



Data Center Extension Buyer's Guide

AT A GLANCE

As organizations extend on-premises data center environments to the public cloud, there are several factors that need to be considered to effectively integrate on-premises data centers with the public cloud in order to realize cloud benefits.

The goal of this paper is to help our customers understand these factors and identify the right cloud platform while identifying potential challenges.

Cloud infrastructure is becoming the primary deployment environment for a majority of workloads.

Business drivers for adopting cloud infrastructure models could be driven by topline growth or bottom line cost savings. Topline drivers typically include the need to achieve faster time to market, improved development cycles or increased scale to remain competitive in today's hyper-competitive markets. The ability to realize bottom line impact, such as lowering total cost of ownership, increasing operational resilience or improving productivity, is also accelerating the adoption of cloud models as organizations look for new ways to create operational and cost advantages.

From an infrastructure standpoint, organizations want to leverage the unique benefits that public clouds offer and that typically cannot be delivered with today's traditional data centers. These benefits include access to unlimited compute and storage capacity on-demand, usage-based pricing, global reach and access to innovative cloud services.

As organizations adopt cloud infrastructures, the hybrid cloud is evolving as the preferred approach with the majority of organizations planning to extend on-premises data center environments by integrating with public cloud infrastructures.

Scenarios for extending data centers to the cloud



Footprint expansion

Obtaining capacity for new projects to support the business, or expand into new geographies, without building new data centers or investing in over-provisioning of existing data center resources



On-demand capacity

Handling unplanned, temporary or seasonal capacity needs without having to incur the capital expense of maintaining idle capacity



Hybrid applications

Developing new applications that need to integrate with on-premises applications or access native cloud services



Test, development, lab, and training environments

Deploying as-needed environments for ephemeral workloads such as test, development, lab, and training environments

73%

OF RESPONDENTS say that the cloud (private/ public) will be their primary deployment venue for a majority of workloads in 2020¹

SOLUTION HIGHLIGHTS

Consistent infrastructure

VMware vSphere®-based Software Defined Data Center environments in the AWS Cloud

Bi-directional application portability with VMware vSphere vMotion and VMware HCX - no need to re-factor or re-architect applications

Consistent operations with seamless interoperability

Single, logical management of on-premises and public cloud resources

Common vSphere and vCenter® APIs leveraged to enable existing VMware and 3rd party technologies

Seamless and consistent networking and security from data to the cloud

Retain existing network topologies and leverage unique capabilities such as Layer 2 stretched networks with VMware NSX®

Leverage advanced capabilities such as micro-segmentation, data-at-rest, and in-transit encryption

Cloud agility, scale and flexibility

Spin up a complete VMware SDDC in under 2 hours and add hosts in minutes

Leverage flexible consumption options with hourly on-demand pricing and deeper discounts with longer 1 and 3 year term commitments

Automated resource management and cluster scaling with vSphere Distributed Resource Scheduler™ (DRS) and Elastic DRS

Factor #1: Selecting the right cloud

Organizations need to spend time evaluating the right cloud platform to fulfill their use-case and workload requirements.

Use-case requirements

Organizations need to consider whether the public cloud provider has a footprint in the desired geography. In addition, ask how fast, easy, and automated it is to spin up and scale the public cloud environment. Also consider if the public cloud infrastructure delivers easy to understand and predictable consumption-based economics. Finally, ask if the provider has the right set of mature cloud services to fulfill the organization's requirements.

Workload requirements

Organizations want enterprise-class reliability and consistency when it comes to platform availability, performance, and business continuity. Extending existing on-premises environments to the public cloud also requires organizations to consider whether the public cloud infrastructure can support these workload requirements, especially if they are planning to run business- or mission-critical applications.

Factor #2: Integrating public cloud infrastructure

In addition to selecting the right cloud platform, organizations must also take into account several integration considerations.

Infrastructure compatibility and interoperability

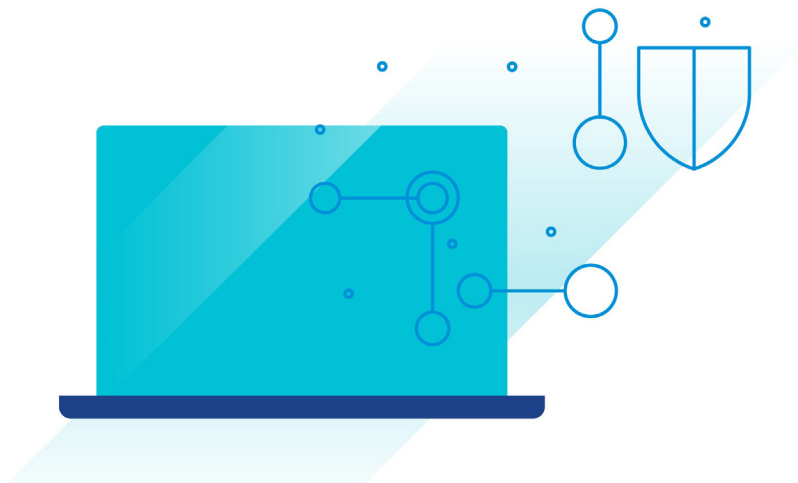
When extending to the public cloud, it is important to consider whether the public cloud infrastructure is compatible with existing on-premises environments – having the same architecture on-premises and in the cloud reduces risk, mitigates interoperability issues, reduces integration challenges and enables existing technology investments to be carried forward.

