

FinOps: A New Approach to Cloud Financial Management



Executive summary

The data center world is one of fixed spending. Once the money is spent, optimization options are limited. Optimizations in one area result in spending going up in another area, and resources are always constrained. It takes weeks or months to get new hardware. Spending, tracking, and forecasting are fixed and controlled, with no variability. It's a world where planning and prediction are straightforward.

In the late 2000s, the cloud came into play. While Amazon wasn't necessarily the first cloud, it was the first large, scalable cloud that removed many constraints for its users. You no longer had to wait weeks or months for hardware.

DevOps arrived at about the same time, transforming development and IT into a single high-velocity service. With DevOps, teams could deliver features quickly and be lean and agile. Fast feedback loops developed that allowed companies to adapt quickly to customer demand. In effect, the cloud changed the way that software was developed.

Today, we have a world where most enterprises are cloud-first — or at least aspire to be. Almost all cloud spending is variable, which means that micro-optimizations can happen at the team level each and every day to change the shape of the cloud spend.

The way that cloud infrastructure and software are deployed is completely different than in the world of on-premises data centers. It's a world of OpEx instead of CapEx, completely changing how finance is reported and managed.

The problem is that DevOps and the cloud have broken the traditional procurement model, which is static and slow-moving. In fact, procurement methods are so out of sync that procurement departments have essentially outsourced their jobs to engineers, who are spending company money at will with very few constraints and controls. The result is engineers making financial commitments to the cloud that affect the bottom line of their companies while finance teams struggle to keep up with the pace and granularity of spend.

There is a solution: a new set of patterns and practices called FinOps. FinOps brings together Finance, Technology, and Business Leadership to master the unit economics of cloud to drive the competitive advantage.

Introduction

Cloud spending accounts for a significant portion of IT spend — and is expected to grow at five times the current rate through 2020. Yet with all this growth, the cloud operating model is still immature. Operating and managing cloud infrastructure is vastly different from managing traditional on-prem IT infrastructure. In on-prem, decisions are limited to just a few people who make purchases once a quarter or once a year with a 3–5 year investment cycle. In cloud, decision-making happens in real-time and is distributed across Finance, Technology, and Business teams.

“Organizations are struggling to balance operational and financial control with the need for high-velocity decision-making.”

Because of this decentralization, organizations struggle to balance operational and financial control with the need for high-velocity decision-making. Lack of that balance leads to cloud bloat, inefficiencies that slow down the business, and sticker shock over the monthly cloud bill. Organizations are looking for guidance and best practices that help them work together to speed up innovation while optimizing cloud spending.

DevOps and the cloud have broken the traditional procurement model. In effect, procurement now outsources its job to engineers — as do IT and Finance. Engineers now manage operations and capacity, spending company money at will and making financial decisions about cloud providers such as AWS, Google Compute Platform (GCP) and Azure.

At many companies, these shifts in responsibility have resulted in some big problems. Engineering spends more than it needs to, with little understanding of cost efficiency. Finance teams struggle to understand — and keep up with — what is being spent on the mind-boggling number of options (AWS alone has approximately 300,000 SKUs) and the additional thousands of new features per year. Leadership doesn't have

enough input into how much will be spent or the ability to influence priorities, and procurement isn't a deliberate participant in its own outsourcing. In short, DevOps and the cloud have forced companies to change their approach.

Enter FinOps — a new operating model for the cloud. FinOps is a combination of systems, best practices, and culture that increases an organization's ability to understand cloud costs and make trade-offs. In the same way that DevOps revolutionized development by breaking down silos and increasing agility, FinOps increases the business value of the cloud by bringing together technology, business, and finance professionals with a new set of processes.

“FinOps is a combination of systems, best practices, and culture.”

With FinOps, you no longer have a siloed team that identifies costs and signs off on them. Instead, you have a cross-functional FinOps team acting as governance oversight, centralized optimization, and communication facilitator. A FinOps team acts a bridge between the technology, business, and finance teams. With FinOps, each service team or product owner has the data that enables them to have some control over their spend and to make intelligent decisions that ultimately impact the cloud bill.

Enterprises that are adopting FinOps all share a few characteristics. They break down silos between organizations. They get huge discounts over what they would have paid in the old world. Their engineers deliver innovation at faster speeds than in organizations with traditional operating models. Procurement shifts its focus to strategic sourcing and owns the relationship with the cloud provider. Finance is a proactive partner that is technically enabled and is focused on optimizing unit economics. Leadership makes intentional and frequent choices between speed, quality and cost.

The challenge

What's the penalty for not adopting FinOps? Costs soar, innovation slows down, and company margins decline. As one CTO put it: "Cloud spending is like antigravity. It will always float up unless you actively manage it."

A recent survey from 451 Research, **Cost Management in the Cloud Age**, found that:

- 80% of the respondents acknowledged that poor cloud financial management has had a negative impact on their business.
- 85% of the respondents reported overspending their budgets.
- 57% said that cloud cost management was a daily worry.
- 51% of respondents from Finance said they overspend on cloud compared to 37% of the respondents from Technology, which shows a real lack of alignment and communication.

With FinOps, companies see a 10% to 40% efficiency gain — a large industrial manufacturing company in Europe saved \$60,000 a month simply by resizing their Amazon RDS instances using FinOps.

The challenge is that FinOps is brand new to most companies. Very few people know how to implement it in an organization and it's still an emerging industry practice. This eBook introduces you to the fundamentals. For a full look at FinOps, we recommend reading **Cloud FinOps: Collaborative, Real-Time Cloud Financial Management**, available from O'Reilly Media early 2020.

Who should read this

If your company is relying more on the cloud, then you already know that traditional, static processes don't work when it comes to cloud infrastructure and spend. No matter your discipline, you're probably looking for a better way to operate. **FinOps: A New Approach to Cloud Financial Management** is an introduction to FinOps to ensure that your company is getting the most that it can from the cloud.

This eBook is intended for anyone who's interested in extending the cooperative, decentralized approach that you may already appreciate if your company practices DevOps. Broadening that DevOps spirit to include members from Finance and Business Leadership is what FinOps is all about.

If you're just starting out, this eBook will help you get FinOps introduced into your company. If your company already has a Cloud Center of Excellence (CCoE) or a cross-functional team of people responsible for the cloud infrastructure, this eBook will help them incorporate best practices for ensuring that cloud spend is part of their cloud strategy.

What is FinOps?

FinOps is a continuous, iterative journey that traditional enterprises and cloud-native organizations embark on as they continue to adopt the cloud. The goal of FinOps is to balance cost, speed, and quality in order to gain cloud efficiencies and keep reinvesting in innovation.

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The six principles of FinOps

FinOps is built around six core principles. FinOps practices that embrace these principles will be able to establish a self-governing, cost-conscious culture that promotes both cost accountability and business agility to better manage and optimize costs while maintaining the velocity and innovation benefits of cloud.

