Success in digital transformation requires new thinking about the consumption of IT resources in increasingly "smart" edge locations. Using local cloud solutions to deliver IT to edge locations will be the key to greater business operational flexibility.

Gaining an Edge in Enterprise Cloud Transformation

August 2019

Written by: Richard Villars, Research Vice President, Datacenter and Cloud

The Next Phase of Cloud Transformation

Private and hybrid cloud strategies are critical for implementation of IT infrastructure to deliver new services to customers and change business processes. Investment in traditional IT will remain important to sustain the business, but investments in cloud IT infrastructures by enterprises will surpass investments in traditional IT in 2019, and private clouds used in conjunction with other IT resources, either traditional or public cloud based, will be at the heart of modern hybrid clouds.

Prebundled "as-a-service" infrastructure solutions will be a major contributor to this shift. Enterprises that adopt this approach will no longer directly purchase much of their IT hardware. Rather, they will subscribe to a prepackaged local cloud-as-a-service solution that includes deployment of supplier-owned and supplier-managed compute, storage, and network hardware (hyperconverged systems), plus continual remote management and asset optimization in their corporate datacenters and a growing number of edge locations. In a 2018 IDC survey, 58% of respondents indicated that they are interested in hyperconverged solutions delivered as a service, with 35% desiring consumption onsite and 23% interested in services off-premise.

AT A GLANCE

WHAT'S IMPORTANT
In the coming year, a growing number of as-a-service infrastructure solutions that enable delivery of SaaS and digital services clouds in specific locations will become available, opening up new opportunities for innovation but posing new challenges for IT and OT teams. These local cloud-as-a-service solutions, deployed in edge datacenters, server rooms, and even server closets, will drive the next wave of business transformation.
FIGURE 1: How Organizations Want to Consume Hyperconverged Solutions

Q. How would you like to consume/buy converged infrastructures?

According to IT consumption findings from IDC’s U.S. IT Procurement Trends and Consumption Models Survey, respondents indicated that primary drivers for choosing a flexible consumption model such as a local cloud as a service are the enablement of a predictable cost model, the promise of faster refresh of IT devices, increased procurement efficiencies, and reduced IT staff footprint.

Furthermore, IDC believes success in digital transformation requires new thinking about the consumption of IT resources in increasingly smart edge locations. This is even more critical in the so-called urban cores — hospitals, factories, transportation hubs — and a wide range of spaces where local people or smart things are demanding an optimal digital experience. Such local edge environments are where innovation — tied to augmented real/virtual reality, Internet of Things (IoT), robotics, autonomous vehicles, 3D printing, cognitive/artificial intelligence (AI), and rapid image processing — will occur; and all these new transformative technologies are built on a cloud foundation. These smart edge locations are where IT, operational technology (OT), and customer experience (CX) meet. Preparing for delivery of IT-to-edge locations via local cloud solutions will be the key to boosting business velocity, enabling dynamic business scaling, and ensuring greater business operational flexibility.
Extending Business Reach to the Edge of the Enterprise

The challenge for today’s IT teams is that these edge locations often are not well defined. They already include traditional IT systems (compute, memory, storage, and network) that provide services such as basic file/print services for local employees as well as an expanding range of OT services such as local inventory management or CX services such as digital signage. However, both the maintenance and the management of these assets remain major burdens for local facilities teams and centralized IT organizations. A critical component of digital transformation is the extension of innovative, locale-specific digital services delivered to edge locations. Examples of such targeted systems include:

» Collection, processing, and onsite viewing of electronic images/records in hospitals, HD video streams used for airport security, in-store customer tracking, or factory process monitoring

» Management and coordination of activities for fleets of autonomous cranes/vehicles/robots/drones in a container port, warehouse, or mine

» Short turnaround downloads and analysis using machine learning/inferencing of aircraft/jet engine data during unloading/loading of commercial aircraft

» Deployment of augmented reality platforms at major construction sites to enable a faster and more reliable review/alignment of structural, electrical, HVAC, and plumbing design elements

These new local systems must be built on highly standardized and automated hardware/infrastructure software platforms (clouds) that support the easy deployment/maintenance of cloud-native applications in a specific location to deliver SaaS-like OT or CX services. They must also be compatible and integrated with shared cloud platforms, be rapidly deployed in multiple locations, and reduce the up-front capital and operational costs of delivering new services to local communities of users and things.

Limitations of Existing Private Clouds

Many companies are finding that their original private cloud deployments have several shortcomings, especially inconsistency in configuration, inflexible deployment options, and limited usefulness. These shortcomings are further aggravated by an IT organization attempting to run its private clouds within legacy datacenters. Because every enterprise private cloud is unique, expansion options are limited and inflexible. Most significantly, these limitations restrict the use of most private clouds to traditional workloads and to legacy corporate datacenters.

As a result, organizations must set aside significant time and up-front investments to sustain legacy private clouds. Further, existing private clouds are often the worst choice for development/deployment of new, innovative customer experience, real-time analytics, and IoT workloads that need to leverage dedicated cloud resources, especially in important edge locations.

