IBM Software
Thought Leadership White Paper

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Simplifying cloud management and data center automation

Accelerate the delivery of cost-effective cloud services with IBM Cloud Orchestrator

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Introduction

Although 90 percent of global CEOs view the cloud as critical to their business plans,[1] the management of cloud infrastructure is no simple matter. Today's IT organizations are often tasked with supporting public, private and hybrid clouds within an existing data center that already delivers mission-critical services. Cloud administrators have to incorporate emerging technology into existing systems, while also keeping costs low and maintaining service levels. It's a complex juggling act that's increasingly challenging to sustain for the long term.

To deliver ongoing value in the cloud, organizations need to be able to react quickly to changing demands, scale resources on the fly, and accelerate performance across diverse resources. In fact, in a recent survey of Fortune 1000 IT leaders, 58 percent placed faster delivery of IT services in their top three priorities—and a full 83 percent didn't believe they could deliver services fast enough.[2] IT staff need automated solutions for deploying critical workloads and services. Development teams need standardized middleware configurations; otherwise, it can take months for applications to move into production. In addition, operations personnel need interoperable solutions that can help alleviate the risk of instability.

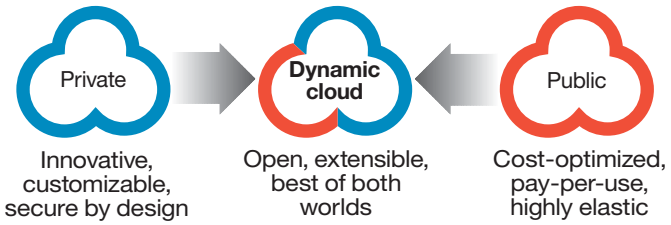
This white paper explores the value of standardizing and automating cloud services through a flexible orchestration engine. It also looks at how IBM® Cloud Orchestrator, formerly known as IBM SmartCloud® Orchestrator, provides an integrated cloud automation platform that can help orchestrate the development, deployment and management of cloud services. As a result, organizations can reduce IT costs and accelerate the overall time-to-market of strategic initiatives.

The challenges of cloud management

Organizations around the world are moving beyond traditional client/server-based architectures toward much more dynamic and agile environments enabled by cloud, big data, social technologies and mobility. IDC research indicates that the typical North American IT decision maker expects the combined cost of buying and managing public and private cloud resources will consume approximately half of his or her budget by 2016.[3] Yet 76 percent of business users, IT leaders and cloud vendors expect hybrid clouds to be the core of their cloud strategy, overtaking public and private clouds in the next five years.[4]

Simultaneously, converged systems that combine servers, storage, networks and software are gaining traction. IDC expects the market for converged systems to grow at a compound annual growth rate of 54.7 percent from USD2 billion in 2011 to USD17.8 billion in 2016.[3] So the challenges are not going to slow down. In addition to managing traditional applications—as well as mainframe-based workloads—IT staff will have to manage critical services running on virtual servers, converged systems, and *dynamic* public, private and hybrid clouds. Dynamic clouds combine the innovation of private clouds with the efficiencies of public clouds, supported by a mix of vendors and best practices that can adapt to changing business conditions.

Dynamic clouds: The future of cloud computing



To help manage complexity in a cloud-enabled data center, organizations need end-to-end automation to accelerate delivery of IT services while reducing costs. The initial provisioning of resources is not enough. Orchestration solutions can help organizations:

- Reduce the number of disconnected management tools in use
- Implement common processes and tools for deploying services
- Improve productivity to enable faster responses to market demands
- Reduce error-prone manual workloads

Cloud orchestration to the rescue

Orchestration solutions enable organizations to coordinate—that is, *orchestrate*—the automated deployment of data center resources, cloud-enabled business processes and cloud services. They empower IT staff to create, maintain and reuse infrastructure, middleware and application templates across heterogeneous environments, whether automating just one business process or the entire data center. These templates are a way to deliver application topologies with more efficiency than manual scripting, and they provide building blocks for standardizing processes and creating repeatability for faster service delivery.

Behind the scenes, orchestration solutions should also integrate with existing development and service-management workflows. These solutions should support plug-and-play integration via application programming interfaces (APIs) and development tools.

Many organizations already address their orchestration needs with open-source technologies, such as Chef and Puppet, combined with traditional automation tools from systems management vendors. However, these disjointed approaches can only solve pieces of the overall orchestration puzzle.