These principles were developed by the FinOps Foundation and validated by AWS:

1	Teams need to collaborate
2	Decisions are driven by business value of cloud
3	Everyone takes ownership for their cloud usage
4	FinOps reports should be accessible and timely
5	A centralized team drives FinOps
6	Take advantage of the variable cost model of the cloud

What is FinOps?

Making sure that all of your processes, tooling, and people align with these principles will help ensure the success of your FinOps practice. Let's look at them a little closer.

1	Teams need to collaborate	FinOps is about cultural change and breaking down the silos between teams that, historically, haven't worked together. In order to be effective, your FinOps practice needs to promote collaborative productive conversations and actions.
2	Decisions are driven by business value of cloud	Building a FinOps practice is about more than just reducing costs — it's about maximizing the impact of cloud. Sometimes that means spending more to drive innovation. The goal is to make sure you deliberately make the decision to increase spend instead of having spend creep up from waste without you knowing. FinOps should always consider the business value of the cloud with the goal of making completely informed decisions.
3	Everyone takes ownership for their cloud usage	The core idea of cloud is straightforward — if you use more, then you pay more. As a correlation, that means if you're responsible for cloud usage, then you're responsible for cloud costs. This idea means accountability should be spread to the edges of your organization, all the way to individual engineers and their teams.
4	FinOps reports should be accessible and timely	In the world of per-second compute resources and automated deployments, monthly or quarterly reporting isn't good enough. Your teams need to be able to quickly see data as soon as possible so they can make real-time decisions about their cloud usage and spend — instead of waiting until it's weeks after the fact.
5	A centralized team drives FinOps	If you want to change your culture, you need someone to drive it forward. A central FinOps team drives best practices through standardization, education, and cheerleading. That same team can centralize rate optimizations to take full advantage of them, while empowering the rest of the team to maximize usage optimization.
6	Take advantage of the variable cost model of the cloud	With cloud, capacity planning changes from "What will you need to cover demand?" to "How can you stay within your budget given what you're already using?" Instead of basing capacity purchases off possible future demand, base your rightsizing, volume discounts, and RI/CUD purchases off your actual usage data. Since you can always purchase more capacity to fit demand, the emphasis becomes making the most out of the services and resources you're currently using.

Cross-company collaboration is key

The goal of FinOps isn't necessarily to spend less — rather, to make sure a company's cloud spend is optimized and that the company is improving the unit economics of cloud.

Achieving those goals requires fluid, cross-company communication across multiple teams. The cloud is about agility innovation, decentralized decision-making, and fast adaptation to change. These qualities must be mirrored in how a company makes financial decisions about its cloud infrastructure.

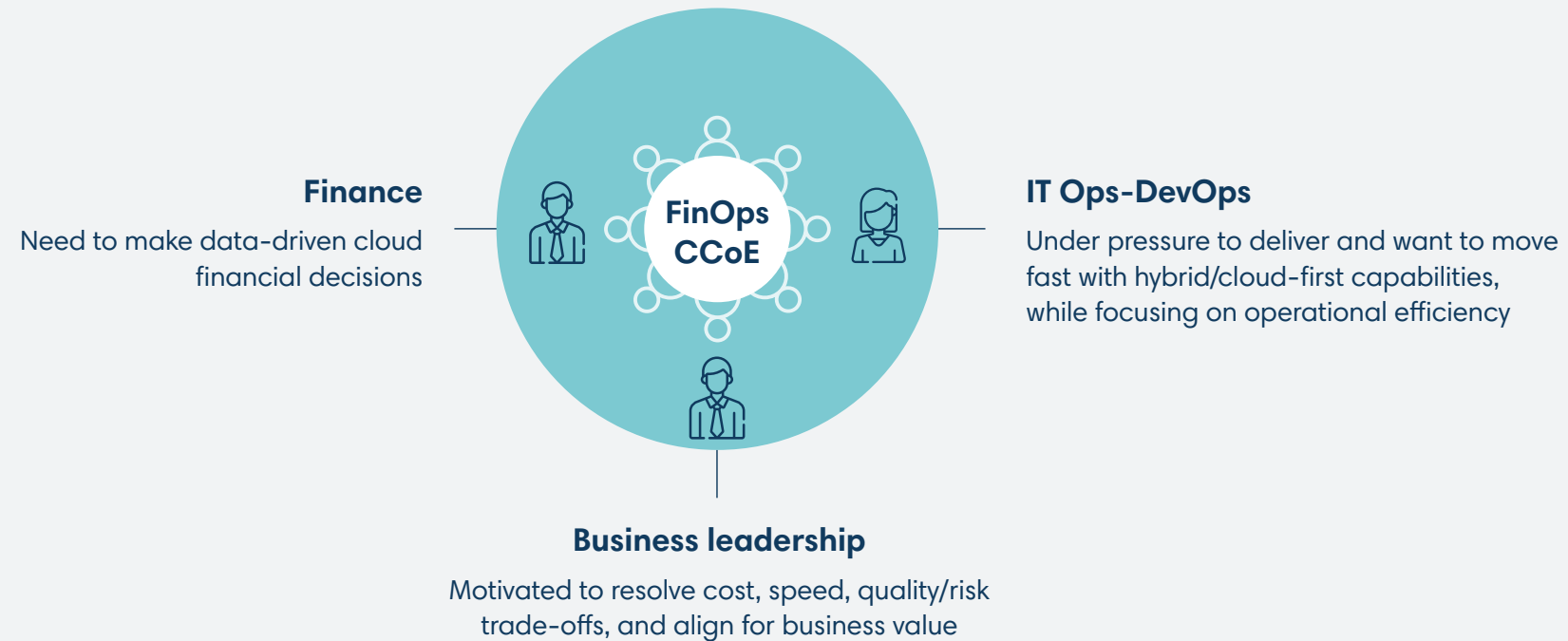
It all comes down to the difference between fixed spending and variable spending. Variable spending gives individual teams the ability to make daily decisions about how and where to spend money based on the value that money creates. Teams can measure the impact of that spending and iterate quickly in one of three directions: maximize the quality of their offering, improve speed of delivery, or drive down costs — also known as good, fast, or cheap.

“The cloud requires variable spending.”

In the same way that DevOps breaks down silos and increases agility, FinOps increases the business value of the cloud by giving all the stakeholders a shared set of processes.

The FinOps team meets and discusses choices about cloud infrastructure. The team's goal is to make sure everyone understands the interplay between the actual infrastructure, the infrastructure costs, and the business goals. People from Finance can take on a financial planning and advisory role. Management can give its perspective on what exactly should be optimized in terms of cost, speed, and quality. Development and Operations can contribute by explaining what cloud resources they need to build the applications and features that management has identified as adding value to the business.

