Vigitron IP Infrastructure Design Educational Series

Midspans

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Midspans

In order to better understand Midspans, we first have to learn about what they are. Midspans are a PoE power source that is placed between a network switch and the device being powered, hence the term “Midspan”. Almost all network switches provide PoE power, so why do we even need a Midspan? The answer is “In some cases, we don't, but in other cases, we do”. Similar to the other products we've discussed in this series of articles, we first need to take into consideration that, like network switches, there are no real standards for Midspans. If you are considering the power you required based on just the power supply without putting any considerations to the actual power provided to each port and the total power available when each port is active, you are likely to pick the wrong Midspan. To simply put it, a Midspan can be the same as a network PoE switch without the switching capability.

The increasing power demands of many IP cameras such day/night, LED on/off, autoback focus, and heaters/blowers have placed high demands on PoE power. Let's begin with IP PTZ domes that require more than 802.3at (30 watts). Network switches do not provide more than 30 watts of PoE port power. When called upon to do so, the normal reaction within the 802.3at operation is to shut down power to the port, rendering the camera useless. Thus, if your camera requires more than 30 watts, you are going to need a Midspan. Some camera manufacturers provide one with their camera requiring more than 30 watts, but many do not. If you are going to extend the range of power transmission beyond the normal 328 feet (and yes, you can), then you have to account for additional power and a Midspan becomes a must.

However, thinking about a Midspan in terms of power is too limiting. What else should a Midspan be able to do? First, the Midspan should be managed. Power is expensive and a Midspan should be able to provide the ability to allocate power so that it can be applied to each camera, making the most out of the total available power. A Midspan should be able to respond to additional power requests while still providing protection. We've previously noted that all cameras have power surges due to the start up of their accessory features. These are often the causes of port shutdowns. A Midspan should have the ability to respond to these requests while providing camera protection from over-power conditions. In other words, it should have the ability to tell the port that the camera connected to will surge and provide the requested power for a specific and safe time period. We know that network switches do not fuse their individual ports, so a Midspan should have fused ports in case an individual port shorts the rest of the ports and the Midspan will still remain active. Because of the Midspan's position in front of the switch, we are actually providing port fuse protection for the switch itself.

In most cases, once the power to a port is terminated, a service call is likely to be made if it's only to unplug the Ethernet camera to start the PoE cycle. The most important aspect of a Midspan is attempting to establish the initial PoE, preventing its loss, and in some cases when PoE is lost, attempting to re-establish power. What separates a “smart” Midspan from a standard Midspan are the abilities to be programmed, establish initial power, maintain power if lost, and communicate statuses. Let's not forget, the labor and field service call saving potential of a Midspan.

Using a Midspan is often rejected based on the costs. However, consider the most expensive components in a PoE switch are those that provide PoE power. Remove those, and the cost of a switch is greatly reduced. The resulting combination of a “smart” Midspan and a non-PoE network switch may not be that much more than a network PoE switch, which has the same or even less power. Remember, it's even less when you consider the cost of system downtime and service calls.

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Suggested Vigitron Products:

Vi2201

802.3at Single Channel PoE PSE

Vi2202

802.3at Duel Channel PoE PSE, 60W Single Channel

Vi2208A

8 Channel 802.3at, 30W-74W Managed Midspan

Vi2216A

16 Channel 802.3at, 30W- 74W Managed Midspan

Vi2216LT

Low Cost 16 Channel 802.3af, 15.4W to 802.3 at, 30W Managed Midspan

Vi2508

8 Channel 802.3at, 30W-74W Managed Midspan w/ UTP extensions to 3,000 feet

Vi2516

16 Channel 802.3at, 30W-74W Managed Midspan w/ UTP extensions to 3,000 feet

Vi2608

8 Channel 802.3at, Up to 37W, Managed Midspan w/ Coax extensions up to 2,000 feet

Vi2616

16 Channel 802.3at, Up to 37W, Managed Midspan with Coax extensions up to 2,000 feet

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Vi3626

High Bandwidth Managed Network Switch

To learn how you can reduce the cost of large scale systems while increasing reliability, contact Vigitron at support@vigitron.com or your local Vigitron product representative. Vigitron offers free and without obligation Design Center Services staff by trained factory engineers. To access Vigitron's Design Center, click here.

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