeds, lower latency, and greater capacity for connected devices. Figure 3 shows the growth of Wi-Fi since its inception, shown as the number of Wi-Fi devices sold annually.

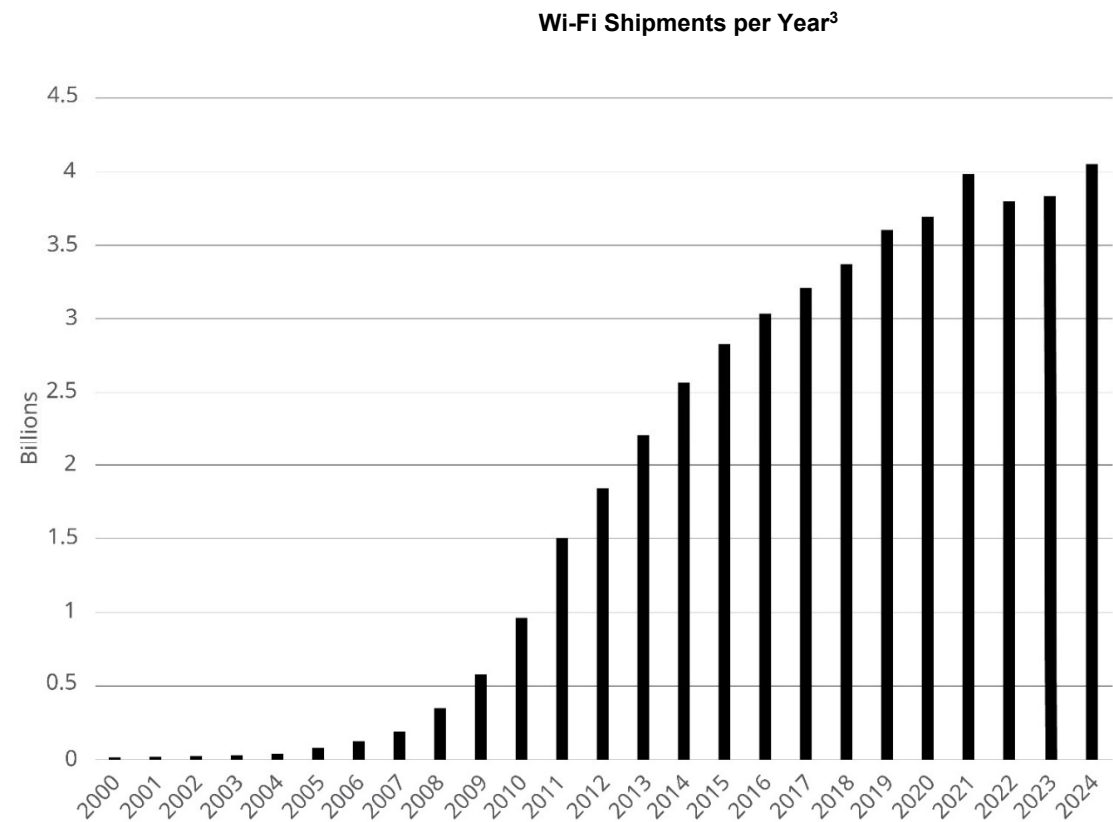


Figure 3: The number of Wi-Fi devices that have been shipped annually, showing growth from near zero in 2020 to more than 4 billion in 2024. Chart and statistics from the Wi-Fi Alliance.

Wi-Fi advancements have historically equaled higher data rates and reduced latency, as shown in Table 1. Additionally, the density of access points has also improved. Wi-Fi 5, for instance, is more prone to interference with other access points, while Wi-Fi 6 has better support for many devices. As we move to Wi-Fi 7 and 8, those access points are optimized for extremely dense environments, where many users are connecting many devices at the same time.

² <https://www.wi-fi.org/discover-wi-fi>

³ [The state of connectivity: Wi-Fi Momentum in 2024 | Wi-Fi Alliance](#)

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Table 1: Wi-Fi types that support more than 1 Gigabit of bandwidth.

	Wi-Fi 5 IEEE802.11ac	Wi-Fi 6 and 6E IEEE802.11ax	Wi-Fi 7 IEEE802.11be	Wi-Fi 8
Bands	5 GHz	6 = 2.4/5 GHz 6E = 6 GHz	2.4/5/6 GHz	2.4/5/6 GHz
Density of APs*	++	+++	++++	++++
Data Rates	6.9 Gbps	9.6 Gbps	10+ Gbps	10+ Gbps
Cable	Category 6A	Category 6A	2x Category 6A	2x Category 6A
Latency (approx.)	-	<10 ms	<5 ms	<1 ms

*Density: ++ = more prone to interference with other APs; +++ = better support for many devices; ++++ = optimized for extremely dense environments.

