

AWS Free Services

Cheat sheets, Practice Exams and Flash cards  www.exampro.co/clf-c01

AWS Free services are free forever, unlike the “free-tier” that are up to a point of usage or time



IAM - Identity Access Management



Amazon VPC



Auto Scaling



CloudFormation



Elastic Beanstalk



Opsworks



Amplify



AppSync



CodeStar



Organizations & Consolidated Billing



AWS Cost Explorer

The AWS services are also free.
however these AWS Services
provision other services which
may cost money



AWS Support Plans

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Basic

Email Support only
For **Billing and Account**

Developer

Tech Support via **Email** ~24 hours until reply

No third party support

General Guidance

System Impaired

Business

Tech Support via **Chat, Phone** Anytime 24/7

Production System Impaired

Production System **DOWN!**

Business-Critical System **DOWN!** < 15m

 Personal Concierge

 TAM

7 Trusted Advisor Checks

\$0 USD /month

***\$29 USD /month**

All Trusted Advisor Checks

***\$100 USD / month**

***\$15,000 USD / month**



AWS Support Plans

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Developer

***\$29 USD /month**

or

3% of monthly AWS usage
whichever is greater

eg.

Monthly Spend is \$500

3% of 500 = \$15 USD (\$29)

Monthly Spend is \$1000

3% of 1000 = \$30 USD

Business

***\$100 USD / month**

or

10% of monthly AWS usage for the first \$0–\$10K

7% of monthly AWS usage from \$10K–\$80K

5% of monthly AWS usage from \$80K–\$250K

3% of monthly AWS usage over \$250K

whichever is greater

eg.

Monthly Spend is \$1000

10% of 1000 = \$100 USD

Monthly Spend is \$5000

10% of 5000 = \$500 USD

Monthly Spend is \$12,000

10% of 10,000 = \$1000 USD

7% of 2,000 = 140 USD

\$1140 USD

Enterprise

***\$15,000 USD / month**

or

10% of monthly AWS usage for the first \$0–\$150K

7% of monthly AWS usage from \$150K–\$500K

5% of monthly AWS usage from \$500K–\$1M

3% of monthly AWS usage over \$1M

whichever is greater



Technical Account Manager (TAM)

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A Technical Account Manager? (TAM) provides both **proactive guidance and reactive support** to help you succeed with your AWS journey

What does a TAM do? (Straight from an AWS Job Posting)

- Build solutions, provide technical guidance and advocate for the customer
- Ensure AWS environments remain operationally healthy whilst reducing cost and complexity
- Develop trusting relationships with customers, understanding their business needs and technical challenges
- Using your technical acumen and customer obsession, you'll drive technical discussions regarding incidents, trade-offs, and risk management
- Consult with a range of partners from developers through to C-suite executives
- Collaborates with AWS Solutions Architects, Business Developers, Professional Services Consultants, and Sales Account Managers
- Proactively find opportunities for customers to gain additional value from AWS
- Provide detailed reviews of service disruptions, metrics, detailed prelaunch planning
- Being part of a wider Enterprise Support team providing post-sales, consultative expertise
- Solve a variety of problems across different customers as they migrate their workloads to the cloud
- Uplift customer capabilities by running workshops, brown bag sessions, etc.



TAMs follow the Amazon Leadership Principles
Especially about being Customer Obsessed!



TAMs are only available at the Enterprise Support tier.



AWS Marketplace

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AWS Marketplace is a curated digital catalogue with **thousands** of software listings from independent software vendors.

Easily find, buy, test, and deploy software that already runs on AWS.

The product can be **free** to use or can have an **associated charge**. The charge becomes part of your AWS bill, and once you pay, AWS Marketplace pays the provider.

The sales channel for ISVs and Consulting Partners allows you to **sell your solutions** to other AWS customers.



Products can be offered as

- Amazon Machine Images (AMIs)
- AWS CloudFormation templates
- Software as a service (SaaS) offerings
- Web ACL
- AWS WAF rules

Consolidated Billing

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Consolidated Billing is a feature of AWS Organizations that allows you to pay for multiple AWS accounts with **one bill**.

