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# Cloud **Cost** **Management** Guide for 2023

Trends, Tips, & More

Whitepaper 2023

# TABLE OF CONTENT

## 01

### **Introduction**

Cloud Cost Optimization Challenges

## 02

### **Emerging Trends in Cloud Cost Management**

Automation

FinOps

Intelligent Cost Forecasts

## 03

### **Understanding How to Manage Cloud Costs**

Track Wastage

Discard Unused Resources

Schedule Services

Make the Most of Preemptible Resources

Leverage Horizontal Autoscaling

Optimize Consumption-based Services

Automate Rightsizing

Integrate DevOps with Cloud Cost Management

## 04

### **Gathr's Cloud Cost Management solution**

Unified Multi-Cloud Cost Visibility

Granular Visibility into Cloud Costs

Tag Compliance

Advanced Alerts & Recommendations

Improve Cloud Operations and ROI with Gathr

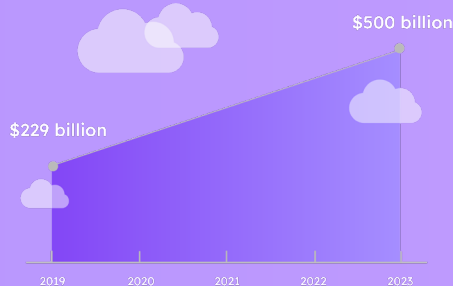
# 01

## Introduction

As organizations continue to increase their cloud investments, the challenge of reducing and optimizing cloud costs has become bigger than ever before. According to various surveys and state of cloud reports, enterprises typically waste around one-third of their cloud budgets due to multiple inefficiencies and planning failures. Regardless of their cloud maturity, most organizations identify cloud cost optimization as a key challenge.

### Public Cloud Spending to Double by 2023

(IDC estimates CAGR of 23%)



### Most Organizations Overspend on Cloud

70%

Organizations without a cloud cost optimization strategy overspend ~70% on cloud

- Gartner



## Cloud Cost Management Challenges

However, there's no one-size-fits-all approach to cloud cost management. Organizations have to wade through complex billing models and pricing structures across different cloud service providers, which makes it difficult to arrive at any optimization decisions. There are often thousands of line items to analyze, even when the service consumption is low. Lack of actionable intelligence and guidance to optimize costs at the right time is the biggest factor leading to cost overruns.

While understanding the bills can be complex, buying isn't. The self-service portals make it exceedingly simpler for developers to provision new resources, which often leads to resource sprawl. Organizations lack governance and policy-based controls to identify and control such wastage. They often continue to spend on Virtual Machines (VMs), load balancers, snapshots, etc., which have long served their purpose but have been left running due to manual oversights and policy gaps.

As a result, there is a high demand for solutions that can help:

- Improve cloud cost visibility
- Automate policy actions, such as shutting down unused workloads or rightsizing instances, and
- Implement the FinOps framework to bring technology, finance, and business teams on the same page for better cloud cost optimization.

We will be exploring some of the emerging trends and practices in the cloud cost management space briefly in our whitepaper. Also, the whitepaper presents a unique incremental approach to improving cloud cost monitoring and optimization using Gathr's no-code platform.



## 02

# Emerging Trends in Cloud Cost Management

Traditionally, the manual approach to cost optimization involves rigorous analysis; the finance teams in the organization take a snapshot of their cloud infrastructure costs at some point to analyze the source (teams/departments) leading to the costs. They have to carefully examine the usage and growth patterns to estimate whether the costs will increase or remain stable. Further, they must identify opportunities for the elimination of costs. Once they identify wasteful resources and come up with an optimization plan, they need to reach out to engineering teams for approval. Needless to say, such practices are prone to errors and cannot keep up with the pace required in modern cloud operations. As a result, enterprises have increased investments in cloud automation.



