Cost management and control in a multicloud world

FEATURING RESEARCH FROM FORRESTER

Top 10 Facts Every Tech Leader Should Know About Cloud Cost Optimization

COST MANAGEMENT AND CONTROL IN A MULTICLOUD WORLD

Addressing and managing cost should be an integral part of your multicloud strategy. At Cisco, we understand, however, that maintaining the visibility necessary to control cloud costs is not an easy job. Why? On top of your existing on-premises environment, you're getting more and more tools and services from your cloud providers. Your apps, workloads and various cloud services can change daily. Not to mention changes in your cloud providers' offerings.

And as the focus shifts from managing infrastructure and tooling to making sure your development teams are able to continually release improved functionality faster, manually tracking cloud consumption and costs can be near impossible. But it doesn't have to be.

We believe that cloud cost management should be easier. It should be:

- **Comprehensive:** Cloud is not just workloads. Capturing consumption and cost for additional services besides all instances, storage, and PaaS offerings, such as public IP addresses usage or load balancers, is a prerequisite – including the cost profiles as defined in your data centers (core and edge).
- **Consistent:** Cost control across your multicloud environment should be, by definition, a balanced act. It's the ability to get the same detailed picture across all aspects of your apps and infrastructure, both on-premises and with all the cloud providers you want to work with. Therefore, the tools you choose should be able to provide this comprehensive level of detail as well as assist you in analysing the data and drawing comparisons across all environments.
- **Proactive:** To manage cloud costs, monitoring your monthly spend and only then reacting, is not enough. True cost optimization begins with collecting and understanding the consumption of your cloud resources in real-time before leading to a reduction (or optimization) of your monthly bill.
- **Actionable:** Visibility into cloud spend and usage is just one side of the coin when it comes to cost optimization. Reducing costs and avoiding surprises also means being able to take action. Supporting your multicloud environment with the tools to follow-up on cost control insights is "where the money is", from automatic workload actions such as rightsizing and suspension policies to better utilization of reserved instances and so on.
- **Policy-driven:** Once you've identified opportunities for cost-reduction, creating policies to enforce and future-proof cost management as part of your operating model is next. This ensures your multicloud governance is tied to cost rules not just for all the clouds you are using but for the users that are consuming them.

IN THIS DOCUMENT

- **Transformational:** Finally, cost management isn't only about technology. It also requires a cultural shift. As your development teams are working more closely with IT and your organization is expanding to multiple clouds, change management is key to streamlining usage of cloud resources (e.g. turning off test environments when unused, standardizing instance sizes etc.). Promoting and constantly re-evaluating best practices in your organization is critical for a cost management strategy.

With Cisco, monitoring cloud usage and controlling costs can be made easier. Our mission is to enable you to take advantage of the latest technologies to accelerate innovation, wherever that is. This is why we build open, modular tools such as Cisco CloudCenter Suite that work across every environment in your multicloud world. We understand that cost management is a top priority for our customers. With CloudCenter Suite and its inclusion of a new Cost Optimizer module, you're now able to simplify and optimize your day-to-day operations and overall strategy.

Find out more information here: https://www.cisco.com/go/cloudcentersuite

FORRESTER®

Top 10 Facts Every Tech Leader Should Know About Cloud Cost Optimization

Business Case: The Cloud Computing Playbook

by Lauren E. Nelson and Rich Lane
March 18, 2019

Why Read This Report

Tackling wasteful cloud usage and exploding cloud spend is the first step of cloud management. The good news is that you can stop wringing your hands about the best approach to solve this pain. Cloud cost management and optimization (CCMO) tools are genuinely here to save the day. Vendors in this market have solved the right cloud challenge, at the right price point, and with minimal red flags to prevent adoption — and we don't say that lightly. This report highlights key information on cloud cost management and optimization for infrastructure and operations (I&O) professionals leveraging public cloud today.

Key Takeaways

Optimizing Cost Is The Right Challenge To Solve

Bulky cloud management tools of old promised to fix a long list of pains, even those you hadn't yet experienced. CCMO tools target one problem — and it directly ties to reducing hard costs.

CCMO Tools Sell At The Right Price Point

Old-school multipurpose cloud management tools rarely achieved ROI and started at a hefty price. Conversely, CCMOs deliver ROI quickly, even for efficient cloud shops. And the starting cost is one-tenth that of suites.

Red Flags Are Few

Vendors in this space are vulnerable to acquisition, but this isn't much of an issue to enterprise adopters. The functionality doesn't tie into app functionality. Switching solutions is easy and presents minimal migration costs.

This PDF is only licensed for individual use when downloaded from forrester.com or reprints.forrester.com. All other distribution prohibited.

Top 10 Facts Every Tech Leader Should Know About Cloud Cost Optimization

Business Case: The Cloud Computing Playbook

by Lauren E. Nelson and Rich Lane
with Glenn O'Donnell, Amanda Lipson, and Diane Lynch

March 18, 2019

Table Of Contents

Related Research Documents

Emerging Role Profile: Cloud Cost Manager

The Forrester Wave™: Cloud Cost Monitoring And Optimization, Q2 2018

Top 10 Decision Factors That Must Influence Your Cloud Strategy

Share reports with colleagues. Enhance your membership with Research Share.

