ESG Lab Validation

BMC's Cloud Lifecycle Management

Full Stack Service Provisioning, Security, and Compliance Across Cloud and Traditional Environments

By Tony Palmer, Senior ESG Lab Analyst

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ESG Lab Reports

The goal of ESG Lab reports is to educate IT professionals about data center technology products for companies of all types and sizes. ESG Lab reports are not meant to replace the evaluation process that should be conducted before making purchasing decisions, but rather to provide insight into these emerging technologies. Our objective is to go over some of the more valuable feature/functions of products, show how they can be used to solve real customer problems and identify any areas needing improvement. ESG Lab's expert third-party perspective is based on our own hands-on testing as well as on interviews with customers who use these products in production environments.

Introduction
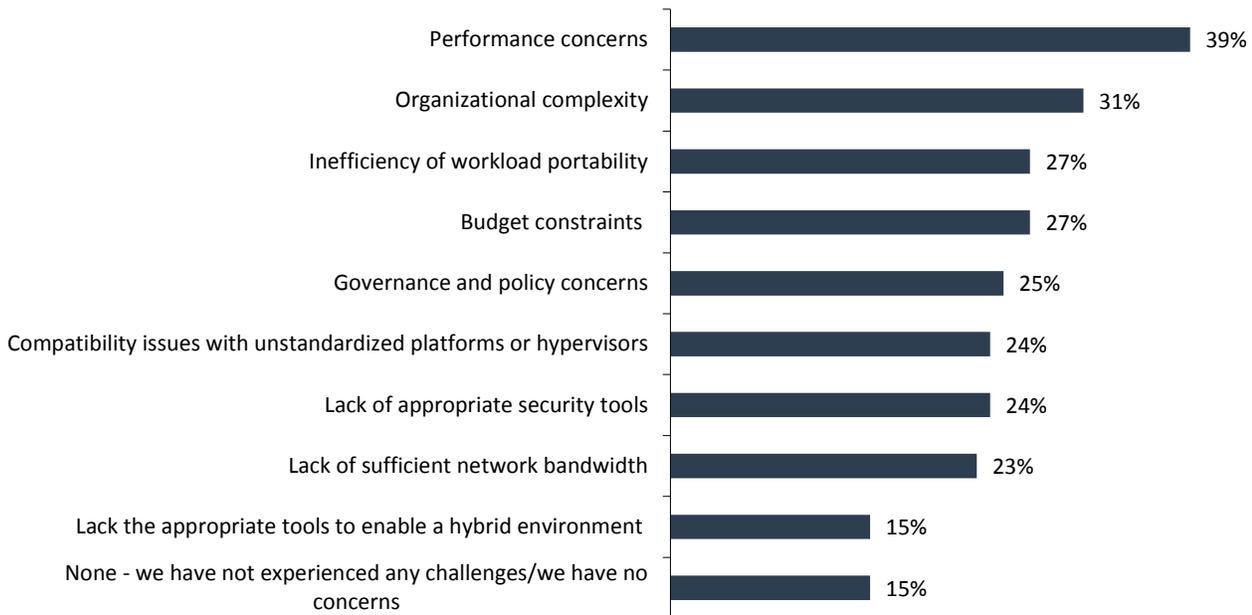
This ESG Lab Technical Validation will focus on the operational value of BMC's Cloud Lifecycle Management. The goal is to demonstrate and validate business value for customers in three key functionality areas: Full stack application environment provisioning, security and compliance (including remediation of non-compliant services), and decommissioning or consolidation of unused or underutilized resources.

Background

IT organizations are increasingly challenged to deliver IT services precisely when and how they're needed. Business users seek faster, customized services and are going around IT to source infrastructure themselves from the public cloud. This brings additional risk to IT's already difficult task of managing security and compliance across increasingly more heterogeneous cloud and legacy data center infrastructures. In fact, when asked to name challenges with moving servers, apps, and data in hybrid cloud environments, 25% of organizations surveyed by ESG reported governance and policy concerns.[1] Other concerns called out include the usual complement of performance, complexity, budgeting, and security.

Figure 1. Challenges Moving Virtual Servers, Applications, and/or Data Between On-premises Resources and Public Cloud Services

In general, which of the following challenges has your organization experienced since – or what concerns does it have about – moving virtual servers, applications, and/or data between on-premises resources and public cloud services? (Percent of respondents, N=181, multiple responses accepted)

Performance concerns	39%
Organizational complexity	31%
Inefficiency of workload portability	27%
Budget constraints	27%
Governance and policy concerns	25%
Compatibility issues with unstandardized platforms or hypervisors	24%
Lack of appropriate security tools	24%
Lack of sufficient network bandwidth	23%
Lack the appropriate tools to enable a hybrid environment	15%
None - we have not experienced any challenges/we have no concerns	15%

Source: Enterprise Strategy Group, 2016

Modern application development and deployment needs to be built around the principles of virtualization often addressed via containerization and microservices: agility, which enables adaptability and responsiveness to business needs; scalability, which is the ability to match capacity to demand; and manageability, which means securely supporting policy-based orchestration and day-two operational support across the lifecycle.

Manageability is by the far the most challenging of these principles because the overall increase in infrastructure flexibility and responsiveness is forging a new dynamic form of IT, in which new approaches to managing, trouble-shooting, and

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[1] Source: ESG Research Report, *The Cloud Computing Spectrum, from Private to Hybrid*, March 2016.

monitoring systems and applications are now required while embracing the principle of immutable infrastructure. Immutability is effectively changing the management paradigm from "update" to "replace," which impacts patching, monitoring, and operations. Software-defined storage and networking and the availability of hyperconverged systems mean a full-stack approach to system management is now a necessity.

