Powering the Cloud:

Using intelligent rPDUs to prevent the storms of downtime

Introduction

Cloud adoption is at an all-time high, and increasing. According to RightScale's 2016 State of the Cloud Survey, private, public and hybrid cloud migration has risen significantly in the past year[1]. Meanwhile, The Wall Street Journal estimated that more than one-third of all companies will have at least one public cloud workload by 2018[2].

Many business stakeholders are being drawn to the cloud for its implicit benefits: scalability, resiliency, enhanced potential for collaboration, lower overhead (for public deployments) and more remote capabilities.

While it is hard to find fault with many of these benefits, there is one concern that has cropped up on occasion, and its impact has been felt by organizations with even the deepest pockets: data center downtime. In particular, downtime that results from power failures has wreaked havoc on organizations in all industries, costing as much as $7,900 each minute, according to the Ponemon Institute. Now more than ever, the importance of optimized power infrastructure in the data center is mission critical.

Cloudy With A Chance Of Storms

There have been several notable instances of power-related downtime affecting data centers. For example, in August 2016, Delta Airlines experienced an outage at one of its main data centers in Atlanta. All of the airliner's computer systems were subsequently knocked offline throughout the world, resulting in the cancelation of 740 flights and delays for thousands more. It was later revealed that the downtime resulted from a power failure in what MJ Shoer, CTO at Internet & Telephone, LLC, later identified as a private-cloud data center[3].

Delta is hardly alone in these trials and tribulations. In January, 2016, a power failure at one of Verizon's data centers precipitated several hours of downtime for JetBlue, resulting in delayed flights across the U.S.[4]. That same month, GitHub's cloud facility also experienced a power failure that led to downtime[5].

With power-related downtime causing so much damage to so many organizations across industries, the importance of meticulous power management is apparent. There are a myriad of external factors that are beyond cloud data center managers' control. With that in mind, anything less than perfection in data center power infrastructure simply is not good enough.

Better Power Management Starts At the rPDU Level

Aptly named, rack power distribution units (rPDUs) are responsible for rack power distribution in data centers. The importance of this role cannot be overstated. Regardless of whether your equipment is running on its primary power source, or a secondary uninterruptible power supply (UPS), it is rPDUs that, at a minimum, help data center managers achieve the following at the rack level:

- Balanced power distribution

- Billing-grade accuracy of power usage

- Power consumption metrics with monitoring

All of the above are fairly basic features that are essential just for keeping the lights on in standard data centers. While this is a start, the minimum simply is not enough for today's ever-evolving, dynamic cloud data centers.

High-Maintenance Facilities Call for High-Functioning rPDUs

Cloud facilities, especially public cloud environments, are in a somewhat unique situation in that operational integrity depends on the infrastructure's acumen for quick adaptation to changes. The ability to swiftly and efficiently increase workloads is a significant benefit for clients, but it is also a complicated endeavor that falls on facility operators' shoulders.

For instance, because of the flexibility that cloud facilities are expected to support, the need to add and remove equipment may arise more regularly. As this happens, facility technicians will need, at a minimum, an intuitive means to locally identify power loads. To this end, the use of color-coded power strips has proven an effective method for helping operators easily identify supply feeds. Drilling down further, some intelligent rPDUs provide color-coding for the output phases/circuits to assist with simplified load-balancing. Simply by glancing at the rPDUs, technicians can get a sense of how load is being
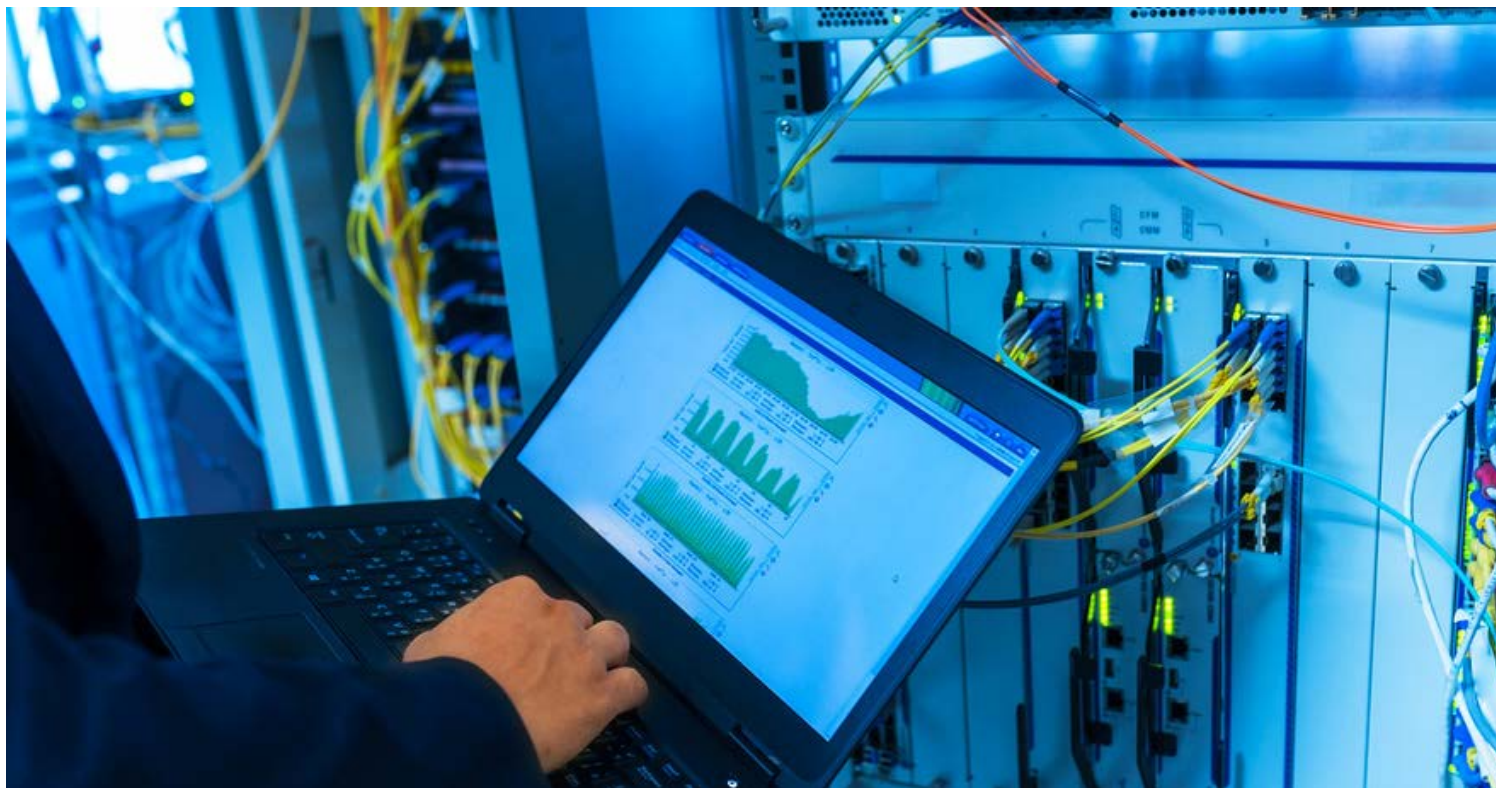
distributed by referencing the rPDU phase/ circuit color-coding to help determine where additional equipment can be connected.