Since these Wi-Fi types allow for more than 1G of bandwidth, the cabling infrastructure must also support more than 1G of bandwidth. Category 6A is the right cabling infrastructure to achieve the maximum bandwidth supported by the Wi-Fi device. Selecting the right cabling today will enable your network for tomorrow's technology.

What's next for Wi-Fi?

Wi-Fi 8 is already in development as standard IEEE 802.11bn Ultra High Reliability. As its name suggests, the focus of Wi-Fi 8 will be high reliability, while maintaining the speeds established by previous Wi-Fi generations. Category 6A is expected to be the cabling of choice for Wi-Fi 8.

Power over Ethernet

Power over Ethernet (PoE) – which enables both power and data transmission over a single twisted-pair Ethernet cable – continues to grow rapidly as more devices rely on this simplified cabling solution. From security cameras, wireless access points, and LED lighting to digital displays and building automation systems, PoE has become a preferred approach across industries for the following reasons⁴:

- Simplified Installation
- Flexibility and Scalability
- Cost Savings
- Reliability and Redundancy
- Remote Management and Monitoring
- Improved Safety
- Energy Efficiency
- Future Proof
- Sustainability

⁴ [PoE Consortium: Benefits of PoE](#)

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With the rise of higher power PoE standards (up to 90W with PoE++), the choice of cabling plays a critical role in ensuring safe and efficient operation. The design of Category 6A cable is better suited for PoE applications and helps it support the growing ecosystem of PoE-powered devices:

- Larger conductors and better thermal dissipation mean less heat, which in turn means safer, better performance, and longer cable life
- Tighter cable twists and the presence of a separator or barrier reduces crosstalk and EMI to maintain signal integrity, even when delivering power alongside high-speed data
- 10G performance at up to 100 meters, even under PoE conditions

Heat rise is one of the biggest concerns when running PoE over copper cables, especially when cables are bundled, as is common in enterprise buildings. Several factors contribute to heat rise, including the type of cable, the number of cables in the bundle, and the ambient temperature where the cable is deployed. As shown in Figure 4, Category 6A cables manage heat rise better than Category 5e and 6. Figure 4 represents the worst-case temperature rise data reported by cabling manufacturers during a cable bundling test-off.

PoE Standards Evolution and Devices

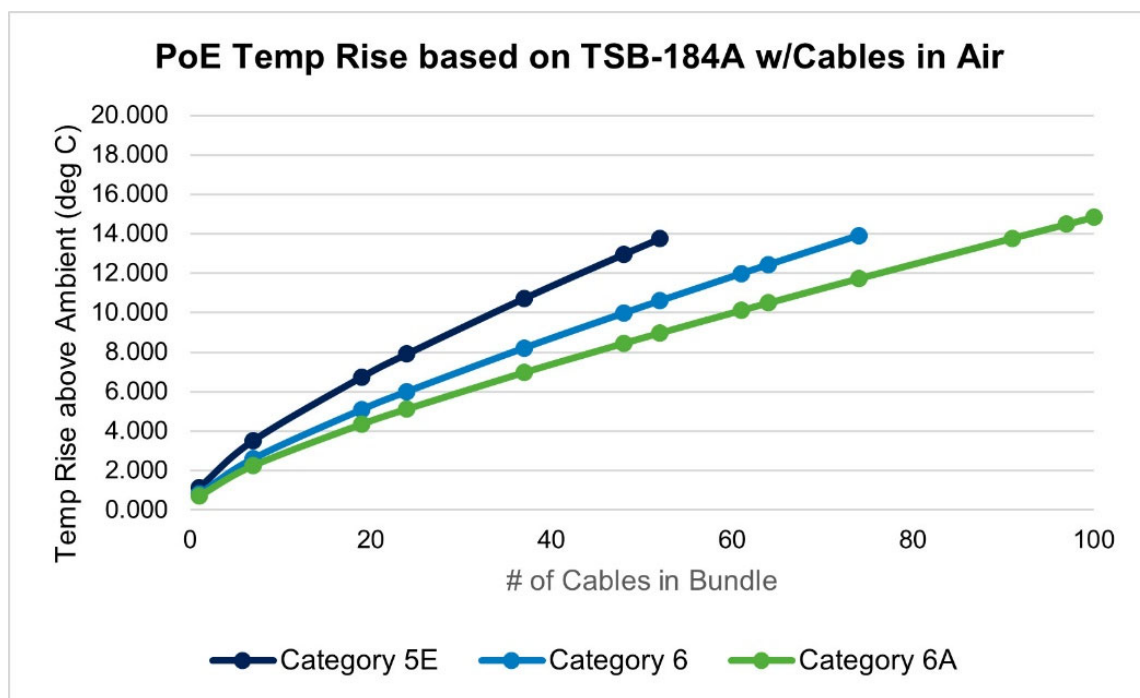


Figure 4: The maximum heat rise allowed is 15°C, to keep total cable temperature within the 60°C operating limit (45°C ambient + 15°C PoE temperature rise). Category 6A cables manage heat rise better, allowing larger cable bundles and remaining in the 15°C threshold.

