By aligning IT with where demands are greatest, where decisions are made, and where data lives, organizations can transform datacenters into "centers of data."

Moving from Datacenters to Centers of Data

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Introduction: As Cloud Operating Models Become Pervasive, Datacenter Strategies Need to Change

The scale and complexity of enterprise infrastructure environments continue to rise as digital business drives an explosion of new applications, new sources of data, more expansive use of advanced analytics and automation, and broader distribution of resources across datacenters, public clouds, and edge locations.

The cloud operating model has become foundational for maximizing the value of IT — ease of acquisition, elasticity, and scale based on customer demand.

As organizations pivot to a digital-first economy, the cloud will continue to play an increasingly dominant role because IT is consistently focused on delivering greater efficiency, better flexibility, and faster innovation.

How traditional enterprise datacenters fit into this cloud picture needs to change too.

The Modernization Dilemma

IDC observes that organizations are adopting a hybrid multicloud approach to their IT environments; 66% of respondents in IDC's *Future Enterprise Resiliency and Spending Survey* (March 2022) intend to rely on hybrid cloud architecture (both public and private cloud deployment models) to achieve their business goals. IT decision makers are selecting this model for the following key reasons:

» Security, compliance, and regulatory issues prescribe a much tighter data ownership model for certain workload types compared with the public cloud where organizations often are not aware of the physical location of their data.

» Public cloud costs can be unpredictable and expensive at scale for some workloads. These "heavy" workloads are better suited to dedicated infrastructure for cost control and to meet the organization's service-level agreements.

AT A GLANCE

KEY STAT

Over the next five years, enterprise-operated datacenter capacity will decrease (-6.6% CAGR) and service provider-operated datacenter capacity will increase (20.9% CAGR).

WHAT'S IMPORTANT

To keep pace with a digital-first economy, enterprises will need to work more closely with colocation providers to rethink the way IT provides infrastructure. In response, colocation operators will shift a significant percentage of their services from simple rack leasing to enhanced services models.

» There are performance concerns for heavy workloads that require dedicated infrastructure and low-latency architectures. At the same time, these workloads are becoming increasingly interdependent with workloads in the public cloud.

» Some workloads can be difficult and expensive to replatform, or they have compatibility issues or dependencies. They require special skills that may necessitate retraining and possibly time to containerize or transform into microservices.

» Cloud-native workloads are often required to exchange data and information with traditional on-premises IT applications such as financial systems, online transaction processing, databases, and high-performance computing. This workload and data interdependency problem will only compound as innovation continues to accelerate and data sources explode. Artificial intelligence and machine learning services will become a critical factor in competitive differentiation as public cloud providers innovate with these services, and Internet of Things and edge architectures will begin to proliferate.

These trends have several implications for traditional datacenter models. First, organizations will need to embrace cloudlike IT deployment models to become more agile and elastic. Second, customer cloud adjacency — close physical proximity to hyperscaler datacenters — will be critical. The demand for reduced latency also reduces dependence on any one cloud provider, suggesting a need for a heterogeneous approach. Performance, bandwidth, and latency constraints will become barriers to digital transformation, particularly in modern deployment models where sharing transactions and data across deployment models (in-house, public cloud, and edge) is becoming a requirement to enable new IT operating models.

For these reasons, IDC is confident that private clouds, which reside in traditional enterprise datacenters or increasingly in colocation facilities, will persist for many years.

Multicloud Requires a Shift in Datacenter Strategy

Traditional in-house datacenters are now struggling to meet the demands of digital transformation:

» The costs of modernizing and scaling in-house datacenter resources, such as connectivity, power, cooling, and space, are significant.

» IT staff shortages and gaps in IT skill sets present a wide range of challenges in maintaining datacenter facilities.

» Operational overhead in managing global expansion and an increasingly distributed application model demand that information be placed close to applications and users. This requires multiple enterprise-operated facilities, site-to-site VPNs, and expensive telecommunications carrier connections.

IDC predicts a decline in enterprise-operated datacenters. However, driven by service providers, global datacenter capacity will grow more quickly starting in late 2023 as the effects of the pandemic wear off. As a result, datacenter capacity growth will accelerate overall (see Figure 1).