Organizations, therefore, have two choices when it comes to the deployment of private cloud solutions in support of continued digital transformation. They could design, assemble, and operate (with assistance from a managed service provider [SP]) their own enterprise private clouds, or they could subscribe to a predefined, dedicated, cloud-as-a-service offering. In both deployment options, specific private clouds have to be optimized to address compute-centric needs (e.g., databases, business applications, and analytics) or data/storage-centric needs (e.g., object stores, content archives, and video streaming). The major shortcomings in both areas are that such clouds quickly become obsolete as needs and workloads evolve.
Rethinking Private Clouds

Because markets and business needs are rapidly evolving within short-term horizons, enterprises must develop a cloud adoption strategy that can exploit and capitalize on both short-term and longer-term digital transformation opportunities while avoiding major costly mistakes and missteps. Cloud implementations to support existing workloads in corporate datacenters and local service delivery must focus on elements that have the following requirements: extreme low latency, high availability and continuous operation despite network degradation/failure, and local data placement to meet data governance requirements.

Within the next 12 months, a growing number of as-a-service infrastructure solutions will be deployed not only in an organization’s traditional centralized datacenters but also in smaller local datacenters, server rooms, and server closets near the edges of the business, raising significant new challenges for IT/OT/CX organizations.

Advantages of a Standardized Dedicated Cloud Platform

IDC believes that a new generation of local cloud options that seek to address the issues discussed in this paper will play a key role in driving even greater levels of cloud adoption across enterprises. The closer integration (and prebundling) of modern hyperconverged hardware with a fully software-defined infrastructure/cloud orchestration software stack addresses most of the inconsistency challenges as well as part of the upgradability challenge.

Essentially, this next-generation platform is designed to address existing and new workloads/applications that have latency, availability, and/or data control specifications that require use of dedicated infrastructure in a specific building campus or metro area to support local users and things. These private clouds are dedicated physical server, storage, and network hardware as well as software-defined infrastructure and cloud automation software/tools/scripts that an enterprise's IT team acquires to more efficiently deliver compute and/or storage resources for internal workloads in its own datacenters. Interestingly, companies that IDC works with see a shift from capex to opex as a secondary advantage to these as-a-service infrastructure solutions, though this shift is something that many organizations are planning to undertake in the coming years.

Reduced time to deployment, reduced operational overhead, and continual automatic system optimization are even more frequently cited as the primary advantages.

These solutions offer the ability to create a cloud environment under enterprise control, but remotely managed/optimized by a service provider, that IT teams can more easily align with business demands and processes. They can be set up to deliver value by shifting focus from standardized deployment and management to rapid development and deployment of targeted and case-based innovative business solutions.
Leveraging Local Clouds to Drive Innovation

Local clouds essentially bring a public cloud platform to the enterprise. In local cloud offerings, a cloud SP, an IT hardware partner, or a managed cloud SP owns all physical compute, storage, and network hardware (integrated in something like a hyperconverged system), but those assets are in the customer’s datacenters, other customer facilities, or nearby colocation spaces leased by the customer. The customer is responsible for delivering floor space, power/cooling, and a network connection, but the cloud SP retains custodianship (responsibility/control for patching and upgrading) of any software-defined infrastructure and cloud automation software/tools/scripts and service catalogs.

It is critical to realize that the preparation for and extensive adoption of local cloud solutions also provide a clear structure around extending SaaS and digital service applications — ones that can benefit by taking advantage of local, dedicated resources to deliver unique value. Three critical elements will speed time to adoption, ensure consistent adoption across the organization, and provide a framework for maintaining control of data assets and are at the core of the next wave of cloud adoption, bringing cloudlike assets and innovative services to edge locations:

» Selecting a companywide standard local cloud platform upon which SaaS providers as well as internal developers must deliver/build new edge services

» Establishing standard specifications (power, HVAC, network connectivity) and processes (physical and remote access, disaster recovery, network configuration) that IT/OT teams and managed service providers must follow when deploying/managing local cloud solutions

» Implementing centralized physical, application, and data asset management and service assurance systems that enable consistent and secure delivery of innovative digital services

The real value from local cloud solutions will emerge as companies begin to use this platform to more rapidly develop, adopt, and extend a growing base of locally optimized OT- and CX-oriented SaaS and digital services across corporate facilities. This use of local cloud to extend delivery of OT- and CX-centric SaaS and digital services to edge locations is what most clearly distinguishes this solution from existing enterprise private clouds and existing public clouds. While today’s private clouds are unique to each organization, the goal of a local cloud solution is to enable the placement of the same platforms and cloud-based services in tens, hundreds, or even thousands of different locations.
**Considering VMware Cloud on Dell EMC**

In April, VMware and Dell EMC announced VMware Cloud on Dell EMC, a co-engineered local infrastructure as a service offered by Dell and VMware. The service integrates VMware Cloud Foundation (VCF) compute, storage, and networking infrastructure software tightly paired with Dell EMC VxRail hyperconverged infrastructure hardware to provide an innovative IT infrastructure platform delivered as a fully managed service. Enterprises will be able to consume infrastructure in datacenter and edge environments on demand like a public cloud service via a hybrid cloud control plane. Initial solutions will come in half- and full-rack offerings, which feature fully redundant networking, compute, and storage along with VMware VeloCloud SD-WAN software appliances (see Figure 2).

