Your Data Center May Not Be Dead, but It’s Morphing

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Initiatives: Infrastructure, Operations and Cloud Management

Workload placement is not only about moving to the cloud, it is about creating a baseline for infrastructure strategy based on workloads rather than physical data centers. This is causing I&O leaders to rethink infrastructure strategies, which have a direct impact on enterprise data centers.

Additional Perspectives
- Invest Implications: Your Data Center May Not Be Dead, but It’s Morphing
  (22 September 2020)

Overview

Impacts
- Workload placement in a digital infrastructure is based on business need, not necessarily constrained by physical location.
- To create a scalable, agile infrastructure, I&O leaders will require an ecosystem of service partners.
- Hybrid digital infrastructure management (HDIM) will provide the tools for I&O to monitor and manage any asset or process, anywhere, at any time, enabling a successful transition to digital business.
- The movement to digital infrastructure will result in radically increased complexity for I&O, so staff must be retrained, with a focus on versatility.

Recommendations
I&O leaders focused on planning and enabling an infrastructure delivery strategy should:
- Adopt a plan based on business needs by basing it on the application or workload level, rather than on the physical infrastructure.
- Leverage their partner ecosystem to enable an agile, flexible infrastructure that is responsive to new business initiatives and reduces the I&O need to do it all.
Strategic Planning Assumption
By 2025, 85% of infrastructure strategies will integrate on-premises, colocation, cloud and edge delivery options, compared with 20% in 2020.

Analysis
Maintaining and updating traditional data centers is not seen as the primary role of IT. IT leaders are looking to workload placement based on business outcomes as a key success factor and, as such, the physical management of data centers becomes the role of colocation, hosting and cloud providers, not necessarily traditional IT, and facilities teams.

This is not about moving everything to the cloud or the edge, rather about changing the focus on how IT delivers value to the business. Infrastructure and operations (I&O) leaders face a daunting challenge. The IT they have known for decades is changing — radically. IT’s primary function will be to enable the business to be more agile, enter new markets more quickly, deliver services closer to the customer and position specific workloads based on business, regulatory and geopolitical impacts. The role of the traditional data center will be relegated to that of a legacy holding area, dedicated to very specific services that cannot be supported elsewhere, or supporting those systems that are most economically efficient on-premises (see Figure 1).

Figure 1: Workload Placement

- Integrate diverse platform choices together into a unified solution to allow market advances and advantages to be deployed quickly and easily.
- Develop staff versatility, changing focus away from critical roles (vertical focus) and more toward critical skills across the team.
As interconnected services, cloud providers, distributed cloud, edge services and SaaS offerings continue to proliferate, the rationale to stay only in a traditional data center topology will have limited advantages. This is not an overnight shift, but an evolutionary change in thinking how we deliver services to our customers and to the business. This trend, coupled with the new reality that outside factors might limit physical access to the data center (such as emergency quarantine), is driving new thinking in infrastructure planning.

The drivers behind this shift to a distributed digital infrastructure are many, but the key impacts to consider are shown in Figure 2.

**Figure 2: Impacts and Top Recommendations for I&O Leaders**

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Top Recommendations</th>
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<tbody>
<tr>
<td>Workload placement has become the key driver of digital infrastructure delivery.</td>
<td>• Rationalize which workloads belong where, based on business rules and benefits, not just costs.</td>
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<td></td>
<td>• Replace older workloads with “as-a-service” offerings where possible.</td>
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<tr>
<td>IT talent management and retraining base staff are critical success factors.</td>
<td>• Focus on critical skills vs. critical roles, reducing overall risk if a staff member becomes unavailable.</td>
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<td></td>
<td>• Actively develop individuals and teams, prioritizing collaborative skills and lateral thinking.</td>
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<tr>
<td>An ecosystem of partners will be required to enable scalable, agile infrastructures.</td>
<td>• Pick partners based on their vision, capabilities and ecosystem.</td>
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<td></td>
<td>• Focus on geodiversity, ease of deployment and interconnection services.</td>
</tr>
<tr>
<td>Hybrid digital infrastructure management emerges as the key enabler for I&amp;O's transition to digital business.</td>
<td>• Invest in the technologies needed to provide I&amp;O more proactive and business-relevant insights.</td>
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<tr>
<td></td>
<td>• Develop advanced analytical foundations and increasingly relevant monitoring technologies.</td>
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Source: Gartner

With the recent increase in business-driven IT initiatives, often outside of the traditional IT budget, there has been a rapid growth in implementations of IoT solutions, edge compute environments and nontraditional IT. There has also been an increased focus on customer experience with outward-facing applications and on the direct impact of poor customer experience on corporate reputation. This outward focus is causing many organizations to rethink placement of certain workloads based on network latency, customer population clusters and geopolitical limitations.