FORRESTER®

Forrester Research, Inc., 60 Acorn Park Drive, Cambridge, MA 02140 USA
+1 617-613-6000 | Fax: +1 617-613-5000 | forrester.com

© 2019 Forrester Research, Inc. Opinions reflect judgment at the time and are subject to change. Forrester®, Technographics®, Forrester Wave, TechRadar, and Total Economic Impact are trademarks of Forrester Research, Inc. All other trademarks are the property of their respective companies. Unauthorized copying or distributing is a violation of copyright law. Citations@forrester.com or +1 866-367-7378

Cloud Cost Optimization Is An Easy Win For I&O Pros

The constant push for innovation isn't sustainable without mature management and relentless reduction of existing costs. Not acting (e.g., letting cloud costs go ungoverned or unoptimized) quickly consumes budget, without notable results. Most enterprises start their cloud management journey with an easy win — cloud cost visibility, management, and optimization. Today, 56% of North American and European infrastructure decision makers at enterprises track their cloud costs.[1] I&O organizations tackling cloud costs should know 10 key facts about cloud cost optimization (see Figure 1).

FIGURE 1 Top 10 Facts Tech Leaders Should Know About Cloud Cost Optimization

1	Drivers	Complexity is too high for manual or custom-built fixes.
2	Paths	Four paths to cloud cost optimization exist.
3	Pricing	Yearly cloud spend usually determines price.
4	ROI	ROI comes quickly.
5	Data	The cloud provider, not the tool, typically does data collection.
6	Insights	CCMO insights are limited to identifying waste and optimizing compute.
7	Market	Companies in this space are transient.
8	Reactive	CCMOs focus on reactive optimization
9	Behavior	Proactive optimization requires behavioral changes and reinforcement.
10	People	Major cloud users will still need a dedicated cloud cost optimization manager.

1. COMPLEXITY IS TOO HIGH FOR MANUAL OR CUSTOM-BUILT FIXES

Even solving for the numbers on a single cloud platform is a hefty task. For example, Amazon Web Services (AWS) provides 150-plus products and releases roughly 500 new features or services each quarter. It can bill services as on-demand (per second), as reserved instances, or as spot instances. EC2 alone has 25 instance families, with up to 12 sizes per instance family.[2] Most enterprises use multiple platforms: In 2018, 61% of North American and European infrastructure decision makers at enterprises that use public cloud said they use two or more public cloud vendors.[3] The natural tendency is to problem-solve for cloud cost complexity with custom-built spreadsheets and dashboards. This is a temporary fix and not a sustainable solution, given: 1) the constant stream of new instance types, services, and billing options and 2) the time lag and employee time it requires to deliver updates. As you manage this complexity, think about:

FORRESTER®
© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

- **What it means.** Tackling this complexity without support is an inefficient use of time. Developing cloud cost knowledge, building the tool, maintaining the tool, adjusting the tool, deciphering results, and dealing with ongoing remediation can take thousands of full-time employee (FTE) hours. This is wasted time. All this functionality is available in tools today, at a minimal cost of roughly US$50,000 per year.[4]

"We pride ourselves in our cloud pricing knowledge and custom-built tools — so we tested their results to ours. At first, we were convinced they were wrong, until we realized they had incorporated a newly available service that had just come out that we weren't privy to. The effort it had taken our team to get that answer, and still be out of date, was a wake-up call. Our efforts could never compete, nor should they." (Director of managed services at a large software company)

- **What to do about it.** Give in to the logic. Your employees' time is too valuable to waste. Tackle cloud costs not by wading through complexity but by implementing tooling, saving employee time, and reinvesting these savings in a meaningful way.

