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Automating the Cloud: How Management Platforms Will Change Managed Cloud Offers

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Introduction¹

As cloud solutions and technologies evolve, enterprises continue to show interest in how the cloud can help them achieve corporate goals. While the cloud promises previously unachievable results at attractive price points, complexity confounds resource-strapped IT departments, and often drives them to seek outside assistance in managing cloud services. A wide variety of providers have been all too happy to fill the gap, with everyone from traditional communications service providers, to managed hosting providers, to native cloud providers, stepping in with managed cloud offers that provide greater oversight and assistance in terms of operating the customer's cloud service.

With providers hailing from such diverse backgrounds, managed cloud offers vary greatly from provider to provider and service to service. But, what comprises the core of a managed cloud offer? What components are common to all managed services; and what differences do individual providers present to differentiate themselves in the market?

Providers have come to a general consensus about what makes a cloud service “managed.” Most agree that providers bear the full responsibility for meeting performance metrics, and take proactive steps to ensure that metrics are met. But, as cloud services evolve, the means by which these are met can vary greatly from provider to provider.

Major shifts have been afoot in which the enterprise IT department becomes more service-oriented; and automated service management is quickly becoming an integral part of cloud services. As such, providers have more tools at their disposal to help ensure that the customer's operation and business goals are met. In this context, delivery of managed cloud services is shifting: routine monitoring and maintenance, as well as several management tasks, are able to be performed without human intervention. Time will tell whether greater automation diminishes the need for managed cloud services.

In this study, Frost & Sullivan offers a definition of managed cloud services. We also examine managed cloud service evolution, with emphasis on how new cloud management platforms impact managed services. Finally, we review the offers of selected providers, comparing and contrasting their services, and determining what constitutes a strong managed cloud offer.

¹ In preparing this report, Frost & Sullivan conducted interviews with representatives of the following companies:

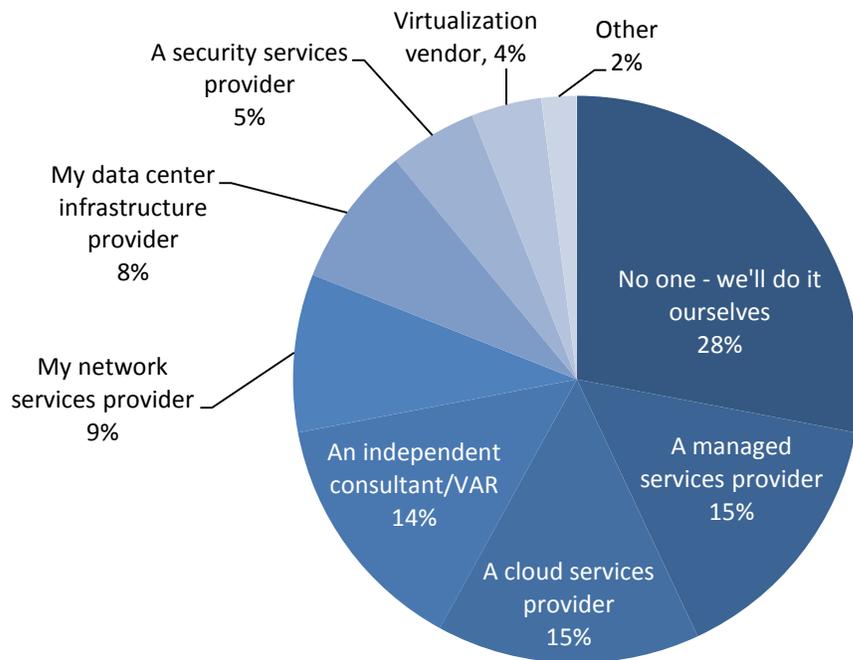
- Dimension Data – Keao Caindec, Chief Marketing Officer
- IBM – Fausto Bernadini, VP and Distinguished Engineer of Managed Enterprise Cloud; Susan Wallace, Global Segment Marketing Manager for SmartCloud Services
- Oracle – Ajay Srivistava, VP of Managed Cloud Service Engineering
- QTS – Aditya Joglekar, Director, Cloud Services

Please note that the insights and opinions expressed in this assessment are those of Frost & Sullivan and have been developed through the Frost & Sullivan research and analysis process. These expressed insights and opinions do not necessarily reflect the views of the company executives interviewed.