## Automation

Typically, automation solutions help organizations in selecting the most cost-efficient instance types as per their application usage, auto-scale resources to meet varying workloads, remove or shut down unused resources, book spot instances, and handle load-balancing to avoid potential interruptions. It is also possible to automate storage and backup, security and compliance, and configuration management. Cloud cost optimization solutions often club these capabilities with visual analytics dashboards that simplify cost comparison across clouds. Moreover, such solutions can simplify the overall management of public, private, and hybrid cloud environments. For instance, cloud-agnostic tools like Terraform help organizations automate and create identical infrastructure across platforms.



## FinOps

FinOps framework is rapidly gaining adoption among enterprises. IDC predicts that 80% of organizations using cloud services will have a FinOps practice by 2023. The framework brings finance, supply chain, business, and engineering teams together with a common objective of maximizing cloud ROI. It goes beyond the basics of cloud cost management and emphasizes accounting of cloud costs by function, business unit, and even down to developer or user levels so that spending and forecasts can be viewed along with budgets, business projections, and past data. FinOps advocates creating a culture where all teams have visibility into the cloud costs in their context and at the right time. This helps actual users and application architects get sensitized about the cloud ROI and better align their application and underlying resource usage with business KPIs.



## Intelligent Cost Forecasts

There is a rising interest in applying AI and machine learning in cost forecast models. Usually, cloud cost forecast algorithms rely on a mix of trend-based forecasts, business driver-based forecasts, and rolling forecasts. AI and machine learning can accelerate cloud cost forecasts for enterprises. As these models improve over time, they can help organizations achieve significant savings with more accurate budgeting and allocation. Moreover, some tools now offer cloud cost forecasts at the CI/CD level. Such tools allow developers to track the cloud expenses associated with their discrete CI/CD jobs and get recommendations to optimize costs, even before the application is deployed. With the implementation of FinOps, early easy visibility into cloud costs, and increased alignment of business goals with cloud costs, organizations can ensure more efficient usage of cloud resources.





# 03

## Understanding How to Manage Cloud Costs

Cloud cost management involves two major initiatives:

- Tracking of costs with tags to identify waste and allocate costs across applications, departments or cost centers.
- Improving cost optimization by continuous monitoring of utilization and capacity metrics.

We have covered some of the best practices to reduce and optimize cloud costs below:



## Intelligent Cost Forecasts

A crucial aspect of managing cloud costs involves tracking all resources that can lead to wastage. These can include orphaned resources such as orphaned snapshots, volumes, unassociated IPs, load balancers without any instances, etc. Many times, overprovisioned resources such as instances, volumes, database warehouses, relational databases, etc., can also lead to wastage. It is also seen that developers provision resources but fail to terminate them after their usage. Failure to set up auto-termination policies can also lead to wastage. Cloud cost monitoring tools offer help in reducing such wastage by providing instant alerts and seamless visibility into provisioning issues, budget overruns, and idle resources.



## Discard Unused Resources

Capacity allocation-based resources continue to accrue costs irrespective of their usage. It is important to keep track of such instances and stop them if they aren't required or have served their purpose. A metric indicating low utilization in your cloud cost monitoring solution can help in identifying such resources. You can define policies to automatically dispose of resources whose utilization drops below a certain threshold for more than 24 hours. Automating the implementation of such policies can help you manage costs associated with idle compute instances. Similarly, you can delete storage volumes that are not attached to any instance for a long time (e.g., a couple of weeks). Deleting older snapshots is also a good practice as they often contain old data, which is rarely useful.



## Schedule Services

Enterprises often have cyclical processes that require cloud-based resources only for certain hours or days in a week. In such cases, it is possible to schedule cloud services as per the expected usage pattern. To automate such schedules, you might have to observe services' utilization over a period and define a policy accordingly. You may have to allow exceptions where a developer might require access to resources outside of the schedule. Also, one should note that not all cloud services persist data after they are turned off. In such cases, you need to schedule operations while ensuring that the data can be backed up and restored from an external storage service.