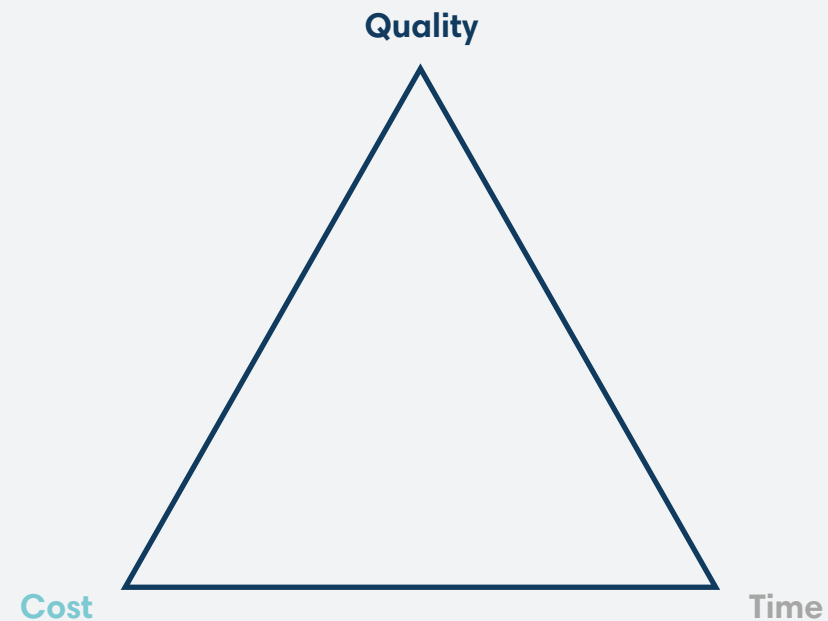
Cross-functional FinOps team drives best practices



FinOps drives best practices and helps people make sensible decisions about real-world trade-offs. Finance teams are still focused on costs and allocation, but now they're partners with the technology and business teams. They can shift from CapEx reporting to OpEx forecasting, and work with those who understand what the drivers of cloud spend are, even when there are thousands of SKUs. For instance, the VP of Finance can sit down with a DevOps team and have actual conversations about the trade-offs of going over-budget compared to the value that increased spending brings by enabling the company to ship key features faster, which can mean more revenue. Together, these stakeholders can come to a decision about the best approach to take.

The Iron Triangle

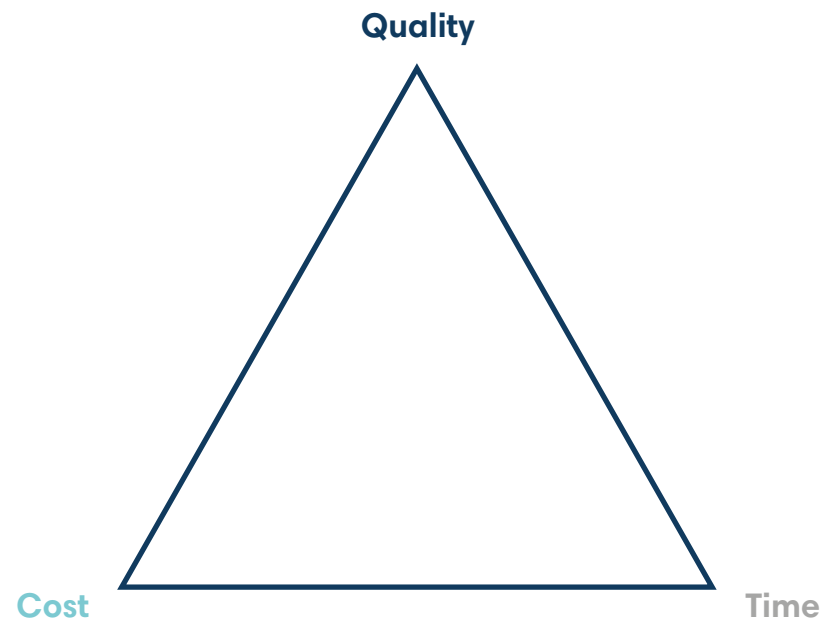
When you balance speed, cost, and quality on different axes, they form what's called the Iron Triangle.



Also known as the Project Triangle, the Iron Triangle shows the relationships between these three parameters. It shows the trade-offs a project manager can make in figuring out how to complete a project. Changes in one side forces changes in others to compensate for the change. The role of the FinOps team is to give everyone the tools they need to make decisions about their triangle. Instead of focusing on savings and ROI (only one corner of the triangle), the goal of FinOps is to make sure everyone works together to improve business outcomes for the whole company.

Optimizing for different sides of the Iron Triangle

Here are a few examples of what it means to optimize for different sides of the Iron Triangle.



Optimizing for speed over cost

Your team is understaffed, and you have a major release coming up. Instead of running your own MySQL, you decide to use AWS Aurora. You know you'll pay more, but it frees up time to focus on feature development. You recognize that being the best MySQL shop doesn't bring you differentiated value — focusing on improving your upcoming release does. You've just optimized for innovation and speed of delivery over cost.

Optimizing for quality over cost

Your platform is too slow. You could refactor large amounts of code, but your team is understaffed, and there are major releases coming up. You decide to throw money at the problem and increase the number of machines in your analytics cluster. You've just optimized for quality over cost.

Optimizing for cost over speed

A rendering service that currently uses EC2 to do occasional file format transformations is too expensive, and because it's a production system for your SaaS offering, it's eating into the margins for the product. You decide to invest the time to refactor the service to trigger serverless functions only when jobs are needed, rather than an on-all-the-time virtual machine. Your costs plummet and margins improve significantly. Your CFO is happy because those improvements ultimately affect the bottom line positively.

Involving the stakeholders

Because it reflects a shift from static, siloed processes to fluid, agile ones, members of a FinOps team must move outside their comfort zone and learn something about each other's disciplines. Remember, it's all about balancing cost, speed, and quality — and everyone has a say in how to do that.

Finance learns about the cloud

Before FinOps, a finance team might have looked at spending monthly or even quarterly to see, for example, the total cost for compute resources. When dealing with the cloud, a finance team working in isolation can quickly become overwhelmed with the explosion of SKUs and features that are characteristic of cloud vendors.

With FinOps, Finance meets frequently with the technology team to understand how those cloud resources are used, what projects might be coming up and what resources they'll need. Instead of examining costs in terms of months or years, the finance members shift the time frame to resolutions of hours or even seconds, which reflects how cloud companies calculate charges.

With the knowledge they get from the business and engineering members, stakeholders from finance can take specific actions, such as buying RIs or renegotiating terms with a cloud provider.

Engineering learns to consider costs

A crucial point for engineering is to understand the impact of the shift from CapEx to OpEx. The cloud has given engineers, who can spin up their own compute resources, the ability to affect OpEx spending, which in turn affects the company's bottom line.

