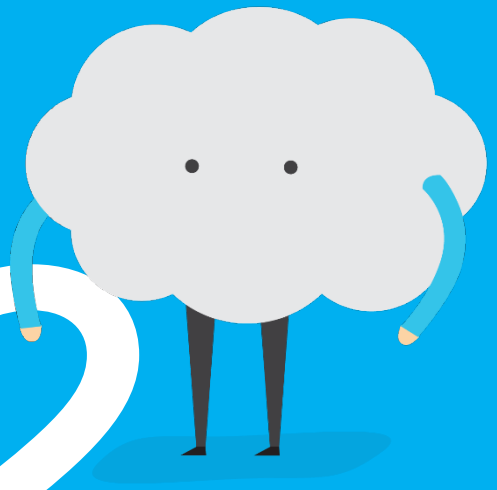


12

Tips and Tricks to

Trim the Cloud Fat

◦ Best practices for controlling and optimizing your cloud ◦

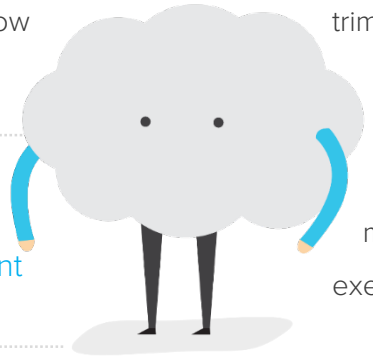
introduction

Who doesn't love the cloud? You have to love the agility, the ability to spin up resources at the drop of a credit card, and the way you can scale resources up and down at will to match demand .

On the other hand, like a really tasty, but really rich, dessert, it's easy to have too much of a good thing. That's how you get 'Cloud Bloat.'

cloud bloat kloud blōt

noun a condition of uncontrolled usage and spend in a cloud computing environment Leading to inefficiency and waste



Cloud bloat is what happens when you consume resources without measuring them. But instead of expanding your waist line, you're expanding your "waste line" – in fact, research shows that up to 30% of cloud spend can be wasted.

To avoid this sad situation, we explore several tips and tricks for trimming the cloud fat, eliminating cloud bloat, and maximizing the efficiency and effectiveness of your cloud resources. Putting these tips and tricks into practice, with help from the right cloud cost management solution, is like eating right and exercising for your cloud, to keep it in tip-top shape.

The Ultimate Cloud Fitness Checklist

- [ ] Get accurate visibility into your cloud usage and spending
- [ ] Make sure your cloud data is expressed in meaningful business terms
- [ ] Create reports and charts that drive real decisions
- [ ] Give decision-making power to your cloud users
- [ ] Set budgets and alerts on any dimension
- [ ] Design automatic triggers that tell you where to optimize

getting clear visibility

When it comes to managing your cloud usage and spending, you can't manage what you don't measure. Sounds basic, but it's a clear fact that most companies don't have access to the right data in the right format to get clear visibility, let alone to control and optimize their clouds effectively. You must measure to manage.

You can't manage what you don't measure.

There are lots of reasons why it's so difficult to get a clear picture of your cloud spend. For one, most businesses rely on the monthly bill from their cloud provider(s), which can be problematic. Cloud bills are in technical terms, not in terms that make sense to your business. They are also after-the-fact, long past the point of enabling you to react to a problem in any timely fashion, and lack the historical context required to pinpoint problems or plan for future spend. And while most cloud providers offer some sort of tagging capability that enables customers to categorize resources, compliance and consistency is difficult, if not impossible, to enforce, making it hard to for you to understand who used which resources and at what cost.

If you're utilizing multi-cloud, the visibility gets even fuzzier. Every provider's bill varies in the type of data returned and the level of detail provided, so it can take hours of spreadsheet munging to aggregate and manage cloud usage and spending across cloud platforms. Most businesses flat out don't do it, therefore lack the ability to make purchasing and provisioning decisions in a holistic fashion.

The Benefits of Cost Transparency

Why is getting clear visibility so important? With Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) growing as much as 36% YoY, the potential for cloud waste is enormous. In fact, some experts estimate that companies waste on average about 30% of cloud spend. Why all this waste? Well, cloud makes it easy to spend without governance and control.

