Reduce Multicloud Costs and Risks Through SaaS Automation and Management Capabilities

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Introduction

The use of multiple clouds continues to dominate the decision making for most IT and business executive offices as line-of-business (LOB) managers and IT executives determine the optimal strategy to deliver faster business results. Companies use multicloud approaches for several business and technology benefits, such as:

» The use of sophisticated automation and analytics capabilities

» The ability to accelerate modern application development, deployment, and management while accelerating the use of DevOps practices

» The ability to achieve operational agility and business scale

» The efficiency of automatic software updates and a pay-as-you-go financial model

The decision to choose which cloud providers to use has an important impact on a business' ability to compete because every cloud is different and, in fact, is a "silo." This suggests that when a decision is made to use a public, hybrid, private, or platform-as-a-service (PaaS) approach, there are financial, technology, process, staffing, and skill implications that vary from cloud to cloud. Each decision to use a different cloud increases management complexity because each cloud has its own operating model and different requirements. These requirements impact every IT team, notably across operations, security, development, and architecture.

Rising business pressures are driving the need to accelerate and automate development and deployment pipelines using automation and orchestration tools and DevOps and Agile practices to deliver a faster time to market. These tools often enable operations teams, developers, and cloud architects to accelerate and scale application development to meet the increase in software deployment frequency within multiple cloud environments. The transformation of the development cycle is pressing infrastructure and operations (I&O) teams to create a trusted partnership with development and product teams, collaborating early to reduce development and deployment cycles while optimizing infrastructure choices for each set of application requirements.
By increasing collaboration and teamwork through integrated processes and self-service-enabled tools, executives can automate more tasks such as infrastructure provisioning and continuous integration and continuous delivery (CI/CD) and deliver more sophisticated monitoring, management, and orchestration capabilities that identify, resolve, and predict application performance problems across the entire software development life cycle. Without these sophisticated capabilities, teams have a difficult time keeping up with the pace of technology change and the rise in technology complexity, increasing collaboration requirements, and business demands.

Teams face several additional multicloud challenges that must be solved to achieve faster time to market (i.e., speed) and improved customer satisfaction (i.e., quality) as well as increase throughput and business innovation capabilities. These challenges are:

- **Application and infrastructure automation.** The proliferation, integration, and growing distributed development footprint of traditional and modern applications across clouds as well as the growth in the use of software-defined infrastructure.
- **Multicloud service brokering.** The ability to manage services that originate from various cloud environments into a single, unified view; preexisting compliance requirements and growing global security threats that seek entry points across large multicloud environments.
- **CI/CD problem identification and resolution.** Streamline problem identification across the automated CI/CD pipeline with analytics.

IDC’s research indicates that these challenges will remain for the foreseeable future and that companies will invest in management capabilities. IDC predicts that:

- By 2020, 40% of organizations will have invested in automation, orchestration, and development life-cycle management of cloud-native applications to realize cost benefits and operational efficiencies.
- By 2024, 90% of Global 1000 organizations will have a multicloud management strategy that includes integrated tools across public and private clouds.

Critical production applications have always required management tools, processes, and investment to maintain security, reliability, and performance. Now, cloud environments increasingly require the same level of investment as their usage continues to expand for production workloads. Increasingly, companies that don’t make these investments are exposed to less-than-optimal business results, poorly performing cloud-based environments, and high levels of business risk.

**The Business Case for SaaS-Delivered Automation and Management Solutions**

I&O teams, developers, site reliability engineers (SREs), and cloud architects must consider the need for software-as-a-service (SaaS)—delivered automation and management solutions as LOBs play a larger role in dictating IT spending across multiple clouds. Executives should consider SaaS as a sensible alternative to on-premises automation and management solutions for several critical reasons:

- Browser-based access to software applications enables access to data anywhere, on any device, on demand.
- Pay-as-you-go subscription pricing enables a more flexible and predictable financial model and lowers the total cost of ownership (TCO) because it eliminates the need to invest in large hardware footprints.
» Management and automation can be performed in a more integrated, consistent fashion.

» SaaS application delivery often includes top-tier datacenters and security mechanisms and usually consists of a multitenant architecture.

» Implementation cycles are fast because the vendor takes responsibility for successfully delivering the service capabilities, eliminating the need for hardware provisioning.

» Centralized software management and accelerated upgrades and release cycles eliminate the need for customers to download and install software patches and allow customers to automatically obtain new features.

