

# Technical Article

## The ABCs and 123s of Poe



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Power over Ethernet (PoE) is a long-established – and well-adopted – power delivery technology that injects power over 100 m of standard CAT 5 Ethernet cable. This technology radically simplified installation for end equipment such as Internet Protocol (IP) phones, wireless access points for Wi-Fi® connections and IP cameras, and provides features such as power redundancy and smooth power-source transitions (also called “hitless failover”) for systems deemed critical.

With the recent ratification of a new PoE clause (IEEE 802.3bt) and the introduction of the Ethernet Alliance (EA) logo program, the PoE industry is in the midst of a significant inflection point. A new clause, Clause 145, creates an industry standard for defining how to deliver power over all four pairs of twisted CAT 5 cable. This significant industry accomplishment pushes the power capabilities of standardized PoE up from 30 W sent and 25.5 W delivered to 90 W sent and 71.3 W delivered, thus opening up the same PoE benefits to new end-equipment types such as intrusion human machine interface panels, advanced occupancy detection, industrial lighting, medical imaging, professional audio and video equipment, and digital signage.

The benefits of adding PoE to systems that already have data needs and extending its reach up to 71.3 W at the input to the load are clear. The new EA logo program extends these benefits across the entire PoE business ecosystem, including component manufacturers, system vendors and ultimately consumers. [Table 1](#) summarizes the benefits.

**Table 1. PoE logo program benefits and beneficiaries**

EA logo benefits	PoE system stakeholder benefiting			
	Integrated circuit vendors	End-equipment manufacturers	System installers	End users
Ease of installation			X	X
Enhanced designer support	X	X	X	X
Improved designer perception of PoE	X	X	X	
Reduced evaluation costs, faster time to market		X		X
Avoiding unnecessary development/lost opportunity costs	X	X		

The new standard and logo program will enable vastly improved interoperability and cannibalize multiple proprietary nonstandard solutions that jumped in and temporarily filled the technology void while the new standard worked its way through IEEE committee work. Some examples of those temporary solutions include Power over HDBaseT (PoH), Analog Device’s Power Over Ethernet++ (LTPoE+), and Universal Power over Ethernet (UPoE).

With all of this change comes the need for simplified terminology to ease industry communication. Moving forward, the EA PoE subcommittee will refer to the technology and logo testing options according to the brands and associated programs shown in [Table 2](#). TI has already begun incorporating this new language across its web pages and into training materials.

**Table 2. PoE brands and associated standards/logo testing programs**

Brand	Standard	Clause/clause title	EA certified logo program
PoE 1	IEEE 802.3af	Clause 33: Power over Ethernet over 2 Pairs	Gen 1 (Classes 1-4)
	IEEE 802.3at		
PoE 2	IEEE 802.3bt	Clause 145: Power over Ethernet	Gen 2 (Classes 1-8)

The EA PoE subcommittee chose this new language for three reasons:

- It makes the connection between IEEE 802.3bt products and EA testing suites exceptionally clear.
- It follows other industry-standard nomenclature such as USB x and Wi-Fi x, where the “x” indicates a specific generation of those technology types.
- It clearly delineates between pre- and post- IEEE 802.3bt solutions, whether they have undergone EA testing or not.

Start your new PoE design today with an increased understanding the new industry terminology, and be sure to have your design EA certified.

#### Additional resources

- For more help navigating the world of PoE and to get a quick start on designing your IEEE802.3bt-complaint system, see our [Power over Ethernet \(PoE\) training series](#).
- To learn more about the IEEE802.3bt standard, read the technical article, “[Key considerations for designing with the new PoE standard](#),” and check out TI’s [TPS23881](#) power-sourcing equipment (PSE) and [TPS2373](#) powered device (PD) controllers.
- Read the previous technical article on the EA PoE logo program, “[Would you like a logo to go with your PoE system?](#)”

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