## Make the Most of Preemptible Resources

When it comes to production workloads, the scheduling of resources can be tricky, and organizations should look forward to better optimization of resources. For instance, Amazon EC2 Spot Instances, GCE preemptible VM instances, and Microsoft Azure Spot VMs are available at a much lower price and can suit certain workloads. The only catch is that these instances could be terminated at any time (with very short notice) by the cloud service provider. Organizations usually choose preemptible resources for batch and stateless workloads along with load balancers. Similarly, when using storage services, there's a lot of room for optimization. Organizations may not need storage with 99.99% availability and redundancy for all of their data and need to choose the right storage service and tier for cost-effectiveness.



## Leverage Horizontal Autoscaling

Horizontal autoscaling (distributing workload across multiple newly-raised instances) is another practice that can help in optimizing cloud costs. The approach can provide performance benefits by limiting the number of requests any instance gets at one time, eventually leading to greater redundancy and resilience. The autoscaling can be triggered based on usage, and automation tools often take into account different metrics for this purpose. For instance, horizontal autoscaling could be triggered by when CPU, RAM, and other infrastructure metrics cross a certain threshold. It is also possible to define the policies based on middleware and business-based metrics.



## Optimize Consumption-based Services

Lastly, optimizing the usage of consumption-based services, such as network data transfer, load-balancing, API gateways, etc., also needs to be optimized. However, in such cases, optimization is possible only by making changes in the application behavior or architecture. For example, one can cut data transfer costs by placing compute resources closest to where the data resides. Similarly, application architecture changes (e.g., converting monoliths to microservices-based applications) can help organizations leverage the true value of the cloud. While such optimizations are complex and resource intensive, they can provide improved returns over a period while also making significant upgrades in terms of application security, stability, availability, and resiliency



## Automate Rightsizing

For allocation-based services, organizations need to specify parameters such as CPU, RAM, IOPS, etc., at the time of provisioning and are billed according to these specifications, irrespective of their usage. To be on the safer side, organizations often overprovision but end up wasting their cloud budgets. This is why rightsizing resources as per actual workloads is crucial. It is possible to monitor the usage of compute, storage, database, container, and application PaaS services over a period to make rightsizing decisions. In most cloud cost monitoring solutions, it is easy to identify the resources with the highest costs and lowest utilization. One can take the ratio of these metrics to identify and prioritize the resources that require immediate attention in terms of rightsizing.



## Integrate DevOps with Cloud Cost Management

With practices such as infrastructure as code (IaC) becoming the norm in enterprises, developers often overprovision resources due to a lack of real-world visibility into costs and resource usage patterns. In such cases, rightsizing policies can offer little help if they aren't integrated with the CI/CD platform. Organizations need to equip DevOps teams with cloud cost optimization tools that explain how their specific app resources are allocated and used in continuous delivery. Tools like Harness CE make it possible to correlate cloud cost information with applications and their underlying microservices without manual tagging, which helps developers easily identify idle resources. Organizations need to make sure such insights are available to teams that develop deployment manifests.