SaaS-delivered automation and management solutions provide significant business and technology benefits because of the underlying technology architecture. This varies significantly from on-premises automation and management solutions that require customers to absorb significant levels of administration, upgrade, patching, and integration activity.

**Benefits**

Most IT organizations continue to have too many silos, manual processes, poorly integrated management and orchestration tools, and fragmented development processes as well as a general lack of collaboration across I&O and development teams. These challenges reduce operating agility, create political inertia, and increase operating costs. They also make delivering and measuring business outcomes significantly more difficult.

A major benefit of investing in SaaS management and automation is that as more processes are automated, they become more secure while reducing the risk of human error. Even when manual development or operations handoffs remain a requirement during an automated process, the fact that a process has been defined, agreed upon by executives, and automated means that the process is significantly more secure than it was when it was fully manual. Modern I&O, development, and cloud architecture teams use SaaS management and orchestration to deliver business outcomes across people, processes, and technologies. VMware Cloud Automation Services are a SaaS-delivered bundle of automation and management capabilities. These SaaS offerings provide programmable provisioning across multiple clouds.

The following sections highlight some specific benefits for each customer role while using VMware Cloud Automation Services.

**Cloud Administrator**

» Cloud administrators are responsible for multiple cloud architectures, typically using templates for cloud setup and iterative cloud deployments, as well as policies that dictate placement constraints for various application workloads.

» There are multiple benefits to interacting and executing with VMware Cloud Automation Services, specifically by using the web UI, CLI, or REST API to reach and control the functionality of the services.
DevOps Administrator or Engineer

» DevOps administrators or engineers are responsible for the CI and CD processes, and with the use of Kubernetes, Jenkins, and GitHub as key parts of the automated CI/CD pipeline and deployment process, they monitor the pipeline execution using dashboards and project management.

» VMware Cloud Automation Services offer the deployment of infrastructure as code to speed the deployment, testing, and troubleshooting of applications in CI/CD processes, increasing developer productivity.

Developer

» Developers are partially responsible for policy-based multicloud deployments using curated content and Agile project templates for consumption and deployment, enabling control and management of application workloads.

» VMware Cloud Automation Services enable the building, deployment, and iteration of applications across a multiload environment in a consistent and repeatable fashion.

It's critical for IT executives to recognize that an investment in automation and management is a requirement, regardless of which clouds or which application architecture is chosen. Production environment requirements dictate the investment to reduce business risks. I&O, developers, and cloud architects must understand that as DevOps and Agile teams expand, the speed (and breadth) with which I&O teams must partner with them accelerates. Team silos and lack of collaboration must be eliminated to drive operational agility and reduced costs.

Partnerships can use tools to deliver data and data access, which drives faster, more accurate decision making around CI/CD pipelines and availability and performance. Modern IT teams recognize that application operations, programmable provisioning, and self-driving operations can enable faster deployment frequencies and higher-quality code releases that reduce application downtime and provide an improved customer experience.

Considering VMware Cloud Automation Services

VMware Cloud Automation Services are a SaaS-delivered bundle of automation and management capabilities. These SaaS offerings provide programmable provisioning across multiple clouds. The bundle consists of three services:

» **VMware Cloud Assembly** is a multicloud provisioning service. Cloud Assembly also provides an abstraction layer across multiple clouds. This abstraction normalizes infrastructure constructs without sacrificing the unique capabilities of each cloud. For VMware software-defined datacenter (SDDC)–based virtual infrastructure, it offers the ability to create a private cloud. The user can create provider constructs such as cloud zones that provide compute, storage, network, load balancing, and security services for a specific set of purposes. These zones can cover different compliance and security needs, provide location or workload segregation, and be used for multitenancy. These constructs also map to equivalent constructs on public clouds. Policies use the cloud abstraction layer in the service to broker workload deployments between various clouds. For example, if the policies dictate different locations for development and test workloads, then Cloud Assembly will deploy them to the right locations. If the policies dictate gold tier for data-intensive workloads, then Cloud Assembly will use the gold tier for those workloads. To aid troubleshooting, Cloud Assembly maps and shows how it evaluated the policies and arrived at its decisions. Cloud Assembly provides a cloud API layer that is utilized by its templating engine (VMware calls them "Blueprints"). The cloud API can also be used by third-party tools or by products such as Pivotal Cloud Foundry and Pivotal Kubernetes Service.
VMware Service Broker has three main roles: It's a catalog (or storefront) for curated items from multiple clouds, it governs usage of templates and services through policy definition and configuration, and it’s a broker among Cloud Assembly–defined services and third party–defined and –managed services (hence the name). The basic use case is creating a storefront where one can publish curated templates, such as Cloud Assembly Blueprints, AWS Cloud Formation Templates (CFT), Azure Resource Manager (ARM) templates, VMware vRealize Orchestrator–based anything-as-a-service (XaaS) templates, and Kubernetes Helm Charts. One can assign access policies on these templates to other project members within an organization. One can also simplify the consumption of these templates using custom forms. These forms can simplify retrieval and specification of input variables from external sources. In a multicloud environment, it is very important to be able to manage templates, services, and resource usage through policies, such as access policies, lease policies, resource usage policies, quota or capacity policies, and approval policies. Service Broker enables these policies. Further, Service Broker supports brokerage of services across clouds and orchestration systems. This helps central engineering or IT teams play the role of the broker of services enabling developers to consume these curated services. Consumption becomes intuitive through the use of graphical UIs and APIs.