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Understanding the Importance of rPDU Intelligence

Color coding your rPDUs is important, but powering today's dynamic cloud facilities while mitigating the looming threat of power-related downtime requires more than that. According to TechTarget's senior technology editor, Stephen J. Bigelow, how we define "PDU" has evolved[6]. Today's data centers, says Bigelow, need to be "power-aware" facilities.

Several factors have led to this requirement, not the least of which is the increase in high-density facilities as new bytes of data are created by the quintillion every single day. Powering a data center costs a lot of money, which means that every watt should be put to good use. Being able to track

consumption with granularity will allow managers to pinpoint energy-inefficient systems, which, according to Bigelow, "are prime candidates for replacement during the next technology refresh cycle."

On top of that, working with dense power loads leaves little room for error, which puts more pressure on data center operators to get power management just right. Accidentally overload a single rPDU, and you run the risk of causing downtime for critical equipment within the rack.

Achieving energy efficiency and circumventing storms of downtime in a data center facility requires intelligent rPDUs. These can be defined as rPDUs that offer all of the following features and functionality:

- Remote monitoring for at-a-glance, detailed power usage metrics regardless of the operator's location

- Local display to allow technicians to quickly view rPDU available capacity

- Individually remotely managed outlets that allow an operator to switch outlets on/off as required

- Fast and easy upgrade options with hot swappable rPDU intelligence units

- Optional environmental monitoring at the rPDU level (temperature, humidity, etc.)

- Alarming capabilities based on user-specified thresholds

This level of intelligence allows operators to power the cloud without having to weather storms of downtime that cost businesses billions of dollars.

Conclusion

By the end of 2016, Gartner estimates that the market for the public cloud alone will exceed $200 billion[7]. Meanwhile, private and hybrid cloud deployments continue to increase year-over-year, according to RightScale. The demand for cloud is palpable, and the space is primed for unprecedented growth.

Start making sure that your organization has the power infrastructure in place to capitalize on this trend. Don't let power inefficiencies in your facility rain on your parade.

About Vertiv Geist™

We produce high quality products while providing you with superior service and value. Whether it is providing excellent customer service or implementing new technologies, Vertiv Geist promotes innovation, quality and satisfaction in all aspects of business.

Design, Assembly and Testing

- On-site engineering, reliability, conformance and compliance labs allow us to design, manufacture and ship rPDUs so they arrive when you need them.

- Each new unit is built and approved in our labs before being released to production.

- Every unit is 100% tested for reliability and functionality.

Fully Compliant — Worldwide Approvals

- Conformance labs with a dedicated compliance and reliability engineering team ensure conformance to global

standards for safety, reliability and accuracy.

Largest rPDU Selection in the Industry

- rPDUs stocked in the channel for immediate availability.

- Standard units are built-to-order and shipped in 3 to 5 business days.

- Engineer-to-Order units designed to meet your unique specifications shipped in as little as 2 to 3 weeks.

Sources

[1] http://www.rightscale.com/blog/cloud-industry-insights/cloud-computing-trends-2016-state-cloud-survey

[2] http://blogs.wsj.com/cio/2016/09/15/cloud-adoption-among-large-companies-set-to-accelerate-mckinsey-studies-find/

[3] http://www.seacoastonline.com/news/20160814/lessons-from-delta-airlines-it-outage

[4] http://www.datacenterknowledge.com/archives/2016/01/14/verizon-data-center-outage-delays-jetblue-flights/

[5] http://www.datacenterknowledge.com/archives/2016/01/29/data-center-power-outage-brings-down-github/

[6] http://searchdatacenter.techtarget.com/tip/What-is-a-PDU-in-an-intelligent-energy-aware-data-center

[7] http://www.gartner.com/newsroom/id/3188817