

10 Important Cloud Cost Optimization Lessons Learned from Scanning 45K AWS Accounts

Stop Missing Cost-Saving Opportunities
and Uncover Ways to Reduce Cloud
Spending in Your Organization



Where there's a cloud, there's also a high chance of unexpected costs. Imagine how Adobe executives felt when their development team accidentally dropped [\\$80,000 on cloud computing](#) in one day, racking up a bill of \$500 thousand.

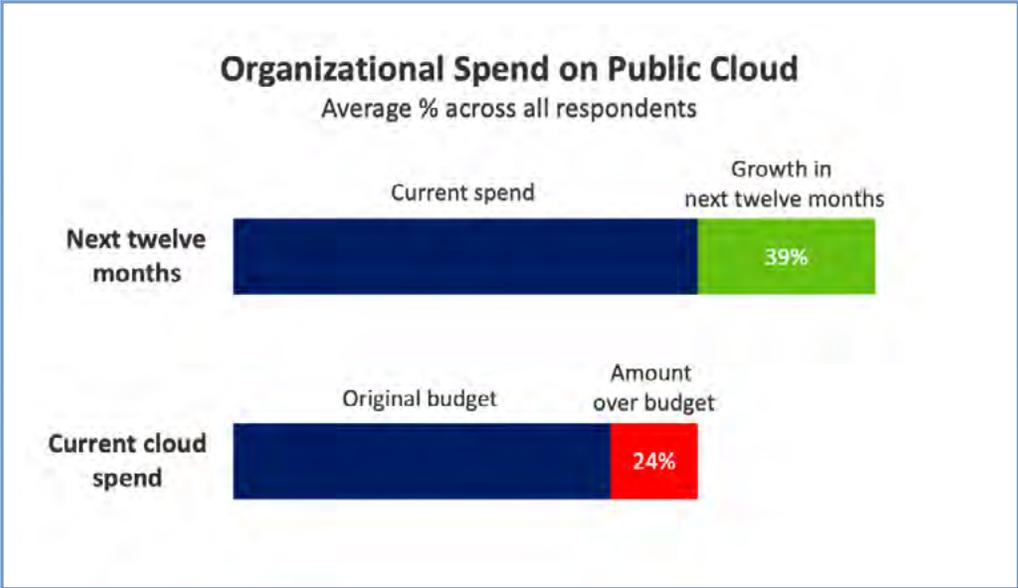
Public cloud vendors made it possible to provision resources in one click, making it all too easy for situations like this to happen. Now, cloud overspending happens in nearly every company. If left unchecked, ongoing cloud operating costs can offset the benefits of moving to the cloud.

This doesn't mean you have to accept this as a common occurrence and continue to lose money. There are steps you can take to battle cloud costs and identify cost optimization opportunities.

Understanding Cloud Cost Optimization Challenges

According to [Flexera's 2021 State of the Cloud Report](#), 30% to 35% of cloud resources go to waste, making this an issue you can't afford to ignore. Still, since every public cloud platform offers tools for cloud cost optimization, this amount of waste is surprising to many.

The truth is that as the corporate cloud infrastructure expands, the intricacies of containing cloud costs among provisioned instances, sandbox environments and storage systems become difficult to manage.



Worse, after analyzing over 45,000 AWS accounts, we found that the biggest issue with cloud resource waste is that it's rarely a one-off event. It's a continuous issue, and cloud providers don't do much to help solve the problem.

Usage-based systems gloss over the real problem, a lack of clarity into how those resources are actually consumed. The AWS, Azure and Google Cloud ecosystem of cloud services has also grown increasingly complex, to the point where even experienced cloud architects can't always select the optimal configurations.

You need to get proactive to recuperate those costs and reduce cloud waste in your organization. But how?

How to Optimize Cloud Computing Costs on AWS

At one time, our AWS bill was inflated too. Across 40,000+ AWS accounts, we were wasting thousands of dollars. We tried manual fixes and a bunch of cloud cost optimization tools. Most solutions point towards resource-hungry applications, but none of them showed us how to fix the underlying issues.

We could have turned to our 4,000 developers and asked them to look for fixes, but we knew that wouldn't be an efficient use of their time. That's when we decided to build our own cloud cost optimization solution: CloudFix.

CloudFix is an automated AWS cost management tool that identifies and fixes unnecessary cloud spending. Installed in one click, CloudFix runs in the background without any disruptions and reclaims pointless infrastructure spending.

10 Lessons We Learned on Our Journey of Reducing Cloud Costs

Our team learned a lot about reducing cloud costs throughout the CloudFix development process. Now, we can share these cloud savings tips with you. If you want to reduce cloud waste, here are the steps you can take.