2. FOUR PATHS TO CLOUD COST OPTIMIZATION EXIST

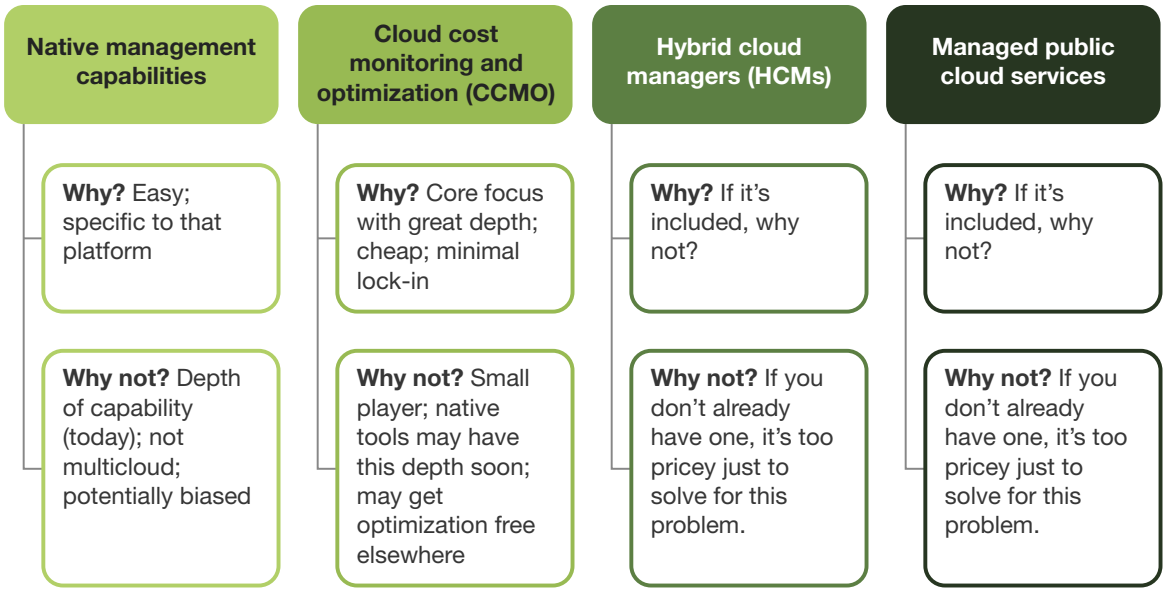
I&O pros have four options for cost optimization: 1) tools from native platforms (works in progress); 2) built-for-purpose tools for cost optimization (e.g., standalone CCMO tools); 3) tools encapsulated in a full hybrid cloud management (HCM) suite; or 4) tools included for free as part of a managed public cloud service (see Figure 2). The most common approach today is using built-for-purpose tools, e.g., CCMOs. Many firms are drawn to their low cost, deep functionality, and ability to work across multiple platforms. But looking forward, as native platforms build out equivalent depth in cost optimization functionality, users must weigh the importance of multiplatform support against the simplicity of a single vendor for cloud use and cloud management. Enterprises that continue to use CCMOs will highly value third-party unbiased opinions and the multicloud functionality. To choose your path, consider:

- **What it means.** Determining your path will depend on cost and quality. Your team may be deciding whether your "free" option, included within a product you already license (e.g., HCM, a managed public cloud, or management tooling from your native cloud platform), is good enough.[5] Many choose to supplement with a CCMO.

- **What to do about it.** Once you know your path, weigh the specifics to select a product. Start with "The Forrester Wave™: Cloud Cost Monitoring And Optimization, Q2 2018" to establish a short list.[6] This report includes Apptio, Cloudability, CloudCheckr, CloudHealth Technologies, Densify, RightScale, Teevity, and Turbonomic — which all provide standalone multicloud cost optimization tools.[7] Keep tabs on native platform management tool development in terms of capabilities, quality, and cost.

© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

FIGURE 2 Reasoning Behind Selecting Your Path To Cloud Cost Optimization



3. YEARLY CLOUD SPEND USUALLY DETERMINES PRICE

Cost is a key factor when enterprises invest in management tools. Management suites are notoriously overpriced and overbuilt, rarely delivering enough value to justify the hefty expense.[8] Refreshingly, CCMOs are usually priced fairly, using the most logical unit — percentage of cloud spend per year. Variations on this model include pricing by cloud compute spend, tiers of cloud spend usage, and a range of on-premises alternatives if you decide to extend the capability to your on-premises environments.[9] As you lower and optimize your bill, the amount you owe to your optimization provider also decreases. In terms of industry averages, expect pricing at 1% to 3% of your cloud spend per year; e.g., for $3 million of cloud spend per year, expect to spend between $30,000 and $90,000 on optimization tooling.[10] You may be able to receive discounting if you're a very large user or if you're working with a powerful partner that passes along a negotiated discount. To control costs, here's:

- **What it means.** Cloud spend is a good metric, as it's: 1) simple; 2) transparent; 3) a cloud-neutral unit; and 4) correlated to value delivered. Chargeback models notoriously get overly complex, with often questionable additional accuracy. If you opt for a different model, make sure the added complexity creates real value.
- **What to do about it.** Look for the two most common red flags — unusually high storage spend and billing departments that favor predictability over lower total cost. If that describes your organization, ask your cloud cost optimization vendors about their alternative options.

© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

4. ROI COMES QUICKLY

Adopters state that they quickly achieve ROI — sans caveats. And they mean it. As with most optimization tools, if you start with high inefficiency, the solution will yield greater savings. But even highly efficient cloud shops claim significant labor savings and minor speed-to-response savings. Business cases note both "hard savings" (e.g., on average, a 30% decrease in cloud spend upon initial implementation and ongoing 15% savings), and "soft savings" (e.g., operational savings, cross-cloud comparisons for migration and portability, and better usage of time for cloud-savvy employees).[11]

> "We haven't maximized the savings yet, but we've saved about 30% on instance costs." (Director of digital transformation at a large telecommunications company)

To obtain quick ROI, consider:

- **What it means.** Many companies don't mandate a business case for CCMOs (e.g., it's a $30,000 tool to manage $3 million worth of spend more efficiently). They remove this requirement to discourage convenience-driven decisions, where expensive multipurpose tools become the preference to minimize paperwork if they need other capabilities later. With such clear ROI and a low purchase price, this may be the best test to advocate for a lower barrier to tool adoption.
- **What to do about it.** If you still need a business case, follow normal protocol for business case creation in your organization. Forrester suggests that you use our Total Economic Impact™ (TEI) methodology as your standard organizational business case format.[12] This captures a more complete view instead of limiting the scope to benefits and costs.

