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IDC TECHNOLOGY SPOTLIGHT

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Expanding use of cloud options (private, public, hybrid) and multiple public cloud providers (IaaS, PaaS, SaaS) is driving enterprise need to gain control over an increasing set of IT assets using hybrid multicloud management capabilities.

Hybrid Multicloud Management: Orchestrating and Optimizing the Cloud Services Supply Chain for Enterprises

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Introduction

Today's enterprise is faced with meeting a wide range of strategic business requirements that include becoming more agile, moving to a digital set of capabilities, and aligning customer needs more closely with personalized and localized products and services. In achieving these objectives, enterprises are expanding their use of cloud resources to include different operating models involving private, public, and hybrid clouds and the use of multiple cloud service provider platforms such as infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). Further, optimizing the value of cloud services requires enterprises to modernize applications using new operational models involving DevOps, continuous integration/continuous delivery (CI/CD), and site reliability engineering (SRE), all of which require driving fundamental changes in enterprise cultural and organizational structures to ensure that all relevant stakeholders are provided access to these resources and capabilities when needed.

AT A GLANCE

KEY TAKEAWAYS

- Increased use of cloud providers and cloud types (private, public, hybrid) is driving complexity in managing these resources effectively, alongside managing noncloud IT assets.
- Optimizing usage of cloud resources requires making fundamental changes to critical organizational structures, business processes, and IT operations.
- Shift to using management platforms will help optimize the move to cloud and the use of multiple cloud resources and cloud service providers.

This IDC Technology Spotlight examines how implementing hybrid multicloud management capabilities as part of utilizing managed services, including the use of SaaS capabilities, can help enterprises as they expand use of cloud capabilities from more resources that involve new operational models to achieve their business and IT objectives.

Definition of Hybrid Multicloud Management

IDC defines hybrid multicloud management, when used as part of providing managed services, as an engagement between customers and managed service providers (SPs) that involves managing multiple clouds from different sources, a form of multisourcing. IDC identifies two fundamental types of these engagements:

- **Managing two or more clouds from different cloud providers.** This engagement would involve a managed SP helping support multiple clouds from different cloud providers across IaaS, PaaS, and SaaS business models (e.g., AWS, Azure, GCP, IBM, Workday, ServiceNow, and salesforce.com).
- **Managing enterprise private clouds and clouds from cloud providers (hybrid cloud).** Combining an enterprise private cloud with a public cloud from a cloud service provider, which could also include noncloud technologies as part of a broader hybrid IT engagement, would be classified as a hybrid cloud engagement (private plus public). This type of engagement can also include managing more than one cloud from different cloud service providers (IaaS, PaaS, SaaS) in addition to supporting an enterprise private cloud (see *Buyer Needs for Managed Multicloud Services for Delivering Multicloud Management Capabilities,* IDC #US45946219, February 2020).

Benefits

There are a broad range of benefits in using managed services, along with SaaS, to support multicloud management capabilities including hybrid options. Utilizing managed cloud services for multicloud management can help enterprises achieve critical business objectives (entering new markets, launching new products/services) that include achieving financial objectives (ROI, reducing costs), optimizing workforce productivity, and meeting regulatory requirements. Multicloud management can also drive enterprise agility by incorporating new innovation and capabilities (e.g., DevOps, SRE, CI/CD) that can ensure speed to market, provide access to emerging technologies, support multiple types of business and IT roles, and enable transformation of applications to cloud-native capabilities involving containers, serverless computing, and microservices.

Managed services for multicloud management capabilities can support a full range of cloud options — whether private or public or on-premises or hosted — and involve any type of cloud platform (IaaS, PaaS, SaaS). Inherent in the capabilities offered by multicloud management is provisioning of the life cycle of cloud services, from designing and developing to deploying and operating cloud capabilities, in a seamless and highly integrated digital supply chain of services to ensure service-level agreements (SLAs) and meet critical key performance indicators (KPIs).

Trends

According to IDC, managed cloud services are projected to grow at a five-year compound annual growth rate (CAGR) of 15.4% to $84.7 billion worldwide by 2023. This market encompasses private cloud, public cloud, and hybrid cloud, as well as hybrid IT (cloud and noncloud), which includes consuming cloud services from multiple sources involving enterprise IT and multiple cloud service providers.