VMware Code Stream helps organizations looking to embrace a CI/CD approach to the delivery of application or IT code across the organization's multiple cloud resource pools. VMware intends to bring the productivity gains from DevOps to developers and administrators of both infrastructure and applications. Code Stream is primarily a continuous delivery service. It includes many prebuilt continuous integration plug-ins for development tools (e.g., Git, Jenkins) and orchestration systems (e.g., Kubernetes). Whereas Cloud Assembly automates infrastructure or application deployments, Code Stream improves productivity by automating the deployments through various stages leading into production. The service includes prebuilt templates for deployment strategies for Kubernetes, such as canary deployments, blue-green deployments, or rolling upgrades. The continuous delivery pipeline also has enterprise-class capabilities such as nested pipelines and out-of-box dashboards to help spot issues and improve release efficiency.

**Challenges**

Innovative SaaS technologies, such as VMware Cloud Automation Services, typically face challenges that can span IT culture, organizational structure, and technology. Several common challenges occur when development, cloud, and I&O teams confer on new strategies and potential solutions. Challenges include the use of on-premises versus SaaS-based models, determining whether a team is ready for CI/CD automation, and getting the courage to accelerate Agile and DevOps processes. The following sections highlight additional challenges.

**IT Culture**

- Developers have not been VMware’s traditional customer audience; the company is attempting to raise its awareness in this new IT buying center and introduce new SaaS services.
- IT executives must understand how VMware’s tools — when used together — can leverage both technology and business metrics to drive further business value across development, cloud architecture, and I&O teams.
Organizational Structure

» Increasingly, cross-silo teams are deciding what might be a "best fit" product for the use of automation and CI/CD processes; some teams might want to maintain the use of current tools for political or skills-based reasons.

» Existing processes across development and operations are often split between legacy/heritage Waterfall methods and modern application workstreams (DevOps and Agile). Some Agile and development teams might want different dashboards and tools depending on their past experiences and what they think the future organizational structure requires.

Technology

» The VMware Cloud Automation Services bundle is a relatively new release for the company; some customers might want to wait until future releases are announced to capture more features and capabilities.

» Many organizations have invested in various CI/CD and related DevOps toolchains; companies must weigh the migration risk and benefits when considering the use of VMware solutions.

Conclusion

Multicloud automation and management requirements span multiple teams and require investment to reduce the business risks, operating complexity, and costs associated with using multiple clouds. The SaaS delivery model offers several benefits across development, cloud architecture, and I&O teams as they utilize Agile and DevOps, deploy CI/CD processes, and attempt to deliver end-to-end automation and management capabilities for application workloads. IT executives who don’t delay investing in production-level application development will create an embedded, optimized, and sustainable competitive advantage around the tenets of speed and quality that cloud architectures offer.
MESSAGE FROM THE SPONSOR

VMware's cloud automation services make it easy and efficient for developers to get what they need, when and where they want it. The cloud automation services consist of:

» VMware Cloud Assembly orchestrates and expedites infrastructure and application delivery in line with DevOps principles

» VMware Service Broker aggregates native content from multiple clouds and platforms into a single catalog with role-based policies

» VMware Code Stream speeds software delivery and streamlines troubleshooting with release pipelines and analytics

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Stephen Elliot manages multiple programs spanning IT operations, enterprise management, ITSM, Agile and DevOps, application performance, virtualization, multicloud management and automation, log analytics, container management, DaaS, and software-defined compute. Mr. Elliot advises senior IT, business, and investment executives globally in the creation of strategy and operational tactics that drive the execution of digital transformation and business growth.