Cloud Management In A Hybrid Cloud World

by Dave Bartoletti, July 30, 2013

KEY TAKEAWAYS

Developers Want Cloud, But They Don’t Want To Manage It
Developers increasingly prefer to build and deploy applications in the cloud because it gives them fast and easy access to infrastructure and application services. But as their cloud use grows, they need to take on operational responsibility that distracts from coding and testing. What they can’t get from central IT, they build or buy themselves.

You Have To Earn The Right To Manage The Hybrid Cloud
Before I&O pros can take control of enterprise cloud services on behalf of their business cloud users, they must prove their value and change the focus of IT ops from the traditional IT infrastructure life cycle to the cloud application life cycle. To do this they’ll need tools and processes to remove the management burden from developers.

Master Cloud Management Skills To Optimize Your Hybrid Cloud Portfolio
Cloud management includes familiar IT capabilities that are updated and extended for the hybrid cloud world, one in which you won’t own much of the underlying IT infrastructure. It’s time to look at which IT operations processes will carry over to the hybrid cloud and which need to be supplemented by newer tools and technologies.
Cloud platforms are increasingly a viable option for a growing set of enterprise workloads. Business-aligned developers are aggressively leveraging public cloud platforms to build and deploy new elastic applications and to extend legacy capabilities. They have come to expect speed, choice, and cost transparency. Meanwhile, nearly half of enterprise IT shops claim to be building a private cloud in 2013. The future enterprise IT infrastructure is therefore a hybrid mix of public and private clouds, but who will manage this new IT portfolio? Today, cloud developers are often doing it themselves out of necessity, but they should be focused on coding and testing, not cloud service management. Infrastructure and operations (I&O) professionals have the operations management skills, but they have not yet earned the right to take over cloud management. In this report, we explain how the I&O role changes in a hybrid cloud world, how I&O pros need to accelerate the cloud application delivery life cycle to exceed business expectations of cloud, and which cloud management capabilities I&O must master to take on the role of hybrid cloud manager.

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This report is based on vendor briefings, client inquiries, consulting engagements, and numerous end user interactions on the topic of cloud management.

Related Research Documents

The Rise Of The New Cloud Admin
February 21, 2013

Cloud Keys An Era Of New IT Responsiveness And Efficiency
November 19, 2012

Improving The Ops In DevOps
July 21, 2011
**WHO WILL DELIVER THE HYBRID CLOUD THE BUSINESS Wants?**

The cloud is now a viable option for a broad range of enterprise workloads and is actually preferred for a growing class of new customer-facing web and mobile applications. Fifty-four percent of business-unit-aligned developers will adopt public cloud services by the end of 2013. While these business users are ahead of IT in the adoption of public cloud services, I&O pros are starting to get serious about cloud. Forrsights data shows that 85% of software buyers expect to have a formal cloud strategy or approach in place by the end of this year. Only 62% had one at the end of 2012. However, only 20% expect to be executing on a formal cloud migration plan by the end of this year (see Figure 1). This means that cloud strategy and migration is top of mind, but still in its infancy. The time is ripe for I&O pros to rise to the cloud challenge and chart a path to hybrid cloud success.

**Figure 1** Companies Are Getting Serious About Cloud Strategy And Migration Planning

> “Today and 12 months from now, which of the following describes your firm’s strategy/approach for using public software-, infrastructure-, or business-process-as-a-service offerings?”

<table>
<thead>
<tr>
<th>2012</th>
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<tr>
<td>38%</td>
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**The Business Wants To Use The Cloud For Speed But Doesn’t Want To Manage It**

Cloud is a great opportunity for I&O pros. Your business users want to *build and deploy* applications faster, and they need an IT foundation that can keep up with them. They don’t want to *operate* the supporting IT environments (i.e., secure them, back them up, maintain them, or fix performance problems). This is where you come in. But you’ll have to earn their trust and prove your value to meet...
their expectations of cloud, which are high based on their experience with public clouds. Before reaching out and offering the business what it wants from cloud computing, understand that:

- **Your cloud customer wants speed and choice above all.** The business wants cloud for two main reasons: speed and agility. It wants access to infrastructure on demand to support Agile and Lean development cycles, and it also wants a range of development tools, packaged application components, and middleware services for integration. These demands are typically at odds with the way IT delivers today: customized resources that are handcrafted and take weeks to provision. If you can't get complete cloud application and infrastructure services to users in minutes, they will go around you.3

- **Developers manage their own clouds today out of opportunity and expediency.** In practice, someone is taking control of cloud, but it's usually not the I&O team. Developers, architects, application managers, and support teams aligned with business units go around IT to get to cloud faster, and they are creating new processes — and experimenting with new tools — to do so. But in the long run, these teams have neither the skills nor the inclination to operate their own hybrid cloud infrastructures.4

- **Developers want autonomy; don't get in the way.** Taking control of cloud doesn't mean standing between cloud developers and the cloud resources they need. Cloud management should be as frictionless to developers as possible. That means you can't require developers to go through a cumbersome request process to deploy services, nor should you limit their ability to configure infrastructure, middleware, database, or server components as needed.

### Don't Be Disrupted: Earn The Right To Manage Your Growing Cloud Portfolio

In the cloud era, your new role is to establish guardrails to guide developers to the best cloud services, get out of the way while they deploy, test, and release them, and then take over ongoing operational support so they can get back to coding.5 But you have to earn the right to be their cloud manager. The operational skills you developed to manage traditional data center infrastructure need to be refocused on the application tier since this is where you'll add the most value. Build your cloud management capabilities with two primary objectives in mind: 1) how you can make developers more productive, and 2) how you can optimize the runtime performance, availability, and cost-efficiency of cloud applications wherever they are deployed. Keep in mind:

- **Shrinking the cloud application life cycle is the end goal.** Cloud managers get involved early in the application design phase and help guide developers to the cloud platforms best suited for each application. They maintain image templates and application blueprints and offer the automation tools to simplify deployment and configuration. Once apps are deployed, cloud managers monitor performance, availability, and compliance to maximize ongoing cloud spend and ensure that cloud provider service-level agreements (SLAs) meet enterprise requirements. And they report utilization and performance metrics back to the business to guide the next phase of development (see Figure 2).
- I&O must improve the cloud “ops” in DevOps (development/operations). Cloud-based development is a team effort and will require close collaboration with your peers in enterprise architecture and application development and delivery. Developers must take on some deployment responsibility, architects must establish an integration canvas, and IT operations must ensure that cloud applications are properly configured to maintain high availability and perform as required. DevOps are the processes, methods, and systems that support such collaboration, and you need to take an active role in defining and establishing them.6

- Cloud management fills the operational gaps left by cloud service providers. Cloud providers, internal or external, present abstracted and standardized services for consumption and offer basic metrics to monitor those services. Today’s cloud consumers are left to make sure that the cloud services they use meet their company’s operational requirements. Cloud management as an I&O practice fills the operational gaps left by this uneven handshake, and I&O pros must understand which capabilities are required to fill these gaps to earn the right to be cloud managers (see Figure 3).7

**Figure 2 Cloud Managers Accelerate The Cloud Application Life Cycle**

- Design
- Select
- Deploy
- Manage
- Optimize

- Determine which apps are right for cloud.
- Decide which cloud is best for which app.
- Maintain standardized app templates.
- Automate deployment to the best cloud provider.
- Monitor and manage app performance, availability, and compliance.
- Track and optimize cloud costs and vendor SLAs.
- Report back to the business to guide further cloud app design.

Source: Forrester Research, Inc.
Cloud Management Is Different From Traditional IT Management

As cloud manager, you will be a broker, orchestrator, and administrator of cloud services, some of which will run on infrastructure you own, but most of which won’t. In this new role, you’ll succeed if you focus on managing services and leave resource management to your cloud providers and cloud-building tools. Service management is the key IT operational discipline to ensure effective cloud operations. To lay the foundations, you’ll need to:

- **Know what you’ll manage in the cloud and what you won’t.** You won’t own the entire infrastructure as your cloud portfolio grows. You’ll likely have a mix of on-premises private clouds built on virtualized or converged infrastructures plus off-premises public cloud infrastructure that for the most part is managed for you. In either case, leave infrastructure management to these cloud providers (private or public) — they are responsible for multitenancy, resource pooling, and scale-out within each cloud domain, for instance. The providers expose the building blocks; your job is to integrate and standardize them to simplify and accelerate consumption.
- **Standardize and automate everything.** Traditional IT provisioning is a slow and manual process, while cloud provisioning is on demand, automated, and application programming interface (API)-driven. Developers don't want to fill out a help desk request, nor will they tolerate a lengthy approvals process to get access to cloud resources. Beyond provisioning, cloud consumers also expect automated compliance, availability, scalability, and performance management features. If you've built your problem diagnosis and remediation processes for specific infrastructure or applications you own, they will need to be generalized to handle new cloud-specific metrics and to enable automated remediation. As your cloud application life cycle compresses, there will be no time to craft custom management processes for each new application.

- **Understand why developers are turning to new cloud management tools.** Your cloud consumers are likely relying on newer cloud management tools already; reach out and understand why. Cloud developers turn to Dell's Enstratius, RightScale Cloud Management, Scalr, ServiceMesh's Agility Platform, and others and rely on Opscode's Chef and Puppet Labs' Puppet for automation because these tools aim squarely at simplifying their lives. From unified dashboards, they simplify application design via reusable templates and blueprints and offer push-button deployment to multiple clouds. They automate configuration, scaling, and recovery operations and consolidate multiple cloud accounts, users, and roles in a common framework that hides infrastructure complexities. In short, they bring order to the chaos of multicloud management without limiting developer productivity.

**MASTER THREE ESSENTIAL CLOUD MANAGEMENT CAPABILITIES**

In the early stages of cloud adoption, developers manage their cloud applications and infrastructure themselves, *if they manage them at all.* Developers are typically responsible for the entire cloud application life cycle: They find a cloud service, open an account, select services and build templates, code, deploy, and then operate — if they have time. What they should be doing, instead, is coding, testing, and fixing bugs. So, as cloud services proliferate in your organization, and as your developers bring more mission-critical workloads and data to the cloud, the time is ripe for I&O pros to take over those skills and responsibilities.

Based on client inquiries and vendor briefings, Forrester has developed a reference model of the skills needed by today's hybrid cloud manager (see Figure 4). Use this model to evaluate your current skill levels, identify where you need to learn more, and start to explore market offerings. In our model, we've organized cloud management capabilities into three primary categories: cloud service delivery, cloud service operations, and cloud service governance.
Cloud Service Delivery Includes Service Catalog, Provisioning, And Migration

The cloud service life cycle describes the management processes you follow to define, deliver, maintain, and decommission cloud infrastructure and application services. This life cycle is above and distinct from the underlying component life cycles (server, storage, and network devices). It’s the responsibility of your cloud platforms to expose these components as elastic services; it’s your responsibility to catalog and combine those services and ensure that they are available on demand from the most appropriate internal and external cloud providers. Cloud service delivery is important because:
Your service catalog connects user requirements with available cloud services. The cloud service catalog defines the cloud services that you are capable of delivering for the needs of various cloud end users. It’s where you align user requirements with your delivery capabilities and the first place to start implementing cloud standards. The catalog is the entry point for your cloud users and should not only make it easy for them to self-provision but guide them to cloud services approved by central IT. Your goal here is to create a way for business users to easily get what they want from both internal and external cloud providers, within the constraints of the services you are able to support.

Your target user communities want a range of packaged services. Services might range from simple compute instances (virtual machine [VM] image types) for a basic infrastructure-as-a-service (IaaS) offering to multimachine templates prepopulated with application components and development tools (e.g., a LAMP stack, load balancer, or app server) for software developers. For each service, clearly define how much customization will be allowed, who will have access (based on role), what availability and performance service levels they can expect, and what it will cost. Look to the public cloud service catalogs such as the Amazon Web Services (AWS) Management Console for guidance — they have set the bar for simplicity and transparency. Cisco Systems’ Cloud Portal, BMC Software’s Cloud Lifecycle Management, and RightScale for Enterprise solutions all include multicloud-enabled service catalogs that have a range of packaged service templates out of the box.