FIGURE 1: *Global Datacenter Capacity Growth*
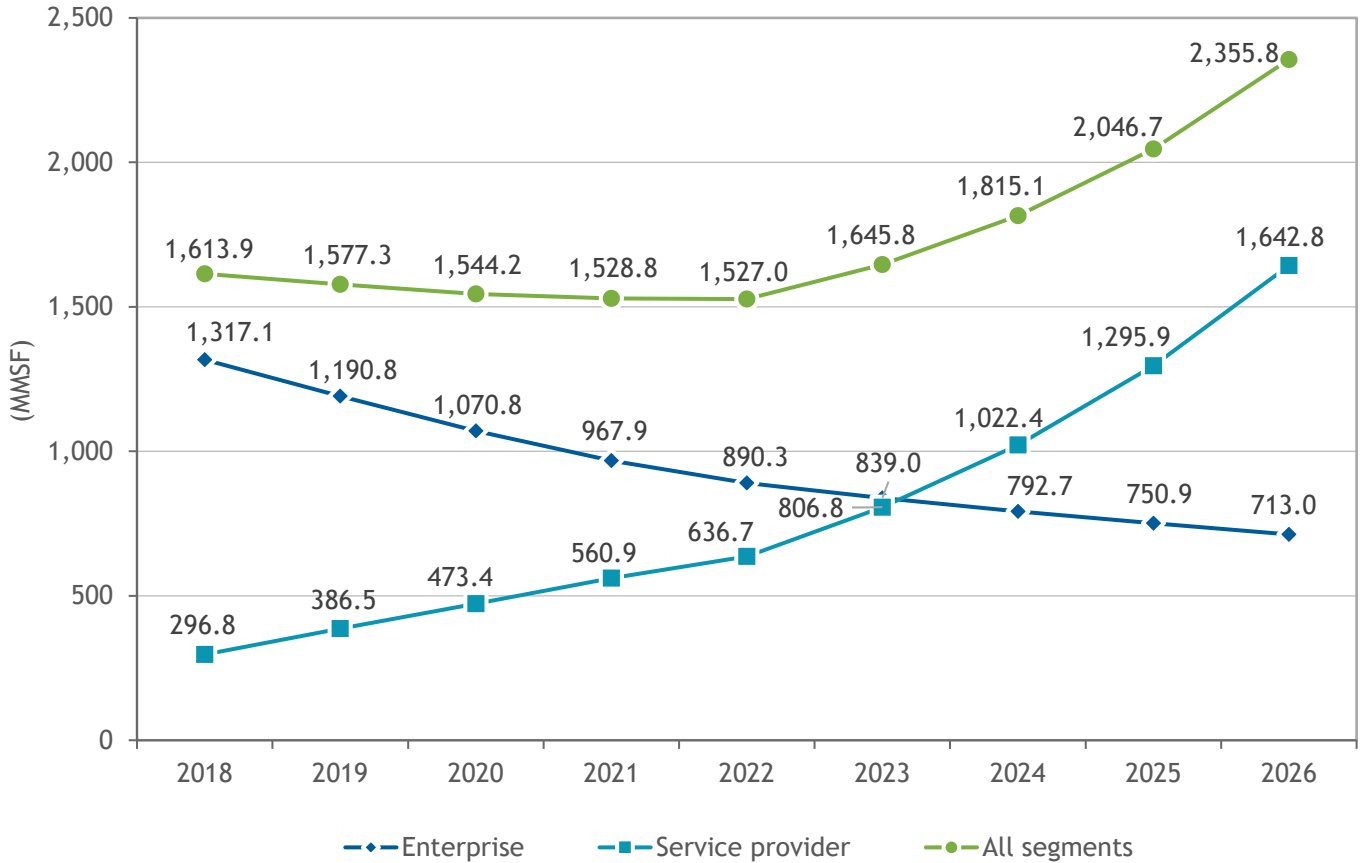
MMSF = million square feet