Cloud makes it easy to spend money

Users don't understand the impact of their provisioning choices

No visibility or governance across clouds

Bills come after the fact and are a big surprise

Small overages add up over time

There are many different sources of waste, but some of the most common include purchasing oversized virtual machines (VMs), leaving VMs turned on when they are no longer needed, using expensive storage for infrequently accessed data, or just spinning up unauthorized resources (Shadow IT).

While we can all agree that eliminating cloud waste should be a high priority for every company, there are other benefits that cost and usage transparency provide, such as resource optimization. Having proactive visibility into resource utilization enables you to forecast future demand and leverage the resources that you have more efficiently. You also have better visibility into your requirements, so you can pre-purchase lower cost blocks of resources, like AWS Reserved Instances (RI's) or Azure pre-paid subscriptions.

View 'Troubleshooting Rising Cloud Costs'

Finding the Best Road to Visibility

There are several ways to gain visibility into your cloud data and the table below provides a very high-level overview of the pros and cons of different solution categories.

option	pros	cons
vendor bills	free	monthly snapshot no cost/usage mgmt. capabilities
spreadsheets	familiar customizable	slow manual effort error-prone labor costs high
cloud provider tools	usually free tailored to the provider's offering	vendor-specific limited functionality
3rd party apps	feature-rich* multi-cloud*	can be costly*

Table 1 | Cloud cost visibility solutions

* Varies by vendor

As you adopt more cloud services and your spend increases, managing your cloud costs becomes a much larger and more critical task. You need to consider how the data is to be used, how often, and by whom, in addition to the factors below:

Which cloud platform(s) are used or planned?

- Public cloud, Private cloud, Multi- or hybrid cloud ?

What are our reporting requirements?

- Showback, chargeback, billing?
- Resource utilization (eg. trends, performance, etc.)?
- Customizable reports, dashboards for business users?

How much data do we have?

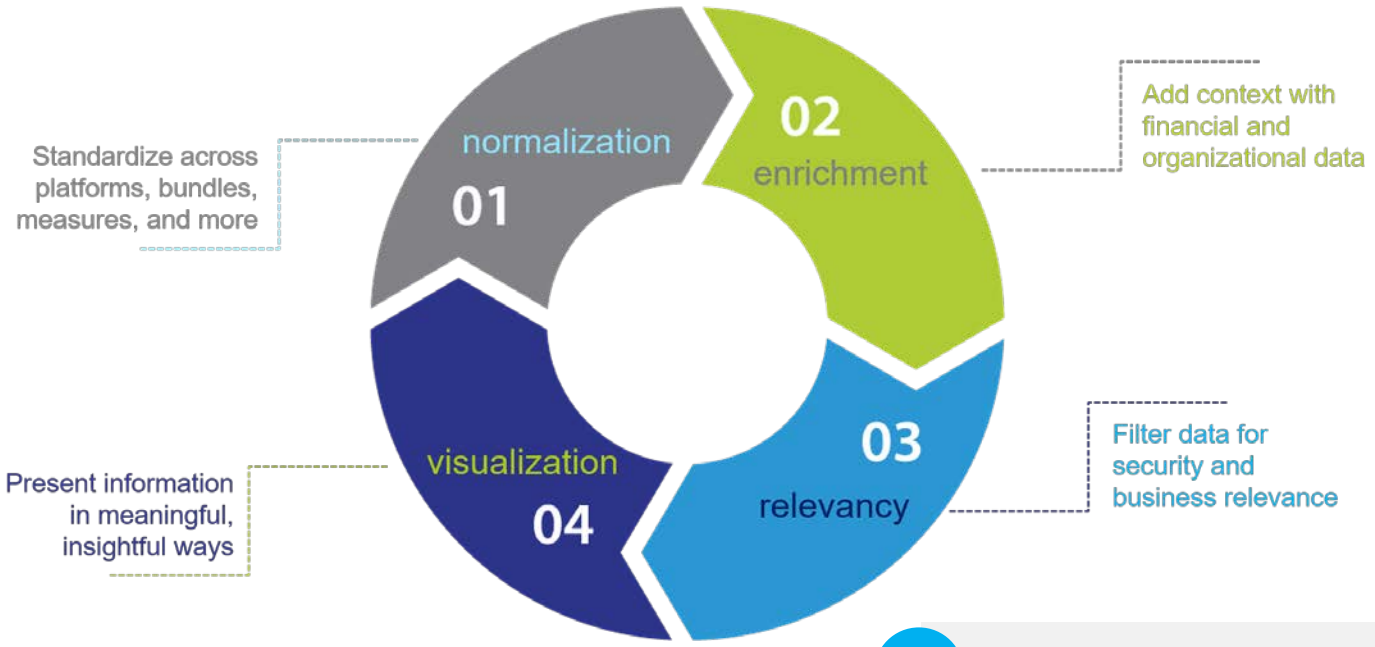
How accurate does the data need to be?