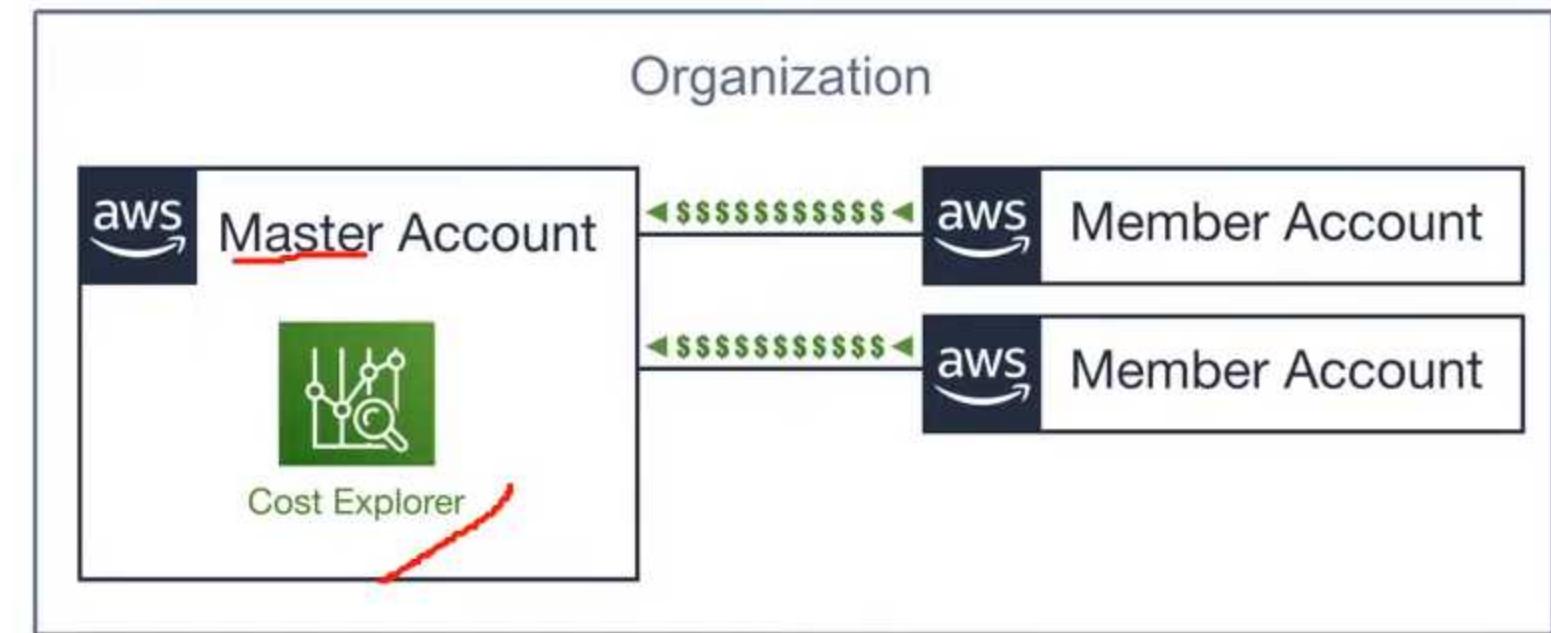
For billing AWS treats all the accounts in an organization as if they were one account.

You can designate one **master account** **that pays the charges** of all the other **member accounts**.

Consolidated billing is offered at no additional cost!

Use **Cost Explorer** to visualize usage for consolidated billing

You can combine the usage across all accounts in the organization to share the volume pricing discounts