# 04

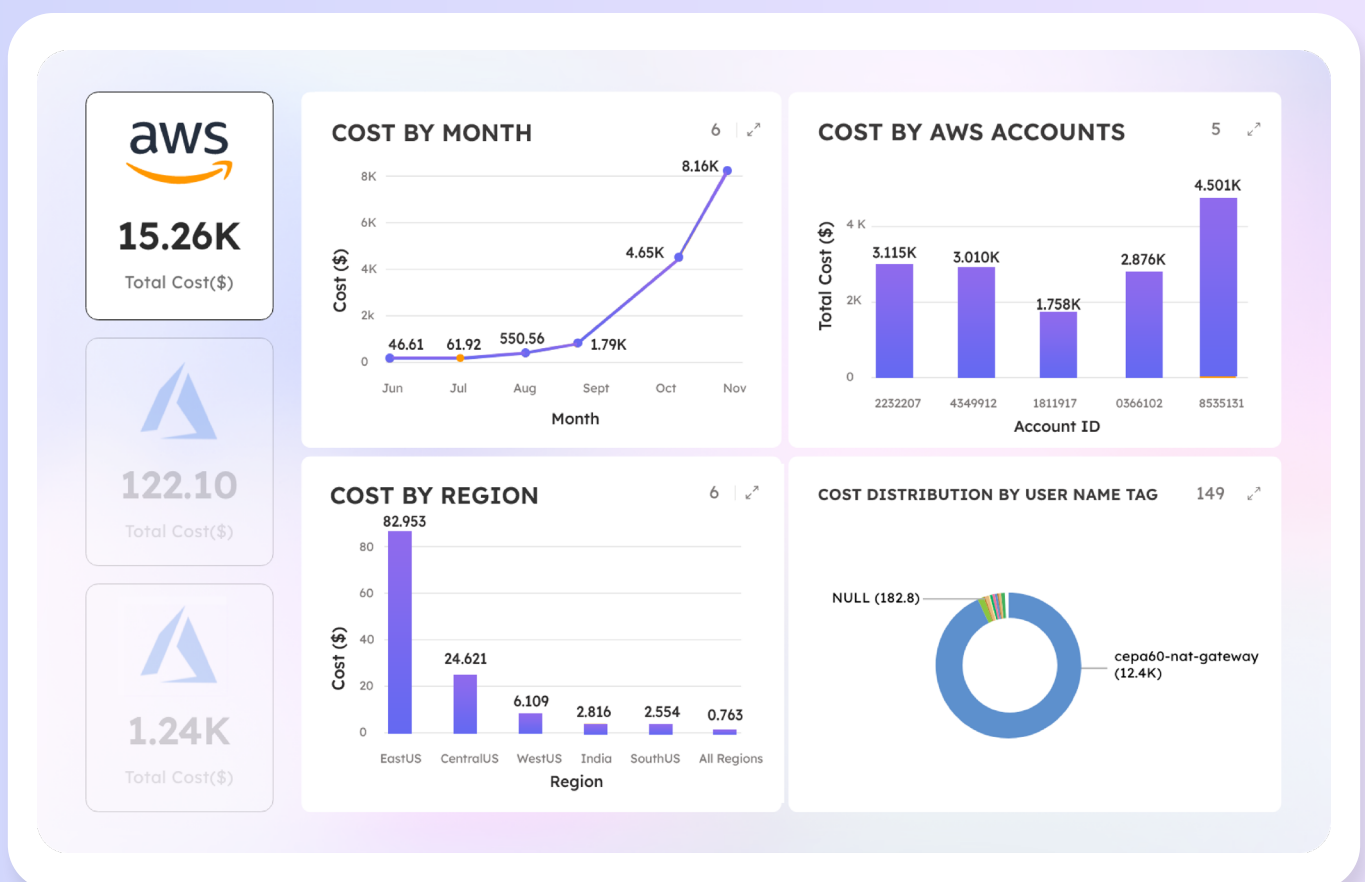
## Gathr's Cloud Cost Optimization Solution

Gathr offers an out-of-the-box solution for [cloud cost optimization](#) that helps enterprises get holistic visibility into their cloud costs, drill down to analyze costs by accounts, teams, regions, etc., automate certain actions, and optimize resources to achieve higher cloud ROI. The solution integrates with your cloud accounts seamlessly, without requiring any complex configuration or coding, and automates data collection, visualization, alerting, recommendations, and more.



