EMBRACING MULTI-CLOUD SERVICES

ENABLING A FLEXIBLE, SCALABLE, VIRTUAL INFRASTRUCTURE

THE EVOLVING MULTI-CLOUD WORLD

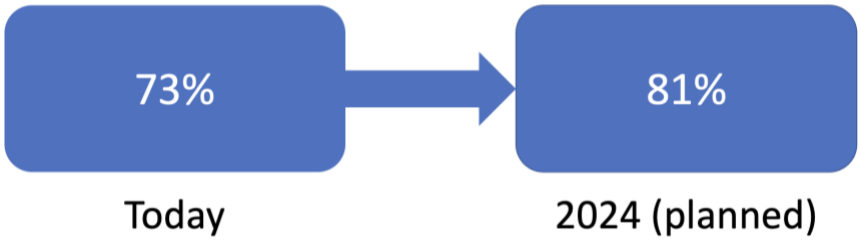
Modern IT infrastructure is no longer restricted to just the servers, storage, and networking owned and operated by an enterprise. The rise of cloud services offers IT organizations the ability to deliver solutions tailored to the specific needs of their business. Some organizations will blend cloud services with traditional on-prem data centers and private clouds, while others may pursue a purely public-cloud-based infrastructure.

Embracing multi-cloud by picking and choosing the best cloud offerings across multiple providers can tremendously impact how IT organizations operate. If done well, multi-cloud environments can accelerate digital transformation efforts and benefit businesses. Multi-cloud is a powerful tool, but it requires careful thought and planning to realize the benefits fully.

MULTI-CLOUD ADOPTION

While challenges are inherent in implementing and managing an infrastructure built across multiple cloud providers, the multi-cloud trend is accelerating. The benefits for an IT organization are too great to ignore.

FIGURE 1. ENTERPRISE ADOPTION OF TWO OR MORE PUBLIC CLOUDS



Source: VMware Inc.

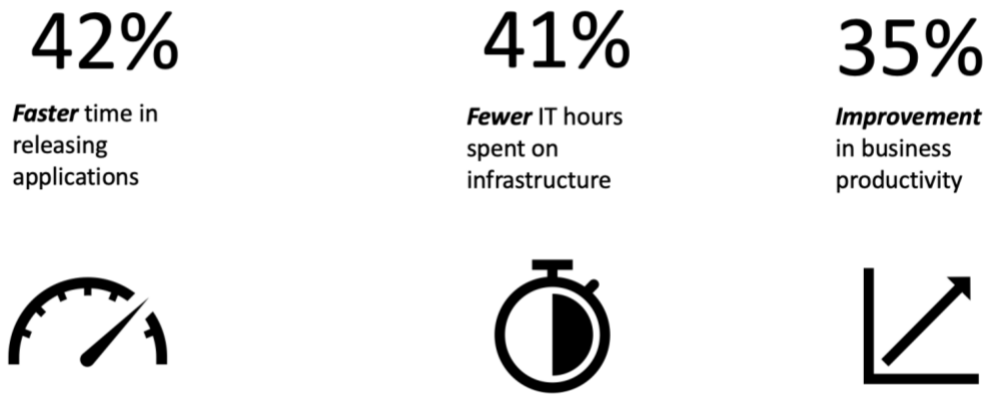
A recent survey of enterprise IT executives revealed that enterprises are aggressively embracing multi-cloud.[1] More than 73% of enterprises today use two or more public

[1] VMware Inc. “VMware FY22 Q4 Executive Pulse.” January 2022.

clouds. More critically, 81% of survey respondents indicated that their organization would embrace multi-cloud by 2024 – a remarkably short time horizon.

Many IT leaders have indicated that leveraging multi-cloud has yielded tangible benefits for their digital transformation projects. These benefits include substantially faster deployment of new applications with a simultaneous reduction in time spent on infrastructure-related tasks.[2]

FIGURE 2. TANGIBLE BENEFITS OF MULTI-CLOUD



Source: VMware Inc.