Historically, we developed sophisticated support structures to rapidly solve customer problems and build long-term intimacy, which improved customer satisfaction. But many of today’s customers might look to social media as a means to airing complaints, and that single customer satisfaction
issue can quickly reach thousands of potential customers and become a board-level corporate reputation issue instead. IT’s new role is to place specific workloads and infrastructure to radically reduce that risk of exposure, while improving that customer experience.

Impacts and Recommendations

Workload Placement Has Become the Key Driver of Digital Infrastructure Delivery

Many organizations are developing infrastructure delivery strategies and are wrestling with the issue of cloud adoption. I&O leaders are not primarily concerned with whether moving workloads to the cloud is an option for them or not, rather how to determine which workloads would make the most sense to develop for or migrate to the cloud and which would have the most optimal benefit to the business.

These organizations have realized that while “cloud first” may be the trend, a more realistic model is “cloud first but not always.” Determining the right workload to migrate, at the right time, for the right reasons, to the right provider, will be the key to success over time. I&O leaders are, therefore, beginning to build IT strategies with a focus on their application portfolio, rather than on the physical infrastructure, moving away from traditional IT-architecture-driven decisions toward a services-driven strategy. When business units have traditionally requested new applications (or services), many IT organizations would first ask themselves, “How can we build this service to fit within our architecture?” While this strategy has worked for completely IT-controlled on-premises environments, it becomes self-constraining over time, as the architecture may not adapt quickly to evolving business requirements.

In a hybrid IT environment, the question of service/application delivery changes from the traditional, “Can we make it fit within our existing architecture?” to “Where can we find it elsewhere, rather than building it ourselves?” This becomes an outside-in or top-down strategy, versus the inside-out or bottom-up strategy that traditional IT shops have used. Initially, this strategy applies to new service requests or new applications, but the same logic can be applied to the existing application portfolio, especially when developing a long-term deployment (or redeployment) strategy.

Recommendations:

- Apply specific business rules for rationalizing workload placement (see “Developing a Practical Hybrid Workload Placement Strategy”). These rules focus on areas such as compliance, data protection, security, latency, resiliency, reputation, service continuity, location, availability and performance. They become guidelines for determining where current and future workloads belong and become the baseline for developing an overall infrastructure upgrade strategy. This is not a migration strategy because some workloads may not move at all, rather a strategy designed to optimize business impacts and not just I&O costs.

- Replace older workloads with an as-a-service offering where appropriate. The trend of migrating back-office workloads toward SaaS adoption continues, but technology procurement leaders
An Ecosystem Will Be Required to Enable Scalable, Agile Infrastructures

The new digital ecosystem can be homegrown and developed in conjunction with key service providers. The deployment of this distributed digital infrastructure begins by agreeing on the business-related benefits that can be attained for each application workload and its associated data. These benefits can include reduced latency, improved customer experience, enhanced corporate reputation, stronger service continuity, geodiversity, improved compliance or mandated data location residency requirements. When answering these questions, take into account not only what the IT infrastructure can deliver, but also what is available on the market that you can leverage — either colocation, hosting, or cloud or, more recently, distributed cloud (see “Distributed Cloud’ Fixes What ‘Hybrid Cloud’ Breaks”). More importantly, ask how a service partner can be leveraged to provide you enhanced services when needed.

An evolving trend in the colocation market has been the introduction of enhanced services that go well beyond traditional power, floor space and support services (see “Infrastructure Is Everywhere: The Evolution of Data Centers”). These enhanced services include carrier neutrality, cloud-enabled services, access to multiple cloud services via secure networks, cross-connects to partners on the same premises, or interconnect fabrics to other sites or services. By using these fabrics, enterprise customers could have access to many different providers and services and be able to switch between or swap services when contracts or performance requirements change. Moving between providers is not a simple task. Expect enhanced colocation providers (see Note 1) to offer a software-centric layer above these fabrics, thus providing a seamless mechanism for moving between services for their customers. In this manner, colocation providers could become an integral part of your digital infrastructure, so the development of clearly defined SLAs, key performance indicators (KPIs) and contractual obligations is imperative.