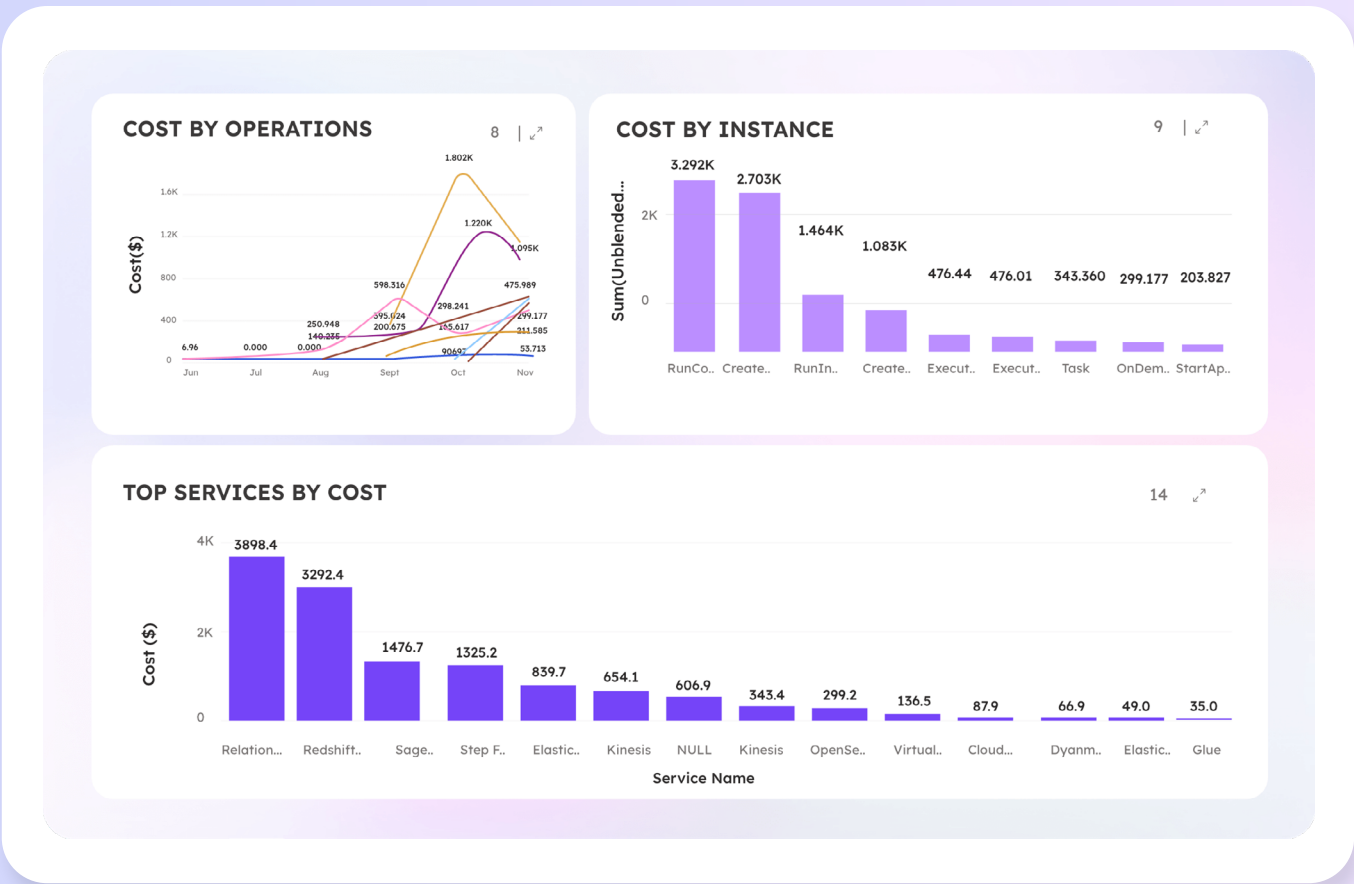
## Unified Multi-Cloud Cost Visibility

The solution offers a multi-cloud summary by collecting cloud cost data from your AWS, Azure, Google Cloud, and Oracle Cloud accounts in a single place for unified monitoring. You can compare the costs across all your cloud accounts and get a brief breakdown of the costs by month, region, account, and tag. The high-level view is useful for business decision-makers to gauge their cost trends and quickly identify if there are any significant cost overruns.