Source: IDC, 2022

The Digital Revolution Calls for a More Flexible Approach: The Interconnected Datacenter

Data has become the lifeblood of almost every organization. When utilized properly, data is the cornerstone of competitive differentiation in the digital era. Where data is located, how data is accessed, data security, and the interdependencies between systems and workloads are now more critical than ever. Many organizations are embracing a new perspective: transitioning from datacenters to centers of data, which requires a distributed IT infrastructure model to provide data where it is most needed and enable new deployment models. However, building such an architecture on your own introduces significant complexity, including vendor management, supply chain bottlenecks, sustainability challenges, time to market, network interconnections, and cost control. The distributed, interconnected datacenter model is foundational, and IDC believes that such capabilities are available only through next-generation datacenters and

modern IT suppliers, so partnering is key. As we have seen, more IT users are turning to colocation to meet their datacenter needs, but not all colocation providers are created equal; it is essential to seek a provider that is well positioned to deliver interconnected colocation. A better solution requires four key elements:

» **An interconnected datacenter.** Interconnection serves to future proof data access and enable digital transformation. Interconnected colocation companies provide a central meeting place for networks, clouds, and enterprises to host their physical infrastructure. Interconnection enables them to efficiently exchange traffic with one another at very high speeds, leading to a broad digital ecosystem of software-defined services.

» **Modern data storage infrastructure.** Infrastructure resiliency and flexibility are now foundational elements of digital strategy. State-of-the art infrastructure solutions support simultaneous data sharing across portfolio workloads and connection options.

» **Locality.** Locality is the ability to locate IT infrastructure as close to demand as possible — proximity to workloads, to clouds and their services, to organizational needs, to data creation and exploitation, to users and endpoint device connectivity.

» **Cloudlike deployment models.** Digital businesses also have an ongoing need to reduce operating costs and improve operational efficiency. As a result, as-a-service consumption models have become an essential approach for sourcing information technology infrastructure.

As-a-Service Drivers: Private Cloud Needs to Operate Like a Public Cloud

It goes without saying that the elastic and agile nature of the public cloud IT deployment model is an ideal value, as evidenced by a growing number of organizations looking to streamline their infrastructure purchases by shifting to consumption-based models. IDC defines consumption-based IT infrastructure as a financial and operational model to help customers increase or decrease usage of network, compute, storage capacity, software, and services on an as-needed basis. These elements provide the required agility, elastic workload management, necessary infrastructure, and budgeting flexibility to expand and contract as the business requires.

As-a-service models more effectively match the digital businesses' requirements while addressing clear and transparent pricing, stringent data protection, sustainability, and uniformity in supply chain integrity concerns.
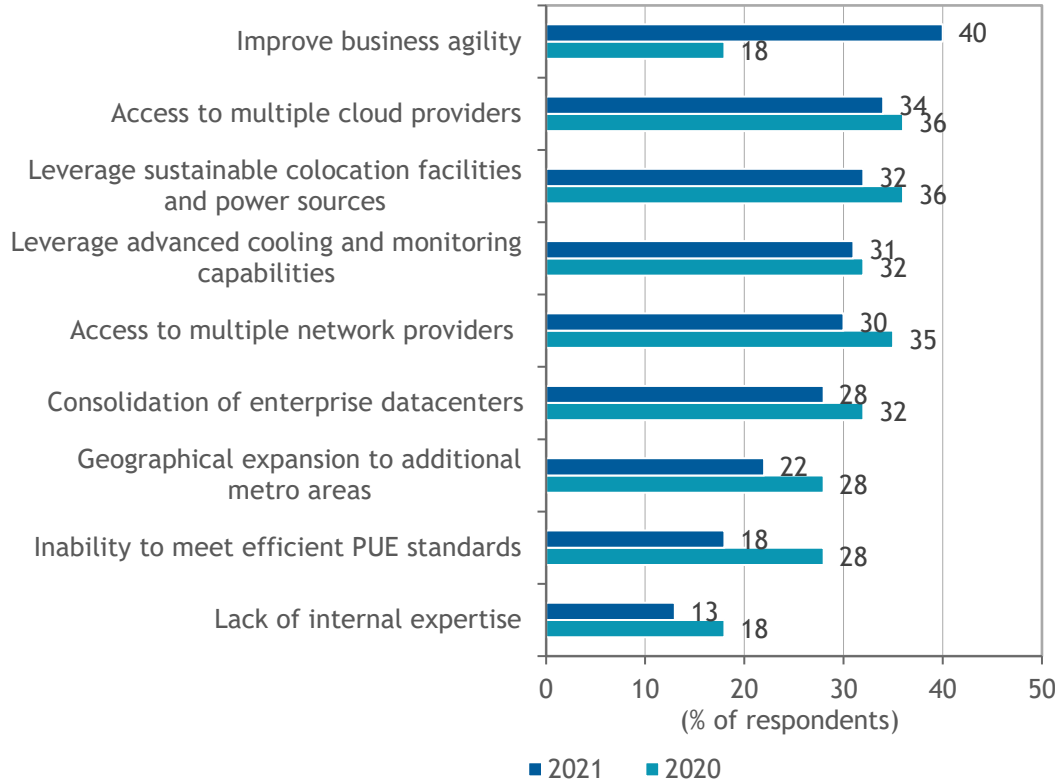
According to IDC's *Future of Digital Infrastructure 2022 Global Sentiment Survey* (June 2022), 77% of enterprises agree that shifting some of their on-premises/hosted digital infrastructure spending to an as-a-service model will improve business resiliency and operational efficiencies.