Application portability

Can applications be moved seamlessly between on-premises and the public cloud infrastructure without a lot of time, effort, and changes? Having this capability enables IT teams to strategically decide where to place certain workloads depending on business needs. They also have the ability to move them without modifying the infrastructure or the application when those needs change. This capability becomes especially important in scenarios where application mobility is needed, for example doing test and development in the cloud and then moving the application back on-premises, or leveraging the cloud to move certain workloads to free up capacity on-premises during peak periods.

93%

OF RESPONDENTS said that they are committed to the hybrid cloud approach as a long-term strategy.²



68%

OF RESPONDENTS said they plan to follow an “infrastructure up” approach to hybrid cloud.²

89%

OF RESPONDENTS consider it important to have the same architecture on-premises and in the public cloud.³

76%

OF RESPONDENTS see managing cloud spend as a challenge, while a smaller 21% see it as a significant challenge.⁴

Flexibility in networking and connectivity

Each cloud provider has its own networking constructs and connectivity options, and that may be different from the way networking is implemented on-premises. Organizations are advised to understand these constructs and topologies to enable their on-premises environments to integrate seamlessly. Further understanding the various options of connecting on-premises environments also helps expedite extension of your data center environment to the cloud. Capabilities such as layer 2 network extensions allow workloads to talk over the same broadcast domain when they exist in different physical locations, removing the need to re-architect your existing network topology.

Consistency in security and governance

Approaches to security and governance are often different in the cloud. Consider how you are going to integrate and leverage your existing security and governance policies while extending to the cloud.

Licensing

Cloud and software technology providers have licensing schemes, and each is unique to individual providers. Understanding how these translate for the specific workloads that organizations are planning to run in the cloud has a direct impact on costs and supportability.

Factor #3: Operating the public cloud infrastructure

Cloud environments often require investments in new skills, tools and processes. This means that existing technology solution investments may not always be extensible or re-usable. When new skills, tools, and processes are required, IT must undergo a learning curve and the incorporation of these new processes into existing paradigms of management, which contribute to increased operating costs. Finally, organizations need to have the right tools to manage cloud spend.

Familiarity of skills

Organizations have invested billions of dollars in infrastructure technology, management, and operations solutions, as well as developing the skills of their IT teams. When incorporating native cloud platforms into existing infrastructures, much of that investment is not transferable, as public cloud infrastructures are built on proprietary technologies that are unique to each cloud provider. This causes organizations to maintain multiple operations teams or re-skill existing staff, adding costs and complexity to the process.

Consistency in management tools and processes

While extending data center environments to the public cloud, organizations must consider how these environments will be managed. With disparate cloud environments, it is often quite possible to have management tool and vendor sprawl, which increases operational complexity, unless this is taken as a design parameter at the onset. In fact, 80% of IT professionals responded that they prefer to consolidate on a large, integrated suite for hybrid cloud systems management from a single vendor.²

RESOURCES

Learn more about our VMware Cloud on AWS service at the [VMware Cloud on AWS website](#)

Review the [VMware Cloud on AWS Solution Brief](#) and [VMware Cloud on AWS Total Cost of Ownership](#)

Watch informative demos, overview videos, webinars and hear from our customers: [VMware Cloud on AWS on YouTube](#)

Read our latest [VMware Cloud on AWS blogs](#)

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Get started now with VMware Cloud on AWS: <https://cloud.vmware.com/vmc-aws/get-started>

[Read VMware Cloud on AWS technical documentation](#)

Conclusion

Rapidly, efficiently and cost-effectively extending data centers to the public cloud requires that organizations select the right public cloud platform for seamless integration and management consistency. In order to remove complexity from data center extension and integration with the public cloud, VMware and AWS jointly engineered VMware Cloud™ on AWS, a highly scalable, secure and operationally consistent cloud service with direct access to powerful native AWS services.

At the heart of this service are familiar VMware technologies and common APIs that allow customers to continue utilizing their existing skillsets, tools, processes and policies. At the same time, VMware Cloud on AWS enables organizations to focus on business outcomes rather than re-tooling their people, processes, and technologies. Designed for VMware customers, this service delivers enterprise-ready, highly scalable VMware vSphere-based environments on the AWS cloud, allowing seamless workload portability.

Learn more at vmware.com.

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1. Voice of the Enterprise: Digital Pulse, Vendor Evaluations 2018, 451 Research (n=1,008)
 2. Hybrid Cloud Trends Survey, Enterprise Strategy Group, March 2019 (N=358)
 3. VMware Core Metrics Survey, 2018 (n=1,633)
 4. RightScale 2018 State of the Cloud Report