BMC's Cloud Lifecycle Management

BMC's Cloud Lifecycle Management is a cloud management platform designed to accelerate and automate the provisioning of multi-tier IT services across cloud and non-cloud platforms. Cloud Lifecycle Management integrates with IT processes like change management, the configuration management database (CMDB), compliance, and patching to manage risk and reduce cost. Organizations use Cloud Lifecycle Management to maintain essential governance and compliance for mission-critical workloads while enabling greater agility for the business to provide continuous delivery of digital services.

Figure 2. BMC's Cloud Lifecycle Management
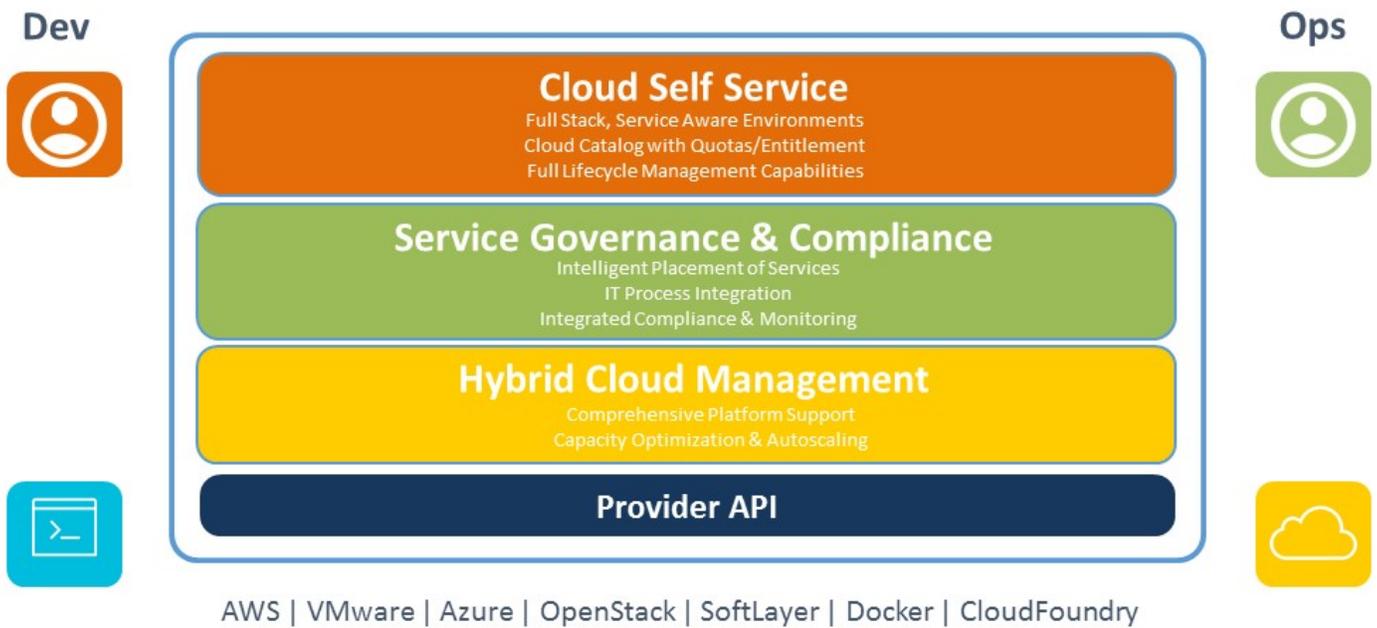
Source: Enterprise Strategy Group, 2016

Cloud Lifecycle Management offers a self-service portal to enable business users to request configurable services without requiring IT intervention regardless of infrastructure, platforms, or applications. The portal integrates with BMC's MyIT to provide a single service catalog for all IT service requests. The provisioning, ongoing management, and de-provisioning of full-stack business services is provided by Cloud Lifecycle Management's blueprint technology, which also automates the use of application container technologies to support agile development and deployment. Built-in integration with change management processes and updates to the CMDB ensure IT service management (ITSM) governance across the full lifecycle of the cloud service. Regulatory and security compliance policies can be automatically applied to the service at the time of provisioning, and then kept compliant through automation of patching, configuration management, and vulnerability remediation. Cloud Lifecycle Management is platform neutral, enabling organizations to deliver services across any platform based on workload requirements across a wide range of infrastructures and public clouds. Cloud Lifecycle Management also monitors service health and can auto-scale resources up or down per predefined service

requirements to minimize disruption in services with proactive, actionable failure notifications and recommended remediation steps.

Cloud Lifecycle Management is built to use two general categories of resources: data center and cloud. Data center infrastructure resources are the physical or virtual resources on which services are hosted, like servers, database systems, and networks. Cloud resources are virtualized abstractions of infrastructure resources. Examples of cloud resources include compute containers, network zones, and virtual firewalls. Both categories include four *types* of resources: compute, network, storage, and platform-as-a-service (PaaS). Cloud Lifecycle Management can provision to a plethora of private and public cloud providers, including but not limited to: Docker Containers, AWS Classic, Amazon CloudFormation templates, VMware vCloud, Azure Classic, Azure Resource Manger templates, IBM SoftLayer, Pivotal Cloud Foundry, and OpenStack. Storage providers and PaaS providers are also supported. Cloud Lifecycle Management also provides a quick start wizard for rapidly standing up a ready-for-use cloud environment for AWS and VMware. Other cloud environments such as MS Azure, OpenStack, Savvis, and Terremark can be provisioned with minimal configuration.

ESG Lab Validation

This ESG Lab Validation report presents hands-on evaluation and testing results of BMC's Cloud Lifecycle Management and explores how Cloud Lifecycle Management enables delivery of flexible, customizable digital services while maintaining a structured, controlled, yet dynamic IT environment. ESG Lab also looked at how Cloud Lifecycle Management automates and accelerates planning, governance, provisioning, operation, administration, maintenance, and reclamation of digital services.