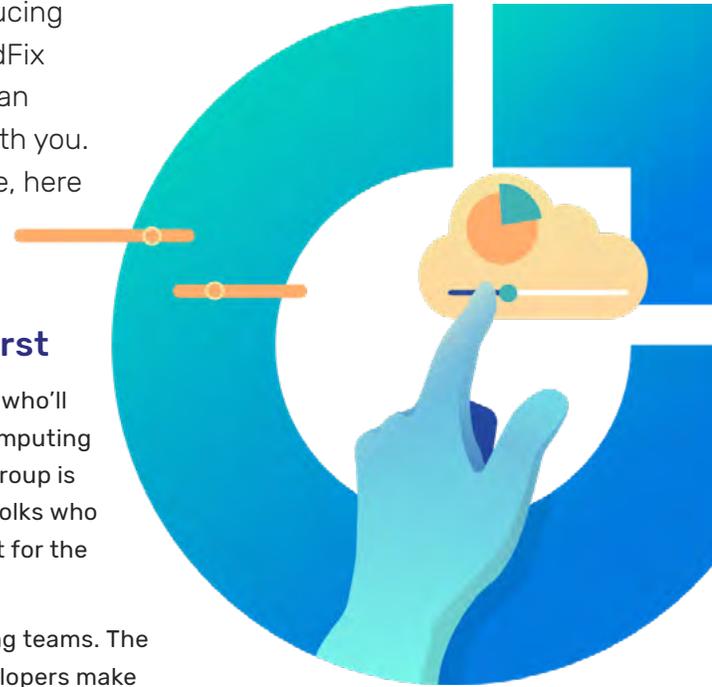
1 Get Engineers to Evaluate the Costs First

You have two groups of people who'll influence the costs of cloud computing in your organization. The first group is made up of execs and finance folks who estimate the total cloud budget for the quarter or the year.

The second group is engineering teams. The architecture choices your developers make each day will determine the total cloud bill. No AWS cost management tool will help you unless you explain the importance of cloud financial management.

Ideally, both of these groups should align on:

- Estimated cloud computing costs (and the reasoning behind some caps)
- Resource tagging decisions (which resources are for testing and which are for production)
- Consistent costs – spending on predictable, budgeted workloads and reserved instances.
- Variable costs – on-demand and spot instances, auto-scaling costs, serverless computing, etc.
- When the two have a mutual understanding of what constitutes a reasonable cloud bill, they don't fight over subtle deviations but focus on optimizing the big picture of costs.



2 Do an Inventory of All Cloud Resources

This is a basic but important step. You can't fix what you can't see. However, once you complete this inventory, you can set up automation for shutting down idle requirements when not in use, as well as find and fix over-provisioned resources.

These are some common types of over-provisioned AWS resources to hunt for:

- Underutilized clusters in Amazon Redshift
- Idle instances in Amazon RDS
- Idle cluster nodes in Amazon ElastiCache
- Cases of suboptimal container resource usage
- Any other "stray" instances or VMs

3 Consider Migrating to AWS gp3 EBS Volumes

Last year, Amazon launched gp3 volumes for Amazon EBS. The advantage of gp3 is that you can automatically increase IOPS and throughput without provisioning extra block storage capacity. Overall, gp3 can provide predictable 3,000 IOPS baseline performance and 125 MiB/s regardless of volume size, which makes it cost-effective for high-load applications.

We also found that it's worth migrating gp2 volumes with less than 3000 IOPS to gp3. By doing so, you can save around 20% yearly as gp3 volumes cost \$0.08 / GB compared to \$0.10 / GB for gp2.

4 Watch Out for AWS EBS Volumes Unattached to EC2 Instances

Did you know that you get billed for EBS volumes, even when your instances are stopped? Amazon charges for all EBS volumes attached to EC2 instances, whether they are in use or not. To avoid extra costs, ask your developers to delete volumes and snapshots they no longer need.

5 Reduce Oversized Resources on EC2 Instances

Right-sizing resources to instances may seem complicated, but here's the process we recommend. First, check the historical data on your instance usage. You can analyze CPU utilization and weed out a set of candidates for de-provisioning.

Then, reduce instance size progressively. For example, during week one, switch the instance from t3.xlarge to t3.large. Analyze resource consumption and performance. If all is good, go another notch lower during the second week.

If you do notice that a reduced instance demands extra capacity, don't rush to upscale it via the standard route. Instead, look at AWS Spot. This is an on-demand instance service upselling spare capacities at deep discounts. Spot instances are well-suited for fault-tolerant workloads such as containerized apps, CI/CD or big data analytics.



6 Try Amazon S3 Intelligent-Tiering if You Run a Data Lake

Amazon S3 is a popular solution for hosting data lakes, but it's not the most affordable storage service. Especially if you have a data science team that often pushes data into the lake and then forgets about it.

The Amazon S3 Intelligent-Tiering service scans your data objects and automatically moves infrequently used assets into a lower-cost storage tier. You can configure the tool to auto-move all objects that weren't accessed for 30 days to the S3 One Zone Infrequent Access tier.