5. THE CLOUD PROVIDER, NOT THE TOOL, TYPICALLY DOES DATA COLLECTION

I&O professionals are accustomed to full monitoring where they track, analyze, and act on data collected from their internal IT systems. The public cloud world is different. Using an agent-based approach, monitoring tools can collect health metrics on any service within a host. However, not every service has a host (e.g., load balancers or serverless functions). Even best-in-class monitoring tools have to rely on the native cloud platform provider to provide health data for these services. Most CCMOs don't do any data collection natively. They simply compile data collected from multiple monitoring sources (e.g., AWS CloudWatch, Azure Monitor, most common infrastructure, and APM tools) to provide insights.[13] The default data retention periods differ by cloud provider and CCMO. If you'd like recommendations to reflect history prior to your implementation date, you'll need the data stored in other platforms or in structured data files (e.g., CSV) for import. CCMOs generally will store or import between one and three years of historic data upon request. As you seek better data, address:

- **What it means.** Historically, infrastructure costs were fairly predictable. But in the new cloud era, powerful autoscaling capabilities and the value of self-service access introduce unpredictability. Role-based or user-based limits and alerts can help control exploding cloud costs but can't provide predictability without removing autoscaling capabilities.[14] Monitoring helps inform spend and performance decisions in real time while providing forecasting to help predict future spend —

© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

all while still leveraging the advantages of cloud. The challenge is deciding which data collection methods give you enough information to balance cost and performance and correctly forecast the future with an acceptable error rate.

› **What to do about it.** Decide whether you value independent insights gathered by monitoring tools rather than the cloud platform providers. If you prefer using monitoring tools, you have two options; 1) Choose a CCMO that already uses independent insights (e.g., Cloudability, CloudCheckr, or CloudHealth); or 2) choose any CCMO and supplement its default insights with independent insights from tools like Datadog, Logicworks, or ScienceLogic.

6. CCMO INSIGHTS ARE LIMITED TO IDENTIFYING WASTE AND OPTIMIZING COMPUTE

Capabilities vary, but at a high level, expect bill visibility, waste identification, and infrastructure usage optimization across AWS and Azure (see Figure 3).[15] CCMOs collect meta billing data from providers and can apply your discounting or specialized pricing models in such a way that they represent an accurate bill; however, their optimization insights are limited to core infrastructure services.[16] The optimization engines themselves typically look at historic monitoring data, ratios from other customers, created tags and policies, and performance insights to inform their recommendations. Other capabilities include billing unification, identifying waste (e.g., unattached IP addresses or resiliency tools relaunching terminated services), anomaly detection, cross-cloud comparisons, turning off developer resources during nonwork hours, and spot-instance consulting support. The most commonly requested new capability isn't new platform support or better optimization engines but rather the ability to wrap all management costs into each individual developer bill so business groups carry the cost burden securely and efficiently, using tools outside the data center. Unfortunately, no tools have this capability yet. Set your expectations by determining:

› **What it means.** If you're looking for basic optimization across AWS or Azure, you have a lot of options. Once you're targeting database resources or support for GCP, IBM, Oracle, VMware, and beyond, your options become more limited.

› **What to do about it.** Rank the list of desired capabilities in order of priority. Cross-check your list of expectations for this product to determine whether it's: 1) out of scope; 2) rare but plausible; 3) relatively common; or 4) in every tool. This should help you create your vendor evaluation with reasonable expectations.

FORRESTER®
© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

FIGURE 3 Expectations For Cloud Cost Optimization Tooling

For:	Expect:
• Platforms and the service they optimize	• Only infrastructure services from AWS and Azure
• Types of waste they identify	• Unattached volumes, unattached IP addresses, orphaned snapshots, and unused resources
• Types of optimization advice they give	• Reserved instance purchases today and at next purchase, credit usage, and configuration corrections
• Data sources they collect	• Billing and monitoring data from AWS and Azure
• Data sources they can leverage	• AWS CloudWatch, Azure Monitor, meta billing data, tagging information, infrastructure monitoring, logging tools, and some APM metrics