Deployment automation shortens the application delivery life cycle. Your cloud users must be able to deploy application or infrastructure services from the service catalog in minutes. Remove any manual approval processes and replace them with policy-driven workflows that place constraints on special requests but auto-approve standard ones. Focus on the application services catalog and what your cloud users need to find there to easily customize multitiered and multicloud applications with a few clicks: preconfigured image templates, application stack blueprints, and configurable inputs like domain, database, compliance, security, and load balancing parameters.

Your image templates and application blueprints enable portability. Reach out to your experienced cloud developers to understand the configuration tools and scripting languages they are already using in public clouds and make sure you can support them or offer something better. Your cloud developers are likely deploying applications via Chef recipes and Puppet, while you might be more comfortable with Perl or PowerShell, for example. As your development and operations teams will share responsibility for application deployment in the cloud, encourage them to work together (as a developer-operations or DevOps team). Cloud management solutions from Dell’s Enstratius, Microsoft, RightScale, Scalr, and VMware support a range of configuration tools and languages and aim to simplify template and blueprint design with visual design canvases.

Onboarding and migration facilitates portability between clouds. You’ll also need a way to bring existing applications to your cloud and migrate applications between clouds. You can expose this capability directly to cloud users at deployment time, offering a choice of approved clouds for different application types or data sets, constrained by placement policies. You can also automate onboarding
of your existing physical or virtualized workloads to your cloud using a physical- or virtual-to-cloud conversion tool. These tools can automatically discover the OS, network, and storage configurations of in-place multitiered applications, and then inject drivers, tools, and security components and package the app for deployment to a range of private and public cloud stacks. CliQr Technologies, Racemi, ravello systems, and RiverMeadow Software offer dedicated migration tools, and most of the leading cloud management solutions include migration features as well.

Cloud Operations Include Monitoring, Scaling, And Service-Level Management

What you monitor in your clouds determines what you can manage. I&O pros have traditionally monitored infrastructure components as first priority because they owned and had access to these server, storage, and network elements. CPU utilization, storage I/O, network throughput, and memory consumption are still essential infrastructure metrics to track, correlate, and threshold, but they’re not sufficient. In your clouds, application performance and user experience are paramount — that’s what your cloud users care about above all. Your cloud monitoring approach should start at the user and work back to the infrastructure, some of which you’ll own and much of which you won’t. Be sure to:

- **Instrument your cloud to monitor user experience.** For adequate visibility into cloud application performance, you need to collect and integrate low-level system metrics and end user app performance metrics and add in business-level metrics as well. If you’re supporting web/mobile apps, include web application metrics (response time, transaction throughput) and mobile app performance data (error rates, active users, client stack traces) to give both you and your developers real-time insight into customer experience. Cloud monitoring vendor AppFirst, for example, integrates a wide range of data sources (from Nagios Enterprises to StatsD to log file data from Splunk) into a unified dashboard with drag-and-drop correlations to speed incident resolution. CA Nimsoft Monitor for Public Cloud extends in-house infrastructure monitoring to include quality-of-service metrics from a range of public clouds, including AWS, Microsoft Windows Azure, Google App Engine, and Rackspace.

  As the director of cloud architecture for a global online media giant put it, “There’s no one way to deploy or monitor apps in the cloud, but what’s revolutionary is knowing what we don’t have to monitor anymore. All our new sites are instrumented upfront — not as an afterthought — with user experience being the top metric we watch.”

- **Embed monitoring into your cloud applications early in the development cycle.** Application performance monitoring (APM) becomes inseparable from infrastructure performance management in the cloud, but legacy APM solutions (born to instrument and monitor app servers and Java EE code, mostly) can be complex, expensive, and time-consuming to install and configure. Newer software-as-a-service (SaaS)-based APM solutions such as New Relic aim to simplify the process of instrumenting both web and mobile apps deployed in the cloud (even down to line-of-code detail) with automated deployment from the cloud. ManageEngine’s Applications Manager
automatically discovers your Amazon EC2 instances and EBS volumes, monitors for problems, and rolls up performance data into a set of unified dashboards. Leverage analytics tools to correlate metrics and detect emerging performance hotspots faster.¹⁰