Inherent in the successes enabled by multi-cloud is the shift by the cloud providers from a primary infrastructure-as-a-service (IaaS) model to a more cloud-native-friendly service-based approach.

THE SERVICE-BASED CLOUD

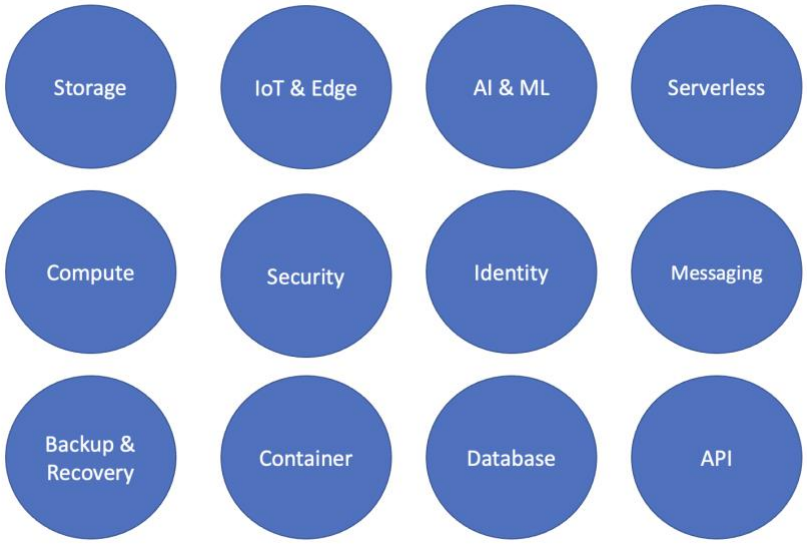
Today's public cloud combines traditional IaaS offerings with a wide range of software-based offerings. This is a natural progression. After all, applications, not servers, are the basic unit of functionality delivered by today's IT organizations.

The shift toward an application-centric approach to IT has given rise to an entirely new set of technologies and business practices. Cloud-native now defines how applications are developed and managed. DevSecOps has emerged as a complementary set of processes and practices to manage the overall lifecycle of applications.

[2] VMware, Inc. "FY22 H2 Benchmark, Digital Momentum." August 2021.

Cloud providers have embraced cloud-native technologies to deliver a wide range of service-based solutions matched to many IT application challenges. Nearly every cloud vendor, for example, has a solution for deploying database-as-a-service, where an IT practitioner can enable an instance of their preferred database without ever having to consider the underlying hardware. There is a long list of service offerings that offer similar benefits.

FIGURE 3. EXAMPLE OF PUBLIC CLOUD SERVICE OFFERINGS



Source: Moor Insights & Strategy

A service-based approach dramatically eases the burden of deploying and provisioning new services. It also reduces the time and complexity traditionally required for delivering services to IT's customers.

EXPANDING CHOICE

While today's cloud landscape is dominated by vendors such as AWS, Google Cloud, Microsoft Azure, and Alibaba Cloud in Asia, it also includes more solution-focused vendors such as IBM and Oracle. The list grows even larger when including edge and OEM-as-a-service offerings. Every cloud provider today offers a range of service-based solutions.

Combining offerings from multiple vendors to build a dynamic IT infrastructure allows an IT organization to realize the full value promised by this choice. Multi-cloud enables IT

organizations to tailor a solution to address the distinct needs of their business. As a result, businesses can leverage “best-of-breed” cloud services from across multiple vendors to meet nearly any IT challenge.

Overcoming the Challenges of Multi-Cloud

Seamlessly combining components from multiple providers is a hard problem. The variety of options available leads naturally to increased operational complexity. Every cloud service provider has its own tools, APIs, and processes for managing workloads hosted on its infrastructure. Often, there are different tools for managing different services, even within a single cloud service provider.

There are no standards for deploying and managing the lifecycle for workloads across multiple clouds. This lack of standardization leads to different experiences for IT practitioners managing multiple clouds. Furthermore, the complexity increases as cloud-based services integrate with on-prem and even edge IT infrastructure.

