Improve planning and cost control with AWS Budgets

NOTE: This content will be available as a video course soon! We are making it available as a Learning Path resource in the meantime to help you prepare for the newly updated AWS Certified Solutions Architect - Associate (SAA-C03) exam.

Introduction

Hello and welcome to this course which will explain how AWS Budgets can help you manage AWS spend and improve financial planning.

My name is Alana Layton, and I am an AWS Content Creator here at Cloud Academy. Feel free to connect with me to ask any questions using the details shown on the screen, alternatively you can always get in touch with us here at Cloud Academy by sending an e-mail to support@cloudacademy.com where one of our Cloud experts will reply to your question.

Who should attend this course?

This course has been created for financial operations professionals that have an interest in controlling AWS costs, and engineering team members that want more visibility into the cost of their environments.

Learning Objectives

By the end of this course, you will have a greater understanding of AWS Budgets, including:

- What the tool is and the benefit it provides
- How to set up a Budget and configure Budgets actions
- How to send a Budget report
- And lastly, how to configure and use AWS Cost Anomaly Detection

Prerequisites

To get the most out of this course, you should have an understanding of the AWS Billing console and AWS Cost Explorer. Additionally, I may briefly talk about establishing permissions through IAM and AWS Organizations and use examples that reference Amazon EC2. For more information, you can see our existing content here:

AWS Cost Management Tools
https://cloudacademy.com/course/aws-cost-management-tools-1299/

Compute Fundamentals for AWS
https://cloudacademy.com/course/compute-fundamentals-for-aws/

Managing Access using IAM User Groups and Roles
https://cloudacademy.com/course/managing-access-using-iam-user-groups-roles-2175/

Securing AWS Organizations with Service Control Policies
https://cloudacademy.com/course/securing-aws-organizations-with-service-control-policies-scps/

Feedback

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Please note that, at the time of writing this content, all course information was accurate. AWS implements hundreds of updates every month as part of its ongoing drive to innovate and enhance its services.

As a result, minor discrepancies may appear in the course content over time. Here at Cloud Academy, we strive to keep our content up to date in order to provide the best training available. So, if you notice any information that is outdated, please contact support@cloudacademy.com. This will allow us to update the course during its next release cycle.

Thank you!

Introduction to AWS Budgets

Before the cloud, companies often had a fixed procurement process. Companies signed contracts upfront and understood how engineering workloads mapped to software and hardware. Because that process was so well understood, the costs associated with it were understood as well - which meant it was easier to track and control costs.

Now, with cloud computing, costs are variable. With variable usage, you gain speed - you can move quicker and procure the hardware and software you need faster. However, it's now more difficult to understand the costs associated with that procurement. Often, it requires a change in the

procurement process, which means application teams and finance teams need to work better together to determine how to improve planning and control costs.

And to do that, these teams need three things:

1. They need to track AWS usage and costs, set appropriate budgets and receive alerts if they're exceeding those budgets
2. They need to provide reports to business leaders and engineering managers to better inform future purchasing decisions and
3. they not only need to see this information, but they also need to take action and automate responses when they do exceed their budget

This is where AWS Budgets comes into play. AWS Budgets has tools that map to each of these requirements. For tracking AWS usage and costs, or Savings Plan and Reserved Instance coverage, you can create a Budget.

For business reporting, you can use AWS Budgets Reports to disseminate information to the right people.

And for taking action, you can use AWS Budgets Actions to automate responses if you go over your budget.

Let's see how each of these tools work together at a high level.

You'll first define your budget, by specifying

- what you want to track, this could be cost - or how much you're spending, service usage - how much you're using, or coverage and utilization for Savings plans and Reserved Instances - are you getting the most out of your reservations
- Then you will determine your budget amount,
- and last, provide the scope of what this budget applies to - does it only apply to a particular project or service or does it apply to all resources in your account?

For example, you can specify a cost budget with a $100 monthly spend as your budget amount that applies to all services in your account.

Then you configure an alert, by specifying a threshold. This threshold is where you specify *when* you want to be notified. For example, you may want to be notified once you spend 80% of your $100 budget. Once that threshold is reached, the alert will notify you through your choice of email, SNS topic or AWS Chatbot notification.

You can optionally also attach a Budget action to this alert. You can configure one of three automated actions:

- you can change IAM permissions,
- change AWS Organizations permissions,

- or stop EC2 or RDS instances.