- **Automate scaling and failover within and across cloud resource pools.** Use the monitoring data you collect from cloud resources to enable automatic scale-up and scale-down as well as automated recovery across cloud resource pools. Your cloud portfolio should look like an elastic resource pool. Expose scaling options to your cloud users at deployment time via service catalog configuration options. Remember, too, that saving money in the cloud depends on both using resources efficiently and not using them when they are no longer needed. You can offer users a choice of scaling based on triggers (memory utilization, CPU thresholds, etc.) and enforce availability policies by automatically scheduling backups across cloud availability zones, for example. Solutions like Dell’s Enstratius, RightScale, ServiceMesh, and Scalr let developers define application architectures once, and then automate the tasks to deploy them across various cloud providers and availability zones.

- **Manage service levels across clouds.** Once your hybrid cloud is hosting development teams and production applications, ongoing service optimization is essential to maintain user satisfaction, ensure application performance, and identify service problems before they get out of hand. But with a mix of on-premises and off-premises cloud providers, each with its own performance and availability service levels, you are now responsible not only for tracking performance within clouds but across them as well — and hiding the details from cloud users. Cloud service management starts with a foundation of continuous and proactive performance and availability monitoring, then adds automated event detection, analysis, and remediation. Cloud operations solutions such as BMC’s Cloud Operations Management, CA’s Automation Suite for Clouds, Cisco’s Intelligent Automation for Cloud, Red Hat’s ManageIQ, and VMware’s vCenter Operations Management Suite extend traditional IT performance management solutions to include multiple clouds and help speed time-to-resolution for a range of performance problems.

### Cloud Governance Includes Access Control, Cost Management, And Integration

Cloud computing lets business users consume IT resources themselves. Self-service means that some degree of IT control is forfeited, along with the manual processes that IT has relied on to maintain access controls, limit use, enforce security, and maintain compliance. In the cloud, these governance controls are implemented via policy-based and automated workflows. Policies govern who has access to cloud services, what they can use, how they can modify and integrate services, where they can deploy workloads, and how much they can spend, to name a few. Use governance policies to guide users on what they can do, not just tell them what they can’t do.¹¹ As you build out your cloud governance practice, be sure to:

- **Control who has access to your cloud and what they can do.** Security in the cloud must be balanced with speed: too many restrictions and users will find a way around them; too few restrictions and
you’ve exposed yourself to unacceptable risk. Cloud security starts with identity verification, access controls, and permissions. Extend your existing identity services into the cloud by reaching out to take control of existing public cloud user accounts, security keys, and credentials. Define and enforce role-based access controls across clouds to restrict access to specific pools or types of resources by team or business unit — and expose these limitations clearly in your service catalog.

- **Review current regulatory and corporate compliance constraints.** These determine where you’ll let applications run and where data can reside (public cloud, private cloud, or a combination); you’re ultimately responsible for compliance, whatever the mix. In addition, determine your tolerance for shared multitenant environments either on- or off-premises. Integrate cloud security with your existing LDAP and/or Active Directory infrastructure and include spending caps by role to keep cloud costs under control. Finally, make sure that you actively track, log, and report on all security and compliance events, from configuration changes to placement of sensitive data.

- **Implement cost management to save money and encourage good behavior.** At the heart of cloud economics is a pay-per-use consumption model. Public cloud providers assign transparent prices to every cloud service, and you will need to do the same for your enterprise cloud services, wherever they live. Clear pricing and ongoing cost management serve three purposes: 1) help users select the most cost-efficient cloud resources for each application or use case; 2) give real-time cost visibility to financial stakeholders in your company; and 3) identify opportunities to save more money over time by decommissioning resources or moving applications to more cost-effective providers. A range of solutions from public-cloud-focused vendors (including CliQr, Cloudability, Cloudyn, Newvem Insight, and RightScale’s PlanForCloud) and traditional IT management vendors can help track cloud usage, spot trends, alert you when utilization thresholds are breached, and suggest migrations.

- **Integrate your clouds into your software development and IT management processes.** Developers increasingly rely on RESTful APIs (built in a representational state transfer style) to build composite cloud-ready applications. Your cloud management processes should also be enabled with these web-friendly APIs. A rich API framework provides the abstraction from underlying cloud providers, hiding the details of any particular cloud API (AWS, OpenStack, CloudStack, or vCloud, for example) to simplify cross-cloud migrations and avoid lock-in. Leverage this API framework to not only connect to multiple cloud providers but to integrate your cloud management capabilities with existing enterprise IT management tools and software delivery life-cycle tool chains.

