SCRUM 5

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Financial Operation

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## Summary Costs

This document is an AWS Cost Analysis Report that examines the usage and associated costs of AWS services over the period from July to December 2024. It presents a detailed breakdown of the expenditures for various AWS services, allowing for a deeper understanding of how costs are distributed across different categories. The report highlights key trends in spending, noting any significant spikes or fluctuations in cost, with particular attention to December 2024, which saw a substantial increase in spending.

The analysis also identifies critical areas where cost optimization could be beneficial, such as reviewing specific service configurations (such as VPC, Elastic Load Balancing, and Relational Database Service) for potential cost-saving opportunities. It provides a set of recommendations aimed at reducing unnecessary spending, such as investigating the December cost surge, implementing cost allocation tags, and considering reserved instances for more predictable pricing.

Overall, this report underscores the importance of monitoring and analysing cloud service usage regularly, as it suggests that the infrastructure being used is moderately complex, with irregular patterns of service consumption that could lead to inefficiencies if not optimized.

## Summary Metrics

* **Total Cost for the Period:** $235.36
* **Average Monthly Cost:** $39.23
* **Total Number of Services Utilized:** 34

## December 2024 Breakdown

In December 2024, a notable increase in costs was observed, with the total monthly expenditure amounting to $116.33. Below is the breakdown of the key services contributing to this cost, listed from highest to lowest.

* **Virtual Private Cloud (VPC):** $25.09
* **Tax:** $20.19
* **Elastic Load Balancing (ELB):** $18.83
* **Relational Database Service (RDS):** $18.58
* **CloudWatch:** $9.68
* **EC2 Instances:** $6.89
* **EC2 Other (non-instance related):** $4.75
* **Key Management Service (KMS):** $4.65
* **CloudTrail:** $4.49
* **Other Services:** $3.20

## Cost Trends and Analysis

**Service Cost Distribution (6-Months in Total)**

Over the six-month period, several services consistently represented the bulk of the costs. Below is the breakdown of costs across these services.

* **VPC -** $46.61
* **Tax -** $40.86
* **Elastic Load Balancing (ELB) -** $37.01
* **Relational Database Service (RDS) -** $30.17
* **EC2-Other (non-instance usage) -** $26.99
* **CloudWatch -** $19.19
* **EC2 Instances -** $13.69

VPC and Tax were the highest cost contributors across the full six months, while other services like Elastic Load Balancing and RDS also represented significant portions of the total spend.

**Monthly Spending Pattern**

The spending pattern for each month showed considerable fluctuations. Here's a breakdown:

* **July 2024 -** $10.94
* **August 2024 -** $0.00 (No usage recorded)
* **September 2024 -** $5.33
* **October 2024 -** $3.63
* **November 2024 -** Data not available
* **December 2024 -** $116.33

A key observation here is the drastic spike in December 2024, where costs jumped substantially to $116.33. This increase represents roughly 49% of the total spend across the entire six-month period. In contrast, August saw no costs, which could suggest inactivity or possibly credits or adjustments applied during that time.

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## Key Observations

* **Significant Cost Spike in December 2024 -** December accounted for a substantial increase in costs, contributing almost half of the total expenditure for the six months. It is critical to investigate what drove this surge in spending and whether it can be optimized.
* **Consistent High Costs in VPC and Tax -** Both VPC and Tax have consistently been among the highest cost categories throughout the six months. Optimizing these services or reviewing their configurations could potentially reduce expenses.
* **Minimal Activity in August 2024 -** There was a notable dip in usage in August 2024, with zero costs recorded for that month. This could indicate that services were paused or that billing credits were applied.
* **Irregular Usage Patterns -** Most services, especially Elastic Load Balancing, EC2 instances, and RDS, show irregular usage with peaks occurring sporadically, which might indicate inefficiencies or fluctuating workloads.
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## Recommendations

1. **Investigate December's Cost Surge -** The sharp increase in December 2024 warrants a thorough investigation to determine its cause. It is important to check for unexpected service scaling or usage spikes, and to identify any potential inefficiencies.
2. **Optimize VPC Configuration -** Since VPC has been a significant cost driver, it would be worthwhile to review its current configuration. Consider using cost-saving strategies like reserved instances or right-sizing the VPC architecture to better match usage.
3. **Analyse Elastic Load Balancing Efficiency -** ELB usage has been a consistent cost factor. Reviewing how traffic is distributed across load balancers and scaling them efficiently could help reduce unnecessary spending.
4. **Implement Cost Allocation Tags -** To gain better insight into cost distribution, implementing cost allocation tags across AWS resources is recommended. This will enable more granular tracking and help identify areas for further cost reduction.
5. **Monitor RDS Usage and Evaluate Reserved Instances -** Since RDS costs have been notable, if its usage pattern remains consistent, it might be worth considering reserved instances to benefit from cost savings over on-demand pricing.

## Additional Notes

* **Zero or Negative Costs in Certain Months -** Some months show zero or negative costs, which may indicate that billing adjustments, credits, or refunds were applied. This is worth confirming with AWS billing support for clarification.
* **Complex Infrastructure -** The usage of a wide range of AWS services (34 total) suggests a moderately complex infrastructure. This could lead to both opportunities and challenges in cost optimization. Continuous monitoring and adjustments will be necessary to ensure the infrastructure remains cost-effective.

By implementing the recommendations above, the organization can potentially reduce unnecessary spending, improve the efficiency of AWS resources, and optimize overall cloud costs.