Do we need real-time results?

What is our budget?

transforming your data

Once you've automated the process of extracting your usage and cost data from your cloud sources, you need to transform that data into meaningful business information and present it in such a way that you can make timely, accurate decisions. The diagram below illustrates 4 steps required to transform your data into business intelligence: **normalization**, **enrichment**, **relevancy**, and **visualization**.



View 'Turning Cloud Data into Business Insights'

Steps to Data Transformation

Normalization

Reports and charts are only valuable if you're able to slice and dice information in meaningful ways. For example, imagine summarizing total storage consumption when one vendor displays megabytes of storage and another gigabytes. Or how about comparing resource costs across cloud vendors when they're bundled in different ways? Normalizing data into common buckets and units of measure provides more holistic and useful analytics that ultimately produce better decisions.

Enrichment

Let's face it – you get what you get from your cloud vendors – and it's usually not enough to inform meaningful business decisions. VMs and elastic compute don't mean much to a marketing exec trying to manage the costs of getting a new website up and running. That's why one of the key factors in data transformation is the ability to map your cloud data to organizational and financial information to provide business context. Look for solutions that enable you to easily connect to or import the contextual information you need.

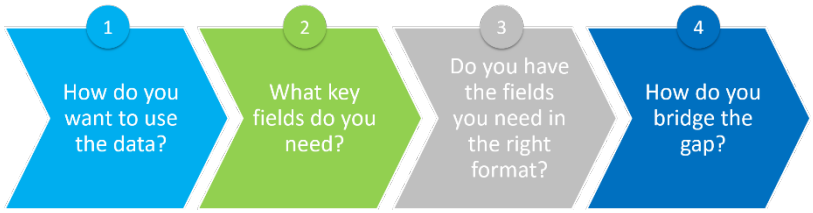
Tags are another key component in the data transformation process and are offered by most cloud providers, such as Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform. However, the effectiveness of tags is limited by the people and processes put in place to enforce them and often result in missing, inconsistent, or just plain incorrect tagging of resources. Therefore, technology must be used for proper enforcement.

blog Read 'Tagging Strategies for AWS, Azure, & Google'

Steps to Data Transformation

98%
of companies polled indicated **consistency issues in tagging** cloud resources.

Developing your business use cases – such as specific business, technical, operational, or security use cases - and answering some key questions about them will help you develop a more effective tagging strategy.



Remember that tags still come down people and processes so implement technology to enrich, transform, and correct your tags when the inevitable errors or changes occur.

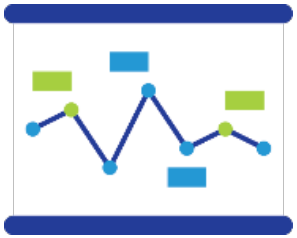
Relevancy

Ever been on the receiving end of a big, hairy spreadsheet with more data than you know what to do with? That's what cloud-committed businesses face every month. In order to trim the cloud fat, your cloud consumers need fast access to relevant information so they can see where they're spending and trim where necessary. Role-base filtering also protects company data by restricting access to confidential data.