IDC research highlights that enterprises are using managed cloud services to support their hybrid multicloud requirements to meet a wide array of needs that start with supporting critical business and IT objectives including becoming more agile, driving new revenues, and linking IT with business performance. In using managed SPs to support enterprise use of hybrid multicloud capabilities, enterprises view the strategic role of these providers as centered on supporting a firm's growth strategy (e.g., entering new markets, mergers and acquisitions), bringing efficiencies to infrastructure delivery, and optimizing application portfolios. Enterprises also view managed services as helping meet ROI, cost savings, productivity, and profitability goals while complying with industry regulations (see *Managed CloudView 2019: Executive Summary,* IDC #US45601719, October 2019).

Enterprises expect managed SPs to help organizations develop agile and adaptive capabilities. From a transformational perspective, they also look to these providers to incorporate new models of application development and deployment (DevOps, CI/CD, PaaS) and assist in reengineering processes and organizational structures to consume cloud capabilities effectively. Implementing these changes will meet customer requirements that managed cloud services enable more agility and/or speed from IT as well as help optimize an enterprise's portfolios of applications via rationalization and modernization/migration to the cloud. Additionally, IDC research shows that enterprises are looking for service providers with end-to-end cloud capabilities including DevOps and CI/CD, both of which require incorporating new technologies (e.g., containers/serverless, open source, cognitive) to enable greater agility.

At an operational level, customers expect managed SPs to provision cloud capabilities that meet stringent performance requirements in areas such as availability and time to response. Additionally, a lack of effective security continues to be a top inhibitor in using managed cloud services for which providers are expected to incorporate advanced security that includes predictive capabilities (e.g., vulnerability assessment). Enterprises are also seeking to link and make interoperable any combination of clouds as part of a managed service. All of this will require utilizing new operating models that involve SRE and cloud operations.

Further, enterprises expect managed SPs to support them across a broad set of cloud resources and capabilities. IDC research shows that in 2019, 61% of enterprises worldwide were using fewer than five public cloud providers. Over the next three to five years, 64% of enterprises expect to use five or more public cloud providers. Firms expect to optimize public cloud providers based on preferences for key competencies (e.g., enterprise applications, Internet of Things [IoT], blockchain, hybrid cloud cognitive, DevOps, analytics, and infrastructure). Additionally, customers seek to utilize clouds (private, public, hybrid) for a wide set of applications (e.g., customer relationship management [CRM], enterprise resource planning [ERP], supply chain management [SCM], productivity, and business intelligence/data warehouse [BI/DW]), whether located on-premises or hosted by a service provider.

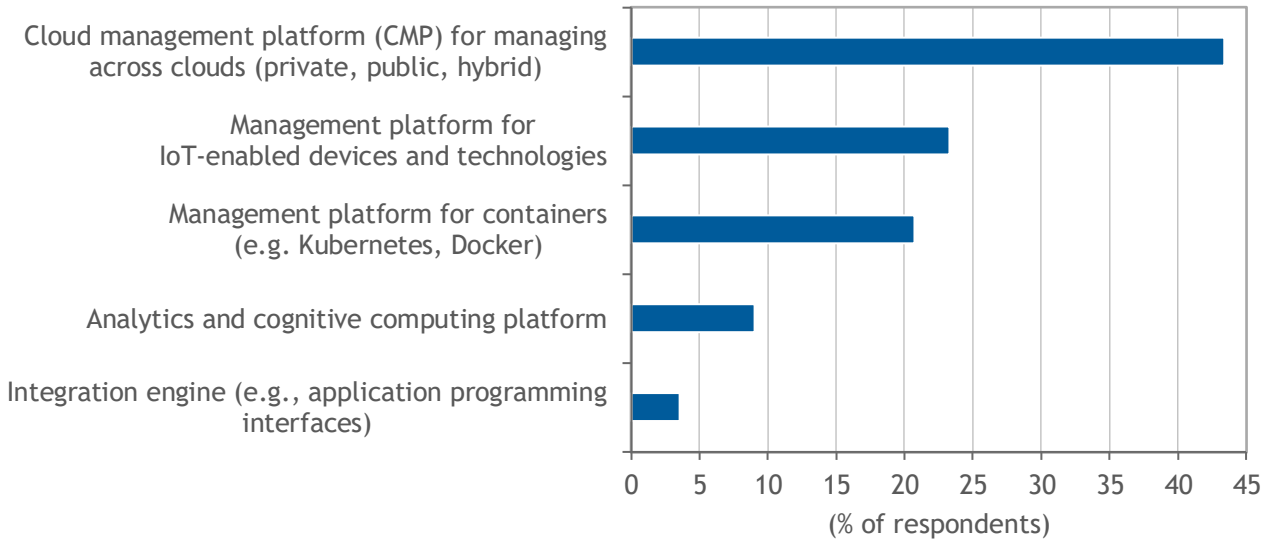
Enterprise Management Platform Priorities

Figure 1 highlights that when it comes to critical management platforms, enterprises consider it a priority to have a cloud management platform (CMP) to manage across all types of cloud environments (private, public, hybrid). IDC research also shows that this type of hybrid multicloud management platform is the foundation in supporting and delivering a full array of digital capabilities such as IoT, containers, analytics, cognitive computing, and application programming interfaces (APIs).