7 Alternate Between Amazon S3 Infrequent Access and One Zone Infrequent Access

Chances are that you have a ton of non-used data, capable of tolerating lower availability. Those objects are strong contenders for getting moved to S3 Infrequent Access (IA) or One Zone IA. Both of these provide significantly cheaper storage.

Here's a look at the availability tradeoffs:

- Amazon S3 Standard. Availability: 99.99%. Annual downtime: 52m 36s
- S3 Infrequent Access. Availability: 99.9%. Annual downtime: 8h 45m
- S3 One Zone Infrequent Access. Availability: 99.5%. Annual downtime: 1d, 19h 49m

The result of moving your data to One Zone IA is lower durability since all data will be stored in one region. In the event of a major regional failure, it may be unavailable. This option may not be suitable for storing critical data, like compliance records.

You should also consider data retrieval costs. The standard charge is \$0.01 per GB, on top of the standard Data Transfer fee in S3, plus a \$0.01 per 1,000 conversions charge from Standard S3 to Infrequent Access. Additionally, the minimum billable object size is 128KB. If you transfer smaller data objects, you still pay for 128KB of storage.

8 Look for Discounts

AWS offers different opportunities to save money. One way is to choose between Standard and Convertible reserved instances. There are a couple of things that you should know to make the best choices for your organization.

Standard instances are more affordable, but cannot be converted to another instance type. However, you can sell them on AWS Marketplace. Convertible instances can't be resold but can be upgraded to a more expensive instance type. Do this with caution, because you can't downgrade a convertible instance.

You can also save by looking for AWS credits. Here are several ways to get them:

- Check if you qualify for AWS Activate
- Attend AWS webinars and events
- Apply for the AWS Imagine Grant Program
- Publish an Alexa skill and receive \$100/mo. while it's active
- Sign up for the Ship program from Product Hunt for \$5,000 in credit
- Look for other AWS partners

AWS	AZURE	GOOGLE
AWS Reserved Instances 52%	Enterprise Agreement 49%	Committed use discounts 61%
AWS EDP (Enterprise Discount) 44%	Azure Reserved Instances 46%	Ad hoc negotiated discounts 48%
AWS Savings Plan 44%	Azure Hybrid Benefit 37%	
AWS Spot Instances 37%	Azure Low Priority VMs 28%	
Ad hoc negotiated discounts 26%		

N=750 Source: Flexera 2021 State of the Cloud Report

9 See if You Can Save With Amazon EFS One Zone

Amazon Elastic File System (Amazon EFS) is a serverless, flexible file system for storing shared data across EC2 instances, ECS, EKS, AWS Lambda and AWS Fargate. Until March 2021, the service automatically determined where they'd store your data. Now, you can choose your zone for EFS storage and transfer all the data to it.

Amazon EFS One Zone storage works similarly to One Zone Infrequent Access storage classes in S3. To get a lower cloud storage bill, all you need to do is select a low-cost region, enable lifecycle management and transfer infrequently accessed data.

10 Do Regular Housekeeping of AWS RDS

Database storage optimization often gets overlooked, but this is a mistake. There are things you can do to cut AWS RDS costs. RDS offers both a dedicated database server option, as well as a traffic-based “serverless” database option. The choice you make directly impacts costs.

The dedicated database server option allows you to spin up as many database instances as you need for your workload. It supports MySQL, PostgreSQL, MariaDB and Amazon Aurora, as well as Oracle and SQL Server if you bring your own license. RDS instance prices differ based on size, speed, optimization and region.

You can also purchase reserved instances. This comes with larger upfront costs and an obligation to keep the instance from one to three years but provides significant cost savings over that period of time.

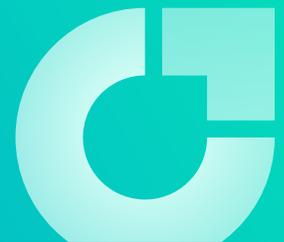
The “serverless” database option is Aurora Serverless, which is a usage-based offering of the AWS Aurora engine. It bills based on Aurora Capacity Units (ACUs), which are consumed whenever you interact with the database. As with most serverless offerings, there can be enormous cost savings when the database doesn't have to deal with heavy workloads. However, costs can get out of hand if you need high availability, so choose wisely.

Win the War on Cloud Costs With Automation

You don't have to leave your team to struggle with tedious processes like resource tagging, monitoring or attempting to estimate ever-changing expenses. CloudFix does all the heavy lifting, freeing your Finance and DevOps teams to focus on the work they do best.

Our solution identifies cost optimization opportunities that won't disrupt the rest of your infrastructure and automates workflows so that you can execute optimizations with one click. It also provides a central dashboard to manage and track cumulative savings across your AWS accounts.

Aurea Unlimited subscribers already own access to CloudFix. To activate your CloudFix account and start saving, contact your organization's dedicated engagement specialist.



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