Visualization

Raw data or data in spreadsheets lacks the context and the visual 'ah-hah!' you need to optimize your cloud spend and make better business decisions. Different roles require different levels of information. Donuts, bar charts, or tabular reports? Make sure you have flexibility to pick the right visualization for the different use cases you've identified.

visualizing your data



A picture's worth a thousand words... or hundreds of thousands of rows of data in the case of cloud. The amount of data is growing exponentially, with more than 2.5 quintillion bytes of data being produced every day (that's 2.5 followed by 18 zeros!). It's no wonder that the Business Intelligence (BI) and Analytics market is predicted to reach $16.9B this year. Plain and simple: people need help making sense out of all that data.

Effective data visualizations communicate complex ideas simply and allow you to interact with your data in ways that naturally lead you to solutions. They're not only simple to use, but simple to build, with drag-and-drop, what-you-see-is-what-you-get interfaces that unveil results as you create, not at the end of a long review-and-redo cycle. In short, in today's world of data overload, the ability to transform rows and rows of data into *actionable* visualizations is no longer a nice-to-have; it's a *must-have*.

When it comes to managing your cloud usage and spend, effective data visualization drives faster decisions that directly impact the corporate bottom line. Customized dashboards that surface key insights and make it simple to identify and react to potential problems can eliminate days or weeks of tedious sifting through vendor bills and spreadsheets. Whether it's as simple as seeing at a glance where the bulk of your cloud spend is occurring by business unit or as specialized as identifying which VMs have been idle for more than an hour, cloud analytics must be flexible, interactive, easy-to-use, and tailored to the problems you're trying to solve – or avoid.