Building a Full Stack Application Environment

ESG Lab began by walking through the provisioning and deployment of a full stack application environment in a simulated enterprise. First, ESG Lab logged in to BMC's Cloud Lifecycle Management portal, as seen in Figure 3. Users can also interact with Cloud Lifecycle Management through BMC's MyIT via a browser interface.

Figure 3. BMC's Cloud Lifecycle Management Cloud Administrator Dashboard
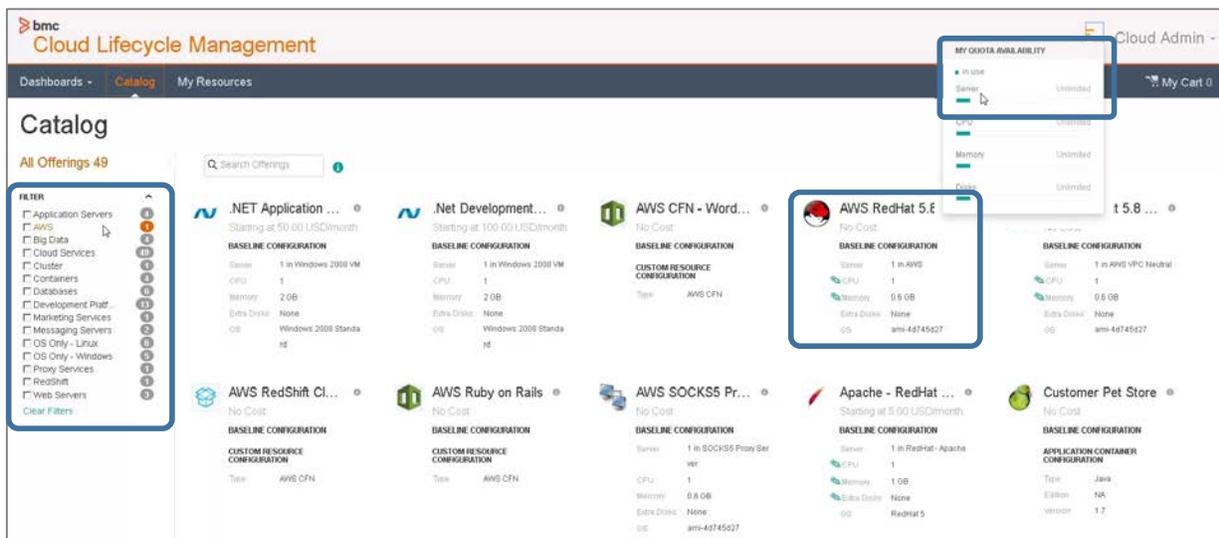
Administrators have access to general dashboard info, including value metrics, the health of Cloud Lifecycle Management components, and licensing. The Catalog only displays the services that the user is permitted to access and *My Resources* represents the resources the user has provisioned. An administrator can see everything; a tenant administrator can see

anything inside her tenant; and an end-user would only be able to see resources assigned specifically to him. Users can also see their quotas, or how much of their allowed resources are in use. To enable faster implementation, users can request services on behalf of other users, and manage ownership of the service.

ESG Lab Testing

ESG Lab started in the service catalog, as an end-user would, to request a full stack cloud service by clicking on **AWS RedHat 5.8**. The basic information required to provision a service is standard across most services. As seen in Figure 4, a user would enter the name of the service, enter a server username and password for the administrator of the service, and configure whatever request-time parameters are exposed to that user for that service. When selecting the service, the user has visibility into the projected cost and can see that the cost can adjust based on different user-defined configurations such as added memory or disk. This initial visibility helps users understand the financial impact to the business—and its budget—for different choices.

Cloud Lifecycle Management allows extensive customization of services to allow non-technical users to provision and deploy services with a minimum of technical decision making while simultaneously enabling technically savvy users to specify the detailed configuration of services that have varying requirements. Cloud Lifecycle Management also offers the ability to set custom "day-two" options that users can adjust on a service after it is provisioned, like memory, CPU, monitoring, etc.

Figure 4. Requesting a Cloud Service
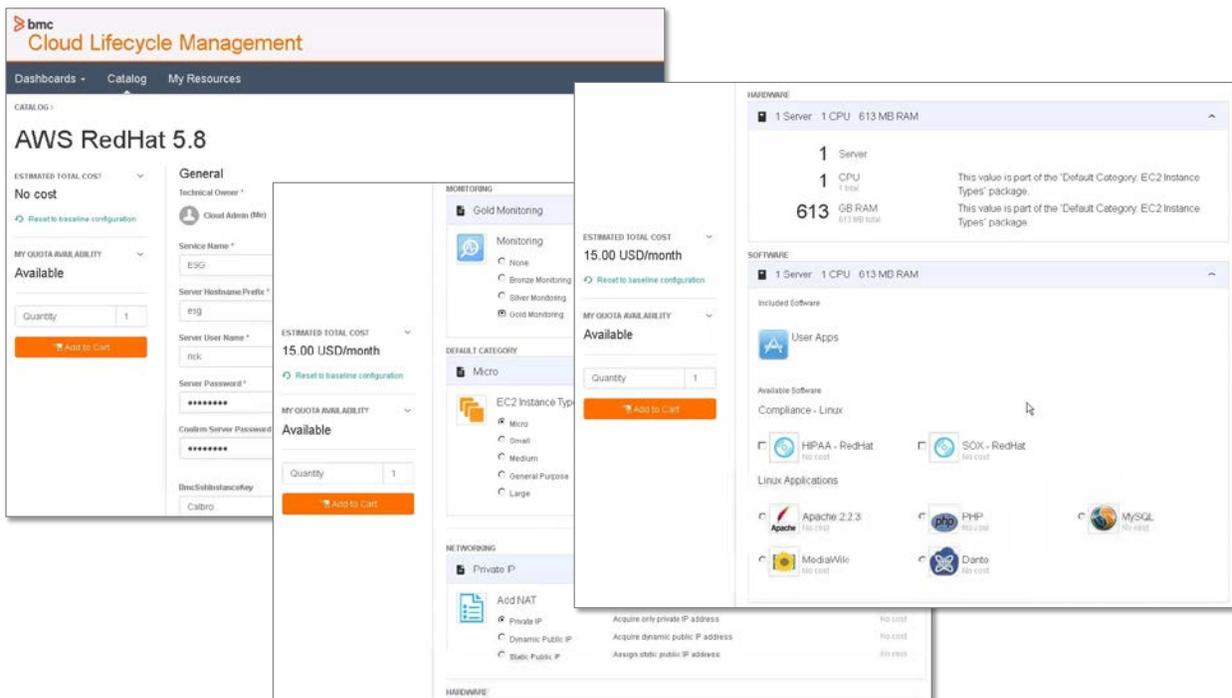
ESG Lab selected the appropriate compliance option for this service by simply checking a box, as seen in Figure 5.