Accounts that leave the organization can no longer access Cost Explorer data

Consolidated Billing – Volume Discounts

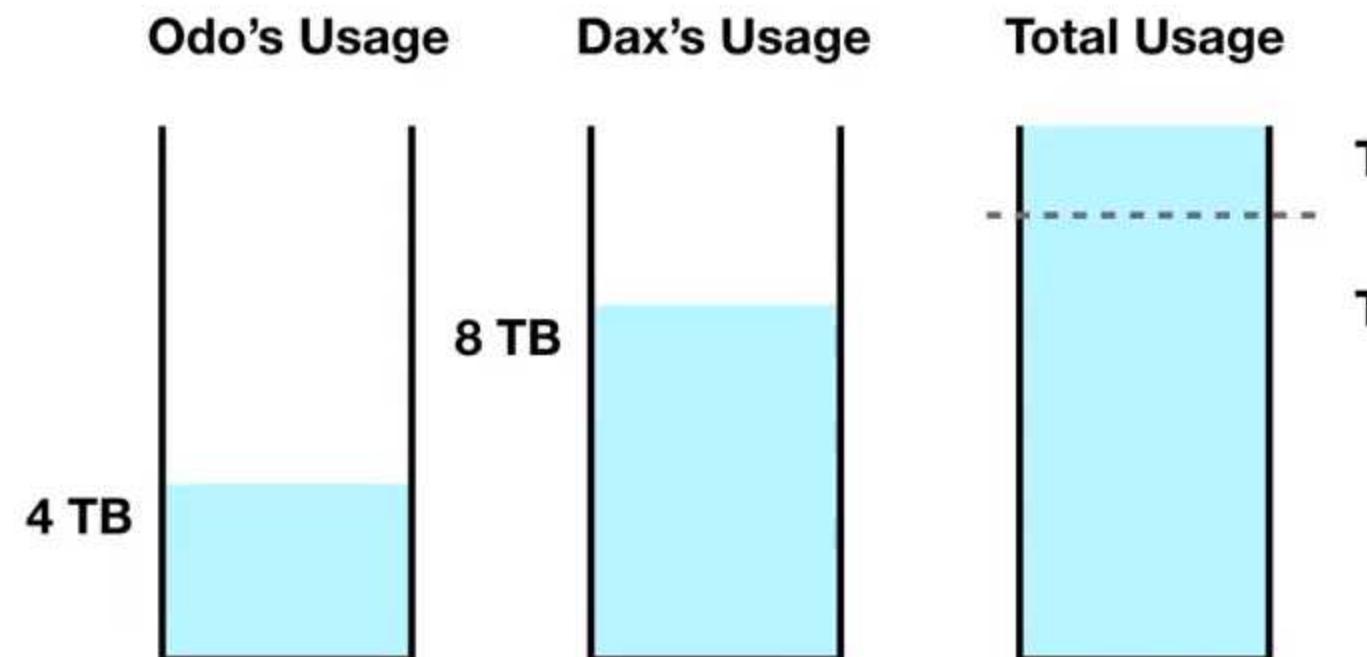
Cheat sheets, Practice Exams and Flash cards [👉 www.exampro.co/clf-c01](http://www.exampro.co/clf-c01)

AWS has **Volume Discounts** for many services

The more you use, the more you save.

Consolidated Billing lets you take advantage of Volume Discounts

Consolidate Billing is a feature of AWS Organizations



Data Transfer	
First 10 TB	\$0.17 per GB
Next 40 TB	\$0.13 per GB

Odo

$$(4 * \underline{1024}) * \underline{0.17}$$

$$= \$\underline{696.32}$$

1 TB = 1024 GB

Dax

$$(8 * \underline{1024}) * \underline{0.17}$$

$$= \$\underline{1392.64}$$

Unconsolidated $696.32 + 1392.64$

$$= \$\underline{2088.96}$$

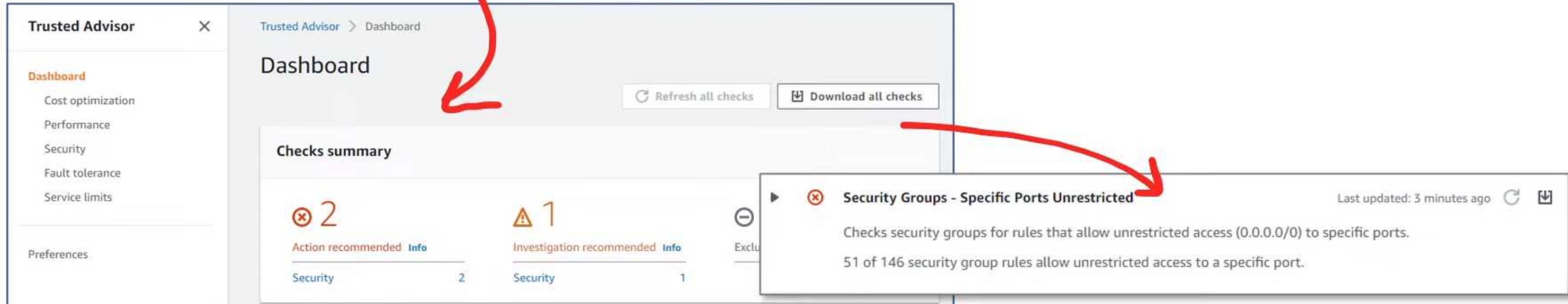
Consolidated $((10 * \underline{1024}) * \underline{0.17}) + ((2 * \underline{1024}) * \underline{0.13}) = \$\underline{2007.04}$

AWS Trusted Advisor

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AWS Trusted Advisor is a **recommendation tool** which automatically and actively monitors your AWS account to provide **actional recommendations** across a series of categories.