Anatomy of Good Data Visualization

visualizations tailored to user / role

flexible date ranges

data filters

drag-and-drop dashboard authoring

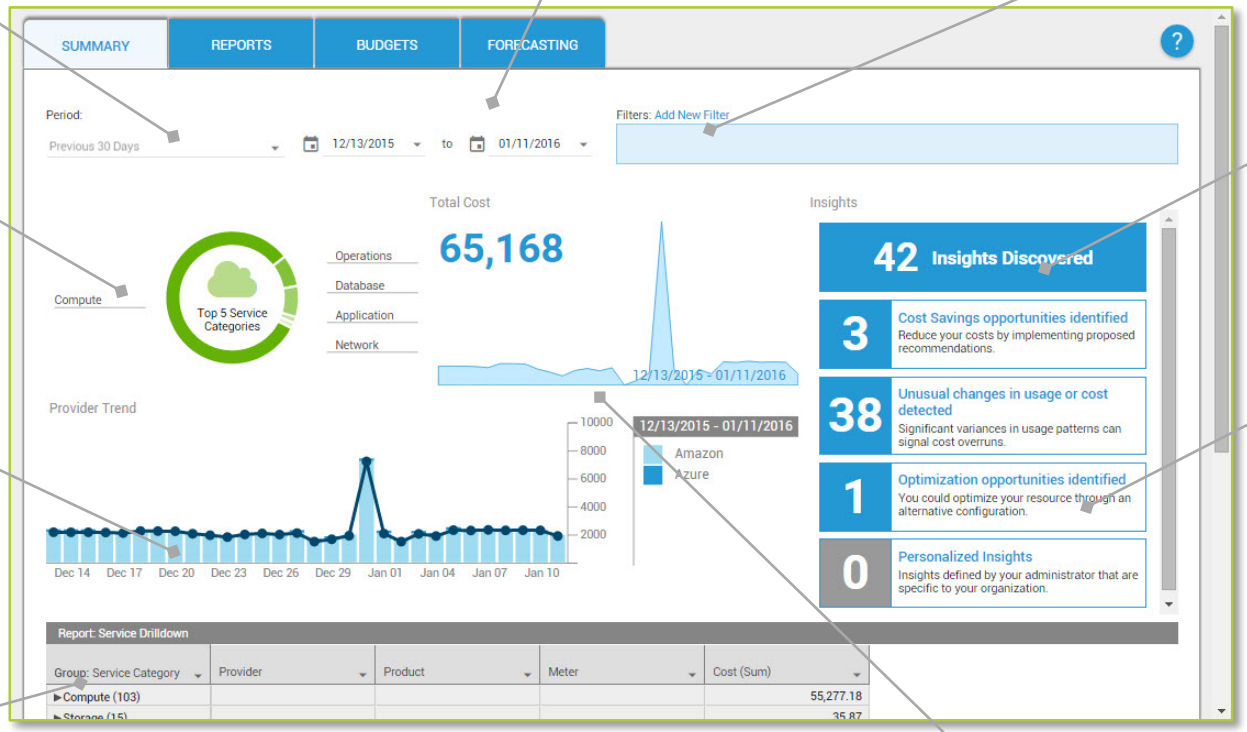
at-a-glance alerts and insights

Interactive charts and graphs

actionable insights

Supporting tabular data

robust widget library



empowering your users

Getting the right information into the hands of your cloud users helps drive more accurate, fact-based business decisions and encourages self-management of cloud usage and spend. But first, you need to understand who your cloud consumers are, what decisions they are responsible for, and what information is required to support those decisions.

87%

of business stakeholders polled have **insufficient or no understanding** of their cloud usage and spend.

Giving Cloud Consumers What They Need

You need to identify the business stakeholders that are consumers or managers of cloud services in order to set them up for success. Each of those users will have different reporting requirements that will determine the type of information they need to see (and what they *shouldn't* see), how they need to slice and dice and aggregate that data, and how they need to visualize and share that data.

The results of your analysis will inform the type of data mapping – or tagging – that will be required, as well as the permissions strategy and data visualizations that must be created.

1 **Attribute usage to the business hierarchy**

- Projects, business units, executives, regions

2 **Provide appropriate access to information & capabilities**

- Permissions for security
- Filtering for data relevancy

3 **Identify what's important to the business stakeholders**

- Finance – budget creation and tracking
- IT / DevOps – consumption, provisioning
- LOBs – budget allocation, used vs. allocated

4 **Display what's important**

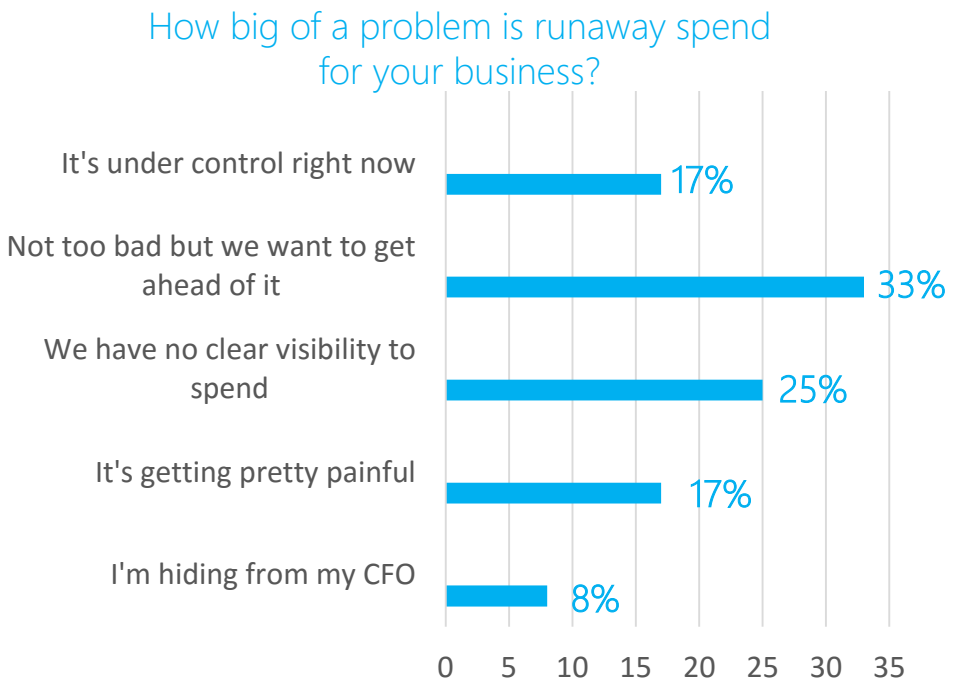
- Self-service, relevant dashboards, charts, and reports

View 'Enabling User Accountability & Self-Service'

controlling cloud spend

Now that early concerns about security and reliability have been laid to rest, companies of all sizes and across all sectors are embracing cloud. So much so that cloud use is running amok in some companies, with users bypassing IT to get the resources they need (*or want*) faster and without the red tape. We love the innovation and agility! But where's the governance and control? Bottom line, without control, there's bound to be Cloud Bloat.

