Data Center Digital Transformation Without Trade-offs

By:

Digital transformation means disruptive approaches to business processes, technology and broader organizational collaboration.

In the risk-averse world and with so much at stake for business, changing technology and the data center can appear risky and daunting. Any mention of transformation can have IT leaders worrying about the rip and replace of existing infrastructure, while business executives work to identify which processes it impacts.

The history of business IT and data center operations offers many examples of strategically planned projects using advanced transformative technologies. But some of these have foundered as a result of failure in aligning technology, business and cultural changes within the broader context in which change is needed. This has led to trade-offs where projects are watered-down or abandoned.

In the era of digital transformation, this is no longer an option.

The question to ask is, does digital transformation represent a 10x change for the enterprise and for those tasked with operating data centers and IT? Intel founder and CEO Andy Grove addressed 10x changes at the enterprise level in his seminal business book and IT industry history explainer *Only the Paranoid Survive* (1996 version):

"To manage a business in the face of a "10x" change is very, very difficult. The business responds differently to managerial actions than it did before. We have lost control and don't know how to regain it. Eventually, a new equilibrium in the industry will be reached. Some businesses will be stronger, others will be weaker. However, the period of transition...is particularly confusing and treacherous."

Now, nobody will ring a bell to call your attention to the fact that you are entering into such a transition. It's a gradual process; the forces start to grow and, as they do, the characteristics of the business begin to change. Only the beginning and the end are clear; the transition in between is gradual and puzzling.

What such a transition does to a business is profound, and how the business manages this transition determines its future. I like to describe this phenomenon as an inflection point.

In the context of data center digital transformation, two key questions are: How are data center characteristics changing? Is the data center at an inflection point?

Lessons from Another Industry

The car industry is a good example of a sector for which digital transformation is a reality. After more than 100 years of managing change to engineering R&D, improving manufacturing and optimizing supply chain management, the automotive industry finds itself in the middle of several revolutions at once.

The reliance on fossil fuels as an energy source is no longer a long-term option, so electrification means battery and hydrogen cell advances must be rapid. At the same time, automation and AI advances are changing how transportation products are built and used. And the industry is awash with new competitors with access to the latest data center and cloud technologies.

Over the decades, car companies responded to compute, storage and networking demand in a manner appropriate to the times, used what was available in the market and ran their data centers accordingly.

Those with global distributed manufacturing hubs operated complex supply chain and distribution networks. Doing so meant running dozens of data centers as owner-managed and third-party-supported infrastructure.

Complex, highly distributed environments evolved, leading to the steady rise of availability and reliability costs. At the same time, visibility (monitoring and management) became largely guesswork, and sustainability (operating efficiency) fell sharply.

In a recent industry example, the digital transformation of one automotive company's data centers involved capturing a holistic view of all of its infrastructure and optimizing operations.

With dozens of facilities, the manufacturer opted to combine staff resources, ticketing systems, change control procedures, and demand and capacity management into a single 'as-a-service' experience providing a dynamic and flexible data center environment. In addition to reaping the benefits of an immediate reduction in operational risk, staffing levels and costs, the company wanted to also maximize reliability, overall efficiency and capacity utilization.

Using a cloud-based platform to manage people and process change meant trade-offs were unnecessary. With full visibility of the M&E and IT infrastructure layer, the IT function knows it can continue to provide uninterrupted services to the business as it undergoes its own digital transformation.

Transforming Enterprise Data Centers

Turning to the data center industry itself, it's critical to understand what digital transformation means. From an investment perspective, some of the challenges are common to enterprise and commercial worlds.

Back in 1996, even while Mr. Grove was saying that it was unclear whether the Internet represented an inflection point for business, some brave and some foolhardy souls rushed into data centers and were badly burned several years later by the dot-com bust. Many big bets were very successful.

Others less so.

But what happened long term is instructive and relevant in the era of digital transformation.

Data centers were built based on capacity forecasts that were overtaken by short-term drops in demand. And when demand did ramp up as the Internet 2.0 really took off, technologies such as virtualization meant server utilization rates went up, power use remained stable and physical space use plummeted.

Long-Term Planning Amid Rapid Change

Long-term capital asset planning in an era of rapid technological change is hard.

Today, as every industry experiences degrees of digital transformation, the business world is even more complex. Driven by data-intensive technologies such as AI and ML, automation and mobile-first strategies, data growth is forecast to continue climbing, translating to demand for IT and data center capacity.

But it is not enough to rely on capacity forecasts to avoid failure. Data centers were justifiably characterized by inflexible infrastructure that could not adjust to new requirements. Digital transformation means data center operation must be agile, flexible and able to evolve rapidly.

It is possible, for example, to create a data center built on agile infrastructure to accommodate different densities that match customer workload needs, from low and medium densities of 1-4kW per rack to high-performance density environments of up to 35-50kW per rack. This can be achieved without sacrificing efficiency. In fact, design PUE can be dramatically decreased. By using containment, optimization and deployment of high-efficiency cooling systems alongside real-time monitoring of data center operations, workload flexibility is baked into the design. This type of digital transformation of the data center has been proven to be achievable in existing facilities. Operating a responsive data center is no longer restricted to those with budgets that run to billions of dollars for new facilities on a massive scale.

By thinking differently about how data centers can be transformed, the transition can itself create new capacity so that companies can embark on broader digital transformation strategies without the fear of being restricted by old capacity constraints and the risk of costly cloud investments.

Traditional data centers have a reputation for being inflexible and static. In fact, the inside of an unchanging data center operation is the last place you would consider a suitable home base to begin thinking about your digital transformation. It is no longer the case that a data center must be considered a fixed capital and operational asset. The inflection point has been reached and, through its own digital transformation, the characteristics of the data center have changed.