Setting the Standard for Power Distribution in Data Centers

People | Power | Partnership

Data center connectivity keeps a company running smoothly. Disruptions, whether they last for minutes, hours or days, can wreak havoc on a company's bottom line through lost or corrupted data, lost productivity and repair costs.

The following article explores the most important data center trends, the Open Compute Project (OCP) and the ways in which HARTING is meeting these challenges head on, providing solutions to today's challenges with an eye toward future trends.

Data Center Trends

As companies generate an increased amount of data about everything from internal operations to customer preferences, the need for data centers to house all of this information increases. Just as standalone desktop computers gave way to networked systems in order to increase information sharing within a company, internally housed servers are giving way to data centers. This change allows for adequate storage of the amount of data companies now generate, share and utilize in various ways. Data centers enable companies to streamline internal operations, tailor products and services to customer needs, and increase profitability through their data analytics.

Data centers meet the secure storage and retrieval of company information in several ways. Today's data centers offer expandability, minimal downtime, and rapid deployment. These trends are relevant to traditional data centers, along with less cost intensive solutions: prefabricated data centers and colocation data centers.

Prefabricated data centers and colocation

Not every company can afford to build its own data center, regardless of its need for storage capacity. Every program, every client profile, every product, process and web page requires room on a server. Prefabricated data centers are pre-built, and can be installed on-site in units the size of shipping containers. They provide an inexpensive option to securely store data on location. A colocation data center offers rentable equipment or

bandwidth from a building shared with other companies. Just as a tenant might rent an apartment, smaller companies may band together to locate their data in a common facility. Data center colocation[i] is estimated to reach a $73 billion industry by 2023 in the U.S. alone.

The Power Distribution Unit is an important piece of every data center rack

1. *Expandability*

    As a company grows, its data storage and connectivity needs expand. Meeting one company's needs, let alone staying ahead of the competition, requires the ability to store, access and utilize vast amounts of data.

    Hyperscale data centers[ii] enable a company to meet its current data storage demands and plan for future additional demands. These centers have 100,000 or more servers, depending on the definition. This allows for the rapid expansion of data storage through uniformity and higher-density

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server configurations. They easily accommodate today's cloud storage, enabling secure data access across multiple platforms and devices. Since behemoths like Amazon and Facebook use hyperscale data centers, this philosophy can also be employed by smaller companies as well so they can meet their expanding data needs.
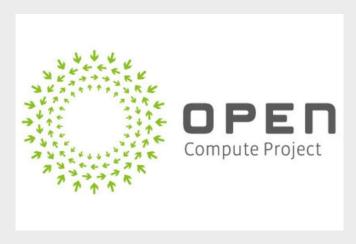
2. *Minimum downtime*

    Lack of access to vital company data results in reduced productivity and, ultimately, lost revenue. Poor infrastructure management[iii] leads to increased downtime. Properly constructed data centers consist of uniform connections and connectorized servers ensuring that companies experience minimal downtime. Traditional hardwired data centers may increase downtime as an electrician must check each connection to determine the failure's location. Modern, connectorized data centers eliminate that requirement as new connectors can be tested and replaced quickly, bringing a company back online with all of its data intact and with minimal loss of productivity.

3. *Rapid deployment*

    As more companies focus on their core missions and outsource secondary functions, such as data management, construction of data centers is proliferating. Additionally, mobile data center usage is increasing. Military operations, disaster relief organizations and other companies that require secure linkage in multiple, moving locations find that a mobile command center now means far more than one well-equipped trailer. Fast, secure and reliable data links comprise a vital component of mobile rapid response.

Open Compute Project

The Open Compute Project (OCP)[iv] is an international effort to break down technological silos, making IT hardware more open, standardized, flexible, manageable and economic. Proprietary technology creates communication walls. The OCP builds communication bridges.

Open IT hardware shares data center rack designs between companies. Think of a housing development. The developer has three or four base model designs shared by all of the residents. However, residents can then customize those designs to meet specific needs and desires. The same could be said for open IT hardware solutions. Companies can choose from several designs, improve upon those designs and share the improvements.

Using a standardized design as the base improves supply chain functionality in that the basic components can be manufactured and shipped globally, knowing that they will meet the customer's needs. The standardized designs also ensure that all engineers and operators understand the equipment or can be brought up to speed with the minor modifications quickly.

"Standardized" does not equal "rigid," though. As rapidly as technology and data centers change, end users

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require the flexibility to create IT systems that truly meet their individual needs. The OCP does not want to dictate the programs or data storage needs of any given company. Rather, it seeks to share the standards adopted in operating data centers to allow companies in the design phase to achieve greater flexibility for current and future needs.

Manageable IT hardware must be nonproprietary so that the greatest number of engineers and operators can understand the largest portion of available systems. Proprietary hardware is unmanageable in that it locks the end user into one brand name or one vendor. Such sole source contracts enable the proprietary vendor to charge whatever the market will bear for his product rather than the product's true value.

All of these features play into the economics of open IT hardware. The greater the knowledge base, the lower the cost to install, repair and maintain IT hardware, making it affordable for even small companies to store large amounts of data.

The HARTING solution

HARTING partners with industry leaders to remain on the cutting edge of technology and trends. Underwriter Laboratories and the Telecommunication Industry Association form the basis for many of the products HARTING designs, ensuring regulatory compliance and efficient, effective connections. Most recently, HARTING's Han-Eco® connector and cabling solution was used in Project Olympus, Microsoft's next generation rack-level solution that is open-sourced through Open Compute Project.

The Han-Eco® [v], known as the "universal PDU connectivity solution" represents HARTING's marriage of functionality, design and cost-efficiency. Its plug-and-play design enables quick and easy assembly of a new data center. Because of its light weight, the solution is ideal for prefabricated or mobile centers.

HARTING Han-Eco® Modular PDU Connector Solution

In keeping with the OCP's goals, this solution is a customizable stock part, providing both the standardization and flexibility that any company requires when designing a data center. Inside the Han-Eco® connector are standardized, reconfigurable modules from HARTING's Han-Modular® product line. The Han-Modular® product lines allow multiple media such as power, signal and data in a single connector. All of the modules are standard stocked parts, allowing for a customized solution using off-the-shelf parts. With its global footprint, HARTING parts are available as needed, where needed, making them an economical option. For all of these reasons, the HARTING Han-Eco® was the chosen connectivity solution for Microsoft's Project Olympus and has become a standard connectivity solution for Data Centers.

The Han-Eco® connectivity solution is available as a full cable assembly manufactured by HARTING Customized Solutions (HCS) or as individual components.

With the Han-Eco® connectivity solution, as with all of its products, HARTING actively partners with customers and potential clients to pinpoint and solve their pain points. Completely robust and completely affordable, HARTING solutions create customizable plug-and-play products for every company's data center needs.

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