Controlling cloud spend without going through the previous steps of proper data collection, normalization, and organizational mapping is nearly impossible. It's like trying to lose weight without having an exercise plan and a fridge full of healthy food. To avoid cloud bloat, you need a cloud fitness plan, with the right ingredients for success.



Percentage of poll responses from May 2016 'Controlling Cloud Spend' webinar

Methods of Control

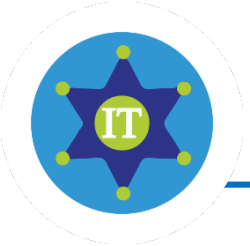
There are several levels of control that can be imposed on cloud usage and costs, ranging from just providing visibility to shutting down or restricting access to resources when limits are reached.

Awareness

Showback and chargeback are the most common means of providing awareness to consumers of cloud resources. Many business users are unaware of the impact of their provisioning choices, so it's not uncommon to purchase more resources than you really need– or to leave them running when the job is done. Showback and chargeback raises awareness and encourages users to be more fiscally responsible.

Alerts

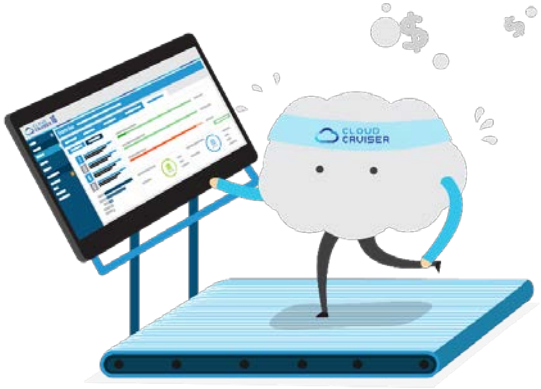
Budgets and alerts are designed to alert you when usage or spending approach or reach predefined thresholds. To avoid cloud bloat, align budgets with key business metrics, which may be based on cost for finance or P&L owners, or usage for those responsible for managing resources. Likewise the ability to set budgets by different categories, such as project, business unit, or cloud provider is desired.



Action

Actionable insights are the most sophisticated form of control. These analytics monitor and measure your cloud environment and suggest – or even trigger – an action to be performed when certain conditions are met. For example, insights might identify conditions such as orphaned VMs and automatically shut them down, or expose unusual spikes in usage or spend and restrict access to particular resources.

optimizing your cloud



You've no doubt seen your cloud bills – in their overly detailed, techie-termed splendor – and are wondering how and where you even get started trying to optimize this stuff. Where's the EASY button? Some of the standard areas for cloud optimization are listed below, however you'll want to go through a detailed analysis, as outlined on the next page, to create a plan that's right for your unique business requirements and cloud – or multi-cloud – environment.

VMs	Storage	CPU	Networking	Pricing
orphaned VMs	unused storage	spikes in usage	spikes in usage	cloud provider 'price wars'
underutilized VMs	aging storage	overburdened CPUs		vendor price comparisons
underprovisioned VMs	spikes in storage consumption	under-burdened CPUs		regional savings opportunities
Reserved Instance opportunities	wrong type of storage			

Table 2 | Common Cloud Optimizations

Optimization Plan of Attack

For most customers, knowing where to start in their optimization strategy is half the battle. To be honest, the answer is: it depends. Every business is different, so it's best to start out small and build from there. Start with the highest cost resources or the resources that have the greatest impact on your business. If CPU performance is mission-critical for your customer-facing apps, then target VM utilization first. If keeping costs under budget for a particular project is your main objective, then target costs by project. Figure out what your thresholds are for each KPI and identify the action that should take place when that threshold is reached. Last but not least, identify who can – *or should* – take corrective action.