A global sportswear manufacturer told us about why it chose Dell’s Enstratius cloud management solution: “We don’t want to manage APIs to our various clouds, and we might want to build our own dashboard [catalog] at some point. We want users going through us to get to AWS so we can create good habits and eventually offer internal cloud services that can compete with what they get today from AWS.”
**Recommendations**

**Manage the disruption or plan to be disrupted**

If developers continue to manage cloud themselves and don’t see value in central IT’s cloud management capabilities, they will continue to go around I&O teams. Not only will this cut into developer productivity, it will foster the notion that cloud is competition for I&O professionals, something they’d like to avoid or constrain. Don’t let that idea take hold. Reach out and embrace the hybrid cloud opportunity by proving that you can lower the burden on business cloud users wherever they use cloud services and that you have the right skills and tools to make sure that their apps deliver killer user experiences. To get started:

- **Find out what your developers are doing that keeps them from coding.** You will learn the most from your early cloud adopters. Spend time with them to understand how much infrastructure control they actually need and how much they are doing just because they have to. Ask them where they need more visibility and focus your monitoring efforts there. Find out why they chose a particular public cloud so you can establish a baseline for your own cloud operations — what do they like and where are the gaps?

- **Catalog your existing cloud services.** Before you can define your cloud management requirements, you need to pick a starting set of deployment models and determine what level of abstraction is available in each. Which integration APIs are available, what types of infrastructure, which development tools? And how much operational management is provided for you by the cloud platform itself, and what will you have to build or acquire to fill in the gaps?

- **Add cloud management capabilities in increments, looking for quick wins.** Are your cloud developers spinning up hundreds of images and then forgetting to deactivate them and seeing costs soar? Are they creating different templates for build, test, and production? If so, you should focus on service catalog and account management first to help bring some order to the app life cycle and rein in spending. Locate the most painful part of your cloud app life cycle and attack that first, and then make sure to advertise your successes early and often.

- **Recognize that vendor solutions are a work in progress — one size doesn’t fit all today.** Cloud management vendor solutions (at least 40 vendors currently claim to have one) are definitely a moving target. Some purposefully mix cloud building with cloud managing, some are virtualization management tools with a fresh coat of paint, and some work quite well but for only a small subset of clouds. You are unlikely to find one cloud management solution that will have everything you need today, so be ready to do some integration work to pull together best-of-breed features.
WHAT IT MEANS

WHAT DOES IT MANAGEMENT LOOK LIKE IN 2020?

It’s inevitable that enterprise IT in 2020 will be a hybrid mix of on- and off-premises services. While your particular mix of actual cloud services will vary, it’s unlikely that any enterprise IT shop will still be primarily focused on configuring server, storage, and network devices as a core competency. The shift to business technology and IT-as-a-service is well underway, so you can either ignore it, try to contain it, or embrace it.

Start preparing now to manage an IT portfolio based on services that are deployed on demand, automatically, and from an elastic pool of infrastructure, most of which you won’t own. That means you need to start thinking about applications first: how your developers can build and deploy them faster and link them more easily to a range of existing and new business services and data sources — in-house and outside your enterprise walls.

Does that mean your current IT operations skills lose value? No, unless you stick to legacy thinking about your role. You will spend much less time configuring servers and installing management software in the future, but you’ll spend more time extracting meaningful insight from performance metrics and negotiating service provider agreements. The result will be better application performance and IT cost efficiency, two objectives you already have — you will just be achieving them in a different way.

SUPPLEMENTAL MATERIAL

Methodology

Forrester’s Forrsights Services Survey, Q2 2012 was fielded to 1,058 IT executives and technology decision-makers located in Canada, France, Germany, the UK, and the US from enterprise companies with 1,000 or more employees. This survey is part of Forrester’s Forrsights for Business Technology and was fielded during May and June 2012. LinkedIn Research Network fielded this survey online on behalf of Forrester. Survey respondent incentives include gift certificates and research reports. We have provided exact sample sizes in this report on a question-by-question basis.