The screenshot shows the AWS Trusted Advisor dashboard. On the left, there's a sidebar with links: Trusted Advisor (with a red 'X'), Dashboard, Cost optimization, Performance, Security, Fault tolerance, Service limits, and Preferences. The main area is titled 'Dashboard' and 'Checks summary'. It shows two items: 'Action recommended' (2) and 'Investigation recommended' (1). A detailed view of the 'Action recommended' section is shown on the right, titled 'Security Groups - Specific Ports Unrestricted'. It says 'Checks security groups for rules that allow unrestricted access (0.0.0.0/0) to specific ports.' and '51 of 146 security group rules allow unrestricted access to a specific port.' There are 'Refresh all checks' and 'Download all checks' buttons at the top of the main area.



Think of AWS Trusted Advisor like an **automated checklist of best practices on AWS**

The 5 categories of AWS Trusted Advisor

- Cost Optimization – How can we save money?
- Performance – How can improve performance?
- Security – How we can improve security?
- Fault Tolerance – How can we prevent a disaster or data loss?
- Service Limits – Are we going to hit the maximum limit for a service?



AWS Trusted Advisor

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AWS Trusted Advisor providers different level of checks based on your AWS Support Plan

Basic

Developer

Business

Enterprise

7 Trusted Advisor Checks

All Trusted Advisor Checks

AWS providers the following checks for free:

1. MFA on Root Account
2. Security Groups – Specific Ports of Unrestricted
3. Amazon S3 Bucket Permissions
4. Amazon EBS Public Snapshots
5. Amazon RDS Public Snapshots
6. IAM Use - discourage the use of root access
7. Service Limits (All Service limits checks are free)

Six security checks



(
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AWS Trusted Advisor

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Cost Optimization

Amazon EC2 Reserved Instances Optimization

Low Utilization Amazon EC2 Instances

Underutilized Amazon EBS Volumes

Amazon EC2 Reserved Instance Lease Expiration

Amazon RDS Idle DB Instances

Amazon Route 53 Latency Resource Record Sets

Idle Load Balancers

Unassociated Elastic IP Addresses

Underutilized Amazon Redshift Clusters



Performance

CloudFront Alternate Domain Names

Amazon EBS Provisioned IOPS (SSD) Volume Attachment Configuration

Amazon EC2 to EBS Throughput Optimization

Amazon Route 53 Alias Resource Record Sets

CloudFront Content Delivery Optimization

CloudFront Header Forwarding and Cache Hit Ratio

High Utilization Amazon EC2 Instances

Large Number of EC2 Security Group Rules Applied to an Instance

Large Number of Rules in an EC2 Security Group

Overutilized Amazon EBS Magnetic Volumes



Security

AWS CloudTrail Logging

IAM Password Policy

MFA on Root Account

Security Groups - Specific Ports Unrestricted

Security Groups - Unrestricted Access

Amazon S3 Bucket Permissions

IAM Access Key Rotation

Amazon EBS Public Snapshots

Amazon RDS Public Snapshots

Amazon RDS Security Group Access Risk

Amazon Route 53 MX Resource Record Sets and Sender Policy Framework

CloudFront Custom SSL Certificates in the IAM Certificate Store

CloudFront SSL Certificate on the Origin Server

ELB Listener Security

ELB Security Groups

Exposed Access Keys

IAM Use



AWS Trusted Advisor

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Fault Tolerance

- Amazon EBS Snapshots
- Amazon RDS Multi-AZ
- Amazon S3 Bucket Logging
- Amazon S3 Bucket Versioning
- Amazon Aurora DB Instance Accessibility
- Amazon EC2 Availability Zone Balance

Amazon RDS Backups

- Amazon Route 53 Deleted Health Checks
- Amazon Route 53 Failover Resource Record Sets
- Amazon Route 53 High TTL Resource Record Sets
- Amazon Route 53 Name Server Delegations

- Auto Scaling Group Health Check

- Auto Scaling Group Resources

- ELB Connection Draining

- ELB Cross-Zone Load Balancing

- Load Balancer Optimization

- VPN Tunnel Redundancy

- AWS Direct Connect Connection Redundancy

- AWS Direct Connect Location Redundancy

- AWS Direct Connect Virtual Interface Redundancy

- EC2Config Service for EC2 Windows Instances

- ENA Driver Version for EC2 Windows Instances

- NVMe Driver Version for EC2 Windows Instances

- PV Driver Version for EC2 Windows Instances



Service Limits

- Auto Scaling Groups
- Auto Scaling Launch Configurations
- CloudFormation Stacks
- DynamoDB Read Capacity
- DynamoDB Write Capacity
- EBS Active Snapshots
- EBS Active Volumes
- EBS Cold HDD (sc1) Volume Storage
- EBS General Purpose SSD (gp2) Volume Storage
- EBS Magnetic (standard) Volume Storage
- EBS Provisioned IOPS (SSD) Volume Aggregate IOPS
- EBS Provisioned IOPS SSD (io1) Volume Storage
- EBS Throughput Optimized HDD (st1) Volume Storage
- EC2 Elastic IP Addresses
- EC2 On-Demand Instances
- EC2 Reserved Instance Leases
- ELB Active Load Balancers
- IAM Group
- IAM Instance Profiles
- IAM Policies
- IAM Roles
- IAM Server Certificates
- IAM Users
- Kinesis Shards per Region