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PoE Devices

The devices most often powered via PoE include surveillance cameras, access control, and AV devices.

Figure 5 highlights how PoE standards have evolved over the years to deliver more power, along with many of the most common PoE devices, and the required power needed for each.

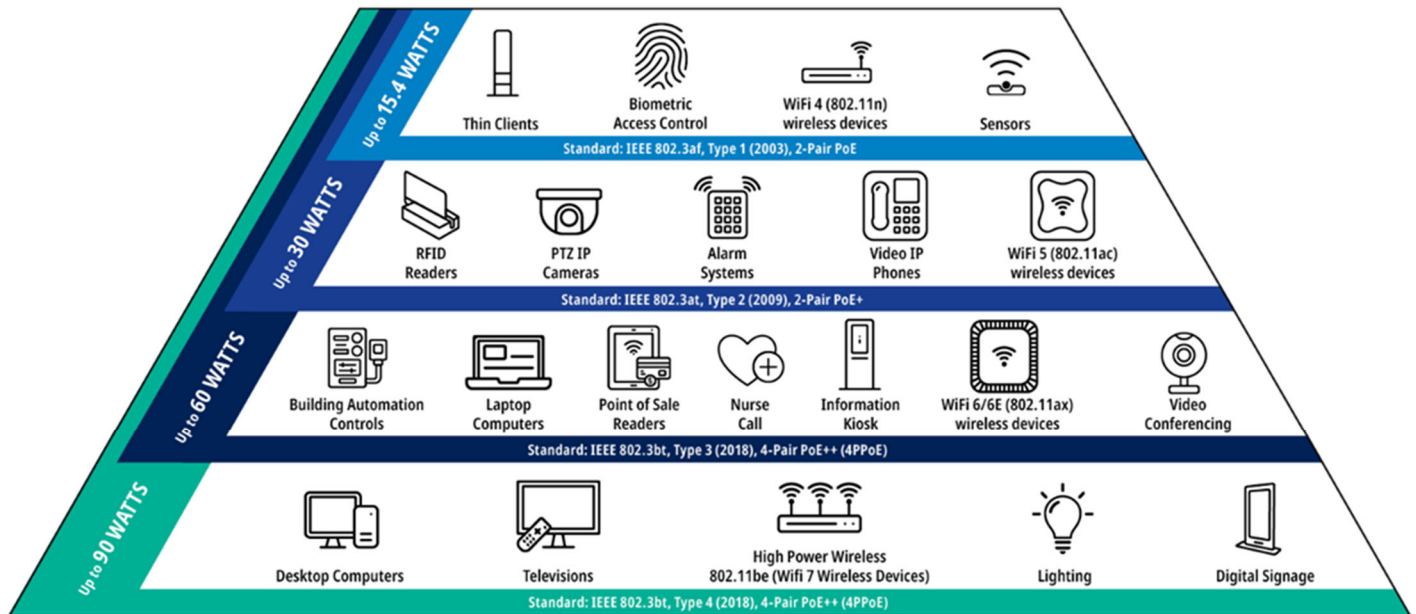


Figure 5: PoE standards have evolved to deliver more power, and power new devices with each evolution.

What does Category 6A Futureproofing Really Mean?

When we talk about futureproofing with Category 6A, it means investing in an infrastructure that is built to support not only today's network demands but also those of the foreseeable future – without the need for costly upgrades or cable replacements. Over the years, other Category cables have been introduced, with little adoption:

- Category 7 and 7A failed to gain traction due to proprietary connectivity and no real speed advantage over Category 6A
- Category 8, which remains limited to very short distances (up to 30 meters) and has yet to be adopted in the market

Category 6A stands as the highest performing, broadly adopted copper cabling solution for data center and enterprise environments.

With no new copper cabling standards on the horizon offering a meaningful performance jump for 10GBASE-T over 100 meters, Category 6A remains the long-term choice. While Category 6A may represent a slightly higher upfront investment compared to Category 5e or 6, this cost is far lower than the expense of upgrading in a brownfield environment, where replacing cable in occupied spaces requires significant labor, disruption, and rework. Choosing Category 6A from the start provides peace of mind, knowing the network is prepared to handle higher bandwidth needs, emerging technologies, and multi-gigabit applications well into the future.

