




Advantages of Zone Cabling Architectures for Power over Ethernet

When Power over Ethernet (PoE) was introduced in 2003, it was available for only a handful of low-power operations and devices. Today, PoE is one of the fastest growing networking applications, and it is on the rise due to the wide range of benefits it provides, including:

- Lower cost compared to a line voltage system and a separate network for data
- Improved system control
- Greater operational efficiency
- Opportunities for technology expansion
- Network future-proofing



A wide range of enterprise devices and technology rely on PoE, including lighting, access controls, laptops and desktop computers, IP cameras, information kiosks, industrial automation equipment, and wireless access points (WAPs). With the advent of the Internet of Things (IoT) and digital buildings, PoE is poised for unprecedented expansion in the enterprise.

To leverage the many capabilities of PoE, network designers are increasingly turning to zone cabling architectures.

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Network Architecture Options for PoE

When considering infrastructure design options for PoE systems, three basic topologies are commonly implemented: home run, passive zone, and active zone architectures.

Home Run — In this network architecture, all active gear is located in the telecommunications room with permanent link cabling running from the telecommunications room patch panel to each device. A surface mount box or other type of termination at a port may also be included, with patch cords connecting to the devices.




Active Zone — In this architecture, a PoE device is located in the telecommunications enclosure to accommodate long distance runs between the telecommunications room and the telecommunications enclosure, or to facilitate the transmission of large amounts of data. The cabling from the telecommunications room to the telecommunications enclosure is typically fiber, with copper cabling running from the telecommunications enclosure to the devices.

Passive Zone — Like home run cabling, this type of architecture locates all active gear in the telecommunications room. However, a consolidation point is added between the telecommunications room and the devices to facilitate moves, adds and changes.

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The Benefits of Zone Architecture

There's no one-size-fits-all topology for PoE, but each architecture offers specific advantages and disadvantages.

	Pros	Cons
 <p>Home Run</p>	<ul style="list-style-type: none"> Easier to maintain equipment Uses existing power infrastructure Simpler to support emergency lighting via UPS to switches 	<ul style="list-style-type: none"> Larger PoE switches are generally less cost effective Additional cooling and space required in Telecommunication Rooms to accommodate switches Future MACs are more difficult Cost
 <p>Passive Zone</p>	<ul style="list-style-type: none"> Easier to maintain equipment Uses existing power infrastructure Simpler to support emergency lighting via UPS to switches Flexible cabling infrastructure 	<ul style="list-style-type: none"> Larger PoE switches are generally less cost effective Additional cooling and space required in Telecommunication Rooms to accommodate switches
 <p>Active Zone</p>	<ul style="list-style-type: none"> Reduces energy loss in cables Smaller PoE switches are generally more cost effective Telecommunication Rooms do not need to accommodate additional switches Flexible cabling infrastructure 	<ul style="list-style-type: none"> Equipment is spread throughout building, making management more complex Requires electrical cabling to be run to every switch Active enclosures may generate noise from cooling fans

For high-power PoE, the advantages of passive and active zone architectures are clear:

- Flexible infrastructure
- Easier maintenance
- Lower long-term cost
- Support for high port density
- Reduced size requirements for the telecommunications room
- Facilitation of moves, adds, and changes



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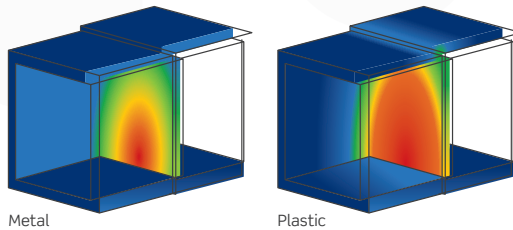


PoE-Optimized Connectivity for Zone Architecture

Leviton's end-to-end PoE-compatible systems of cable, jacks, patch cords, and patch panels are component rated, and third-party tested and verified to exceed industry standard performance, including higher bandwidth and power levels. Leviton Atlas-X1™ connectivity has successfully demonstrated readiness for 100-watt PoE, which will enable the transmission of power and data to a wide range of remote devices.



Atlas-X1 Cat 6A jacks include the only UTP jacks on the market with a solid metal body. By using a metal jack body, instead of the more common ABS plastic, the jacks achieve higher performance and a 53% improvement in heat dissipation.



Atlas-X1 jacks are designed with PoE-optimized tine geometry that prevents tine damage that can be caused by higher current PoE applications. Leviton's patented Retention Force Technology™ maintains constant contact force at the jack and plug interface, preventing inadvertent intermittent disconnects. This increases system longevity and prevents costly repairs.

Leviton zone cabling enclosures are the perfect solution for adding flexibility within an open-office architecture. Active zone enclosures, typically a tie-in to a ceiling grid, should be used when active equipment is included in the consolidation point. Passive enclosures can be used in open-air environments or unfinished ceilings, where only passive cabling is used in the consolidation point.



For more information, visit Leviton.com/PoE.