1 **Identify highest cost / highest impact resources first**

- Understand your Key Performance Indicators (KPIs), such as cost by BU, usage by VM size, etc.

2 **Determine what your thresholds should be**

- Significant change – when you should notice (relative)
- Pain threshold - when you should care (absolute)

3 **Recommend the action to take**

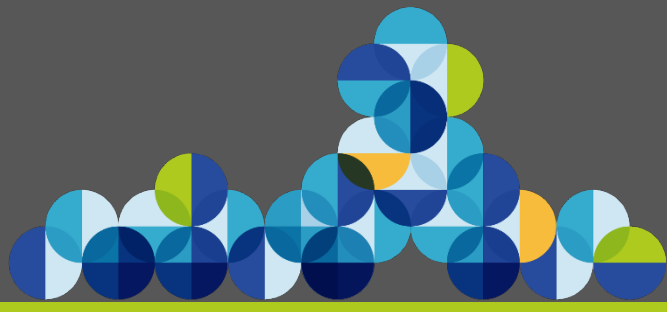
- Downsize VMs, offload expensive storage
- Justify budget increase

4 **Identify who can take action**

- Key stakeholders and decision-makers

blog Read '8 Spots to Seriously Trim Your Cloud Costs'

top 12 tips



1. If you have more than $20k of cloud spend per month, ditch the spreadsheet and automate
2. Collect cloud usage and spend on a daily basis – do not wait for month-end bill
3. Normalize cloud data across cloud platforms, service bundles, and units of measure so you can see everything in a single, holistic manner
4. Think of the end results you want first, and work backwards to identify users, visualizations and data requirements
5. Add organizational and financial context to your cloud data to give business meaning to cloud data
6. Eliminate the IT bottleneck - give end users self-service reporting access. You'll save time *and money*
7. Develop use cases to ensure your tagging strategy considers both financial and operational goals
8. People and processes are not enough to enforce consistent tagging – technology must be used to add, correct, or transform tags
9. Data filtering should be enforced to ensure both relevancy and security
10. Visualizations are not one-size-fits-all. Use the right visualization for the story you're trying to tell with your data
11. Implement multiple levels of control to ensure usage and spending stays within prescribed thresholds
12. When optimizing your cloud, focus first on the areas of greatest spend and/or the areas of greatest impact to the business

summary

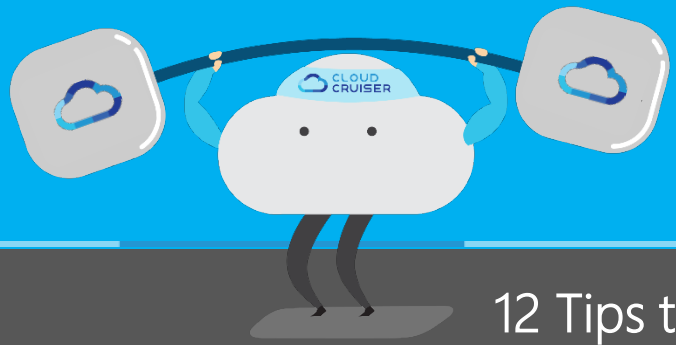
The cloud is a wonderful thing, but the ease of access to resources can lead to waste, inefficiency, and out-of-control spending – in other words, cloud bloat. Fortunately, with the right mix of people, process, and technology, you can trim the cloud fat and defeat cloud bloat.

You supply the people, use the tips and tricks provided here to optimize your process, and choose the right technology to get the job done. Put it all together, and you can get all the benefits of the cloud – agility, cost savings, and more – without waste or inefficiency.

About Cloud Cruiser

Cloud Cruiser's application is a smart-meter for hybrid cloud that gives detailed insights into usage and spend, enabling the business to deliver the right services at the right time. By mapping metered usage and cost data with organizational information, customers get instant analytics to optimize cloud investments for business value.

Sign up for a Free Trial today!



12 Tips to Trim the Cloud Fat

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