The Rise of Managed Cloud Services

While the allure of cloud computing—pay-as-you-go consumption model, flexibility, and on-demand access—makes the cloud attractive to a wide variety of businesses, choosing from among the available options, and integrating those choices into an existing IT environment, can prove to be daunting. As such, enterprises are increasingly turning to cloud or IT service providers for assistance. In its 2013 cloud user survey, Frost & Sullivan found that 72 percent of cloud users surveyed anticipate using the services of a provider to help implement their cloud services; with 30 percent turning to a cloud or managed service provider specifically.²

Figure 1: When it comes to developing and implementing a cloud strategy, cloud users turn to outside providers for assistance



Source: Frost & Sullivan

In response to customer needs, some cloud providers are offering managed cloud infrastructure as an alternative to self-service IaaS. For others, the evolution comes out of a managed hosting background, in which cloud is offered to customers as a more cost-efficient alternative to leasing half-racks or racks, when only a portion of that space will be used immediately. Despite diverse backgrounds, managed cloud providers often end up in much the same place. Most managed cloud providers are offering managed infrastructure in which the cloud provider takes on routine management tasks, like deploying new instances based on traffic, or testing the disaster recovery function on a set schedule. Providers often layer managed IaaS with popular features, such as

² The results of the 2013 Cloud User Survey are published in several reports, including CC 3-5, *2013 Cloud User Survey: Non-Adopters Harbor Doubts About Cloud Benefits* (July 2013); and SPIE 13-28, *Does Your Brand Convey What You Think it Does? How Businesses Rate IaaS Providers* (August 2013). For information on how to obtain these or any Stratecast or Frost & Sullivan report, contact your account executive or e-mail inquiries@stratecast.com.

security, business continuity and disaster recovery, or applications like ERP or databases. In both scenarios, providers that have created managed cloud offers are responding to customer needs for effective, right-sized infrastructure and assistance in both deploying and managing the services over the course of the service lifecycle.

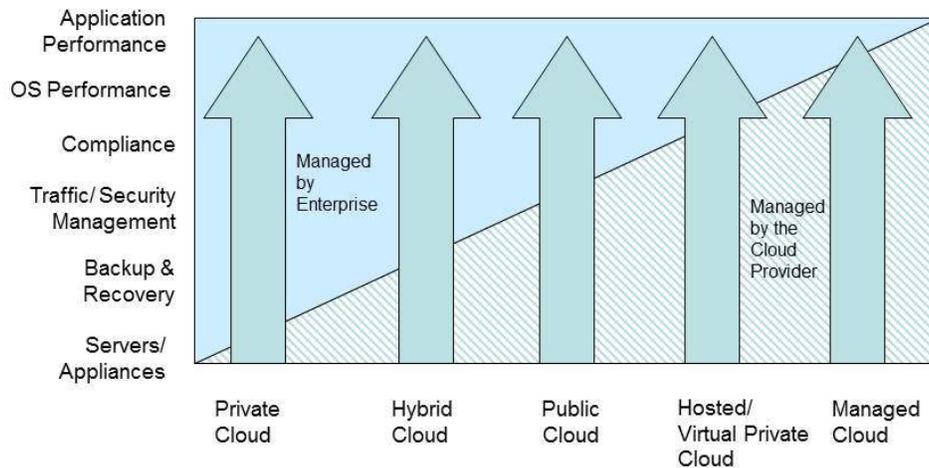
What Makes a Cloud Service “Managed”?

“Managed services” are comprised of one entity performing a function or providing some sort of benefit or advantage to another entity in exchange for an agreed-upon fee. Management entails the introduction of policies, processes, and proactive monitoring that help control the daily tasks that are required for operational success. When defining managed cloud services, however, some additional commonalities are customary. In general, managed cloud services:

- Can be customized to desired business outcomes. Providers generally offer more latitude for customized SLAs, or for SLAs that go beyond standard cloud availability metrics.
- Often have a higher commitment pricing structure. Basic IaaS services are available on demand, with no commitment. Managed cloud services generally require some sort of contractual commitment, potentially with volume or monthly revenue commitments or fees.
- May cover any or all layers of the cloud stack, including hosted or premises-based cloud hardware (similar to managed CPE services like managed router), platforms, and specific applications.