Figure 5. Requesting a Cloud Service—Adding Compliance
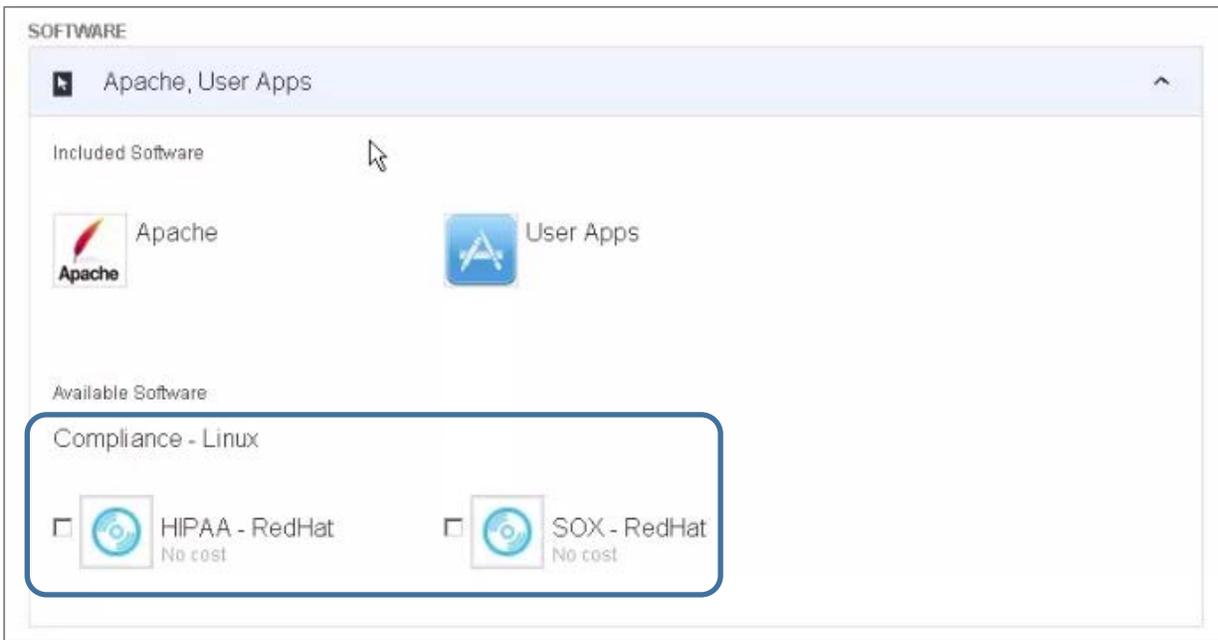
ESG Lab clicked *Add to Cart*, then checked out and the service was provisioned and built. Clicking on *My Requests* shows the service we requested with the status of "waiting for change approval" (see Figure 6).

Figure 6. Requesting a Cloud Service—Waiting for Change Approval
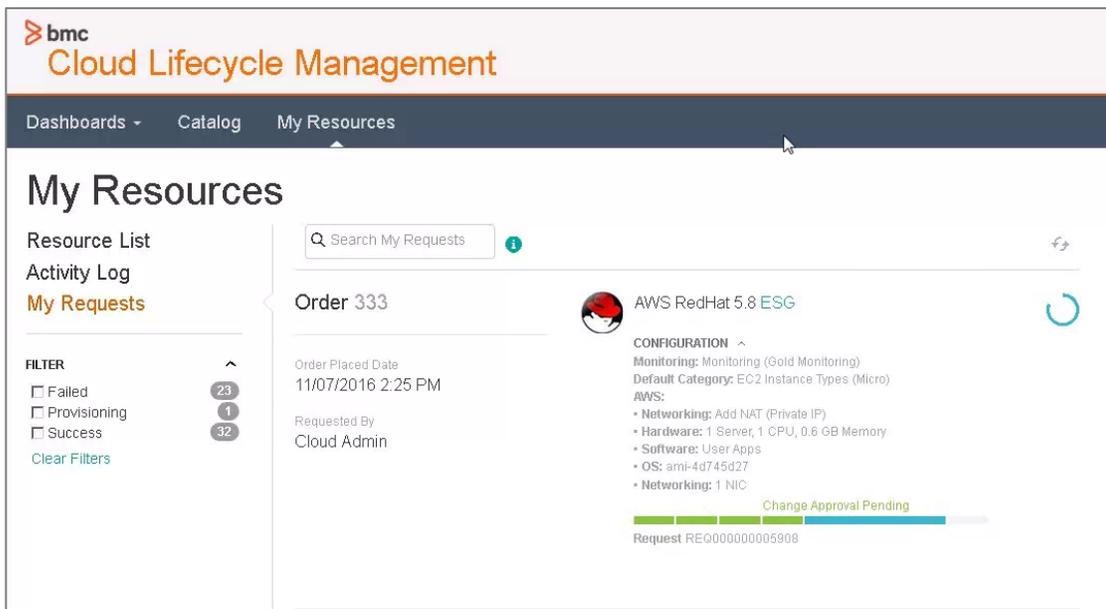
In this environment, Cloud Lifecycle Management is integrated with BMC's Remedy for IT Service Management (ITSM), so a Remedy user would get a notification when another user requests a new service or a change to an existing service— triggered per the organization's policies—and the approver would log in to Remedy to review and approve the change.