If OpEx spending is treated as a COGS (cost-of-goods expense), engineering actions to procure cloud resources hit the margins of a publicly listed company and can ultimately affect its stock price. It's critical to get a handle on how these costs are reported and allocated.

Just as finance teams have to broaden their scope to understand what makes up the cloud infrastructure, engineers, whether in operations or development, also need to understand how their infrastructure choices affect the company's finances. Being a good engineer isn't just about understanding the tech anymore — engineers must understand how technological choices have a financial impact and consider cost as a new efficiency metric, which they must take into account when they write code and deploy infrastructure.

“Engineers must consider cost as an efficiency metric when they write code and deploy infrastructure.”

Management sets the priorities

Management needs to set business priorities so that other FinOps team members can start to think about the trade-offs between cost, speed, and quality. Management also needs to understand what choices are available to Finance and Engineering to make the most informed decisions that will best support the business. The Iron Triangle is management's guide. They take the broad view and make the decisions on whether to optimize for speed, quality, or cost for each product.

The language of FinOps

Communication among FinOps team members is essential to effectively optimize for speed, cost, and quality. Because the team includes people from different disciplines, everyone needs to share a common vocabulary for describing cloud spend. This is the language of FinOps.

The two most important terms are **cost avoidance** and **cost optimization**. Cost avoidance refers to activities where you turn off a resource or reduce its size to a cheaper option to decrease cost. Cost avoidance is about using less. Cost optimization, on the other hand, is about reducing the rates you pay for what you are using. For example, you might optimize costs with Reserved Instances (on Amazon or Azure) or Committed Use Discounts (on GCP).

Once every member of the FinOps team understands what cost avoidance and what cost optimization is, they can discuss the implications of their cloud bill.

“At its simplest, a bill can be summarized as: $Spend = Usage \times Rate$ ”

At its simplest, a bill can be summarized as: **Spend = Usage x Rate**. This equation says that cost avoidance, which relates to usage, and cost optimization, which relates to rate, are the two levers available to reduce the amount the company spends.

<p>Measuring usage</p>	<p>When looking at cost avoidance, it's important to understand how usage is measured. Usage isn't simply a count of the number of services a company uses. Each of those services uses different metrics to measure usage. To understand the cloud bill, it's important to understand how the cloud provider charges for each of them.</p> <p>For example, on AWS, for EC2 instances, you're charged by the second. What matters is time, or how long you run the instance. On GCP, PostgreSQL is charged by GB/month, so you're charged according to both quantity and time. On Azure, any data coming out of a VM to a non-Azure location is called egress traffic and charged. The first 5 GB of data are free each month. Above that limit, you're going to have to estimate your egress traffic.</p> <p>When you estimate costs, make sure you understand how each resource is measured by the cloud provider to avoid surprises.</p>
<p>Cost avoidance activities</p>	<p>Two of the most common cost avoidance activities are rightsizing and automating. Rightsizing is making sure that your cloud infrastructure uses resources that are "just right." The infrastructure is neither over- nor under-provisioned. Compute instances are fast enough to get the job done without clipping or without having unused power. Likewise, storage isn't larger than needed, volumes aren't unattached, and there are no more snapshots than necessary.</p> <p>Automating takes advantage of the cloud's elasticity by programmatically handling repetitive or hygiene tasks, such as shutting down resources that aren't actively used. For example, a company might write a script that turns off instances that aren't used over the weekend. They might run a script that snapshots and deletes orphaned block storage volumes.</p>
<p>Making cost avoidance decisions</p>	<p>Making cost avoidance decisions involves the whole FinOps team. Engineering needs to be involved because they'll make the actual changes to the infrastructure and they'll understand the implications of those changes in terms of quality and speed of innovation. Management needs to be involved to make sure that business goals are met. Finance is there to track, forecast, and monitor how the decisions that Engineering and Management make impact costs.</p>
<p>Cost optimization activities</p>	<p>Cost optimization decisions can be made by the finance members of the FinOps team once they understand the cost avoidance decisions. For example, Finance can manage the RIs on Amazon or Azure, or Committed Use Discounts (CUDs) on GCP, and negotiate volume discounts. The finance and procurement teams can use their centralized economy of scale to drive higher coverage of commitments such as RI rates and better commitment terms.</p>
<p>Measure everything</p>	<p>The FinOps team should use metrics to make sure every cost avoidance and cost optimization activity is paying off. Are the RIs you have in place being used? Are they saving you money? Are the compute instances you're using for a particular project the right size? Are they delivering enough performance to ensure customer satisfaction? Is the CPU usage well below what the instance can provide?</p>

“Metrics need a target. A measurement without a target is just data.”

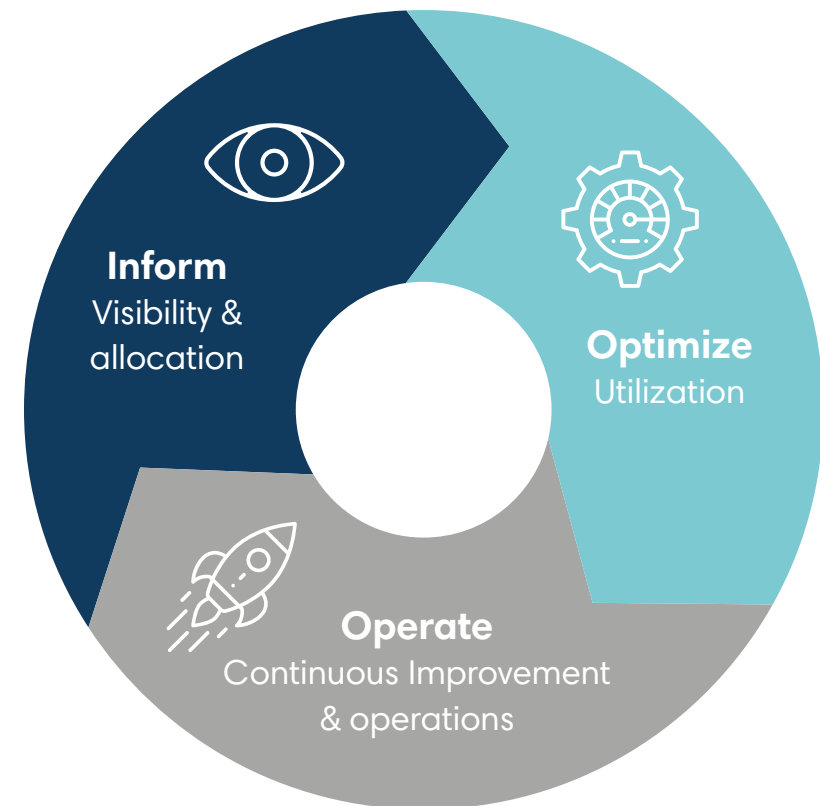
All of these metrics need a target. A measurement without a target is just data, meaning you won't know if you're on track or if you need to change something. For example, a target on Amazon might be to make sure that all RIs have 90% utilization. To make sure that target is being met, you can track the actual utilization for every subscription you have on Amazon. Measure the number of hours or seconds that you're applying the discount versus when you're not. If any one of those subscriptions falls below 90% utilization, you can look for ways to modify or exchange those RIs to get better coverage.