FIGURE 1

Worldwide Enterprise Management Platform Priorities

Q. Please select the one type of management platform that you believe providers of managed cloud services need to utilize to ensure effective delivery of these services.



n = 1,500

Source: IDC's 2018 Worldwide Managed CloudView Survey

Considering IBM

IBM provides multicloud management capabilities as part of its Multicloud Management Platform (MCMP), delivered via the company's managed services and SaaS offerings. MCMP is designed to help enterprises achieve business objectives, adapt to dynamic market changes, enable transformation, gain access to a comprehensive portfolio of cloud solutions, and drive efficiencies in using any type of cloud for any purpose, location, business process, and industry requirement. IBM helps enterprises optimize the potential of MCMP to ensure competitive advantage when using cloud resources by incorporating the following as part of the platform's capabilities:

- **Enabling fundamental change.** MCMP supports enterprise migration to any cloud type and cloud provider, and it supports strategic stakeholders (developers, IT operations, CFOs) in shifting to a new means of consuming cloud services using a self-service, API-driven approach; delivering these cloud resources through CI/CD; and ensuring governance via data-driven and automated compliance.

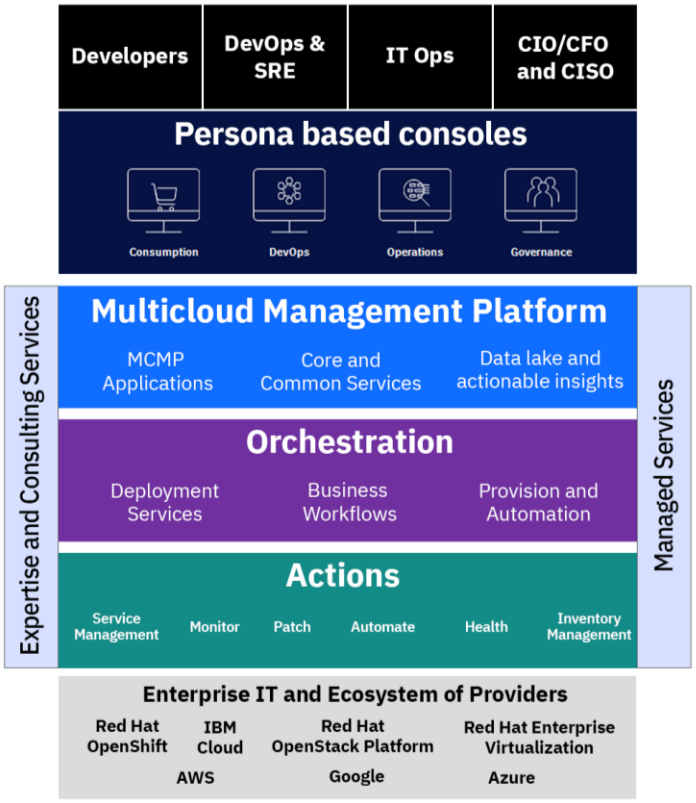
- **Delivering value.** The platform provides a digital self-service, API-driven user experience via a control plane to consume, deploy, operate, and govern across all clouds and datacenters. This involves using a federated and curated business catalog, DevOps for traditional IT and cloud-native environments, and governance for financial and asset management across an integrated supply chain of cloud resources and providers.
- **Providing differentiation.** MCMP is differentiated by a combined set of capabilities that include being platform agnostic; supporting open source, standards, and containers; enabling infrastructure and application life-cycle management; integrating with existing tools; and addressing the needs of all personas and stakeholders. It also provides a digital self-service experience that can be consumed in any type of business model (e.g., SaaS, managed service). To help enterprises optimize the value of MCMP, IBM utilizes decades of information it has generated from actual services engagements in managing IT and combines this information with artificial intelligence and machine learning (AI/ML) capabilities via its Watson (cognitive) platform to drive efficiencies such as higher-quality services, lower costs, and increased agility.