Multi-Cloud Services

The complexity of using multiple clouds can be overcome by transforming a cloud service into a multi-cloud service. A multi-cloud service is built by abstracting away the underlying provider-centric details of managing a cloud service. Abstracting the cloud services while providing a consistent set of characteristics that span multiple cloud providers reduces complexity while enabling new levels of flexibility.

The multi-cloud service model is advanced and advocated by VMware, an industry leader in cloud management solutions. Many software vendors have embraced the concept, even if under a different name.

A multi-cloud service delivers consistent operational behaviors and characteristics that remain true across cloud boundaries. In addition, it provides, at a minimum, a consistent API, an object model, and security functions. This combination yields a service that meets one or more of the following goals:

- The service runs on a single cloud but supports interactions across at least two different clouds.
- The service runs on multiple clouds while supporting interactions with at least two different clouds.
- The service runs on any cloud or edge, regardless of connectivity, with fully automated operations.

Multi-cloud services allow IT organizations to deploy interoperable services that transparently span on-prem data centers, public and private clouds, and even edge locations. A multi-cloud service enables cloud-specific operations while providing a consistent experience for application development, operations, and security teams.

While multi-cloud services enable many functions, four are common across most environments:

- **Application Services** provide core application services and application management functions such as observability, replication, backup and restore, and operations required by DevSecOps teams.
- **Infrastructure Services** deliver the abstraction of cloud-specific management functions, engaging with cloud-specific management APIs to transparently manage the underlying IT resources. These resources may include such elements as virtual infrastructure and Kubernetes and even provide increased observability capabilities.
- **Security Services** allow security, including network security, to be delivered across multi-cloud environments. Security services include network detection and response, endpoint detection and response, next-gen antivirus, and secure access service edge (SASE).
- **End-User Services** provide identity management and role-based access control for end users. This enables a more secure and consistent user experience when accessing applications and data in various clouds from multiple devices and virtual desktops.

The benefits of deploying multi-cloud services are many:

- **Reduced operational complexity** as services can be managed across clouds with a consistent set of management tools
- **Greater skill portability** as the need for cloud-specific skills is greatly reduced, allowing developers and operational IT practitioners to manage resources across clouds without cloud-specific knowledge
- **Improved observability**, leading to improved application performance and security
- **Improved security capabilities**

These benefits naturally lead to a more agile IT organization, enabling a flexible IT infrastructure that can quickly adapt to the needs of the business. Therefore, multi-cloud services are the cornerstone of any multi-cloud deployment.

CONSIDERATIONS FOR DEPLOYING MULTI-CLOUD SERVICES

Multi-cloud services benefit the IT organizations adopting them, but the concept requires planning. The list of things to explore will naturally vary based on the unique needs of the organization but includes:

- **Audit existing cloud usage** to understand how the organization is currently leveraging the cloud.
- **Identify applications** and cloud services that might be built, deployed or managed using one or more multi-cloud services.
- **Identify tools** that can help navigate the transition to multi-cloud services.
- **Identify skillset gaps within the IT organization**. Managing workloads across multiple clouds, even with multi-cloud services, may require training or adjustments for the IT staff tasked with maintaining those workloads.

It's crucial for IT organizations looking to employ multi-cloud services to fully understand the current state of their cloud utilization. These activities begin to do that but maybe helped along by the capabilities built into tools such as the VMware Aria cloud management suite. These tools may even highlight where additional optimizations can occur.

CONCLUSION

Today's enterprises live in a multi-cloud world, but leveraging multiple clouds can, at times, be complex and inefficient. Despite this, multi-cloud enables a flexible IT organization to adapt to constantly shifting business environments. The benefits usually outweigh the pain.

Multi-cloud services remove much of this pain by reducing the operational complexity inherent in multi-cloud deployments. They offer a level of abstraction and consistent operating experience for cloud operations and platform engineers. Multi-cloud services allow an IT organization to seamlessly manage services across cloud boundaries.

Embracing a multi-cloud infrastructure, complete with multi-cloud services, allows IT teams – the ultimate enabler for any digital transformation project – to focus on delivering value to the business. Multi-cloud and multi-cloud services enable those teams to focus on providing business value.

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