**FIGURE 2: Overview of VMware Cloud on Dell EMC as-a-Service**

With this solution, the VMware Cloud on Dell EMC infrastructure will be installed on-premise in a local datacenter and consumed just like a cloud service. The fully managed offering is designed to combine the speed, flexibility, and cost model of public clouds with the low latency, security, and control of on-premise infrastructure. Key advantages are the simplicity and consistency provided, especially to enterprises that have many edge locations. Traditional advantages of "as-a-service" offerings also come into play: IT can offload maintenance, for example, and focus on value-added services; IT architects can simplify workload management; and developers can speed up development and delivery because they need to build for only one environment.

VMware Cloud on Dell EMC simplifies the challenges most organizations face managing multiple clouds. There will be a single vendor to manage datacenter needs, and the solution offers the economics of definable subscription pricing, enabling enterprises to provide IT as a service to virtually any location, allowing the organization to focus on using technology to support business strategy.


**Challenges**

VMware Cloud on Dell EMC is well positioned to address the emergence of local clouds with a fully managed infrastructure service; however, its success is dependent on how well Dell EMC and VMware partner to codevelop technology that resonates with customers. While internal solution and service co-marketing between VMware and its parent company Dell EMC is a relatively new objective, the creation of VMware Cloud on Dell EMC demonstrates that the two companies can produce product synergy in combining their respective technologies to form innovative services that enterprise customers want and need.

**Conclusion**

As enterprises worldwide continue the process of digital transformation, they must be able to extend the value of their cloud investments to the outer reaches of the organization. True transformation will not occur without the extension of innovation to the edge and beyond.

Solutions such as VMware Cloud on Dell EMC will be the foundation of this next wave of innovation as they make it possible to quickly and securely deliver a hybrid cloud across tens, hundreds, or even thousands of local sites.

IDC believes that this hybrid cloud approach, in which IT resources are not limited to a single deployment model, whether on-premise private cloud or public cloud, will be the standard operating environment for organizations in the future. In addition, the propensity to acquire and operate these dispersed assets via a subscription model will drive one of the most dramatic changes in enterprise IT over the next few years.

Enterprise IT teams looking for such datacenter and local cloud-as-a-service solutions will need a partner that can help them:

- Quick adoption of flexible IT resources delivery through on-premise consumption-based models that are closely linked to major public cloud environments
- Develop tools for the migration, integration, and automated management of IT resources across on-premise and off-premise cloud deployments
- Establish governance and asset management best practices to ensure optimal use of the right IT resources for specific workloads

The two most important differentiators for selecting an as-a-service infrastructure solution provider will be the provider’s ability to enable easy/consistent connectivity and the provider’s established software partner portfolio. While offering a fully managed IT infrastructure-as-a-service platform is a relatively new thing for VMware, Dell EMC has experience in providing this type of offering to its customers. VMware and Dell EMC are well positioned to meet the challenges outlined in this document and should be on the short list for any enterprise looking to extend digital transformation to the entire organization on a cloud foundation.
About the Analyst

Richard L. Villars, Research Vice President, Datacenter and Cloud

Richard Villars is a senior member of IDC’s IT Infrastructure research team, which assesses the evolution of datacenter design, placement, and management strategies as well as the exploitation of rapidly evolving technologies in the areas of Big Data and Cloud. He develops IDC’s viewpoints on the workloads driving adopting of converged and software-defined IT solutions as well as strategies to enable more effective use of public and private cloud solutions.

MESSAGE FROM THE SPONSOR

Today, many organizations continue to run critical workloads in their on-premises environments due to complex regulatory, security, and low-latency needs.

VMware Cloud on Dell EMC combines the simplicity and agility of the public cloud with the security and control of an on-premises infrastructure, delivered as-a-service to data center and edge locations. VMware's industry standard compute, storage, and networking software is integrated with enterprise-class Dell hardware, empowering you to drive any enterprise workload. This unique approach empowers customers to focus on business innovation and differentiation, while VMware operates the entire infrastructure end-to-end.

Learn how VMware is changing the way Enterprises consume and manage their Infrastructure at:
https://www.vmware.com/products/vmc-on-dell-emc.html

IDC Corporate USA
5 Speen Street
Framingham, MA 01701, USA
T 508.872.8200
F 508.935.4015
Twitter @IDC
idc-insights-community.com
www.idc.com

This publication was produced by IDC Custom Solutions. The opinion, analysis, and research results presented herein are drawn from more detailed research and analysis independently conducted and published by IDC, unless specific vendor sponsorship is noted. IDC Custom Solutions makes IDC content available in a wide range of formats for distribution by various companies. A license to distribute IDC content does not imply endorsement of or opinion about the licensee.

External Publication of IDC Information and Data — Any IDC information that is to be used in advertising, press releases, or promotional materials requires prior written approval from the appropriate IDC Vice President or Country Manager. A draft of the proposed document should accompany any such request. IDC reserves the right to deny approval of external usage for any reason.

Copyright 2019 IDC. Reproduction without written permission is completely forbidden.