IBM also delivers the following critical capabilities and resources to help transform enterprises across strategic business and IT functions needed to optimize the value of MCMP:

- **Professional services.** IBM helps enterprises transform key business areas involving organizational factors, roles, and processes that involve moving to DevOps (DevSecOps), Cloud Service Management and Operations (CSMO), and SRE.
- **Garage services.** 16 IBM Garages are available globally to support enterprises in developing cloud capabilities rapidly through co-creation, co-execution, and cooperation and to help in implementing critical processes and practices (e.g., DevOps, test-driven development, design thinking) to create an agile environment.
- **IBM intellectual property (IP).** IBM supplements the capabilities of MCMP by incorporating new IP/innovations that are developed by IBM's Global Business Services (GBS) and Global Technology Services (GTS) organizations in the areas of cognitive delivery insights and financial analytics to optimize cloud spend.

Collectively, IBM's MCMP is an integrated suite of management applications that provides a full range of capabilities to support any type of cloud for any purpose, which, as Figure 2 highlights, involves integration of the following four critical core capabilities: Consumption, DevOps, AIOps, and Governance. Each of these capabilities is designed to assist a vast array of stakeholders based on their roles and personas.

FIGURE 2: ***IBM's MCMP***



Source: IBM, 2020

Consumption

In consuming and utilizing any type of cloud resource, MCMP provides a single pane of glass that lets IT leaders control procurement of any cloud service using proper approvals while giving users, particularly developers, access to preapproved/predefined, security-compliant, standardized services from various providers via a self-service marketplace. Key benefits of using this approach help balance speed in provisioning a cloud service with the ability to find resources more quickly by simplifying the selection process while ensuring control over service procurement. This approach drives greater agility and consistency and helps minimize risks by ensuring adherence to security policies, compliant tools, and regulatory requirements such as GDPR, HIPAA, and PCI. It also enhances enterprise choice via multicloud visibility, avoids lock in, and ensures alignment of usage by preferred cloud provider.

DevOps

Migrating and modernizing enterprise applications to work effectively in any environment involve utilizing a DevOps approach. IBM MCMP provides a single view for DevOps management that enables standardizing continuous development and deployment toolchains, establishing pipeline management of toolsets, and providing visibility across a fully integrated pipeline to move applications to the cloud. MCMP's DevOps capabilities support provisioning preferred tools, either individually (customized) or from a set of predefined templates. These templates can be used on a preferred

cloud while incorporating automated CI/CD with AI. AI provides analytical capabilities needed for more instantaneous decision making and performing tasks more efficiently. However, optimizing MCMP's DevOps capabilities and associated SRE requirements increasingly necessitates a shift in cultural mindset and organizational structure. Ultimately, while these capabilities can help modernize applications for the cloud, they can also enable portability and flexibility in migrating workloads to preferred providers, creating a more agile environment, and driving DevOps efficiencies by collecting and analyzing metrics across toolchains. Finally, MCMP's DevOps capabilities can help manage risks by providing governance and oversight of toolchains to ensure security and compliance.

AIOps

IBM's MCMP incorporates intelligent capabilities in the form of AI and ML to support monitoring and preemptive management of hybrid multicloud environments, provide increased visibility to help proactively manage the complexity of IT operations including all legacy (noncloud) and cloud resources, and improve performance. These intelligent and automated capabilities help enterprises gain faster insight into the health of IT and problems as they arise. This allows for proactive analysis of IT data patterns using multiple sources of information, identifying root causes of issues, defining means of remediation to appropriate teams, and learning to recognize patterns in resolving future situations. Additionally, AIOps capabilities support IT's need for driving a collaborative cloud operating model that includes use of DevSecOps and SRE. Consequently, MCMP's AIOps capabilities can enable enterprises to achieve operational excellence of IT environments, focus more on strategic issues, drive more consistent management and improved control over costs, and help control brand perception.

Governance

IBM MCMP is designed to support enterprises with implementing effective governance in managing their IT assets and cloud resources in supporting key stakeholders including CIOs, CFOs, and CISOs. In particular, MCMP helps control cloud use and establishes governance of clouds across an organization with the goal of driving savings, eliminating wasteful cloud usage and spend, and improving efficiency to support new business outcomes. The platform accomplishes this by introducing a single management tool that helps provide comprehensive visibility into cloud use, centrally manages costs and asset utilization, and establishes and enforces governance control points using financial, security, and compliance policies. This tool can generate insights via analytics and automated reports that can help further optimize spending and usage of all IT assets including cloud resources. Ultimately, the governance capabilities of IBM's MCMP are designed to help gain control over provisioning of workloads and reduce shadow IT while improving day-to-day operations and operational efficiency by decreasing the time between problem identification and problem resolution.