Benefits of Partnering with Interconnected Colocation Providers and IT Providers

A partnership with colocation and IT providers offers many benefits for IT organizations, which is a key driver for the increased number of announced alliances. An IT provider that offers on-premises, as-a-service infrastructure services defines system configurations; remotely manages life-cycle updates, patching, repairs, and troubleshooting; and can scale up based on workload requirements. Interconnected colocation providers handle facilities management and enable access to digital ecosystems. This allows organizations to focus IT resources on value-added activities that directly benefit the business and often reduce IT staff workloads.

The top reasons for migrating to a colocation provider are shown in Figure 2.

FIGURE 2: *Top Reasons for Migration*

	2021	2020
Improve business agility	40	18
Access to multiple cloud providers	34	36
Leverage sustainable colocation facilities and power sources	32	36
Leverage advanced cooling and monitoring capabilities	31	32
Access to multiple network providers	30	35
Consolidation of enterprise datacenters	28	32
Geographical expansion to additional metro areas	22	28
Inability to meet efficient PUE standards	18	28
Lack of internal expertise	13	18

(% of respondents)

n = 600

Source: IDC's Enterprise Communications Survey, June 2021

The key benefits of working with an interconnected colocation provider include the following:

» **Cost-effective collaboration and multicloud delivery.** Once systems are deployed in an interconnected colocation facility, users can leverage the global platform to optimize network performance and costs and at the same time connect to the clouds, business partners, and even customers of their choosing.

» **High availability and resiliency.** Availability and resiliency already present significant operational challenges. Colocation providers remove facilities management concerns such as power and cooling availability.

» **The intelligent edge.** Distributed colocation facilities enable connectivity for data captured at the edge, allowing secure, simultaneous access to multiple analytics engines such as Snowflake or Splunk, and machine learning from the public cloud providers. Customers can concurrently apply different engines to ever-expanding data sets without incurring huge network and data egress costs.

» **Key sustainability goals.** Many state-of-the-art colocation providers make sustainability a number 1 priority with goals of climate neutrality within the next decade. Investing in microgrid technologies, liquid and immersion cooling, as well as other alternative energies can significantly reduce carbon emissions. A recent IDC survey

underscores the importance of sustainability: 83% of respondents agreed that sustainability is one of the most important criteria for IT buying decisions and that working with a like-minded sustainability partner or vendor is a critical factor in their final selection process.

» **Automation and analytics.** To optimize costs and utilization and help their customers meet sustainability goals, colocation providers can measure their environment's workload, security, power, and cooling. To improve operational efficiencies, IT decision makers will select their colocation providers based on trust, vendor reputation, global reach, public cloud on-ramps, technology road map, strategic partnerships, and investment plans. IDC encourages enterprise leaders to focus on these core attributes when selecting their colocation provider.