As digital business evolves, the need for geodiversity is evolving as well. Data location, regulatory requirements (such as the GDPR) and customer requirements (such as low latency) may drive the need for workloads to be accessible from multiple locations. A partner ecosystem that supports strong interconnection services can be a key enabler for these workloads.

Data center interconnection is a model in which discrete assets within a multitenant data center are connected to each other directly and in a peer-to-peer fashion. These connections may be as simple as intrasite cross-connects but can allow data-center-based assets to horizontally connect to multiple carriers, cloud providers, peers and service providers.

Recommendations:

must evaluate and assess migration risks in order to achieve maximum benefit. Picking the wrong provider or moving the wrong workload can increase operating costs and risks, rather than decrease them. I&O leaders focused on efficient service delivery need to work closely with business units to determine where as a service is warranted and where it isn't.
- Combine interconnection with high-speed enterprise access to the multitenant data center and include enterprise assets (such as compute, storage and networking), located in the multitenant data center, to bring the enterprise and its applications to the network, as opposed to the outdated model of bringing the network to the enterprise. This creates a flexible infrastructure that allows placement of the right assets, at the right place, for the right reasons, in support of business outcomes.

- Pick partners based on their vision, capabilities and their partners. When considering ecosystem partners, in particular colocation providers, it’s critical that you understand their long-term vision of the market and how its evolution is changing their strategy. You’ll find many vendors’ “vision” is to produce and provide more of the same — just in more places. However, the important question is how they are preparing for the future of digital infrastructures and how that development will enable you (as a customer) to service your business more effectively.

Hybrid Digital Infrastructure Management Emerges as the Key Enabler for I&O’s Transition to Digital Business

As enterprises move toward hybrid digital infrastructures, one of the key pain points will be operational process and tools (see Note 2). I&O has become great at managing silos, but staff tend to see the world from the construction of silos of servers, storage, networking, virtualization, applications and so on. In highly distributed environments where a workload could be anywhere, with a hybrid mix of sourcing and architectures, the physical location of an asset (or process) will not be as clearly defined, and yet its attributes, performance, KPIs and cost will have an increasingly important impact on how I&O delivers services to end customers. Ultimately, I&O remains responsible for both the assets and the end-user experience and will need tools to actively monitor and manage any asset or process, anywhere, at any time.

Digitalization’s impact can best be observed in the emergence of newer technologies and products providing an advanced analytical foundation (such as artificial intelligence for IT operations [AIOps]) and increasingly relevant monitoring technologies (digital experience monitoring, collective intelligence benchmarking, unified communications monitoring and so on) that support both experience management and delivery automation functions (see HDIM sample vendors in Note 3). These are critical to enabling IT operations management (ITOM) teams to manage a continuously growing and diverse set of technologies, including those with disruptive impact (for example, IoT, wireless networking, cloud and software-centric networking).

Recommendations:

- Invest in the technologies needed to discover and manage a hybrid IT model so I&O can have more proactive and business-relevant insight because, over the long term, this is not about transforming the infrastructure. It’s about transforming how I&O is providing value in a digitally distributed ecosystem. In this new hybrid world, the I&O role is migrating toward integration and operations.
IT Talent Management and Retraining Existing Staff Are Critical Success Factors

I&O leaders are faced with a seemingly impossible challenge: to develop their staff skills to deliver against the business demand, amid a new and unfamiliar level of infrastructure complexity. They cannot afford to lose staff, yet have restrictions placed on new headcount at a time when they feel like 10 times as many resources are needed, especially those with institutional knowledge (see “Talent Management: Dealing With Silos in a Hybrid Infrastructure World”).

For most leaders, this represents a headache on top of every other headache, as they are faced with the challenges of implementing, understanding and supporting new layers of integration, orchestration, customization and configuration. In parallel, existing teams must deliver what they have been doing to date but also find ways to work harmoniously with others in a bimodal environment that supports the aims of a digital business. So much more is demanded of individuals, to the point where they are only able to focus on the immediate issue in front of them. Thus, they fall into the siloed nature of thinking and behaving. All this is occurring at a time when the business appetite for the pace of change and the complexity of infrastructures and technology solutions are at an all-time high.