In a managed cloud offer, providers generally assume end-to-end responsibility for the service level agreement (SLA), to ensure that the service meets acceptable, pre-defined thresholds that are set with the customer’s business requirements and goals in mind. In some cases, providers go a step further, working with customers not only on service level thresholds, but to define success in terms of the business, and to codify those goals and how the infrastructure can help meet them. Figure 2 shows the typical assignment of responsibilities in various cloud configurations.

Figure 2: Functions Managed by Enterprise vs. Cloud Provider



Source: Frost & Sullivan

Thus, the optimal managed cloud infrastructure service meets the following definition:

Managed cloud solutions provide infrastructure as well as services available within the cloud stack (the function), and incorporate the automation and orchestration as well as proactive, manual monitoring to manage the cloud application and infrastructure for customers.

In the cloud, customers often manage their cloud services through the use of an orchestration or service management platform that is overlaid on the infrastructure that they lease. Such orchestration platforms provide real-time performance and operations data, and sometimes analytics, which can be used to make adjustments to the service being offered. These adjustments are pre-defined and carried out automatically, based on best-practice policies that are set when the service is deployed. For example, policies can be programmed to adjust the number of virtual machines allocated to a specific application during times of peak traffic, or to back up the environment at specific intervals to ensure business continuity and meet compliance demands, among other functions.

Cloud automation and orchestration platforms offer a level of proactive “management” that assists customers with functions such as virtual machine (VM) deployment, service cataloging and management, security, load balancing and optimization. Such automation is often set with the provider’s assistance at the time of deployment, but can take the place of routine management functions, potentially providing some of the same functions that a managed service offers, but through use of a preset, programmed interface.

In a managed service, providers can leverage these automation platforms, but typically offer added assistance that can include a variety of services, typically centered on either operating system (OS) management or application management.

OS management can include:

- Patching
- backup and restoration
- security
- compliance
- testing

Application management can include:

- service provisioning
- change management
- application backup and recovery
- lifecycle management

Who’s Managing the Managed Cloud Services?

As noted, a variety of provider types offer managed cloud services.

IT Providers – IT providers are jumping into the cloud with both feet; especially those that formerly relied on hardware sales as the bulk of their business. Many IT firms are developing strong cloud offers to replace waning hardware sales; and these services are quickly becoming core to many

IT service portfolios. For example, IBM has recently invested significantly in its cloud products and services. Similarly, Oracle is leveraging the cloud and providing managed services that specifically support to its own portfolio of application, database, and communications services. Such firms often offer services through the entire cloud stack, from infrastructure to platforms to software applications. Some limit their expertise to supporting a suite of legacy solutions, while others are expanding their portfolios to mitigate decreases in traditional IT sales.

Hosting or Colocation Providers – Hosting and colocation providers bring a different set of core competencies to the cloud market. These providers have long worked to optimize the data center, and have expertise in housing and managing the infrastructure and services of their clients. Cloud is not typically their native capability, but rather a result of ongoing data center optimization. While these providers offer strong proficiency in the managed services realm, moving beyond managed hosting and colocation models to fully optimized cloud solutions can be a difficult transition to make. Partnerships with native cloud providers can help these providers increase their cloud success, if they have not expanded their portfolio to include their own cloud services.

Native Cloud Service Providers – Native cloud providers typically have the strongest core cloud service offers, because they manage only their own services. Managing their own core services for customers can be a natural evolution of the product offer: they know how the service is engineered and understand best how to optimize the service to meet a set of stated goals. However, they may not always have the necessary support structures to handle value-added aspects of service management, like security, compliance, and data migration. These functions can be more challenging for cloud providers in a managed service environment; but addition of orchestration platforms can mitigate this challenge, and create a solid managed cloud service.

