



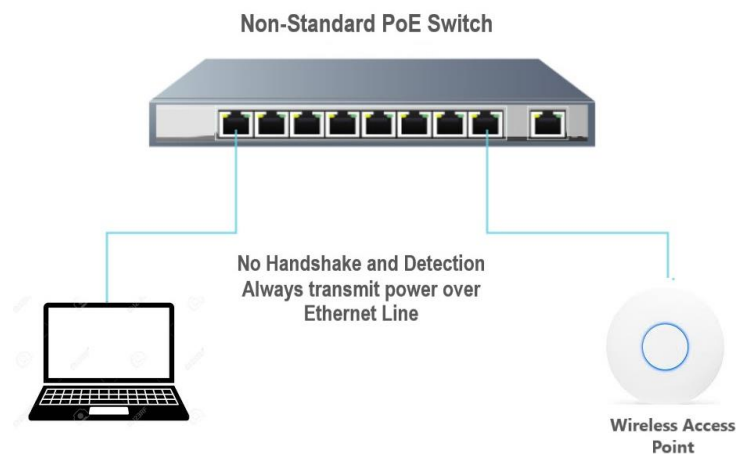
How to Choose a PoE Switch, Standard or Non-Standard?

Overview

Today, PoE switches are popular in the marketplace. However, there is a frequent question concerning standard and non-standard Power over Ethernet switch. This article will review the differences in the standard and non-standard switch in detail. PoE switch is designed to offer both network connection and power supply to one PoE powered device (PD) through one Ethernet cable. And as the demand for deploying PD devices such as IP phones, IP cameras, and access points increases, PoE switch is commonly used in today's enterprise and campus networks for it helps to reduce deployment complexity and cost. There are both standard PoE switch and non-standard PoE switch available in the market. What exactly are they? How do we choose standard PoE or non-standard PoE switches for our application?

What is Non-Standard PoE Switch?

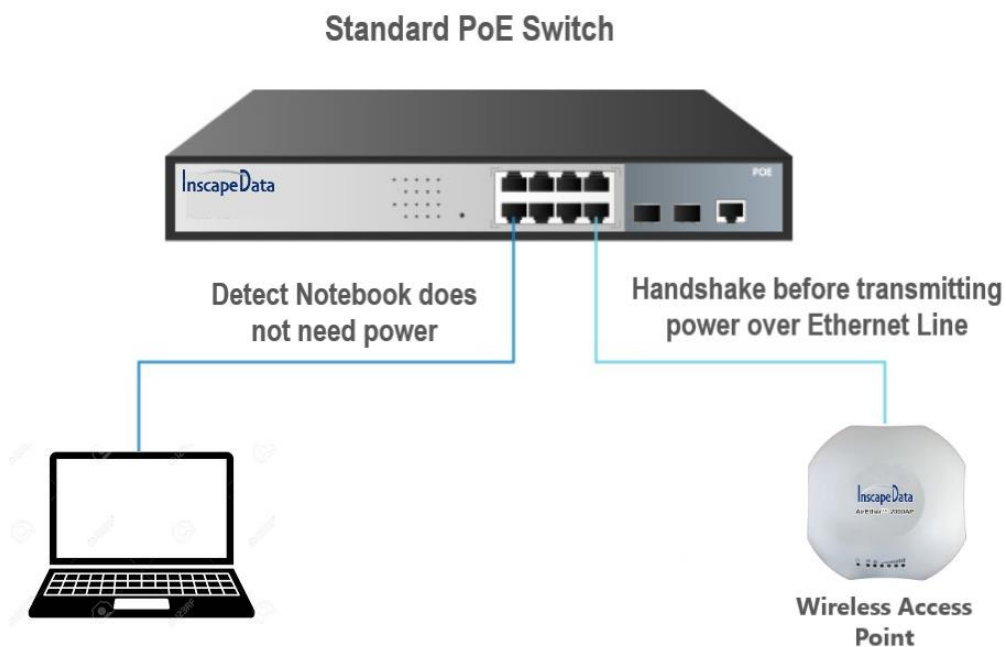
Non-standard PoE, also known as the passive Power over Ethernet. It also delivers power over the Ethernet lines, but does not perform the negotiation or communication process. Passive PoE switch does not adhere to any IEEE standard. The power is "always-on" when using passive PoE switch in networks, which means it always sends electric current out over the Ethernet cable at a certain voltage regardless of whether the terminal device supports PoE or not. So using non-standard, i.e., passive, PoE switch may burn out the terminal devices if they're not prepared for electrified Ethernet cables.



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What is Standard PoE Switch?

