

The Requirements for Hybrid Cloud Management

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Introduction

In my view, the hybrid cloud approach is the only way IT leaders can be prepared to adapt to changes in business strategy, tactics, and technology. In fact, business leaders really don't care what technology is used behind the scenes; they are interested in results. These leaders want the assurance that IT managers will be in lock step with their needs. Traditionally, IT was afraid that they would lose control if business units bypassed internal IT and used public cloud services. Attitudes towards the cloud are changing both in IT and in the business. Business units understand that they need the support of IT, especially for security and compliance requirements. At the same time, IT leaders know that they have to work closely with business leaders to deliver business services that can compete with outside services. In addition, IT organizations are increasingly accepting that they cannot always compete with outside services and that a cloud service might be the best option for some projects.

One of the challenges in managing a hybrid cloud environment is that there are many constituents that must be satisfied. For example, the customer for the managed service provider is both the IT department and the business leader. Likewise, the IT department understands that it must first satisfy the business unit leaders who in turn are obligated to keep the end customer happy. The ability for IT to meet rapidly changing business requirements is key. Having the flexibility to transform and add services quickly can help a business remain relevant to its customers.

Customers expect to have a seamless interaction with their service providers. If the interaction between the users and a service provider is ineffective or frustrating both internal and external customers will look for alternatives. Therefore, a business that is unable to meet the increasing expectations of service reliability risks losing customers. The IT organization must provide its customers with precise service they need – whether that service is on premises, in a private cloud, provided by a public cloud infrastructure vendor or a public cloud software as a service provider.

Today, most cloud services are managed as silos of workloads in a variety of platforms. However, it is becoming increasingly clear to both business and IT management that computing resources whether in public or private clouds or in the data center have to be managed in a unified, consistent, secure and predictable way. To achieve this goal requires an architected and holistic approach to hybrid cloud management. While there are many tasks that have to be accomplished to achieve hybrid cloud management, there has to be automation and best practices at the core.

So, what does it mean to have this type of standardization of management? One of the key starting points is to create a template or pattern based on a codified or golden topology that is consistent across the hybrid environment. This pattern allows administrators to know which and how various workloads are being used across the company. These golden topologies include data about the cost of resources, security and governance requirements. These standards are enforced through a set of abstracted APIs. In this paper we will explain the

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foundation of automation for hybrid cloud management and then indicate the service elements that must be included to create a well-managed computing environment.

The Automation Foundation

Automation is at the heart of hybrid cloud management. Automation at this level requires an abstraction layer based on consistent standardized APIs and a set of services. Automation content is manifested as a packaged set of instructions that indicates how services from a variety of clouds can predictably work together. In essence, these automation services provide a set of templates or blueprints that are well-tested techniques. Templates are imperative because each cloud environment is designed with its own unique set of instructions for how it performs functions. Without this level of automation developers would have to write customized instructions for how to manage workloads across different environments. Needless to say, this approach would quickly become cumbersome and unmanageable. In this next section we will explain the automation services that must be in place to achieve hybrid cloud management.

The Self-Service Imperative

Architecturally, a hybrid cloud management environment requires a self-service interface. This interface sits above an API based abstraction layer that links to the various services that are needed to make the variety of workloads act as a single managed system.

Automation Blueprints

The automation abstraction layer is designed as a set of instructions that enable these services to communicate with each other and execute the right actions.

What would this look like? Here is a simple example based on Infrastructure as a Service. There needs to be an automation blueprint that provides the instructions for provisioning infrastructure elements such as compute nodes, network, and storage. As long as each cloud service is identified in the blueprint it will be possible for the user to select from those identified IaaS options so that they can be managed consistently.

This same blueprint model can be applied to Software as a Service (SaaS) and Platform Services to support DevOps. In this case, you will see the emergence of an environment where services and software can be managed together as a unified hybrid platform.

Quality of Service. How well all of these workloads perform together is critical for the success of a hybrid cloud environment. There needs to be consistency and predictability. Customers will not know where a specific workload or task is being executed. The entire set of workloads has to perform in a way that guarantees quality of service. Consistency must extend to operating procedures, infrastructure and middleware services. This can only be achieved through automation based on best practices.