# Granular Visibility into Cloud Costs

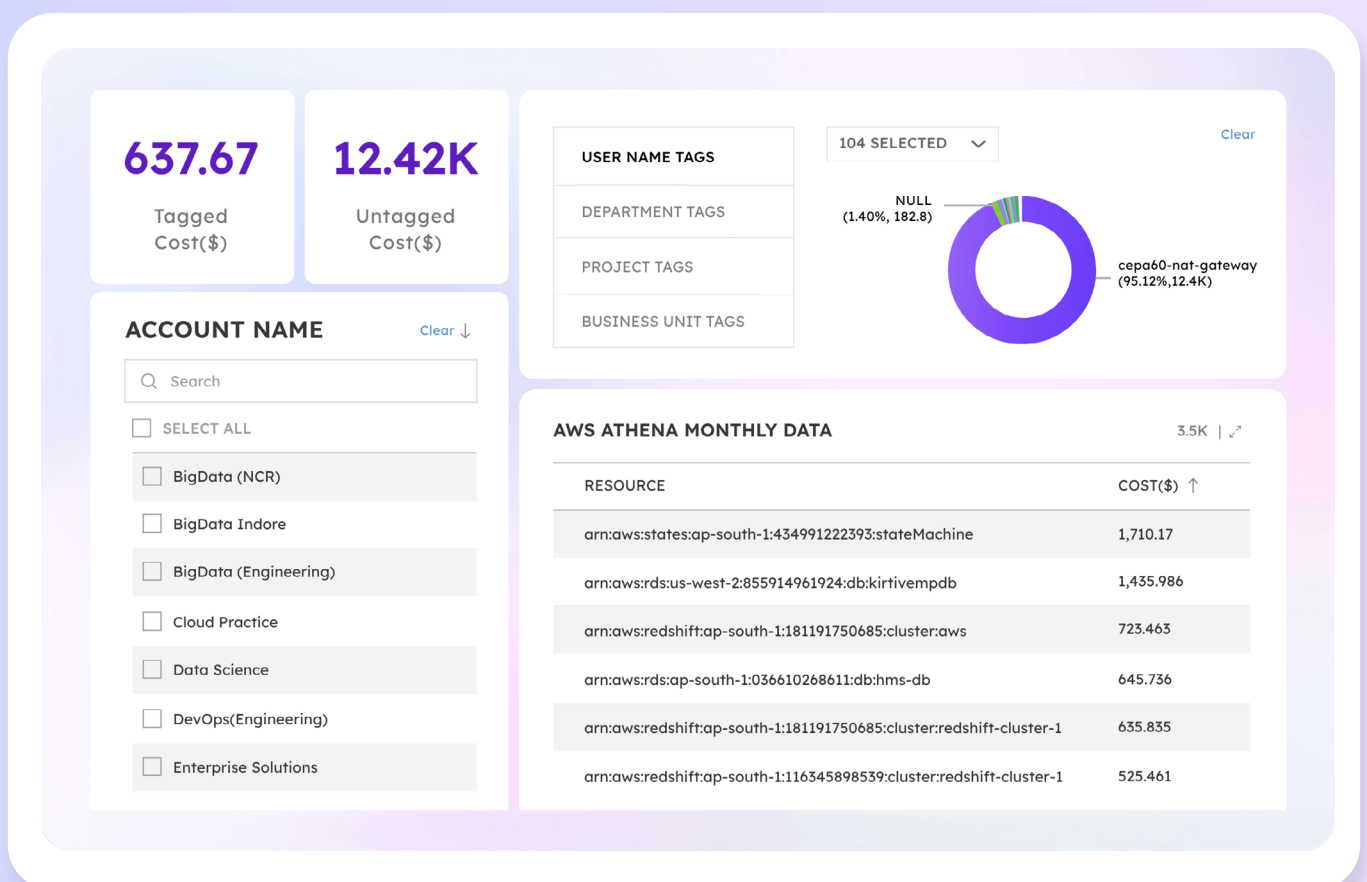
While a quick overview of cloud costs is useful for decision-makers, teams need granular visibility into their costs to identify wastage and optimization opportunities. Gathr offers detailed interactive charts to assess cloud costs across regions, instances, top services, resources, operations, and more.





## Tag Compliance

With the diffusion of responsibility across teams and enterprise groups, addressing the cost optimization challenge is not always easy. Gathr helps enterprises monitor tag compliance to improve cost attribution and implement the chargeback mechanism. With easy visibility into tagged and untagged resources, the solution helps you improve tag hygiene over time, leading to incremental improvements in cloud governance, cost reporting, optimization, security, and more.



