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PDU's And The Colocation Challenge

Demystifying the high implementation costs of intelligent PDUs in a colocation setting.



The ability to monitor and manage power data from the rack and device level has generated steady and increasing demand for intelligent power distribution units (PDUs). In fact, global revenue in intelligent PDU is expected to reach about \$860 million by 2021, a 7% increase at a five-year compound annual growth rate, according to IHS Markit's most recent report on the rack power distribution market.

The connection with the growth of the intelligent PDU market and the boom in colocation and multi-tenant data centers is clear.

Despite the higher upfront costs of deploying intelligent PDUs, colocation providers rely on remote power monitoring to better service and bill their customers. But it is still common to see sluggish buy-in from tenants and endusers who take higher prices of intelligent PDUs at face value.

It is true that certain applications don't require the robustness of an intelligent PDU, but when appropriately deployed, the benefits of intelligent PDUs greatly offset the upfront cost investment. More importantly, new technology available today allows colocation providers to bring their customers up and running very quickly, while allowing operators to closely watch and manage power, environmental conditions, and control cabinet access through one appliance and interface. Tenants and endusers can also benefit from having the right tools to have more visibility with what happens in their rented space.

CURRENT SCENARIO: COLOCATION GROWTH PUSHES HIGHER DENSITIES

The trend is clear and it is not slowing down. With many enterprise IT workloads migrating to the cloud and into colocation, a perfect storm for consolidation has unfolded. In 2017 alone, mergers and acquisitions (M&A) reached a whopping \$20 billion, according to a recent report by Synergy Research Group. The biggest deal in 2017 was Digital Realty Trust's \$7.6 billion merger with its major competitor, DuPont Fabros Technology, and 2018 has already seen a few M&A announcements.

As data centers converge and scale up, so do their power densities, with many going above 10 kW per cabinet. At these levels, selecting the right cabinet-level PDUs becomes vital to ensure availability of all IT applications, as well as to minimize the overall energy footprint of the data center.

BASIC FEATURES OF INTELLIGENT PDUS

With intelligent power management, it is possible to boost operational efficiency by managing and monitoring power use at the rack- and device-level. This allows both colocation providers and tenants to have visibility of power usage and trending.

At the very least, an intelligent power management solution should include:

- High temperature rating: PDUs reside in the hottest area of the cabinet — by the rear of operating high-density equipment — so it is crucial that the PDU withstands the highest temperature possible.
- Outlet-level monitoring: Information obtained can be used to identify servers that are over or underutilized. Outlet-level readings also provide information to determine what servers and applications would be best suited for virtualization and where there is available space and capacity in racks. Many colocation providers rent rack, cabinet, or caged spaces, so this feature also benefits both colocation and tenants.
- Outlet-level switching: The ability to cycle power to each individual outlet allows outlets to be turned off unless specifically assigned to power equipment to carefully manage power and utilization.
- DCIM integration: Easy integration with a monitoring software that

gives users a single point to view, trend, and report the data points the PDU collects is crucial.

Colocation providers can manage power more efficiently and gain insightful information such as kW/hour usage for power chargeback reports, compare efficiency at the cabinet, aisle, or room level, and report cabinet access attempts, to name a few. Similarly, tenants can better visualize their total systems and power use to ensure they are being billed properly.

BRINGING CUSTOMERS UP AND RUNNING QUICKLY

There is a novel approach that integrates intelligent PDUs with cabinet security, all while allowing for quick deployment. In simple terms, this capability allows colocation providers to bring their customers up and running as fast as possible.

The cabinet ecosystem: the integration of cabinet, power management, environmental monitoring, and access control

The cabinet ecosystem approach looks at infrastructure, hardware, and software as one element:

- Standardize on footprint and airflow pattern: The cabinet — or infrastructure — ensures maximum vertical space utilization and promotes full airflow and cable management capabilities.

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- Achieve savings through IP consolidation: Generally, most tenants deploy between five to 16 cabinets in a space, and a typical cabinet configuration utilizes two to four IP connections per cabinet. With a robust IP consolidation capability, it is possible to connect all cabinets using only two IP connections.
- Visualize critical conditions before they cause downtime: Intelligent PDUs that integrate with environmental sensors help users to remotely monitor, record, and analyze environmental conditions at each cabinet, thus preventing downtime and eliminating the need for a separate environmental monitoring appliance.
- Remotely control access: Particularly in colocations where many customers share the same space, the physical security of the cabinet is vital. Intelligent PDUs that integrate with access control allow data center managers to keep a log entry of each cabinet access attempt and export logging files for regulatory compliance audits. The health care and financial industries specifically mandate strict security measures in order to protect data privacy, and physical control is one of these requirements.

BENEFITS OF THE INTEGRATED, CABINET ECOSYSTEM APPROACH

First, it removes the need to network the lock and the PDU separate-

ly. Second, it allows for easy and remote management through the same interface. Lastly, IP consolidation savings are also reflected in the need for less infrastructure required to support additional cabling that would be needed to link the PDUs, environmental monitoring appliances, and access control systems separately.

REDUCING DEPLOYMENT TIME

Deploying a cabinet ecosystem is much simpler and faster than selecting hardware and accessories from different vendors and then integrating on site. Some cabinet manufacturers offer a complete data center cabinet and power solution, making ordering, tracking, and installation easier. The value of single source is one of the most underrated factors that colocation and tenants take into consideration. ■



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