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Self-service Dashboard. Abstraction of services and workloads requires a dashboard to enable the operations team to manage all workloads consistently. This dashboard needs to visualize the operational, process, and financial perspective. Each constituent – whether internal or external needs to be able to have visibility into the environment based on their role or the services they are allowed to consume.

Workload Portability. One of the benefits of automation is workload portability. This level of abstraction means that a workload isn't tied to the details of a specific cloud environment. Therefore, this enables customers to move workloads between clouds. This is important both in terms of flexibility and cost considerations. In addition workload portability will help organizations avoid cloud vendor lock-in. Standardization through automation makes it possible to be able to move workloads across a computing environment.

Hybrid Cloud Management Defined

Hybrid cloud management provides a consistent way to monitor, manage, and optimize workloads regardless of platform through automation and an abstraction layer based on consistent APIs. Hybrid cloud management allows administrators to know who is using a resource, the cost of resources, and if security and governance requirements are being achieved. Hybrid cloud is a cross cloud standard and therefore requires standard APIs that help to achieve standards across platforms.

Customers can blend public cloud, virtualized, private and on-premises infrastructures and manage everything as a single unified environment. Typical managed services include cloud data services, SaaS applications, PaaS platforms and the like. The purpose of hybrid cloud management is to provide organizations with visibility, control, and governance over all the technology services that an organization requires. The implication is compelling because there has to be a consistent environment across development and operations across different deployment models.

The Services Needed to Support the Hybrid Cloud

The following is a list of the services that need to be in place to have an effective hybrid cloud management platform:

Brokerage Services

Automated self-service and management of costs and policy services to make sure that the right services are used based on rules and organizational requirements. The brokerage service will direct users to the appropriate Infrastructure as a Service Provider (IaaS) or Software as a Service (SaaS) provider based on company policy, user rights and workload requirements.

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Service Management and Orchestration

Effective hybrid cloud management requires that business services, including micro-services, be managed in a way that facilitates implementation services. These business services are not static. They will change depending on the changes to business process and workflow. It is important that orchestration provides a way to bring the right services together based on the usage of services and best practices.

Service Catalog

Management of predefined services (including microservices) are codified and vetted so they can be safely used across the hybrid environment. There needs to be rules that dictate how and when a service can be used. Also, the lineage of the service and policy are part of the catalog infrastructure.

DevOps Services

DevOps services are a set of consistent continuous development and delivery operations that allow the creation, continuous updating, and maintenance of applications. These services include software development processes that are agile and can run in the public or private cloud depending on the use case. Services need to be available that can manage testing, deployment, and rapid iteration of both development and deployment. There needs to be a well-orchestrated lifecycle to build, deploy, and manage applications as they move workloads across the environment. In addition, there should be services that can easily move code from one deployment model to another depending on the workload requirements and service level. Organizations should also be able to change the business process flow between services to match the changing needs of the business.

Integration Services

In the hybrid cloud, organizations need the ability to integrate processes, application services, and data across the virtual data center. Service providers manage some of these industry-focused applications and data services. In addition, there needs to be ways to integrate from a business process perspective.

Security Services

Security is important at all levels of the hybrid cloud management environment. There needs to be services that provide security at all levels of the environment including infrastructure, networks, and applications. One of these security services will be embedded in the specific services. There needs to be overarching security services that apply across the organization.

Visibility Services

Hybrid Cloud Management only works if it is possible to see and understand how all the various models work together to create the virtual data center. Management must have the ability to understand what is happening. Visibility services provide a dashboard that leverages all of the capabilities of hybrid

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cloud management so that management know what is happening. Operations management needs to be able to visualize which workloads are running in which environment. It is key to understand how business services are being integrated to create the right outcomes.

Why Hybrid Cloud Management Changes IT

There is a growing recognition in businesses around the globe that there is no one correct answer for which deployment models are the best. Increasingly, companies are recognizing that they need to select the cloud services and the on premises services that best match financial, governance, and security requirements. As the business changes because of new regulations or new business partners it is clear that cloud selection will change as well. When changes happen, IT needs to offer the business the option to move and manage workloads in new and consistent ways. Changing business needs for workload management is resulting in the emergence of hybrid cloud management. This new management imperative will change the dynamics of the computing world by putting the customer in charge.

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