The following are the **benefits of working with IT vendors and colocation partners** with as-a-service solutions:

» **Reduce managing infrastructure and enable IT to focus on driving business outcomes.** Organizations can focus on what is core to their business and not divert resources and management focus to running datacenters and managing infrastructure. Relying on vendors and partners to manage and orchestrate capacity and service levels simplifies operational challenges for IT staff, providing:

- Centralized management through one console

- Optimized management of power and cooling

- A more sustainable operating environment

» **Increase IT agility to facilitate the digital enterprise.** Many as-a-service subscriptions for dedicated on-premises infrastructure offer customers cloudlike usage-based pricing for infrastructure installed with extra built-in surge capacity that can be accessed and paid for only when needed. These flexible models allow customers to better match infrastructure spending to business requirements over time without overpaying for capacity before it is required. By leveraging a global, interconnected colocation provider, companies can grow their businesses by quickly expanding to new clouds, networks, and regions.

» **Improve utilization of the assets.** The enterprise needs to minimize overprovisioning and underprovisioning to reduce costs and risk and align usage with budgets for cost predictability and to help meet sustainability goals. This ability is a top benefit of adopting an as-a-service consumption model.

» **Improve application/system performance and optimize networking costs.** Running workloads on modern technology, in locations close to applications and data and their consumers, over optimized high-speed network interconnections will improve application and system performance.

» **Increase the ability to scale to meet business demand.** Flexible provisioning of infrastructure based on workload, power, and cooling will allow IT staff to respond more quickly to changes in the business they support.

» **Reduce IT staff workloads.** Enterprises can focus on business-enabling tasks instead of the day-to-day maintenance of the environment.

» **Streamline the time to spin up new capacity and reduce procurement cycles.** Adopting an as-a-service model within a colocation facility enables faster access to significant technology capacity without lengthy provisioning and commissioning work.

Considering Dell Technologies' Partnership with Equinix Using APEX Data Storage Services

Equinix helps digital leaders bring together and connect their foundational IT infrastructure. Equinix operates over 240 datacenters across 70 markets in 33 countries; the datacenters contain interconnections to all the key network, cloud, and IT service providers. Dell's essential infrastructure solutions, combined with Equinix's interconnection services and datacenter locality, create a new generation of multicloud deployment models, including:

» **Cloud adjacency.** Dedicated IT solutions (cloud, compute, storage, protection) are directly connected and sitting adjacent, in close physical proximity to public cloud providers, software-as-a-service providers, industry-aligned partners, and suppliers.

» **Interconnected enterprise.** Digital leaders leverage Platform Equinix to align Dell's IT solutions with organizational and user demands across metro areas, countries, and continents.

» **Intelligent edge.** Enterprises aggregate and control data from multiple sources — at the edge and across the organization — and then provide access to artificial intelligence, machine learning, and deep analytic engines without moving the data. This deployment future proofs access to data, radically reducing data egress costs while connecting to the engines of innovation now and in the future.

In partnership with Equinix, Dell is providing storage-as-a-service solutions to be deployed at Equinix datacenter facilities throughout the globe, making the "centers of data" vision a reality today. Among the benefits of this partnership are:

» **Simplicity.** Gain a unified acquisition, billing, and support experience from Dell in the APEX Console with simplified operations and a reduced burden of datacenter management.

» **Agility.** Expand quickly to new business regions and service providers. Build a cloudlike as-a-service experience that offers fast time to value and multicloud access with no vendor lock-in.

» **Control.** Leverage leading technologies and IT expertise on a global scale. Deliver a secure, dedicated infrastructure deployment with the flexibility to connect to public clouds while maintaining data integrity, security, resiliency, and performance.

Dell's partnership with Equinix enables the simplicity, operational efficiency, and security that enterprise organizations demand to compete in today's fast-changing environment. It provides the trusted infrastructure in interconnected colocation that enterprises require to meet today's standards for operational efficiency and agility and accelerates and simplifies how organizations realize the vision of centers of data.