Metrics with targets make it possible to have objective conversations with teams that aren't meeting those targets to understand why. Members of the FinOps team can work with them to decide on the best actions for evaluating those targets and, if they're realistic, reaching them.

The FinOps lifecycle

The implementation of FinOps takes place across three phases, with each phase guided by the six core principles. Those phases are: Inform, Optimize, and Operate. When FinOps is used correctly, organizations cycle through these three phases constantly, achieving higher and higher levels of success.

- The **Inform** phase gives you the visibility for allocation and for creating shared accountability by showing teams what they're spending and why. This phase enables individuals who can now see the impact of their actions on the bill.
- The **Optimize** phase empowers your teams to identify and measure efficiency optimizations, like rightsizing, storage access frequency, or improving reserved instance coverage. Goals are set upon the optimizations identified which align with each team's area of focus.
- The **Operate** phase defines processes which enable the goals of Technology, Finance and Business to be achieved. Automation can be deployed to enable these processes to be performed in a reliable and repeatable manner.



The lifecycle is inherently a loop. The most successful companies take a **Crawl, Walk, Run** approach and get a little better each time they go through it. Let's dig a little further into the activities that go along with each phase.

The new requirements for FinOps

Inform		Optimize		Operate	
Understand cost drivers, allocate spend, and benchmark efficiency		Measure potential optimizations and set goals based on strategy		Define processes to ensure actions achieve goals	
Map spending data to the business	Trending and variance analysis	Identify usage and spend anomalies	Set goals to achieve business strategies	Define responsibilities and processes	Centralize rate optimization ownership
Create showbacks and chargebacks	Internal and external benchmarking	Find and measure usage optimization	Compare services and workload placement	Show real-time spend data to stakeholders	Continuously improve and automate
Define budgets and forecasts	Integrate showback and chargeback	Measure and set goals on rate optimizations	Understand and educate on optimization levers	Empower teams to take action	Define governance and controls
Allocate team spend and shared costs	Calculate custom rates and amortizations				

Inform phase activities

“The Inform phase is where you understand your costs.”

The Inform phase is where you start to understand your costs and the drivers behind them. During the Inform phase, you get visibility into cloud spend, drill down into granular cost allocation, and create shared accountability. By using various benchmarks and analyses, you can show teams what they’re spending down to the penny, and why. In this phase, individuals can see the impact of their actions on the bill — often for the first time ever.

Some of the activities you’ll do in this phase include:

<p>Map spending data to the business</p>	<p>Spend data must be properly mapped to the organizational hierarchy by cost centers, applications, and business units. Tags and accounts set up by engineering teams don’t always align to what Finance needs, nor do they include the proper roll-ups for executives.</p>
<p>Create showbacks and chargebacks</p>	<p>As spend accountability is pushed to the edges of the organization, chargeback and showback models become even more important to drive ownership of spending and recover costs.</p>
<p>Define budgets and forecasts</p>	<p>A FinOps team should be able to generate forecasts of cloud usage for different projects and propose what budgets for different projects should look like. Managing teams to budgets lets you know when to lean in to help optimize or reduce spend. They also enable conversations about why spending has changed. Forecasts should be done for each team, service, or workload based on fully loaded costs and properly allocated spending.</p>

The FinOps lifecycle

<p>Set tag strategy and compliance</p>	<p>It's critical to get early alignment on a supporting tag strategy to get more granular. Without this, tags are defined by uncoordinated teams and tag sprawl quickly makes them unusable.</p>
<p>Identify untagged (and untaggable) resources</p>	<p>There are two types of organizations: those who have untagged resources and those who have fooled themselves into thinking they do not. Assigning untagged resources to teams or workloads — and applying a meta layer of allocation to untaggable ones — is critical to proper chargeback and visibility.</p>
<p>Allocate shared costs equitably</p>	<p>Shared costs like support and shared services should be allocated at the appropriate ratio to responsible parties. There are a few methods to do this including sharing them equally or assigning them based on a usage metric like spend or compute hours. Leaving them in a central bucket is generally less desirable as teams then don't see the true cost of their applications.</p>
<p>Trending & variance analysis</p>	<p>Identifying spend drivers often requires ad hoc comparisons of time periods and the ability to report at a high level all the way down to resources to understand cost drivers.</p>
<p>Create scorecards</p>	<p>Scorecards let the FinOps team benchmark how different project teams are doing in terms of optimizing cost, speed, and quality. They're a quick way to look for areas that can be improved.</p>
<p>Benchmark against industry peers</p>	<p>Building on the concept of internal scorecards, more advanced FinOps teams extend their benchmarking to make comparisons of other industry-peer-level spend data to identify efficiency compared to others with a normalized set of spend characteristics.</p>
<p>Integrate showback/chargeback into internal systems</p>	<p>Once chargeback has been implemented and visibility given to teams, mature FinOps teams then integrate that data programmatically into their relevant internal reporting systems and financial management tools.</p>
<p>Dynamically calculate custom rates and amortizations</p>	<p>Accurate spend visibility requires that you factor in any custom negotiated rates, that there's an application of discounts from RIs/CUDs, and that amortized pre-payments from RIs/CUDs are applied. This ensures teams are tracking to the right spend numbers and aren't surprised if their finance teams bill don't match their daily spend reporting.</p>

Optimize phase activities

“During Optimize, you set the goals for the Operate phase.”

During the Optimize phase, you take the first steps to improve your cloud and set the goals for the upcoming Operate phase. While you look at both cost avoidance and cost optimization, the first focus is cost avoidance. Once those processes are formed and goals clarified, you can start building strategies to take advantage of the offerings from cloud providers to reduce cloud costs.

This phase includes these activities:

Identify anomalies	Anomaly detection isn't just about expense thresholds. It's also important to identify unusual spikes in usage. Given the dramatic rise in the variety of services, anomaly detection that watches for any deviations in spend helps you find the needle in the haystack that may need quick remediation.
Find & report on underutilized services	After teams can see their properly allocated spend and usage, they can start to identify unused resources across all major drivers of spend like compute, database, storage, or networking. You can measure potential savings based on generated recommendations that engineering teams will use during the Operate phase following a predefined process to rightsize resources.
Centralized Reserved Instances or Committed Use Discounts	The FinOps team can evaluate metrics on existing AWS/Azure RIs or GCP CUDs to make sure the ones they have are effective, then look for opportunities to buy more. They track commitments and reservations, analyzing the entire portfolio across the enterprise to account for and understand the efficiency of usage and cost avoidance actuals, complete with visibility into upcoming expirations.
Comparing prices & workload placement	Workload placement is another cost reduction measure. Once the FinOps team understands engineering's infrastructure requirements, they can look at multiple cloud vendors and compare pricing options.