Managed Service Providers – Many legacy value-added resellers (VARs), system integrators, solution providers, and consultants have now embraced an independent managed service provider role, acting as channel partners that handle IT sales to small and mid-sized businesses. Driven by a desire to supplant declining hardware sales and software licensing with recurring revenue from cloud services, **MSPs often specialize in more than one provider whose services complement one another, so that the MSP acts as a trusted advisor offering vendor-agnostic services.** MSPs may also provide platform services to help automate management of routine cloud services across multiple providers. In this model, the MSP is responsible for maintaining consistent quality and insuring that SLAs are met. MSPs offer the ability to aggregate cloud services from a variety of providers, while providing value-added functionality across all workloads. MSPs can help prevent vendor lock-in and create the best environment, regardless of provider, with services that add value to the customer.

How Automated Intervention Changes Managed Cloud Services

The definition of managed cloud services presumes that providers are leveraging the latest generation of cloud orchestration and automation platforms that optimize cloud services. With a sophisticated platform, IT can set specific policies for such functions as provisioning, security, compliance, and lifecycle management, allowing tasks to be carried out with little manual intervention.³

³ Frost & Sullivan Study CC 3-7, *Powering the Global Enterprise: How Software-Defined Data Centers Will Transform IT*, October 2013.

Automation guides the building and deployment of new infrastructure, applications, and desktops. The most efficient way to enable the platform is to create policies that are based on repeatable best practices and that adhere to corporate rules for security and compliance. The most powerful platforms automate a large number of tasks, while supporting flexibility through customizable templates.

Operations management offers insight into the health, efficiency, and compliance of the infrastructure environment. Administrators using a management platform when administering their cloud can optimize network traffic, manage resources based on traffic and usage, and ensure the integrity of the environment, automatically, using easy-to-understand dashboards, infrastructure maps, and management panels. Pre-set policies also enable allocation changes based on current conditions in the cloud—like traffic spikes or increased usage of a particular application.

Business management provides clear, transparent data about the financial aspects of running the IT environment, as well as offering best practices, based on cloud usage, that help to optimize available resources.

Automation and orchestration capabilities will have a critical impact on cloud services moving forward. Providers that integrate strong orchestration platforms into their cloud services will be able to offer stronger management capabilities at a lower price point, because the need for manual intervention will be minimal. However, as orchestration platforms become more prevalent in the cloud marketplace, and automated management capabilities increase, “managed” cloud services may not be needed; cloud services will offer automated means to achieve the same management goals without manual intervention by the provider.

Managed Cloud Providers: A View of the Market

Managed cloud services can vary as widely as the services available in the cloud universe. Nearly any service can be provider managed, versus customer managed. Frost & Sullivan has reviewed four providers in the market that represent the diverse backgrounds of managed cloud providers, as well as the variety available in managed cloud services.

Dimension Data

Traditionally considered as a services provider with strong roots in the systems integration space, Dimension Data offers an interesting twist on managed cloud services. The company’s managed cloud platform comprises several delivery models—public, managed private, and hosted private cloud—and allows customers to manage dedicated hosted resources, on-premises deployments, and consumption based infrastructure with a single orchestration layer. Dimension Data’s cloud is available in 11 data centers around the world. Private or hosted private cloud infrastructures can be interconnected to the company’s public cloud for scalability and automated capacity management.

The Dimension Data Managed Cloud Platform (MCP) infrastructure offers a 99.99 percent uptime SLA, which covers the network and the servers, as well as sub-millisecond VM to VM latency. In addition to managed infrastructure, Dimension Data offers two service levels for managing cloud-based environments.

- **TechOps:** Manages both network and infrastructure in physical, virtual, or hybrid environments. TechOps includes core system monitoring, OS patch level management and 24X7 Level 1 triage. Dimension Data reports that many of its customers are operating

hybrid cloud environments, using public cloud when possible, and dedicated infrastructure when the applications or services running are not cloud optimized.

- AppOps includes all TechOps services plus full application delivery management; including deployment, change control, database management, performance management and testing, application optimization, application layer monitoring, application availability SLA's, 24X7 support and compliance. To deliver AppOps, Dimension Data employs a staff of 70 experts to ensure that its clients' custom SaaS or ASP applications are available 100 percent of the time.

Within its managed cloud services, Dimension Data sets SLAs according to the amount of control it shares with the customer. The more control that Dimension Data is granted by the client, the greater the SLA they guarantee. Within the AppOps service, there is clear delineation of control: every process, from quality assurance forward, is handled completely by Dimension Data. Both platform-based automation and manual processes are used to manage customer applications.