7. COMPANIES IN THIS SPACE ARE TRANSIENT

CCMO software vendors are very niche. They provide an extremely useful value proposition, but they're in a short-term business. Make no mistake, your need for cost optimization will be ongoing, but this is an area that native public cloud vendors are building out aggressively. When capability depth catches up, you must honestly weigh the real importance of its multicloud support and independent opinion. This isn't a shocking realization for vendors in this area. They're already deepening their optimization engines, building out differentiating visualization, seeking alternative ways to collect infrastructure/application insights, and actively looking to tackle the next cloud management challenges. These all extend the tenure of their business. Fast acquisition is the path forward for some, giving them either deeper functions or deeper pockets to tackle what lies ahead. Acquisitions have been numerous: FittedCloud by Apptio, CliQr and Cmpute.io by Cisco, CloudCruiser by Hewlett Packard Enterprise (HPE), Cloudyn by Microsoft, and CloudHealth by VMware.[17] Manage vendor risk by thinking about:

› **What it means.** When vendors are volatile, the general advice is to approach with caution, but in this case, don't. Lock-in is a minimal fear. In fact, this pending pressure is only beneficial to your organization. Fear of becoming obsolete — and the added incentive to be acquired — pressures vendors to deliver better products, provide long-term value, and accelerate the sales process. The actual lock-in for your organization is minimal. Your worst-case scenario is that you'll need to swap products, requiring you to redo onboarding and integration work. Because the management tool doesn't launch resources in any special way, swapping is less painful.

© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

- **What to do about it.** Given the high likelihood of exiting, make sure your exit strategy is in place. Create documentation about whether you'll store or export the data collected in this portal upon your exit, and how.[18] Consider backing up your CCMO data with regular exports to relational database to have for import to a new system should you need to change providers.

8. CCMOS FOCUS ON REACTIVE OPTIMIZATION

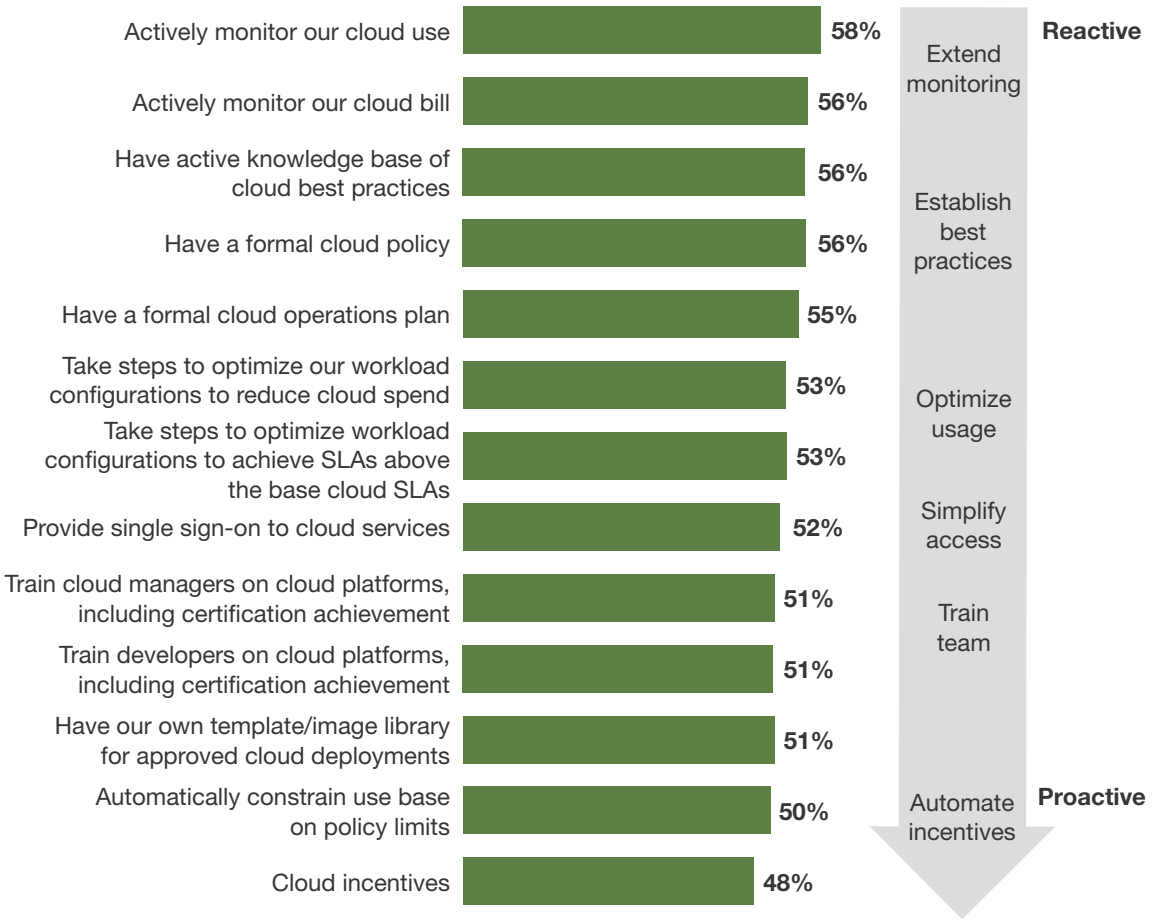
CCMO tools don't include orchestration capabilities. They can't build templates or launch new instances. Their recommendations retroactively look at your cloud environment to uncover inefficiencies and ongoing improvements. This reactive approach is both good and bad. It gives you freedom to pick the developer experience(s) without painful efforts to discover and convert — and all users and apps encounter the same optimization experience, regardless of where they were built or from where they were migrated.[19] But this also means there's a small window prior to optimization, and recommendations are limited to infrastructure corrections rather than big-picture optimization. Survey respondents say they're now further along with monitoring and reactive optimization than with setting proactive policies (see Figure 4). Decide if reactive is the right approach for your organization by considering:

- **What it means.** Although the retroactive view seems limiting, it enables managers to deliver optimization without disrupting developer productivity. Management-focused tools that dictate the orchestration process typically inhibit developers by providing a template-based, simplified dashboard with no vendor-specific app or developer services available. Today, 44% of North American and European infrastructure decision makers at enterprises using public cloud state that their primary approach to providing developer access is directly through the native platform, whereas only 26% state that it's through a hybrid cloud manager.[20]
- **What to do about it.** If proactive management is your preferred approach, where you're looking for an orchestration solution or a tool to tackle inefficiency through policies or the initial launch of an application, seek tool sets that tackle more cloud management challenges inclusively. Key markets to explore are hybrid cloud managers and standalone developer platforms (e.g., Pivotal PAS or RedHat OpenShift).

FORRESTER®
© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

FIGURE 4 Monitoring And Reactive Optimization Are More Popular Than Proactive Policies

"Which of the following statements describe your firm's current use of cloud computing platforms?"
(Actively practicing)



Base: 722 North American and European enterprise infrastructure decision makers whose firms have implemented some type of cloud
Source: Forrester Analytics Global Business Technographics® Infrastructure Survey, 2018

9. PROACTIVE OPTIMIZATION REQUIRES BEHAVIORAL CHANGES AND REINFORCEMENT

Reactive optimization is a great start to controlling cloud costs; however, it's limited for two reasons; 1) an initial lag for fixing mistakes and, more importantly, 2) the inability to fix architectural mistakes made during the initial build process. The former is often a minor pain that still results in some bloated costs, but for developers who launch massive quantities of resources, this can be substantial. Issues

FORRESTER®
© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

can include committing to poor-fitting reserved instances, excess space for configurations, and failure to shut down all resources when not in use. The larger concerns are critical architectural mistakes that require massive rework to correct and that aren't identified by CCMO tools but still have massive long-term cost implications. This includes poor app designs, poorly structured databases, and missed opportunities for operational savings. Enterprises that actively seek holistic optimization should look at engaging with developers in their development platforms with real-time policies, best practices, and incentives. To engage developers in the cost management effort, look at:

› **What it means.** Productivity is key. Slowing developers in the name of lower cost creates cost inefficiencies elsewhere. Resist the urge to strip away self-service access, insert manual approvals, or preach the benefits of in-person advisory about incorporating best practices. Proactive optimization techniques that target developers don't have to control them or slow them down. Powerful data visibility and reminders in the tools they're already using can have powerful impact. Some of this can be simple quotas, configuration templates, life-cycle policies, and smart defaults. More advanced versions can be chatbots, in-portal update flags, tagging mandates, and architectural reminders.

"[As a result of extending visibility to multiple stakeholders], people are much more judicious of their usage [. . .]. We've seen a reduction in cost and better behavior across teams." (Program manager within the office of the CIO at a midsize health insurance company)

› **What to do about it.** The meter is always running in the cloud. After you get reactive optimization under control, consider kicking off proactive optimization by tackling your most expensive mistakes. Brainstorm with your teams about the largest areas of waste that still occur and whether getting in front of that error at the initial provisioning moment would significantly reduce cost — and if it's possible, achieve optimization without disrupting productivity. That might be developers focused on large data sets, individuals that often forget unattached volumes, or big-picture struggles that tie into core development structural issues.

10. MAJOR CLOUD USERS WILL STILL NEED A DEDICATED CLOUD COST OPTIMIZATION MANAGER

Every organization needs someone to own cloud cost optimization; the question is whether that's a dedicated owner or just a part-time responsibility. Automation helps make simple optimization a part-time affair — but that's only part of the job. By description, a cloud cost manager is responsible for analytics and administration related to cloud spend.[21] Time-intensive tasks include juggling offset billing schedules for various services and providers, discerning best practices for complex discounting structures, and dividing up costs correctly by decision makers, users, and budget holders. Early efforts often focus on onboarding and integration into billing systems, while continued efforts focus on tackling the company's biggest cloud inefficiencies. The best fit is someone with not only budgeting/finance experience but also project management, compliance, and process design or engineering knowledge. To staff this position properly, consider:

FORRESTER®
© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

- **What it means.** Cloud cost management is still an emerging practice. Going forward, this will eventually merge with software-as-a-service (SaaS) license management, become imbedded in governance teams, move to become part of external service management, or focus on revenue management and value attribution. Today, this individual needs to reside with the cloud operations team or an IT financial management team, depending on which is best suited to disseminate cost information to influence behavior of stakeholders through data visualization.
- **What to do about it.** Determine if you have need (and budget) to accommodate a dedicated cloud cost manager. If so, look at public examples of cloud cost optimization job postings and position this individual to cross team silos to establish best practices and optimization across your organization. This role can provide real value in the eyes of your peers in application development and enterprise architecture.