While MCMP can be consumed in a SaaS option via self-service capabilities, IBM complements it with core managed services that cover the full breadth of IT. At the application level, these services include DevOps Monitoring and Management services to support both cloud-native and traditional applications used in a hybrid multicloud environment along with Enterprise Application Management services for critical business processes. IBM managed services for MCMP also include Multicloud Management Services to support multicloud and hybrid environments involving any as-a-service model (IaaS, PaaS, SaaS), Managed Infrastructure as a Service for on-premises private clouds to IBM GTS multitenant clouds, and Cloud Security and Resiliency, which provides insights, protection, detection, response, and recovery services to ensure resiliency and security of an enterprise's entire portfolio of IT assets and business processes.

Challenges

IDC research shows that service providers, which are competing to provide hybrid multicloud management capabilities in the managed services market, need to address some key client concerns. In moving to cloud, organizations are often faced with entrenched legacy approaches in developing, deploying, and managing applications and infrastructure, which inhibit the ability to provision cloud services rapidly while adapting to a fast-moving market. Consequently, to utilize multiple cloud providers and operating models while meeting these market needs, enterprises must make fundamental changes to their organizational structures, roles, and processes. To help enterprises make this transformation, service providers such as IBM will need to implement critical capabilities that involve deploying DevOps, SRE, and cloud operations supported by the required professional services in redesigning IT and business processes. This will help create a more streamlined organization across stakeholders, meet the more stringent requirements of provisioning cloud capabilities, and support the changing demands of users and customers.

However, once enterprises have migrated to the cloud, they are faced with some additional challenges in using managed services. These challenges include concerns with security; the ability of clouds to support the operational/performance requirements of critical applications; potential loss of control in managing their IT assets, both noncloud and cloud; and fear of the inability to drive innovation. To help clients overcome these concerns, service providers such as IBM need to make significant investments in building a highly resilient set of clouds (public, private, hybrid) to meet performance requirements, offering a robust portfolio of security and recovery services to meet critical regulatory and compliance needs, and implementing a set of end-to-end management capabilities that can support any type of cloud, anywhere, and for any need. Further, all service providers need to have an ecosystem of technology and cloud partners that can complement the service provider's own capabilities and ensure customers of access to any type of innovation they need.

Conclusion

Careful consideration should be given to selecting the best-fit managed SP from which to utilize hybrid multicloud management capabilities that can orchestrate and optimize the supply chain of an enterprise's entire portfolio of cloud resources and IT assets. While potential customers need to ensure that providers offer referrals and testimonials as proof points of success in using managed services for multicloud management, they also need to ensure that providers can:

When it comes to critical management platforms, enterprises consider having a cloud management platform a priority.

- Help enterprises make strategic changes to business and IT operations. Incorporating new development and operational models involving DevOps, CI/CD, and SRE is critical to enabling effective migration to the cloud, continuous adaptation of cloud capabilities, and ongoing management of cloud and noncloud resources.
- Provide a platform for integrating the life cycle of cloud services (from design and develop to deploy and operate). Having such a platform will help create an integrated "supply chain" of cloud capabilities to enable dynamic, digitally based operations with access to any means of consuming hybrid multicloud management capabilities (e.g., SaaS, managed services).

- Invest continuously in innovation and new business models of service delivery. Ensuring that innovation infuses all stages of the cloud services life cycle will help meet specific client needs as aligned with stakeholders, business processes, industry requirements, and workload requirements.
- Offer a complete set of capabilities. Having access to a full set of services capabilities to support both noncloud (legacy) and cloud technologies used in any location, from on-premises to third-party providers, for any type of workload across any industry will be critical in optimizing the value of hybrid multicloud management.

The speed at which markets move is driving enterprises to embrace and expand use of cloud capabilities, which increasingly include a mix of private and public clouds, along with multiple cloud services providers and their public cloud platforms. However, the challenge facing enterprises in effectively using managed services for cloud capabilities involves transforming their fundamental business and IT operations to new operating models and having a means to manage effectively their full set of IT assets, which increasingly involves cloud capabilities from multiple sources.

Core capabilities that enterprises will need to change to meet these challenges will require implementing fundamental new operational approaches to provisioning IT that include DevOps and SRE. However, to ensure optimal performance, enterprises will need to utilize a management platform as part of managed services that can support consumption of cloud capabilities across multiple resources, referred to as hybrid multicloud management. Such a management platform must also enable provisioning of an integrated set of services — from design and develop to integrate and operate — that can support all digital capabilities, including cloud, to ensure competitive advantage in a fast-moving, dynamic marketplace.

About the Analyst

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David Tapper provides research on emerging services areas including mobility, social media, analytics, automation, IoT, and cloud services as well as provides strategic thought leadership on the transformation of the services industry to newer models of delivery including cloud computing, managed cloud services, and software as a service (SaaS).

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