One of the biggest gaps in many of today's orchestration solutions remains taking the cloud applications into production, which requires connecting to existing enterprise tools and adhering to existing policies. A complete orchestration solution should automate the integration with management tools, business systems, and compliance applications that are required to move software into production.

Introducing IBM Cloud Orchestrator

IBM Cloud Orchestrator can make complex cloud services easy to manage. Built on a foundation of open standards, IBM Cloud Orchestrator provides common cloud services for compute, storage and network resources, while also supporting multiple hypervisors and multi-vendor platforms. It's designed to simplify and speed the creation of process workflows that can help shorten deployment and change processes in the cloud.

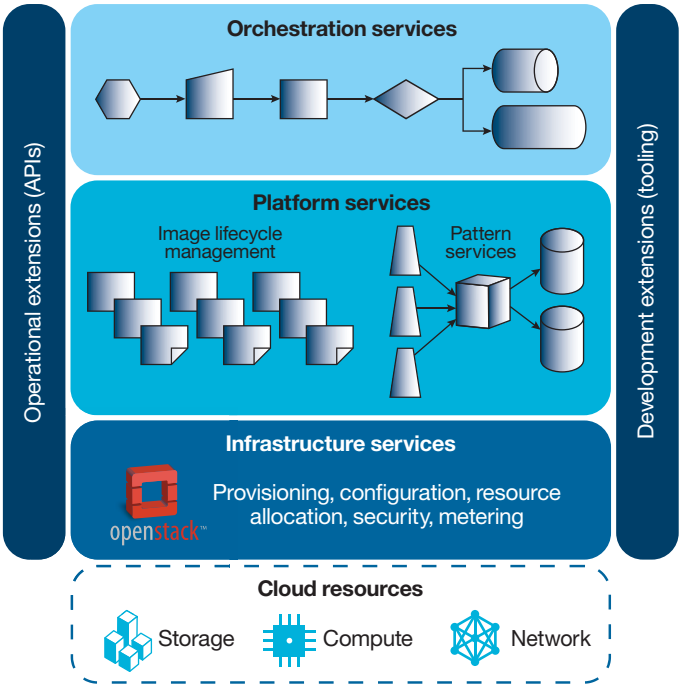
Since it's based on open standards—including OpenStack and community-provided best practices—IBM Cloud Orchestrator can not only easily integrate with an existing environment, but it can also scale and adapt to changing needs. The IBM solution supports three tiers of cloud management services:

- **Infrastructure services**: Integrate configuration, provisioning, resource allocation and capacity monitoring across highly flexible, heterogeneous environments
- **Platform services**: Simplify deployment and lifecycle management of middleware and application patterns, ideally with support of the Topology and Orchestration Specification for Cloud Applications (TOSCA) standard from the Organization for the Advancement of Structured Information Standards (OASIS)

- **Orchestration services**: Automate setup and deployment of complex IT tasks—as well as specific cloud-deployed business processes—leveraging existing skills, processes and technology artifacts, ideally with support of the Open Services for Lifecycle Collaboration (OSLC) standard from OASIS

Plus, IBM Cloud Orchestrator is supported by value-added APIs and tooling extensions, which enable organizations to easily customize cloud services to meet their unique needs.

Common cloud management services



Using IBM Cloud Orchestrator, Wuxi Cloud can support China's growing e-commerce market with cloud deployments in days instead of weeks. "We've become a pioneer in using the cloud to ensure that our customers get service quickly, affordably and accurately," says Paul Lu, CEO at Wuxi Cloud.

Some key advantages of using IBM Cloud Orchestrator include:

- **An open and scalable cloud platform**. IBM Cloud Orchestrator can deploy multi-node applications—not just servers. Organizations can choose whether to pay for licensing from a third-party vendor or use open-source, OpenStack technology.
- **End-to-end automation**. IT staff can leverage pre-built templates—including templates for the Chef automation platform, IBM PureApplication® System, IBM Power Systems™, IBM System z® and SoftLayer[5] solutions—to help automate the provisioning, configuration and lifecycle management of cloud resources. The orchestration technology can help coordinate isolated tasks across heterogeneous compute, storage and network domains.
- **A marketplace for reusable technology**. Organizations can take advantage of a complete ecosystem of IBM services, business partners and open-source communities, and easily integrate the solutions with OpenStack, Chef and TOSCA. The marketplace contains a rich set of ready-to-use automation packages, as well. There are currently more than 250 templates, or "patterns," available, and the list is constantly expanding.