Operate phase activities

“The Operate phase sets up the processes to take action.”

Where the Optimize phase sets the goals for improving, the Operate phase sets up the processes to take action. In this phase, decisions and plans are put into place to reach those goals. It also stresses continuous improvement of processes. Once automations are in place, management takes a step back to ensure spending levels are aligned with company goals. It's a good time to discuss particular projects with other FinOps team members to decide if they want to continue to operate them as they have been, or if they can make some changes.

Here are the activities that take place during the Operate phase:

<p>Deliver spend data to stakeholders</p>	<p>Daily or weekly visibility gives stakeholders a feedback loop that enables them to make the right decisions for the business. During the Operate phase, you focus on how these reports are delivered to stakeholders – building out the processes and automation to generate the reports and make them available.</p>
<p>Cultural change to align with goals</p>	<p>Teams are educated and empowered to understand, account for, and partner with their organizational counterparts to drive innovation. Finance teams are empowered to be bold, change agents who move out of blocking investment and into partnering with the business/tech teams to encourage innovation. Each must constantly and iteratively improve their understanding of cloud and level up their reporting efficiency.</p>
<p>Rightsizing instances and services</p>	<p>During the Optimize phase, you might discover that you're paying for more compute resources than you need. Recommendations that have been generated are actioned during the Operate phase. Engineers review the recommendations and make adjustments, such as switching to less powerful, less expensive instances, or replacing storage that's not in use with smaller sizes. Mature FinOps teams do this across all major drivers of spend.</p>
<p>Defined governance & controls for cloud usage</p>	<p>The primary value of the cloud is speed of delivery fueling greater innovation. At the same time, cost must be considered, so mature companies constantly evaluate their guardrails on how and what types of cloud services can be consumed without hampering innovation and velocity. Overdo control and you lose the core benefits of moving to the cloud.</p>
<p>Resource optimization automation</p>	<p>Mature teams move toward programmatic detection of changes needed for incorrectly sized resources and offer the ability to automatically clean up underutilized ones.</p>
<p>Integration of recommendations into workflows</p>	<p>Mature teams stop requiring application owners to log in to see recommendations and begin pushing items like rightsizing recommendations into sprint planning tools like Jira.</p>
<p>Policy-driven tag clean-up and storage lifecycle policies</p>	<p>Mature teams programmatically clean-up tags through policies like tag-or-terminate or tag-on-deploy. They also implement policy-driven storage lifecycles to ensure data is stored in the most cost-effective tier automatically.</p>

FinOps in action

Let's take a look at how a FinOps team operates using the example of a streaming video service. For a single stream, the current infrastructure delivers content in 600ms and costs \$0.01. By running tests, the DevOps team discovers that improving the infrastructure can cut the time to 400 milliseconds, but the cost goes up to \$0.011 per stream. That's a 10% increase in cost, but they also find that customers begin consuming 20% more paid content. That's clearly a win. The company spends more, but it makes more than the spending increase.

The team does more tests that push costs up to \$0.015 while cutting delivery speeds down to 200 milliseconds, with a further incremental 15% improvement in the consumption of paid content. This strategy is less straightforward. There's a 27% incremental increase in costs for only a 15% incremental increase in revenue. Is it worth it?

To answer that, the technology team needs to think in terms of cost and revenue. The finance team must be on board with the fact that not only did the infrastructure change increase costs, but it increased the COGS costs in a production system, which directly affects gross margins. The cost of that change to the business was much more expensive than it would have been in an R&D test environment that's not a part of the company's COGS.

The finance and technology team members come into conflict on the "right" thing to do. The head of operations says getting streaming speeds down to 200 milliseconds is a win, despite the disproportionate ratio between the speed improvement and the cost of it. The finance people say the extra speed isn't worth the extra 27% cost because it's only driving 15% more revenue and eating into product margins.

But there's a third factor to consider. Two factors, unit cost per stream and speed of delivery, are easily measured. The third factor is the business value of fast delivery times. This is where FinOps really shines. It gives a balanced perspective to what otherwise might be one-sided decisions.

The members of the FinOps team who represent management also have a voice. They understand that, on paper, the finance partner's argument makes sense. But they also realize that, over time, faster load times have a snowball effect on customer satisfaction. Even though the immediate impact on revenue impact doesn't justify the extra cost, the long-term brand loyalty value does. The executive team breaks the tie and decides to spend the money.

A financial management platform for the cloud

If the FinOps team is going to make sure the company is getting the most it can from its cloud providers, it needs accurate, timely information about usage and rates. How can it get that information?

One approach is to build your own system. Many companies start by using spreadsheets to keep track of the data and analyze it to draw conclusions. Building your own seems to have the virtue of simplicity, and it might work well if a company is small or has simple reporting needs like a single product run by a single team. However, once a company starts to increase both its cloud spend and complexity of cloud usage, spreadsheets just don't scale enough. There are too many virtual machines, too many variables, not enough in-house expertise, and too many changes on the provider's end to keep accurate records by hand.

The other option is a third-party cloud financial management platform. If you know your use of the cloud is increasing and you want to institute FinOps in your company, a platform that gives all the stakeholders access to accurate data and timely recommendations is a good choice. But what should a cloud financial platform offer?

Speed of delivery

A third-party platform lets you start saving immediately. Install the platform, let the program collect all the data and start getting recommendations on ways to optimize. Building your own system is time-consuming and the delays will cost you.

Accurate financials

Accurate financials are essential if you're going to drive informed decision-making and reduce risk. For example, the platform should account for amortization, cloud provider discounts, credits, and prepayments (such as RIs on Amazon and Azure).

Actionable analytics

Analytics aren't the same as spreadsheets, which are simply compilations of data. Analytics need to be actionable and customizable, and you should get actual recommendations for both cost optimization and cost avoidance. You also should be able to easily tailor information for particular stakeholders. For example, management might want high-level information about cloud spend while engineers are interested in their own projects.

Built-in expertise

Most companies don't have years of expertise with the cloud — or the accumulated data to take advantage of machine learning. A cloud financial platform should provide that. It should be able to use large amounts of historical data, which it has collected from many customers, to enrich the recommendations it makes to you.

Machine learning

The platform should have an analytics engine that learns from past behavior and adapts to rapid changes.

Adaptability

Cloud providers are known for constantly making changes. For example, they might change their billing from hourly to by the millisecond, or they might deprecate their billing API. An in-house company that has built its own solution can rarely keep up with their providers, while a third-party platform insulates you from these changes.

Normalization

Many enterprises use multiple cloud vendors to make sure they don't get locked into a single provider. However, each vendor has its own terminology. A financial management platform should be able to translate the language of each cloud provider into the language of your business, so you see labeling conventions that make sense to you.