As **Figure 7** shows, clicking on *Resource List* showed the service we requested running in AWS. Information in the resource view includes compliance status and decommission date, if one is set. If the service was made up of multiple servers, each server would be evaluated and the compliance percentage would reflect what percentage of resources are compliant.

Figure 7. Viewing the Running Service
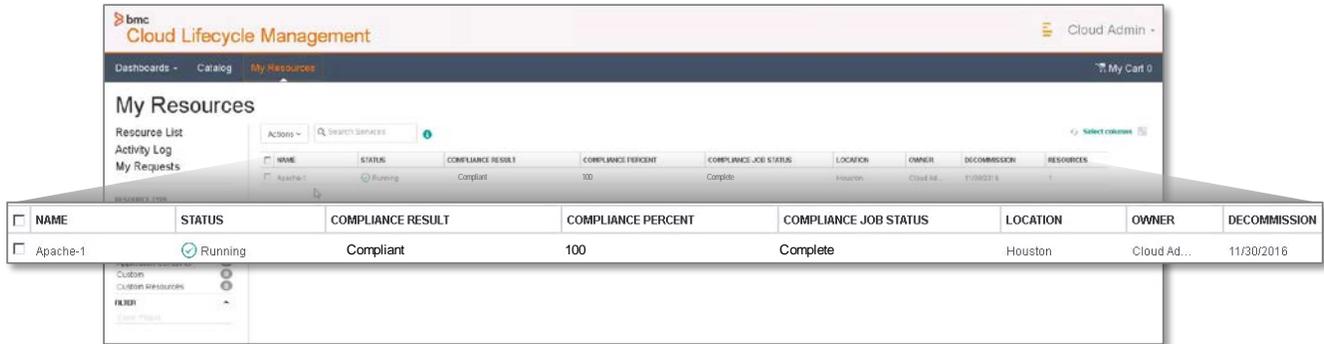
Cloud Lifecycle Management tracks cloud assets in the CMDB so everything is accounted for as it would be in a local data center. With the speed of movement of cloud assets, tracking cloud assets is even more important than in local data centers. It's important to note that customers often add metadata to their services to be able to add information that can be used to classify the services for chargeback purposes or to set a decommission date for services that have a known lifespan. Users can add any metadata that is appropriate to their business.

Next, ESG Lab looked at monitoring. As seen in **Figure 8**, Cloud Lifecycle Management monitoring rules enable organizations to proactively scale services up or down automatically. Services can be scaled vertically, adding or removing CPU or memory, or horizontally, adding or removing servers—or users can specify a custom-defined action.

Figure 8. Configuring Automatic Scaling with Cloud Lifecycle Management
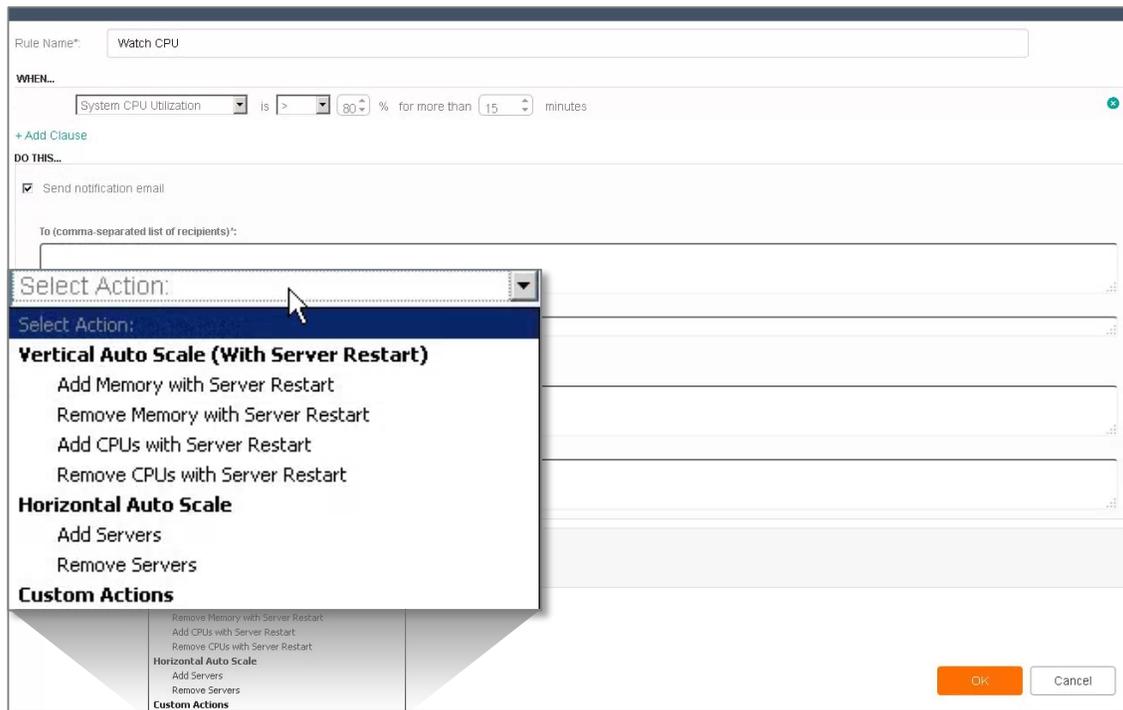
This enables organizations to automate the de-provisioning of under- or unutilized servers or services.