Recommendations:

- Redefine supporting tools to better align with changing demands as the role and value proposition of ITOM changes in support of digital infrastructures. These changes are typically driven by functional groups that focus on managing customer experience quality, automating the provisioning and configuration of resources, or analyzing the performance of technology resources — wherever they are (see “IT Operations Management 2020: Shift to Succeed”).

- Prioritize and develop staff versatility, complementing vertical expertise with the additional capabilities needed. When the business view of a service relies on infrastructure provided by multiple vendors, making the right decisions requires broad thinking, often beyond a single technology silo. As IT moves toward the realm of an ecosystem of partners, connecting the business to the right provider and adding value to this particular relationship require broad understanding of both parties in the brokering relationship. Therefore, in distributed digital infrastructures, the added skills required from a versatilist include two critical areas — business knowledge and provider knowledge — and must also be underpinned by the ability to build rapport. With respect to business knowledge, versatility is needed to interpret business situations and the resulting requirements correctly. This is clearly a critical skill in roles that involve solution architecture. However, in a hybrid infrastructure, this becomes even more important for other supporting staff who need to navigate multiple service delivery models and understand the potential effects of their actions.

- Actively develop individuals and teams, prioritizing collaborative skills and lateral thinking. Let's begin to recognize what we really value in IT — not only depth in a single discipline (except in a specific subset of people) but also breadth across multiple disciplines, coupled with depth in a
primary discipline. Real-world experience is more effective than just training to build the necessary breadth and depth of knowledge needed for the emerging landscape of digital infrastructure. Add or enhance your business analysis functions to facilitate working more closely with lines of business and the CFO.

- The most effective IT people are always looking for new things to learn, and in many cases the most interesting areas are the unknown areas. Enabling learning, even incentivizing it, is a critical success factor as we move toward fully digital infrastructures. When employees realize that their value is not only how much they know in a discipline, but how much they understand the linkages between disciplines and the impact on the business, IT as a whole will become a much stronger organization and more able to adapt to these changing environments. Additionally, retention of high-quality talent is always an issue with IT organizations, but employees that feel valued are often more motivated and less likely to change roles.

Note 1: Representative HDIM Vendors

- Hyperview
- CloudSphere
- Firescope
- LogicMonitor
- Virtana
- Nlyte Software
- Snow Software
- Vistara
- Ivanti
- OpsRamp
- FNT
- Flexera
- Turbonomic

Note 2: Hybrid Digital Infrastructure Management

Hybrid digital infrastructure management (HDIM) involves the integration of tools designed to monitor distributed environments and includes devices, subnets, domains, data centers, edge
deployments and/or service providers. Its focus is on asset discovery, monitoring, KPI metrics, optimization, dependency mapping, and location of both physical and logical assets.

**Note 3: Sample Colocation “Ecosystem” Providers**

- CoreSite
- Cyxtera
- Digital Realty
- EdgeConneX
- Equinix
- NTT Global
- vXchnge

**Document Revision History**

*The Data Center Is Dead, and Digital Infrastructures Emerge* - 13 April 2018

**Recommended by the Authors**

- *Infrastructure Is Everywhere: The Evolution of Data Centers*
- ‘Distributed Cloud’ Fixes What ‘Hybrid Cloud’ Breaks
- Use Gartner’s Connectivity Strategy to Optimize Cloud Performance and Cost
- *Talent Management: Dealing With Silos in a Hybrid Infrastructure World*
- *IT Operations Management 2020: Shift to Succeed*
- *Deliver Digital Business Results by Boosting Workforce Digital Dexterity*
- *Hybrid Digital Infrastructure Management: A View From the Top*

**Recommended For You**

- *Gartner Peer Insights ‘Voice of the Customer’: Data Center Backup and Recovery Solutions*
- *Predicts 2020: IT Operations*
- *5 Best Practices to Create a Successful IT Walk-Up Center*
- *2019 Strategic Roadmap for IT Operations Monitoring*
- *Don’t Let the Cloud Ruin Your CMDB*