Integration

It's critical to be able to integrate all your data into other financial and engineering systems your company uses. To do that, the cloud financial system must support a public API.

Sanity checks

Even very large enterprises, which can afford to build cloud financial platforms themselves, need a sanity check. A third-party platform can give you confidence that the recommendations your own system makes are valid.

Apptio Cloudability and FinOps

Apptio Cloudability is a cloud financial management platform that uses data science, machine learning, and automation to enable Finance, Technology and Business Leadership to continually optimize cloud consumption to improve the unit economics of cloud. Its 8 years of detailed data and \$11 billion of managed spend mean it has the expertise and historical data to make sure your FinOps team succeeds.

Apptio Cloudability has a fully documented public API that supports all parts of the platform which, among other things, means you can integrate with business systems as well as DevOps and orchestration tools. You can also use the API to automate repetitive processes, such as shutting down instances when they aren't being used.

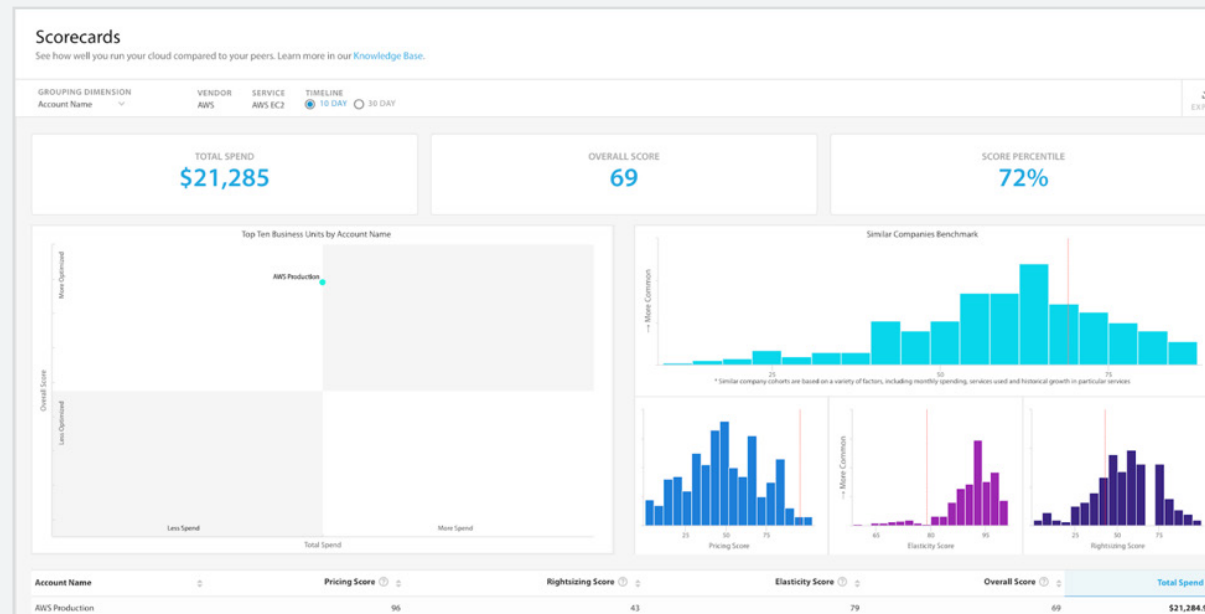
Of course, Apptio Cloudability provides a wide range of actionable insights, such as Scorecards, Anomaly Detection and Business Mapping. These are just a few examples of how Apptio Cloudability can help you successfully adopt FinOps practices and processes.

“It’s peace of mind with Cloudability. I have my finger on the pulse of the company and nothing is changing without my awareness.”

Rocco Corage,
Director of Operations, Cloud Nation

Scorecards

The Scorecards feature help you understand how well you're running your cloud. They give you a bird's-eye view on how each of the teams are doing in terms of cost optimization and cost avoidance.



You'll see a team's scores for pricing, rightsizing, and elasticity. The pricing score lets you know how well cost optimizations, such as RIs and volume discounts, are working. The rightsizing score lets you know if the workloads are running on correctly sized resources. The elasticity score lets you know how well automation and autoscaling are being used.

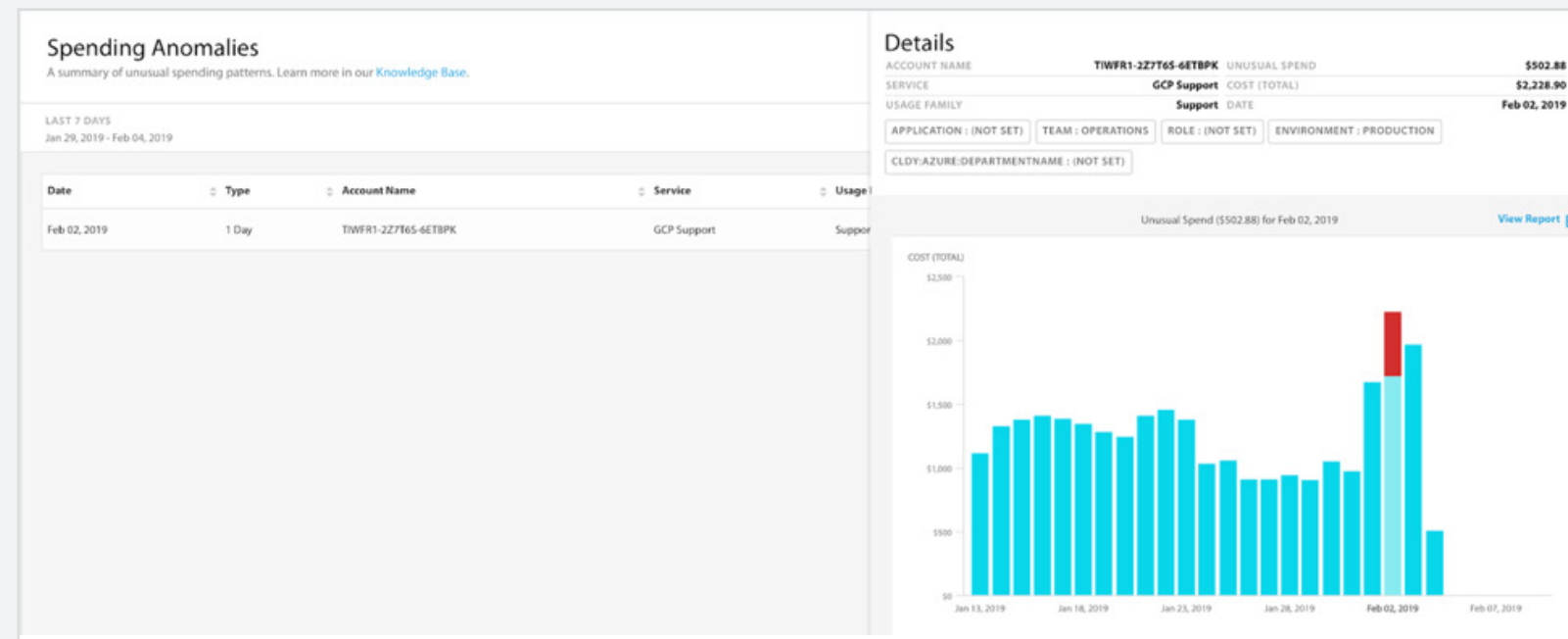
“Cloudability does more than talk about cost management best practices. They deliver actionable results and insights that help us make our AWS infrastructure as efficient as possible.”