# Advanced Alerts & Recommendations

The solution also offers advanced alerts for budget exhaustion, the launch of costly instances, and other anomalies, along with recommendations to optimize costs. Gathr’s out-of-the-box connectors make it possible to connect the solution with your preferred enterprise tools, such as Slack, Teams, Jira, and ServiceNow, to expedite incident logging and team response. It is also possible to customize the alert thresholds, definitions, messages, and tiers. With Gathr’s no-code platform, you can also scale up the solution to automate the implementation of lifecycle policies, terminate idle or long-running instances, and use spot instances wherever applicable.

### ORACLE CLOUD RECOMMENDATIONS 7 | ↗

RESOURCE TYPE	RESOURCE ID	RECOMMENDATION
Boot Volume	ocid1.bootvolume.oc1.a...	Enable performance auto-tuni...
Boot Volume	ocid1.bootvolume.oc1-m...	Enable performance auto-tuni...
Boot Volume	ocid1.bootvolume.oc1.ap...	Enable performance auto-tuni...
Bucket	ocid1.bucket.oc1.ap-mu...	Enable Object Lifecycle Manag..
Bucket	ocid1.bucket.oc1.ap...	Enable Object Lifecycle Mang...
Compute Instance	ocid1.instance.oc1.ap-m...	Enable Monitoring
Compute Instance	ocid1.instance.oc1.ap-m...	Enable Monitoring
Compute Instance	ocid1.instance.oc1.ap-...	Enable Monitoring

### AZURE ALERTS MESSAGES 3 | ↗

**ALERT ID** 72246

**ALERT NAME** Budget Violation

**TYPE** Cloud Cost is over the set Budget limit...

**MESSAGE** Display Message

**EXECUTION STATUS** ✓ Success

**FAILURE MESSAGE** (NULL)

**ALERT ID** 72248

**ALERT NAME** Budget Utilization Above 80%

**TYPE** Your Cost Utilization for current month...

**MESSAGE** Display Message

**EXECUTION STATUS** ✓ Success

**FAILURE MESSAGE** (NULL)

**ALERT ID** 74520

**ALERT NAME** Budget Violation

**TYPE** Cloud Cost is over the set Budget limit...

### TRIGGERS 12 | ↗

SLACK CONVERSATION ID	MESSAGE	DYNAMIC NOTIFICATION MESSAGE..	DYNAMIC DISPLAY MESSAGE..
C0395MYJXRQ	Budget utilization above 80%	(NULL)	(NULL)



## Advanced Alerts & Recommendations

As organizations are increasingly moving towards containerized workloads, optimization again requires new approaches. With the dynamic and often unpredictable nature of container clusters, the smallest configuration errors can cause your cluster costs to snowball in no time. Organizations need advanced solutions that can help them gauge trends in container behavior and make decisions to optimize cloud-native costs. Gathr offers solutions to monitor your Infra as Code pipelines and Kubernetes applications to streamline your cloud operations. With these solutions, you can embrace new technologies while implementing the best practices with increased automation and observability.



Gathr is a zero-code platform for data at scale. The platform offers a unified experience to build ML-powered “data to outcome” applications – spanning data collection, transformation, insights, predictions, and recommendations. It offers enterprise-grade capabilities for ingestion, ETL, CDC, machine learning, analytics, process automation, DevOps, DataOps, MLOps, FinOps, and more. With a drag-and-drop UI, 300+ built-in connectors, 300+ built-in transformations, and 100+ out-of-the-box solution templates, anyone can build production-ready applications in minutes, regardless of their skill levels. Gathr enables seamless collaboration between data engineers, data scientists, ops engineers, business analysts, and business users, helping them launch innovative solutions to the market faster than ever before. Moreover, being a cloud-native, open, extensible, and interoperable platform, Gathr offers much-needed flexibility and agility in the ever-evolving technology industry

[Schedule a demo](#)[Free 14-day trial](#)[www.gathr.one](http://www.gathr.one)