Switching to the dashboard view, ESG Lab next explored administrator dashboard options (see Figure 9). The *Value* dashboard—filterable by tenant—gives a view of the current load on the infrastructure. Organizations can see what is running, what's stopped, peak server load, provisioned vs. decommissioned systems and services, and others. The *Health* dashboard gives a snapshot view of the components of Cloud Lifecycle Management. Users can easily drill down into details of each component to check the status.

Figure 9. Cloud Lifecycle Management Administrator Dashboard Options
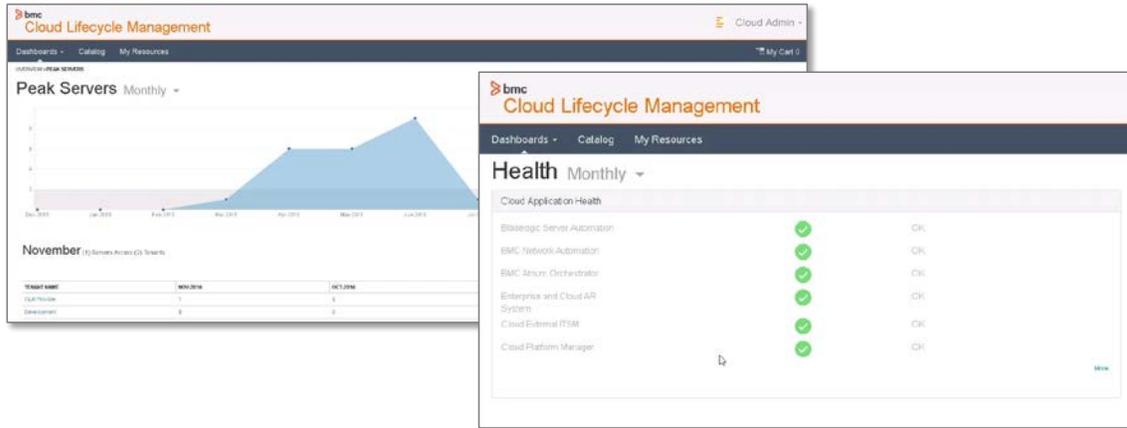
Finally, ESG Lab delved deeper into administration of the Cloud Lifecycle Management environment. Clicking on the bar on the left, pulled out the *Workspaces* menu, as seen in Figure 10. Cloud administrators would most often work from the bottom up to build a cloud environment.
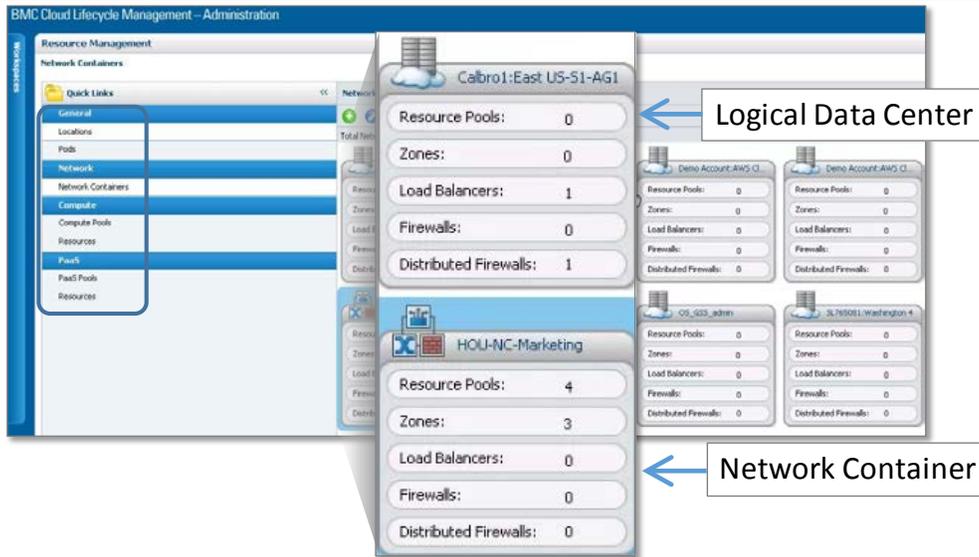
Figure 10. The Cloud Lifecycle Management Administrator Dashboard—Workspaces
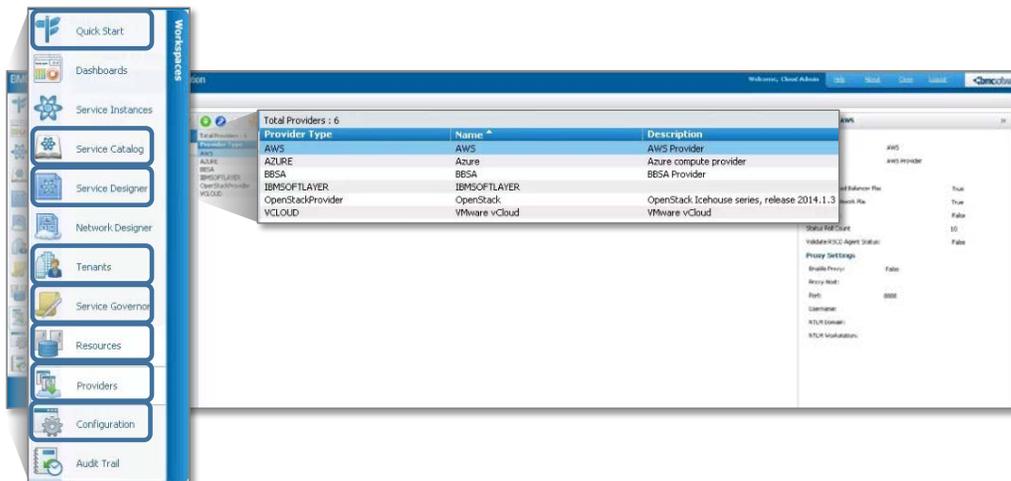
Configuration covers global configuration parameters, default settings, and ITSM integration settings. *Providers* defines how Cloud Lifecycle Management talks to the various cloud providers and hypervisors for compute, network, etc. Cloud Lifecycle Management onboards the resources of the providers as network containers or logical data centers, managed under *Resources*. *Service Governor* is the mechanism for implementing policies on specific services, and policies can govern any resource used by a service: infrastructure, provider, or geography, for example. *Tenants* define entitlements: quotas and cost centers, for example. *Users* are defined inside tenants with individualized quotas and cost centers. *Service Designer* is how Cloud Lifecycle Management creates application, server, and service blueprints—reusable components that can be combined to make up customized services. In traditional IT, hundreds of templates would be created with all

