

The Evolution of Power Distribution, Part 1

If the technology existed to reduce the cost of distributing power via busways and intelligent, rack-mounted power strips by 50%, how soon would our marketplace adapt?

As you may have guessed, we think the answer to the question is, ‘very soon.’ The Zonit Z-PDS is poised to make rack-mounted power strips a thing of the past, and our prediction is that the marketplace will adapt as quickly as it did to busway. The cost to distribute three-phase power to the rack is approximately \$5,000-\$6,000 per rack today. To understand how we got to this point, it is important to understand the historical context of rack power distribution.

There are two parts to the story: first, how power is distributed to the rack and second, how that power is monitored and controlled. In the first part of this series we will discuss the evolution of power distribution.

The original model of power distribution closely followed standard industrial practice. Main power distribution panels (PDU) branched out to smaller remote power panels (RPPs) which fed power whips to racks. This model worked, but not well. The change rate at the rack for power distribution requirements was high, which forced running new whips all the time, often via “hot” changes at the RPP by an electrician. In addition to safety and reliability challenges, old whips were abandoned to keep racks in service with minimal downtime. This was inefficient, expensive in electrician time and potentially dangerous due to “hot” change requirements.

The next step in the evolution was to adapt industrial overhead busway distribution systems, originally invented for electric cranes, to data center power distribution. This worked better but was also more expensive, with the promise that ongoing move, add, and change work would be more efficient. But with busway, changes are still made to an energized busway, and an electrician is still required for adds and changes. It also placed all of the system elements high overhead, requiring ladders to access and use them.

The Zonit Z-PDS is the next step in the evolution of power distribution to the rack. It is a 2U device that is mounted either in or above the rack and is fed directly from the PDU. It can work in an environment fed by RPPs or busway, but it can also take on all of the power distribution tasks downstream of the main PDU. This means that it can also *replace* RPPs, busway, and whips. The modular Z-PDS technology displaces the status quo while reducing cost, maximizing space utilization, and improving reliability.

At half the cost, it is a more effective solution than traditional distribution methods. It saves white space by eliminating RPP’s & whips, or entire busway systems. It also saves breaker positions when RPP’s are used. And with features like automatic three-phase load balancing and twist-lock plug adapters it is safer and more reliable.

The Z-PDS has patented technology that allows the data center manager to eliminate half of the power distribution costs while significantly lowering the cost of making changes to power distribution at the rack. No more cost for electricians. No more coordinating with facilities for change orders. No more running out of RPP breaker positions. And instead of costing \$5,000-\$6,000 per rack to get power, the Z-PDS costs less than \$3,000 per rack and gives more control while lowering CAPEX and OPEX.

About ten years ago, the Zonit Power Distribution System (Z-PDS) entered the evolutionary timeline. Like automobile seat belts that were available long before they became mandated, and the disc brakes that took years to catch on in Detroit, the Z-PDS is a tried, true and tested power distribution technology that has been at work for more than a decade in the data center space.

[Click here for more information about the Zonit Z-PDS.](#)