So going back to the previous example, if your alert threshold is met after you've spent 80% of your $100 budget, it will not only notify you but also trigger the action you selected automatically or with your approval.

Finally, to get a full report on all your budgets and their status, you can create a budget report and send it out to leadership or other interested parties. This will give them a high-level overview of the status of all budgets and enable them to plan for the future based on this data.

AWS Cost Anomaly Detection

Everyone has a story about an AWS bill - and usually it takes hearing just one of these stories for you to become obsessive about tracking your AWS spend. And while AWS budgets help with this paranoia, it's not a perfect science.

There may be times when you exceed your budget, but it's because of business growth. You're using more and racking up additional costs to better serve your customers - which is a good thing. Or there may be times where you've set a budget and you have a spike that's not normal for your business but it remains under the threshold, so you don't get alerted…which isn't a good thing.

This leads us to two fundamental truths:

1. Every business hates surprise spikes in cost and,
2. Every business contextualizes these spikes in costs and determines if they are "good" or "bad" based on their own unique spending patterns

Analyzing these cost spikes used to be a very manual process but now there are tools that can help us automate it, and one of those is called AWS Cost Anomaly Detection.

This service helps you gain an understanding of what is normal or not normal in terms of spending for your AWS accounts. And any time you have a random spike in spending that is deemed "not normal", you can not only be alerted of that spike, but you can also investigate why it happened.

LIke AWS Budgets, the first step in using Cost Anomaly Detection is to create an alert - which is called a cost monitor in this service. You can choose to evaluate your costs based on AWS service, or by linked accounts, cost allocation tags, or cost categories.

This choice is dependent on how you track your costs in your cloud environment. Lets use an example - say you're in an organization that segments cost by project. You can do this in many different ways in AWS. For example, you may use AWS accounts to segment costs for each project or you may use tags, and tag resources based on a particular project or you may even create your own custom resource groupings using cost categories. Or perhaps you're more interested in

segmenting spend by AWS service, to monitor each service spend individually for your projects instead. So depending on how you filter your spend, you'll choose the corresponding monitor to match.

When you create a cost monitor, you have to specify a threshold which will determine *when* the service sends you a notification. This threshold is defined as the difference between actual spend and your normal spend pattern. For example, let's say you set your threshold at $25. And your normal spend is $50. When your daily spend reaches $75, which is $25 past your normal $50 spend, then you'll be alerted of the anomaly.

Keep in mind this threshold only defines when to alert you and does not determine what an anomaly looks like for your account. And actually, you don't have to define that anywhere - the service will define what an anomaly looks like based on your own spending patterns by using machine learning.

From there, you can choose to get notified as soon as the anomaly is detected, or in a daily or weekly summary. Instead of receiving a notification anytime an anomaly is detected, these daily or weekly summaries will consolidate all anomalies that occurred within that day or that week.

Once the anomaly reaches the threshold that you set, you can choose to get notified through email, SNS, or the AWS Chatbot service.

However, occasionally, there may also be times where there is an anomaly in your account but it doesn't reach the threshold you set to be notified. This is where the detection history section of the Cost Anomaly Detection dashboard comes in handy. You can view your entire history of anomalies.

In detection history, you can inspect each anomaly in further detail. When inspecting an anomaly, you can take several actions, for example:

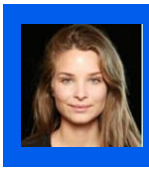
- You can view the anomaly in cost explorer to filter out details on a more granular level.
- You can view the root cause analysis, which the service identifies as the "best guess" to what may have caused the spike.
- And you can also submit assessments of the anomaly to better train the model to better learn your unique patterns of spending.

In summary, Cost Anomaly Detection helps detect one time cost spikes and continuous cost increases. This service is technically considered a free service, so consider using this in conjunction with AWS budgets. This combination of services will provide you more visibility into your spending patterns and any strange cost spikes, enabling you to better plan for the future.

Summary

In this course, I covered AWS Budgets, AWS Budget Actions, AWS Budget Reports and AWS Cost Anomaly Detection. At this point, you should have a better understanding of these tools, the benefits they can bring to your organization and how to use them.

Once again, my name is Alana Layton and I hope you've enjoyed our time together. If you have any feedback, positive or negative, please contact us at support@cloudacademy.com. Your feedback is greatly appreciated. Thank you and till next time!



Alana Layton, Sr. AWS Content Creator
alana.layton@cloudacademy.com