Standard PoE, short for standard Power over Ethernet, is also known as active PoE which refers to any type of PoE that negotiates the proper voltage between the power supply equipment (PSE) and the PD device. Active PoE switch is a device that complies with standard PoE, so it is also named standard PoE switch. This type of switch is rated to be IEEE 802.3af, IEEE 802.3at or IEEE 802.3bt compliant. Thus, it can be further divided into PoE, PoE+ and PoE++. Before powering up, the active PoE switch will test and check to ensure the electrical power is compatible between the switch and the remote device. If it isn't, the active PoE switch will not deliver power, preventing any potential damage to the non-PoE device.



Standard vs. Non-Standard PoE Switch: What Are Their Differences?

As mentioned above, standard PoE switch and non-standard PoE switch can both provide PoE connections but in very different ways. Besides that, they also differ in PoE power supply pinout, Ethernet support, cost, etc.

Standard vs. Non-Standard PoE Switch: PoE Power Supply Pinout

As we know, there are three methods for PoE switches to supply power: PoE Mode A, PoE Mode B and 4-pair PoE. In PoE Mode A, power is delivered simultaneously with data over pins 1, 2, 3, and 6. In PoE Mode B, power is injected onto pins 4, 5, 7, and 8. And 4-pair PoE delivers power over all 8 pins

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simultaneously. Active PoE switch can support all PoE Mode A, PoE Mode B and 4-pair PoE, while passive PoE switch can only support PoE Mode B. For more details about PoE Mode A, PoE Mode B and 4-pair PoE, you may visit [How Does PoE Switch Deliver Power for Your Devices?](#)

Pins at Switch	10/100BASE-T Network			1000BASE-T Network		
	PoE Mode A (Data & Mixed DC)	PoE Mode B (DC on Spares)	4-pair PoE	PoE Mode A (Bi-Data & DC)	PoE Mode B (Bi-Data & DC)	4-pair PoE
Pin 1	Rx+ & DC+	Rx+	Rx+ & DC+	TxRx A+ & DC+	TxRx A+	TxRx A+ & DC+
Pin 2	Rx- & DC+	Rx-	Rx- & DC+	TxRx A- & DC+	TxRx A+	TxRx A+ & DC+
Pin 3	Tx+ & DC-	Tx+	Tx+ & DC-	TxRx B+ & DC-	TxRx B+	TxRx B+ & DC-
Pin 4	Unused	DC+	DC+	TxRx C+	TxRx C+ & DC+	TxRx C+ & DC+
Pin 5	Unused	DC+	DC+	TxRx C-	TxRx C- & DC+	TxRx C- & DC+
Pin 6	Tx- & DC-	Tx-	Tx- & DC-	TxRx B- & DC-	TxRx B-	TxRx B- & DC-
Pin 7	Unused	DC-	DC-	TxRx D+	TxRx D+ & DC-	TxRx D+ & DC-
Pin 8	Unused	DC-	DC-	TxRx D-	TxRx D- & DC-	TxRx D- & DC-

Standard vs. Non-Standard PoE Switch: Ethernet Support

Standard, i.e., Active, PoE switches can support 10/100/1000Mbps Ethernet up to 100m over Cat5/5e/6 cable. Non-standard, i.e., passive, PoE switches, however, commonly support 10/100 Mbps Ethernet up to 100m. Thus, standard PoE switches can be applied in both traditional 10/100BASE-T and modern 1000BASE-T PoE networks. While non-standard PoE switches are usually used in the past 10BASE-T and 100BASE-T PoE networks.

Standard vs. Non-Standard PoE Switch: Cost

All standard, i.e., active, PoE switches are designed with the built-in PoE power controller which performs the function of PD device detection and classification. While the non-standard, i.e., passive,

PoE switch does have such component and functions. Therefore, it is reasonable to find the cost of standard PoE switch is higher than that of the non-standard PoE switch.

In summary, standard and non-standard PoE switches mainly differ from each other from the following aspects:

	Standard PoE Switch	Non-Standard PoE Switch
Standard	IEEE 802.3af/at/bt	N/A
Power Injection	After Negotiation	Immediately
Power Supply Mode	PoE Mode A/PoE Mode B/4-Pair PoE	PoE Mode B
Ethernet Support	10/100/1000BASE-T	10/100BASE-T
Max. Distance	100m	100m
Safety	High	Low
Cost	Medium	Low

As above mentioned, from the safety concerns, standard PoE switches should always be our top choice for powering up remote IP phones, IP cameras, wireless access points, and other PD devices. However, you may also consider non-standard PoE switches if there is a tight budget. But remember that the non-standard PoE switch has no power detection function. So it is important to make sure you buy a non-standard PoE switch that matches the power specifications exactly to the PD device you are trying to power on. Otherwise, you can easily burn up your PD device. Additionally, you should never connect computers and other non-PoE devices to the non-standard, i.e., passive, PoE switch.