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However, when an upgrade is required in a brownfield environment, Panduit Category 6A cables have a significant benefit over legacy Category 6A cables: size. At 0.23" diameter, Category 6A plenum U/UTP cables are essentially the same size as Category 6 cables, allowing reuse of infrastructure such as cable trays, pathways, and conduit. This simplifies the transition from Category 6 to 6A.

Category 6A Cable Innovation from Panduit

Panduit is built on innovation and that holds true for Category 6A products. Panduit Category 6A Vari-MaTriX cable represents years of leadership in copper cabling technology, setting the benchmark for performance, flexibility, and reliability in structured cabling systems.

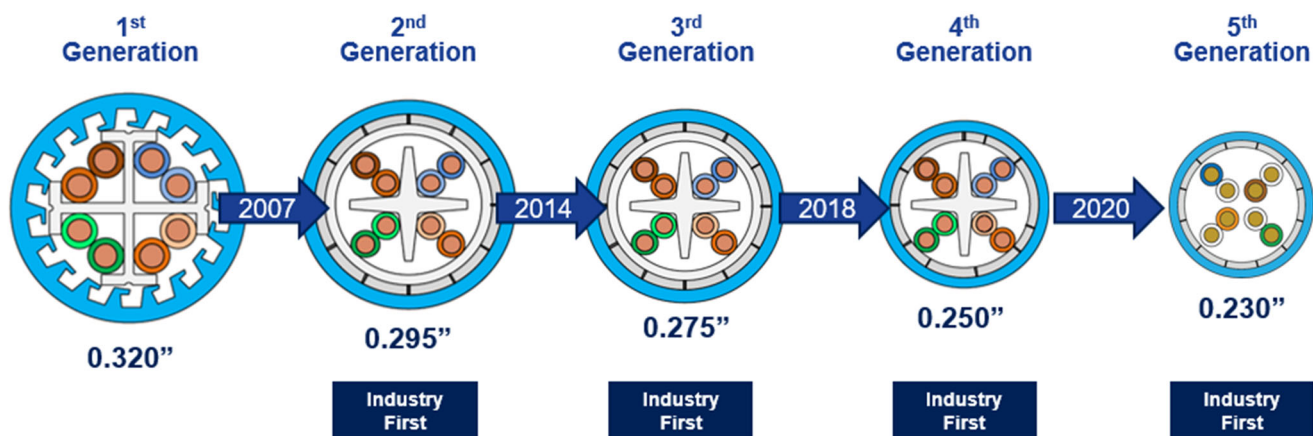


Figure 6: The evolution of Category 6A cables from Panduit.

As shown in Figure 6, Panduit has been the industry leader for Category 6A small diameter cable and each generation represented the smallest diameter in the market at the time it was introduced. The introduction of the MaTriX and the subsequent Vari-MaTriX tape addressed common installation challenges such as pathway fill, bend radius, and ease of termination – without compromising electrical performance.

The unique tape design of variable-length segmented cuts allows Vari-MaTriX cable to have best-in-class alien cross talk mitigation as well as avoid the risk of compromised EMI performance introduced by fixed-length segmented cut tapes. Vari-MaTriX cable excels in PoE and PoE++ applications, minimizing heat rise, allowing larger bundle sizes, and ensuring stable power delivery for high-wattage devices.

Panduit Vari-MaTriX Category 6A stands out as the best-in-class choice for organizations looking to future-proof their networks, delivering quality, innovation, and reliability.

Conclusion

In today's fast-evolving digital landscape, choosing the right infrastructure is critical to supporting the technologies of tomorrow. From the rapid adoption of Wi-Fi 6, 6E, and 7, to the increasing power demands of PoE-enabled devices, the network backbone must be robust, reliable, and ready to scale.

Category 6A cabling has clearly established itself as the optimal long-term solution – endorsed by global standards bodies, built to handle multi-gigabit Ethernet, and engineered for thermal performance in high-power environments.

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With no viable successor on the horizon, Category 6A offers unmatched futureproofing, especially when compared to the costly disruptions of upgrading in a brownfield environment.

Vari-MaTriX Category 6A cable elevates this even further, combining a reduced diameter design with exceptional electrical performance, PoE readiness, and installation flexibility. As networks become more connected, intelligent, and power-dependent, it's clear that **the time is now for Category 6A** – the cabling standard built to support today's needs and tomorrow's innovations.