Engage With An Analyst

Gain greater confidence in your decisions by working with Forrester thought leaders to apply our research to your specific business and technology initiatives.

Analyst Inquiry

To help you put research into practice, connect with an analyst to discuss your questions in a 30-minute phone session — or opt for a response via email.

Learn more.

Analyst Advisory

Translate research into action by working with an analyst on a specific engagement in the form of custom strategy sessions, workshops, or speeches.

Learn more.

Webinar

Join our online sessions on the latest research affecting your business. Each call includes analyst Q&A and slides and is available on-demand.

Learn more.

Forrester's research apps for iOS and Android.
Stay ahead of your competition no matter where you are.

© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

Supplemental Material

SURVEY METHODOLOGY

The Forrester Analytics Global Business Technographics® Infrastructure Survey, 2018, was fielded between July and September 2018. This online survey included 3,391 respondents in Australia, Canada, China, France, Germany, the UK, and the US.

Forrester Analytics' Business Technographics ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of business and technology products and services. Research Now fielded this survey on behalf of Forrester. Survey respondent incentives include points redeemable for gift certificates.

Please note that the brand questions included in this survey should not be used to measure market share. The purpose of Forrester Analytics' Business Technographics brand questions is to show usage of a brand by a specific target audience at one point in time.

Endnotes

[1] Source: Forrester Analytics Global Business Technographics Infrastructure Survey, 2018. For more information on cloud cost monitoring and optimization, see the Forrester report "The Forrester Wave™: Cloud Cost Monitoring And Optimization, Q2 2018."

[2] Source: Leon Spencer, "AWS released 497 new services and features last quarter," ARN, February 2, 2018 (https://www.arnnet.com.au/article/632917/aws-released-497-new-services-features-last-quarter/); AWS (https://aws.amazon.com/products/); and "Amazon EC2 Instance Types," AWS (https://aws.amazon.com/ec2/instance-types/).

[3] Source: Forrester Analytics Global Business Technographics Infrastructure Survey, 2018.

[4] CCMOs typically charge up to 3% of cloud spend. For companies spending $1,666,666.67 per year on cloud, the expected software cost would be $50,000. According to the "RightScale 2019 State of The Cloud Report," half of enterprises spend at least $1.2 million on public cloud per year.

Source: "RightScale 2019 State of the Cloud Report," RightScale (https://www.rightscale.com/lp/state-of-the-cloud).

[5] Microsoft allowed free management of Azure resources using its newly acquired Cloudyn Cost Management and Optimization services until December 2018, while charging 1% of yearly cloud spend to manage AWS or GCP. Source: Cloudyn (https://www.cloudyn.com/cost-management-pricing/).

It's highly likely that other native cloud platforms will charge for the capability when they do opt to deepen these capabilities. Today, AWS charges for its AWS Budgets service and the AWS Cost Explorer API service. Source: "AWS Cost Management Pricing," AWS (https://aws.amazon.com/aws-cost-management/pricing/).

[6] Source: "CloudHealth Technologies Is Now Part Of VMware," CloudHealth blog, October 4, 2018 (https://www.cloudhealthtech.com/blog/vmware-completes-acquisition-cloudhealth).

[7] We evaluated Microsoft's capabilities alongside standalone tools from its Cloudyn acquisition in the Forrester Wave evaluation, but it does plan to retire its multicloud support and instead dig deeper into its Azure support.

[8] This price point is drastically lower than that of a hybrid cloud manager, especially older generations of these bulky management suites. Often, those tools required starting price points from $250,000 to $500,000.

© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

[9] Each solution usually has a primary cost model, with secondary options available if your corporate accounting has unique demands or if your cloud usage patterns create unwarranted escalation without added value.

[10] For those spending $3 million on a cloud platform per year ($250,000 per month), expect to start paying $7,500 for the first month, prior to the associated decrease in spend. Doing a yearly tool price is more difficult because you'll need to understand typical growth and the associated savings from the tool on the overall cloud spend.

[11] In Rightscale's popular "State of The Cloud" survey for 2018, survey respondents estimated that they waste 35% of their cloud spend every year. Source: "How to Optimize Your Cloud Costs," RightScale (https://www.rightscale.com/solutions/problems-we-solve/cloud-cost-optimization-assessment).

[12] For more information on Forrester's TEI methodology, see the Forrester report "The Total Economic Impact™ Methodology: A Foundational Framework For Investment Decisions."

[13] APM is application performance management.

[14] You can turn off autoscaling in all major cloud providers, but if you do so, you'll either spend more on bloated configurations or endanger performance for that application.