Challenges

As noted previously, business agility, high-speed access to cloud providers, and sustainability are the key challenges business are trying to address by utilizing colocation providers with vendor solutions such as Dell APEX. Interconnected colocation providers and technology vendors will need to have proven track records and provide dashboards and self-service capabilities to look and feel like public cloud providers. The challenge for interconnected colocation providers and technology vendors will be providing the transparency of cost and detailed usage reports to satisfy fast-changing regulatory requirements and government mandates. IDC anticipates that over the next few years, the level of scrutiny by governments and regulators to reduce "greenwashing" and improve IT datacenter efficiencies will be significant and will require considerable effort and investment by colocation providers to comply.

IT decision makers will select their colocation providers and vendors based on trust, vendor reputation, technology road map, global reach, cloud adjacency, strategic partnerships, and investment plans. Working with an interconnected colocation provider can reduce many pain points, allowing organizations to focus IT resources on value-added activities that directly benefit the business.

Colocation providers can deploy consumption-based as-a-service models and then scale them up as workloads are migrated from legacy to modern infrastructure. Often, vendor-provided services are automated and standardized and have lower error rates than a typical customer can achieve with internal staff. IDC encourages enterprise leaders to focus on these core attributes when selecting their colocation and product vendor.

Conclusion

Organizations are struggling with infrastructure operational complexity both in the datacenter and in the systems running mission-critical workloads. For example, IDC's *Future Enterprise Resiliency and Spending Survey* (March 2022) indicates that over the next three to five years, 70% of organizations plan to implement a consistent operating model and automation framework across all infrastructure resources. Also, 34% of respondents believe that managing datacenters and integrating edge locations are hindering their efficiency, with insufficient automation and analytics to optimize infrastructure and workload performance across clouds effectively. IT departments need to deliver increased business value and are leaning into deployment models that enable access to the cloud and an ecosystem of service providers as well as greater levels of intimacy with trusted partners and customers. Datacenters will remain, but IT vendors and colocation providers will be necessary to overcome scaling these environments in an agile manner. The critical element to support these new deployment models is modern, trusted IT infrastructure delivered as a service and interconnected with services, partners, and digital ecosystems with built-in low-latency access to the multicloud. The winners will be the partners that provide the most effective technology offerings; the greatest geographical reach; simple access to the cloud, edge, and core; and the broadest horizontal and vertical ecosystem of service providers.

About the Analysts

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Rob Brothers is a Program Vice President for IDC's Datacenter and Support Services program as well as a regular contributor to the Infrastructure Services and Financial Strategies Programs. He focuses on worldwide support and deployment services for hardware and software and provides expert insight and intelligence on how enterprises should address key areas for datacenter transformation and edge deployment and management strategies.

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Susan Middleton leads IDC's worldwide research on IT equipment, software, and services financing markets. As Research Vice President for IDC's Flexible Consumption and Financing Strategies for IT Infrastructure research, she provides insight from both the supply-side point of view and the buyer's point of view. Her core research coverage includes the evolution of procurement models from purchasing, leasing, and financing to the new as-a-service models, also known as flexible consumption.

MESSAGE FROM THE SPONSOR

More About Dell Technologies and APEX Data Storage Services

Dell APEX Data Storage Services is a portfolio of elastic, outcome-based storage resources leveraging Dell Technologies' proven enterprise IT architectures, where you only pay for what you use, delivering flexibility and choice to easily deploy as-a-service resources where they deliver the most value. Equinix delivers global, interconnected ecosystems of datacenters with a deep understanding of optimizing network architectures that deliver services so companies can accelerate their business, IT, and cloud strategies.

In partnership, Dell and Equinix offer solutions that support Dell configurations at an Equinix facility. The integration of APEX Data Storage Services in a Dell-managed colocation within Equinix provides a cloudlike, modern deployment model that enables customers to build multicloud solutions by design.

To learn more about Dell APEX Data Storage Services, visit www.Dell.com/APEX-Storage

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