Real-world results of cloud orchestration

Organizations around the world are using IBM cloud solutions to simplify and accelerate the delivery of critical services. Some specific results include:

- **A global bank used IBM cloud solutions to cut server provisioning times from 45 days to less than 20 minutes, speeding development cycles and allowing the company to more rapidly put new features and enhancements in the hands of customers.**
- **A Dutch cloud services provider reduced its administrative workload by 70 percent with IBM cloud solutions, vastly improving efficiency through dynamic provisioning and self-service capabilities.**
- **Another cloud services provider decreased its labor costs by 60 percent and saved employees an estimated 35 - 40 hours every month by enabling customers to use IBM cloud solutions to provision their own hosting services.**

IBM Cloud Orchestrator empowers cloud administrators to use a single pane of glass to design and deploy services, monitor capacity and performance, control updates and migrations, and recover unused resources as needed. It also provides self-service functionality that can help IT staff deliver resources to end users more quickly and consistently.

Optimized cloud management

IBM Cloud Orchestrator enables organizations to build and manage a workload-optimized dynamic cloud, which helps improve the utilization of IT resources—and cuts licensing and hardware costs. The self-service portal enables end users to request services with ease. In addition, the portal allows an IT administrator to mask the complexities of service provisioning by automating the configuration and integration of existing IT tools such as network devices, firewall rules and load balancer policies during service deployment.

To help meet the most stringent service level agreements, IBM Cloud Orchestrator also provides a single interface for monitoring the health and performance of the cloud environment. IT staff can monitor both virtual and physical infrastructure, including network and storage resources. Also, cost management features are available to display chargeback costs for the managed technology, and organizations can use policy-driven workload placement to help optimize performance and security.

IBM Cloud Orchestrator, in addition, can help improve ongoing cloud management by enabling administrators to:

- Manage the lifecycle of cloud services, from deployment to patch management and security compliance, to help reduce risks
- Automate change management, including service requests and approval workflows, to help increase the integrity of cloud services that are deployed, updated or deleted
- Leverage an integrated approach to service management, linking service requests to asset and change management, to help improve quality of service and business resiliency

Conclusion

Many organizations need the flexibility, security and control that a private cloud offers, but they don't want the complexity or expenses that come with many cloud implementations. IBM Cloud Orchestrator can help organizations deliver ongoing value in the cloud. It enables cloud administrators to react quickly to changing demands, scale resources on the fly, and accelerate performance across diverse applications, infrastructure and management tools.

IBM is driving the development of open, interoperable cloud architecture to help reduce vendor lock-in, simplify integration and enable client innovation in the cloud. In fact, IBM has led thousands of successful cloud engagements and has incorporated best practices into the comprehensive portfolio of IBM cloud solutions. IBM provides enterprise-ready, resilient, OpenStack-based cloud solutions that support multiple delivery models, platforms and workload types—helping to minimize risk and deliver value for the long term.

For more information

To learn more about IBM Cloud Orchestrator, please contact your IBM representative or IBM Business Partner, or visit: **ibm.com**/software/products/en/smartcloud-orchestrator

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[1] IBM Institute of Business Value, "IBM 2012 Global CEO Study: Leading Through Connections," May 2012. http://www-935.ibm.com/services/us/en/c-suite/ceostudy2012/

[2] Barry Crist, "Enterprise IT Is Too Slow for Business Today (Pt. 1)," *Chef Blog*, February 13, 2014. http://www.getchef.com/blog/2014/02/13/enterprise-it-is-too-slow-for-business-today-pt-i/

[3] IDC, "IDC Technology Spotlight: Orchestration Simplifies and Streamlines Virtual and Cloud Data Center Management," January 2013. http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&htmlfid=TIL14057USEN

[4] North Bridge Venture Partners and GigaOM Research, "The Future of Cloud Computing," October 2013. http://www.northbridge.com/2013-future-cloud-computing-survey-reveals-business-driving-cloud-adoption-everything-service-era-it

[5] SoftLayer Technologies was acquired by IBM in July of 2013.

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