[15] For more information, see the Forrester report "The Forrester Wave™: Cloud Cost Monitoring And Optimization, Q2 2018."

Support for VMware is becoming more common as part of a migration recommendation feature. Google Cloud Platform (GCP), IBM Cloud (Softlayer or BlueMix), Microsoft Hyper-V, and Oracle Cloud Platform support is uncommon among standalone cost optimization tools.

[16] Usually, this is limited to compute and storage recommendations, but it occasionally includes database recommendations.

[17] Source: "VMware Announces Intent to Acquire CloudHealth Technologies, a Global Platform for Multi-Cloud Operations," VMware press release, August 27, 2018 (https://ir.vmware.com/overview/press-releases/press-release-details/2018/VMware-Announces-Intent-to-Acquire-CloudHealth-Technologies-a-Global-Platform-for-Multi-Cloud-Operations/default.aspx); "Apptio, Inc. Acquires Machine Learning Cloud Optimization Company FittedCloud," Apptio press release, October 3, 2018 (https://www.apptio.com/press-release/apptio-inc-acquires-machine-learning-cloud-optimization-company-fittedcloud); Jeremy Winter, "Microsoft's acquisition of Cloudyn will help Azure customers manage and optimize their cloud usage," Official Microsoft Blog, June 29, 2017 (https://blogs.microsoft.com/blog/2017/06/29/microsofts-acquisition-cloudyn-will-help-azure-customers-manage-optimize-cloud-usage/); Scott Weller, "HPE to Acquire Cloud Cruiser to Bolster Consumption-Based IT for Customers," HPE, January 23, 2017 (https://www.hpe.com/us/en/newsroom/blog-post/2017/03/hpe-to-acquire-cloud-cruiser-to-bolster-consumption-based-it-for-customers.html); Rob Salvagno, "Cisco Announces Intent to Acquire Cmpute.io," Cisco Blogs, December 7, 2017 (https://blogs.cisco.com/news/optimizing-costs-in-a-multi-cloud-world); Rob Salvagno, "Cisco Completes Acquisition of CliQr," Cisco Blogs, April 15, 2016 (https://blogs.cisco.com/news/cisco-completes-acquisition-of-cliqr).

[18] Follow Forrester's best practices for cloud contracting exit strategies. See the Forrester report "Smart Cloud Contract Negotiation Strategies" and see the Forrester report "The Forrester Cloud Security Compliance Checklist."

[19] Orchestration options include the native cloud platform, a standalone developer platform, and a hybrid cloud manager. For choices on developer options and template conversion, see the Forrester report "The I&O Pro's Buying Guide For Hybrid Cloud Management."

[20] Source: Forrester Analytics Global Business Technographics Infrastructure Survey, 2018.

[21] See the Forrester report "Emerging Role Profile: Cloud Cost Manager."

© 2019 Forrester Research, Inc. Unauthorized copying or distributing is a violation of copyright law.
Citations@forrester.com or +1 866-367-7378

FORRESTER®
CHALLENGE THINKING. LEAD CHANGE.

We work with business and technology leaders to develop customer-obsessed strategies that drive growth.

PRODUCTS AND SERVICES

- Core research and tools
- Data and analytics
- Peer collaboration
- Analyst engagement
- Consulting
- Events

Forrester's research and insights are tailored to your role and critical business initiatives.

ROLES WE SERVE

Marketing & Strategy Professionals

CMO
B2B Marketing
B2C Marketing
Customer Experience
Customer Insights
eBusiness & Channel Strategy

Technology Management Professionals

CIO
Application Development & Delivery
Enterprise Architecture
- Infrastructure & Operations

Security & Risk
Sourcing & Vendor Management

Technology Industry Professionals

Analyst Relations

CLIENT SUPPORT

For information on hard-copy or electronic reprints, please contact Client Support at +1 866-367-7378, +1 617-613-5730, or clientsupport@forrester.com. We offer quantity discounts and special pricing for academic and nonprofit institutions.

Forrester Research (Nasdaq: FORR) is one of the most influential research and advisory firms in the world. We work with business and technology leaders to develop customer-obsessed strategies that drive growth. Through proprietary research, data, custom consulting, exclusive executive peer groups, and events, the Forrester experience is about a singular and powerful purpose: to challenge the thinking of our clients to help them lead change in their organizations. For more information, visit forrester.com.

153056

ABOUT CISCO

Cisco is the worldwide technology leader that has been making the Internet work since 1984. We connect everything—people, process, data, and things—and we use those connections to help change our world for the better. Our priority is to enable our customers to take advantage of the latest technologies, tools and platforms on any cloud, and accelerate innovation with products open and interoperable, working across all technology domains - without the complexity. We are dedicated to working with public cloud providers, the open source community and a global ecosystem of more than 60,000 partners, one million network engineers, and 500,000 DevNet developers. To find out more about Cisco's multicloud approach and solutions, visit https://cisco.com/go/multicloud.