Paul Forte,

Director of Technology, Cimpress

Anomaly Detection

Anomaly Detection lets you find the needle in the haystack — that unexplained spike in resource usage that’s driving up your bill. The Anomaly Detection feature is enabled by default and starts working right out of the box. Cloudability processes anomaly data as soon as a new billing file is available from the cloud provider, which means that anomalies are detected quickly and can be addressed as soon as they’re found. In this example, the anomalous spend is in red.



Business Mapping

Business Mapping lets you restructure your cloud spend to fit your organization. With Business Mapping, companies can view and report on cloud spend at the application or business level rather than just looking at raw cloud provider services like Amazon EC2 or S3. Businesses can optimize the unit economics of a given application, product or business unit.

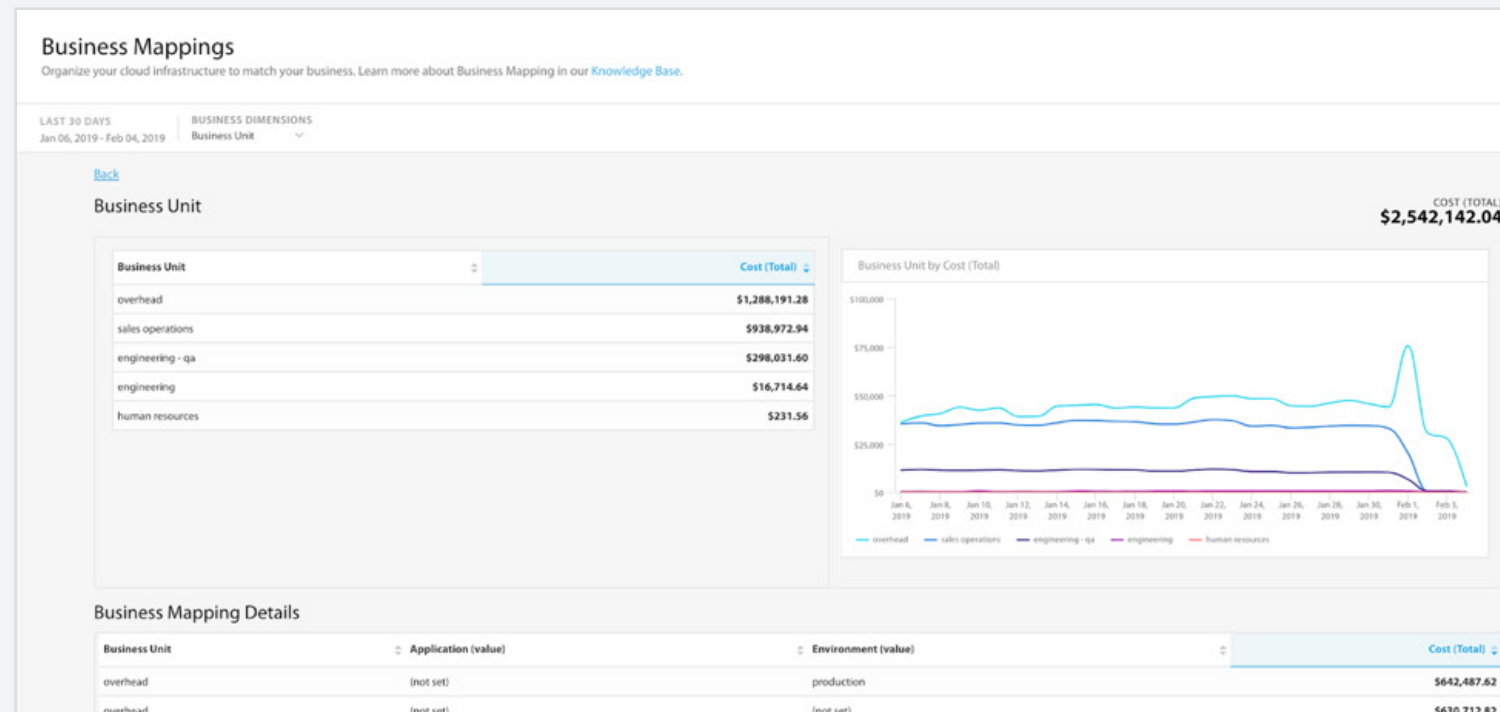
“Having Cloudability provide visibility across our cloud footprint has allowed us to make informed data driven-decisions resulting in significant savings. Using Business Mapping to match our organizational structure to our cloud spend has enabled us to give more responsibility to delivery teams and greatly streamlines our chargeback processes.”

Paul Forte,
Director of Technology, Cimpres

A key use case of Business Mapping is to ensure a full and accurate chargeback of cloud costs allocated to a specific application, product, service, and business unit. Chargebacks are an essential activity during the Inform phase of the FinOps lifecycle.

Business Mapping also makes applying governance rules during the Operate phase easy for issues such as tag compliance, geodata location compliance, and allocation criteria based on project lifecycle status.

Business Mapping produces Business Dimensions, a layer of cost classification that can be referenced in Reports, Dashboards, and Views to provide a business view of the world from which to drive timely decisions.



Main points

- 1** Financial planning and procurement models for on-prem infrastructure are slow-moving, static, and centralized
- 2** DevOps and the cloud have broken the old procurement models
- 3** Decision-making in the cloud must happen in real-time and be decentralized
- 4** FinOps is a new operating model for the cloud, a combination of systems, best practices, and culture
- 5** FinOps brings together Technology, Business Leadership, and Finance to master the unit economics of cloud to drive competitive advantage
- 6** A FinOps team is cross-functional, including stakeholders from Finance, Engineering, and Management
- 7** A FinOps team works together to optimize for speed, quality, or cost
- 8** FinOps teams rely on cost avoidance and cost reduction to take control of cloud spend
- 9** Metrics and targets are critical for FinOps
- 10** FinOps practices ensure that a company's cloud spend is optimized and that the company is improving the unit cost of the cloud
- 11** The FinOps life cycle has three phases: Inform, Optimize and Operate

Get Started with Apptio Cloudability - Start a free 14-day trial to begin your FinOps journey.