the possible combinations of components and services that IT could offer. Cloud Lifecycle Management's **Service Blueprints** allow for user configuration at selection time, reducing the need to create and maintain blueprints for every possible deployment configuration. Blueprints are exposed to users via the **Service Catalog**, which describes the services to users including pricing, request options, etc. The **Quick Start** option enables administrators to stand up a complete cloud environment in a matter of minutes using configurable default parameters.

Figure 11. BMC's Cloud Lifecycle Management Administrator Dashboard—Infrastructure

Cloud Lifecycle Management can granularly manage on-premises and cloud resources (see Figure 11). Cloud Lifecycle Management logically groups hardware resources by **Location**, and the hardware in the location is divided into **Pods**, which are segmented into **Network Containers**. **Zones** are subnets inside **Resource Pools**. For cloud resources, the network container level is referred to as a **Logical Data Center** (LDC). Cloud Lifecycle Management allows organizations to tag resources so that when a user requests a service that needs to go on Azure, for example, Cloud Lifecycle Management knows which LDCs are eligible candidates. Cloud Lifecycle Management also allows organizations to map resources to specific tenants.

💡 Why This Matters

Rapid, precise delivery of IT services where and how they're needed is a challenge in today's increasingly hybridized IT environments. Business users seek faster, customized services and are going around IT to source infrastructure themselves from the public cloud, often heedless of compliance and risk. Thirty-one percent of organizations surveyed by ESG reported organizational complexity as a challenge in moving workloads between cloud and on-premises environments.[2] What is needed is a solution that provides business users with the same dynamic speed and ease of use and provisioning as going directly to the public cloud while maintaining a structured and controlled IT environment.

Traditional IT provisioning can take weeks or months with multiple manual steps, including but not limited to specifying and acquiring hardware, validating OS and application software versions and compatibility, security and compliance reviews, QA, and actual installation. BMC's Cloud Lifecycle Management automates the process and reduces this time drastically, enabling immediate monitoring of the entire service and easy modification of the service after deployment to solve "day-two" issues without burdening IT. ESG Lab talked with customers who consistently reported verifiable time savings in excess of 90%. Prebuilt compliance and security checks make verifying and reporting on vulnerabilities and compliance with

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[2] Source: ESG Research Report, *The Cloud Computing Spectrum, from Private to Hybrid*, March 2016.

regulations such as SOX simple, saving time and effort. ESG Lab provisioned and deployed two services, one in the public cloud and one in the data center—with full monitoring and compliance—in less than ten minutes.

Streamlined Operations and Economic Value

ESG Lab validated the economic and operational value of streamlining operations and decommissioning unused or underutilized services to save resources, reduce capital expenditures, and reduce risk. During testing, ESG Lab observed first-hand Cloud Lifecycle Management's ability to automate multiple previously manual processes and decommission resources automatically. These capabilities will enable customers to improve resource utilization and defer or avoid capital expenditures

Figure 12. BMC's Cloud Lifecycle Management—Streamlined Operations and Costs
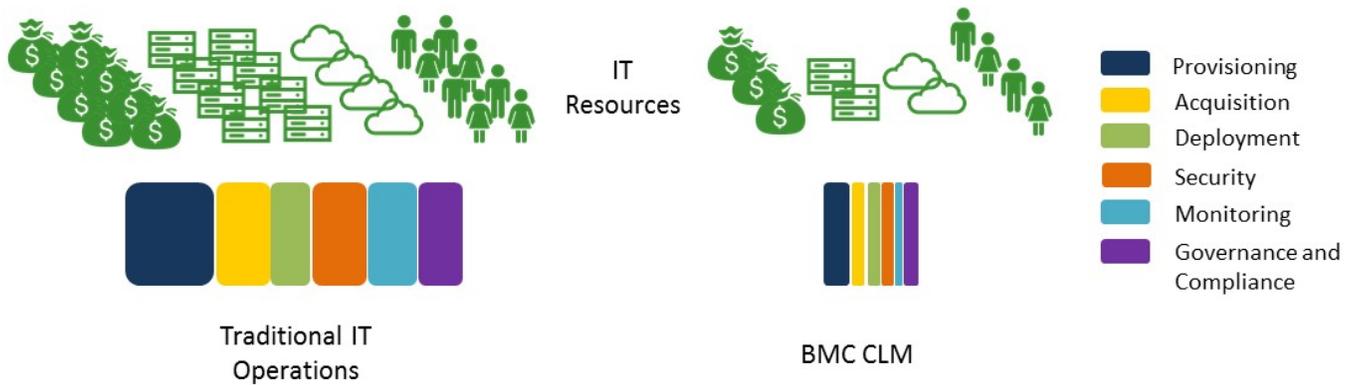
Source: Enterprise Strategy Group, 2016

Using customizable tags set at request time, organizations can keep track of services and automatically ensure that they are on the right infrastructure, are in the right geography, and are not sitting idle, racking up monthly charges unnecessarily.

