

Virtualizing Data Centers for Digital Transformation

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An exponential increase in data is on the horizon. It's coming from the advent of 5G networks, the increase in mobile computing, and the many connected people, places, and things that will come online as the IoT continues to become mainstream.



Just how much of a data increase will we see? [IDC forecasts](#) that 175 zettabytes (ZB) of data will be produced by 2025—an uptick from just 33ZB last year—of which 90ZB will be created by IoT devices. That's a 430 percent increase in just five and a half years—let that sink in for a moment.

As this tsunami of information arrives, data centers will play an increasingly vital role in data processing, storage, and management. Hence, it's no surprise that, according to a [report by Research and Markets](#), the global colocation data center market is expected to grow to \$54.8 billion by 2020. That said, while our homes, buildings, streets, cars, manufacturing plants, financial services, healthcare and retail experiences are anticipated to become smarter and more connected, and every enterprise strives to undergo its own digital transformation to monetize these trends and technologies, the data center too must evolve.

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Achieving cloud-like operations at the physical infrastructure level

From a technology perspective, the data center—especially its mechanical and electrical environment—just isn't keeping pace with the IT environment. Meanwhile, enterprise CIOs and CTOs are attempting to transform their companies into organizations that invest less time and resources in the physical aspects of the data center and more into the business applications that can drive revenue growth and innovation across their product and service offerings. But lest we forget, 80 percent of enterprise IT still resides in owned and operated data centers.

Faced with these challenges, the objective of any progressive colocation provider is to enable its enterprise customers to leverage facilities that are more finely calibrated, monitored, reliable, and energy and cost-efficient than if they were left to their own devices. A more dynamic, flexible and efficient data center, whether on-prem or colo,

moves the management of physical assets into the virtual world by platforming it in a private cloud—while providing transparency and control via a comprehensive online interface. These virtualized physical assets include space, power, cooling, and compute, as well as the existing assets of the enterprise.

It's important to note that while the goal is to achieve cloud-like operations at the physical infrastructure level, the optimal solution isn't simply about adding a data center management software layer. Data center infrastructure resource management was never that simple, and with the continuing proliferation of Artificial Intelligence (AI) and machine learning (ML) tools, and the medley of different monitoring systems, sensors, device alerts, and dashboards, it's only likely to become more complex.

Instead, it's the combination of intelligent software, processes and people that's necessary to provide a service-oriented approach to IT, facilities, and data center physical infrastructure management. Such an approach addresses the need for greater flexibility, agility and cost-effectiveness. And it all begins with a team that can seamlessly integrate within an organization to provide deployment and operations oversight, workflow administration, and data center IT and facilities staffing support.

Breaking the cycle of overcapacity and under-utilization

IT infrastructure requires scalability to ensure an organization has room to grow, whether that means rolling out a new product or service or expanding into a new or existing market. True responsiveness is built on the foundation of in-depth, real-time data and the ability to glean comprehensive insights into data center infrastructure behavior, including power capacities and utilization rates, server asset life cycles, and cable management.

Data center management services provide a deep and holistic view into all data center assets, which helps to successfully drive capacity planning, change management, lifecycle management, and efficiency in day-to-day operations. Gaining insight to available capacity across on-premise, colocation, or cloud data center environments allows IT managers to operate and deliver cloud-like services to their business through informed decision-making.

Where capacity planning, forecasting, utilization and lifecycles are concerned, it is also advantageous to be able to gain insight into 'what if' scenarios. For this reason, predictive analytics are essential in helping create an efficient operational environment across a data center, or even over multiple facilities and cloud platforms. It's also the key to maximizing asset utilization through accurate forecasting, whereby real-time metrics are analyzed and data accuracy over time is validated and ensured. The goal is to break the cycle of overcapacity and underutilization while providing a clear path to a new digital data center operating model that reduces costs and maximizes physical asset utilization. Through virtualization, such a digital data center creates workflow and service efficiencies with comprehensive KPIs and reporting for the management of everything from cables to clouds.

Wondrous technologies, but not without risk

Today, many of the data center management systems being used to oversee operations have become ineffective and are difficult to deploy. These systems have not been built to bring together people, processes and platforms; instead, they have been about vendors selling software rather than organizations achieving physical freedom.

Such systems have failed to keep pace with the demands of the latest compute-intensive workloads, including AI, ML, industrial and consumer IoT, 5G wireless networks, and multi-cloud. These disruptive technologies are having a seismic impact on enterprise IT and data center operations in terms of scale, latency, performance,

resilience and security, where services must be delivered in the context of maximum energy-efficiency and lowest cost. In fact, to cope with new capacity demands, hyperscalers, telcos, banking and finance, pharma and life sciences firms are already optimizing their data centers. They recognize the risk of being constrained by their infrastructure and burst thresholds unless correct data center capacity planning is based on actual data. The new reality is that even while multi-cloud is considered “bursty”—meaning, an application runs in a private cloud or data center and bursts into a public cloud when the demand for computing capacity spikes—data sets and transport demands from AI, IoT and smart applications can be wildly unpredictable.

Meanwhile, there’s the challenge of ensuring capacity is availability for critical applications. Data center operators must plan, deliver and optimize for these new workload conditions. These can include IT asset changes and configuration, including lifecycle management, capacity and asset planning across all data center locations. Accommodating the workload demands of next-generation applications will require maximum utilization and efficiency at the infrastructure layer, which means all physical infrastructure management must become digital.

Only when enterprise and colocation data centers are managed and operated as cloud-like services will IT staff be able to focus on driving business growth and revenue-generating initiatives, and CIOs and CTOs be able to plan and execute their journeys toward digital transformation.