Dimension Data's pricing structure is aggressive, delivering enterprise-class infrastructure and services at a price point competitive with traditional commodity cloud infrastructures.

IBM

IBM views managed cloud computing as an end-to-end service in which it provides the customer with cloud infrastructure overlaid with a set of processes that help to meet the customer's chosen SLA. Different than labor-intensive business process outsourcing or out-tasking, IBM's managed cloud services rely on an automated, controllable, portal-based environment. As with all IBM Cloud services, the managed cloud infrastructure provides the customer with a pre-defined set of standard infrastructure services that are catalogued in a web-based portal. Customers are able to activate available services, and monitor the service status through an online portal. It differs from standard cloud infrastructure in that IBM takes responsibility for meeting aggressive performance metrics.

But, unlike a typical cloud service, IBM's managed cloud services define a specific scope that IBM will administer for the customer. Currently, IBM offers managed infrastructure or managed ERP within its managed cloud portfolio.

- **Managed cloud infrastructure:** This service includes OS backup & restoration, security, compliance, and service activation. The IBM service activation process is extensive. IBM employs 135 checks at the time of service provisioning, as well as security and compliance health checks and service retirement processes.
- **Managed ERP:** IBM can also manage the infrastructure for an SAP environment or a suite of Oracle applications. In a managed ERP engagement, IBM controls the customer SLA based on the size of the environment and the application level. The customer provides the necessary data, while IBM handles backup and recovery. In essence, the managed ERP service handles what a customer's IT management staff would typically handle, but introduces greater automation into the process, to ensure the best outcome, with minimal manual intervention.

Regardless of service, IBM offers customers four SLA levels, providing a range of uptime guarantees and response times for incidents. The SLAs are structured at varying price points in order to balance the workload with the available budget.

IBM's managed cloud services are priced on a standard, monthly rate card that is based on capacity and SLAs, per VM. It is prorated for customers that engage IBM or migrate to another service mid-month; and the contract is strictly month-to-month with no lengthy commitment or onboarding costs.

Oracle

Oracle Managed Cloud Services provides comprehensive managed cloud services for Oracle hardware and software across the operations lifecycle, including deployment, management, monitoring, patching, security, and upgrade services for the entire Oracle stack.

Oracle has spent the last three years engineering its cloud automation platform, which also assists with routine environment management, based on pre-defined policies in order to provide customers with maximum efficiency in their Oracle IT environment. The company reports that it is now working on business technology management in a hybrid environment, as well as acting as a cloud broker for its managed cloud customers.

As a whole, Oracle Managed Cloud Services are engineered to handle massive transaction details in a highly secure manner. The company runs approximately 1.25 trillion business transactions per day, and peak database transactions are over 5.3 billion per hour. Oracle provides certified infrastructure configurations that are optimized for Oracle's Red Stack of cloud-based infrastructure, platforms, and applications; deployment and migration services that aid in managing migration to its cloud for new customers; and advanced analytics that enable predictive incident identification and management. Oracle Managed Cloud Services provides many security certifications to managed cloud customers, including PCI, HIPAA, Government, Identity Management and 21 DFR Part 11.

Oracle Managed Cloud customers are also afforded early patch releases, as well as enhanced issue resolution and product development roadmap input.

Oracle Managed Cloud Services operates 12 data centers on four continents, in which managed cloud services can be hosted. The company can also remotely manage systems that are hosted on a customer's premises, or in a third-party cloud facility. This offers customers greater choice to deploy cloud in the manner most comfortable to them, while still gaining the benefit of Oracle's management of the service. Oracle Managed Cloud Services can also accommodate third party software in its own environments. In such a configuration, Oracle hosts the third party software, and the customer manages it.