To explore the real-world operational and economic benefits offered by Cloud Lifecycle Management, ESG Lab spoke with BMC's Cloud Lifecycle Management customers across a number of industries.

- One financial services company used Cloud Lifecycle Management to implement an automated compliance process that reduced the resolution time for compliance issues from days to minutes and reduced the time and effort required for audit preparation by more than 98%. Another financial services company reduced provisioning time in their 500+ server environment by nearly 94%.

- A private cloud infrastructure hosting provider uses Cloud Lifecycle Management and automatically provisions 95% of its service requests in minutes, with no human interaction.

- One supply chain management customer that provides more than 130 applications via the cloud reduced onboarding time using Cloud Lifecycle Management from up to 90 days to just two hours, a 99.9% savings.

Finally, ESG Lab looked at resource utilization in data center and cloud environments to model how much savings an organization might be able to expect through reclamation and repurposing of underutilized resources. Multiple studies have been done on resource utilization for data center and cloud environments. Data center utilization has been reported in the 6-12% range industry wide, while cloud utilization has been reported in a much wider range, from 7% to 40%. ESG Lab used the median values of these ranges to make a conservative estimate.

Let's imagine an organization running 500 servers in its data center with a 9% average utilization rate and 200 instances using a public cloud service provider with a 24% average utilization rate, which sets a target of just 50% utilization to allow for spikes in demand and batch processing. That organization should be able to return or repurpose 82% of the resources in its data center and decommission 50% of its cloud instances.

Why This Matters

ESG asked 633 IT executives, managers, and professionals which business initiatives would drive the most technology spending in their organizations. Reducing costs, ensuring compliance, and providing employees with the devices and applications they need to maximize productivity were all in the top five most-cited responses.[3] The nature of the public cloud makes it easy for employees to stand up services without any corporate oversight or control. The ability to provide business users with the capability to develop, provision, and deploy business applications from a self-serve portal while ensuring that compliance and governance policies are being enforced is key.

ESG Lab experienced extremely rapid provisioning and deployment times for public cloud and on-premises data center applications, with easily configured policies for security, compliance, automatic scaling, and enforceable decommissioning. The ability to assign tags to services and monitor usage enables organizations to track costs, charge back for resources, and identify idle or underutilized instances. All of this adds up to a tangible economic benefit.

ESG Lab Validation Highlights

- ☑ ESG Lab provisioned and deployed two services, one in the public cloud and one in the data center, with full monitoring and compliance in less than ten minutes.
- ☑ BMC's Cloud Lifecycle Management automated the request, provisioning, authorization, and deployment processes and reduced the time to stand up a complete service to just a few minutes.
- ☑ Cloud Lifecycle Management enabled immediate monitoring of the entire service for health, compliance, and performance,
- ☑ Cloud Lifecycle Management provided the ability to easily modify the service after deployment to solve "day-two" issues without needing to engage IT.
- ☑ Prebuilt compliance and security checks made verifying and reporting on vulnerabilities and compliance with regulations such as HIPAA and SOX simple.
- ☑ Cloud Lifecycle Management streamlined the operational process, automating what used to be a labor-intensive, manual process.
- ☑ Tracking services in the cloud using tags provided a straightforward way to track and recoup costs.

Issues to Consider

- ☑ The test results presented in this report are based on applications and systems deployed in a controlled environment with industry-standard tools. Due to the many variables in each production environment, planning and testing in your own environment are recommended.

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[3] Source: ESG Research Report, *2016 IT Spending Intentions Survey,* February 2016.

The Bigger Truth

When business users need customized services fast, they are ever more frequently going around IT to source infrastructure themselves from the public cloud. IT organizations are increasingly challenged to deliver the digital services their users need in a timely manner. This adds unnecessary risk to IT's already difficult task of managing security, governance, and compliance across hybrid cloud and traditional data center infrastructures. In fact, when asked to name challenges with moving servers, apps, and data around in hybrid cloud environments, governance and policy concerns was in the top five most-cited responses, along with performance and organizational complexity.[4]

Modern application development and deployment requires that organizations provide virtualization, agility, scalability, and manageability, across the lifecycle. BMC's Cloud Lifecycle Management is a solution designed to empower IT to address the challenges of speed, risk, and complexity. It delivers digital services fast enough to deter shadow IT while maintaining effective controls and optimizing a heterogeneous, multi-sourced infrastructure. The end game is to become a trusted services broker to the organization while reducing both risk and cost.

ESG Lab requested, provisioned, and deployed services in the data center and in the public cloud in minutes, while satisfying corporate governance and compliance and not sacrificing any of the convenience of the public cloud, without the need to master the intricacies of configuration, placement, or management.

ESG Lab firmly believes that IT can support agile development for new digital services and respond quickly to the needs of the business with BMC's Cloud Lifecycle Management while ensuring effective security, compliance, and governance. The unified management platform provided by Cloud Lifecycle Management across all types of cloud and legacy infrastructure reduces both cost and complexity. If your IT organization is interested in overcoming the challenges of managing complex hybrid environments and becoming both a trusted partner to the business and a key contributor to competitiveness and growth, you should take a close look at BMC's Cloud Lifecycle Management.

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[4] Source: ESG Research Report, _The Cloud Computing Spectrum, from Private to Hybrid_, March 2016.

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