Each calendar year, Forrester’s Forrsights for Business Technology fields business-to-business technology studies in more than 17 countries spanning North America, Latin America, Europe, and developed and emerging Asia. For quality control, we carefully screen respondents according to job title and function. Forrester’s Forrsights for Business Technology ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of IT products and services. Additionally, we set quotas for company size (number of employees) and industry as a means of controlling the data distribution and establishing alignment with IT spend calculated by Forrester.
analysts. Forrsights uses only superior data sources and advanced data-cleaning techniques to ensure the highest data quality.

We have illustrated only a portion of survey results in this document. To inquire about receiving full data results for an additional fee, please contact Forrsights@forrester.com or your Forrester account manager.

ENDNOTES

1 Source: Forrsights Software Survey, Q4 2011.

2 Source: Forrsights Services Survey, Q2 2012.

3 Developers continue to demand both highly productive tools and transparency and control over the application servers, databases, and other platform layers when needed. The cloud services that succeed for enterprises must strike the right balance between abstraction and control. For a complete discussion of what developers want from the cloud, see the November 19, 2012, “Cloud Keys An Era Of New IT Responsiveness And Efficiency” report.

4 These new cloud administrators are starting fresh with new solutions that are designed to integrate with the public cloud first and the rest of the enterprise second. This means the new cloud admin isn't prioritizing integrating this solution with the help desk, server management tools, a configuration management database (CMDB), or existing ITIL processes. These emerging new administrators are a different animal. See the February 21, 2013, “The Rise Of The New Cloud Admin” report.

5 As you shift your focus from building infrastructure to managing cloud services, you'll need to both teach and learn from your enterprise architecture (EA) and application development and delivery (AD&D) peers. As a team, you'll all need to come up to speed on new cloud application architectures, APIs, and security policies. EA pros will be responsible for balancing the needs of business units against the capabilities of your cloud infrastructure and for laying out the integration canvas on which AD&D pros will implement specific application patterns. See the November 19, 2012, “Cloud Keys An Era Of New IT Responsiveness And Efficiency” report.

6 I&O is in this together with application development and delivery. Both parties must transform their behaviors, but the actions to be taken today are primarily the responsibility of I&O. I&O should start to formulate the road map of what has to be done to change the IT service life-cycle effectiveness and maturity. See the July 21, 2011, “Improving The Ops In DevOps” report.

7 While your business colleagues may think they can buy cloud services and meet all the IT requirements, you know better. Your operational and security requirements don't change, regardless of whether your applications and/or services are on-premises or in the cloud, and if the cloud provider doesn't fully meet your requirements, you have to fill the gap — what Forrester calls the uneven handshake. See the May 29, 2012, “Assess Your Cloud Maturity” report.

8 Test and monitor mobile app user experience continuously. You should not stop testing after you deploy the application. Apps change over time because of updates. Users' needs and expectations change over time
as well, causing the performance of apps with older designs to degrade even if the apps haven't changed at all. To plan your mobile app development strategy with end user experience top of mind, see the detailed analysis in the following report. See the August 7, 2012, “Design Mobile Apps From The Outside In” report.

Application performance management is similar to aspirin: It makes your headache disappear, but in some cases, it's only hiding the cause of this headache. By the same token, when I&O pros cure application performance problems and small failures in production, your APM solution may mask deeper problems. To build out a comprehensive APM practice to include cloud and mobility, see the February 27, 2013, “Realize Practical Application Performance Management” report.

Let analytics tools do the hard work of correlating and spotting patterns in performance data. You need machines to analyze conditions to invoke the appropriate actions. These actions themselves can be automated. To perform adaptive, full-service cloud automation, you need IT analytics. For a guide to understanding analytics and selecting a solution, see the December 5, 2012, “Turn Big Data Inward With IT Analytics” report.

The fastest way to lose a relationship with empowered employees today is to tell them what they cannot do. If you want to engage these leaders, you must first tell them what they can do. Only then will they listen to your guidance on what it takes to engage cloud services responsibly. See the May 18, 2012, “Put Guardrails In Place To Drive Cloud Success” report.
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