The company also offers functional business services which include:

- Assessment and pre-production services
- Migration
- Upgrade assistance
- Help desk
- CEMLI services
- Environment integration
- Security
- Governance and compliance

What's most unique about Oracle Managed Cloud Services is their dedication to customers' business needs and goals. Standard governance is provided by Oracle service delivery managers, who meet with the customer regularly to discuss customer satisfaction and the customer's changing needs. This enables Oracle to proactively recommend new processes or services that will help meet the customer's goals. Oracle also offers a self-service 360 degree view mobile application; this enables customers to drill down on data about their service and environment, business transaction monitoring, system utilization, and workflow automation. Oracle's Managed Cloud Services are unusual in the degree to which they rely on a shared approach to business process optimization and enhancement. After customers share their business needs and goals with Oracle, the company designs the optimal infrastructure, platforms, and applications to meet the customer's needs. It then codifies the configuration and processes as the customer's standard operating procedure.

QTS

QTS brings a tradition of managed services—primarily hosting and colocation—to the managed cloud market. QTS views managed cloud as the next step in the evolution of managed hosting.

At QTS, compliance is a critical value proposition of its managed cloud services; as such, it specializes in services for regulated enterprises—such as healthcare and financial services—as well as government customers. In addition to its general managed cloud service, QTS offers managed clouds for Enterprise and Federal Government clients. With its VMware, EMC, and Cisco-based stack, QTS has built a platform that resonates with these types of clients as they seek to transition their workloads from traditional data centers into cloud and hosted models.

Because of its keen focus on compliance, QTS provides clearly defined roles in its managed cloud environment. It generally manages “from dirt to device,” meaning that the physical facility, network connectivity, and all data center components—including servers and VMs—are under its purview. At the OS level, responsibility may be designated to the customers, if they so choose; or QTS can handle the OS for them. When QTS manages the complete environment, including the application level, and guarantees performance through SLAs, the customer's IT team can request administrative access into their own environment. Customers are never granted access to shared resources in the multi-tenant cloud environment. QTS will also handle some application management, such as customer databases, on a custom basis, if requested by the customer.

QTS supports its managed cloud infrastructure with a 99.999 percent uptime standard, excluding planned maintenance windows. QTS' cost structure harkens back to the managed hosting model, with three-year terms preferred. The company can, however, accommodate customers that want greater agility to scale their environment. In such instances, QTS contracts a base level of services, and enables scalable and metered, on-demand bursting, as needed.

QTS' compliance-focused managed cloud attracts customers seeking to push mission-critical workloads to the cloud, which is somewhat unique among non-workload specific managed cloud services. A common use case is helping independent software vendors (ISVs) who seek to deliver their software as a service, and therefore host on QTS' Managed Cloud. QTS is also well-equipped to handle hybrid cloud configurations. QTS reported its belief that Hybrid cloud is overwhelmingly the common mode of adoption for its target customers who value compliance, services, and have specific needs and preferences for where their data resides.

Frost & Sullivan The Last Word

As cloud computing continues to evolve, customers are moving from a workload-by-workload “test” of the cloud to viewing it more as a strategic IT delivery model. And yet, with the numerous service options, configurations and providers available, complexity drives many businesses to seek out the expertise of a trusted advisor to help them devise and deploy a cloud strategy, and to manage it moving forward. As such, many providers have augmented their cloud portfolios with managed cloud offers to assist customers that desire more cloud expertise than their IT department offers.

Managed cloud offers provide infrastructure as well as services that are available within the cloud stack (the function); and incorporate automation, orchestration, and proactive, manual monitoring that manage the cloud application or infrastructure for customers.

While the core of a managed cloud offer remains the same, the services that are able to be managed in the cloud are as numerous as the providers in the cloud marketplace. Providers that embrace hybrid cloud configurations and that can offer management tools that traverse cloud environments are filling a critical gap as businesses increasingly embrace a hybrid strategy. Likewise, providers that can aggregate third-party services, or become a cloud service broker, offering managed infrastructure supported by a suite of cloud-based applications and services that are vendor-agnostic, are poised for success in the increasingly complex service environment.

It is interesting to note that as cloud computing evolves, the level of manual intervention required by providers to offer a managed cloud service is dwindling. Managed services formerly offered a strong human component, where an actual person proactively monitored the service and suggested or made tweaks to ensure that SLAs were met and customer satisfaction was high. But, as cloud orchestration and automation platforms enable many routine management functions, as well as proactive changes based on real-time operational metrics, the need for human intervention becomes less and less. Eventually, it is plausible that managed cloud services will simply be cloud services, based on the nature of cloud management tools available in the market.

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