- RDS Cluster Parameter Groups
- RDS Cluster Roles
- RDS Clusters
- RDS DB Instances
- RDS DB Parameter Groups
- RDS DB Security Groups
- RDS DB Snapshots Per User
- RDS Event Subscriptions
- RDS Max Auths per Security Group
- RDS Option Groups
- RDS Read Replicas per Master
- RDS Reserved Instances
- RDS Subnet Groups
- RDS Subnets per Subnet Group
- RDS Total Storage Quota
- Route 53 Hosted Zones
- Route 53 Max Health Checks
- Route 53 Reusable Delegation Sets
- Route 53 Traffic Policies
- Route 53 Traffic Policy Instances
- SES Daily Sending Quota
- VPC**
- VPC Elastic IP Address
- VPC Internet Gateways



Service Level Agreements

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What is a Service Level Agreement (SLA)?

A SLA is a **formal commitment** about the **expected level of service** between a customer and provider.

When a service level is not met and if Customer meets its obligations under the SLA, Customer will be eligible to receive the compensation eg. **Financial or Service Credits**

What is a Service Level Indicator (SLI)?

A **metric/measurement** that indicates what measure of performance a customer is receiving at a given time

A SLI metric could be uptime, performance, availability, throughput, latency, error rate, durability, correctness

What is a Service Level Objective (SLO)?

The objective that the provider has agreed to meet

SLOs are represented as a specific **target percentage** over a period of time.

Availability SLA of **99.99%** in a period of **3 months**



Target percentages

- 99.95%
- 99.99%
- 99.99999999% (commonly called **Nine nines**)
- 99.999999999% (commonly called **Nine elevens**)



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AWS Service Level Agreements

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DynamoDB SLA

AWS will use commercially reasonable efforts to make DynamoDB available with a Monthly Uptime Percentage for each AWS region, during any monthly billing cycle, of (a) at least 99.999% if the Global Tables SLA applies, or (b) at least 99.99% if the Standard SLA applies

In the event DynamoDB does not meet the Service Commitment, you will be eligible to receive a Service Credit as described below

	Monthly Uptime Percentage	Service Credit Percentage
<i>Global Tables SLA</i>	Less than 99.999% but equal to or greater than 99.0%	10%
	Less than 99.0% but equal to or greater than 95.0%	25%
	Less than 95.0%	100%
<i>Standard SLA</i>	Less than 99.99% but equal to or greater than 99.0%	10%
	Less than 99.0% but equal to or greater than 95.0%	25%
	Less than 95.0%	100%



AWS Service Level Agreements

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Compute SLAs

- Amazon Elastic Compute Cloud (Amazon EC2)*
- Amazon Elastic Block Store (Amazon EBS)
- Amazon Elastic Container Service (Amazon ECS)
- AWS Fargate for Amazon ECS and Amazon EKS

AWS makes two SLA commitments for the Included Services:

1. a Region-Level SLA that governs Included Services deployed across multiple AZs or regions, and
2. an Instance-Level SLA that governs Amazon EC2 instances individually.

	Monthly Uptime Percentage	Service Credit Percentage
<i>Region-Level SLA</i>	Less than 99.99% but equal to or greater than 99.0%	10%
	Less than 99.0% but equal to or greater than 95.0%	30%
	Less than 95.0%	100%
<i>Instance-Level SLA</i>	Less than 99.5% but equal to or greater than 99.0%	10%
	Less than 99.0% but equal to or greater than 95.0%	30%
	Less than 95.0%	100%



AWS Service Level Agreements

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RDS SLA

AWS will use commercially reasonable efforts to make Multi-AZ instances available with a Monthly Uptime Percentage of at least 99.95% during any monthly billing cycle

In the event Amazon RDS does not meet the Monthly Uptime Percentage commitment, you will be eligible to receive a Service Credit as described below.

Monthly Uptime Percentage

- Less than 99.95% but equal to or greater than 99.0%
- Less than 99.0% but equal to or greater than 95.0%
- Less than 95.0%

Service Credit Percentage

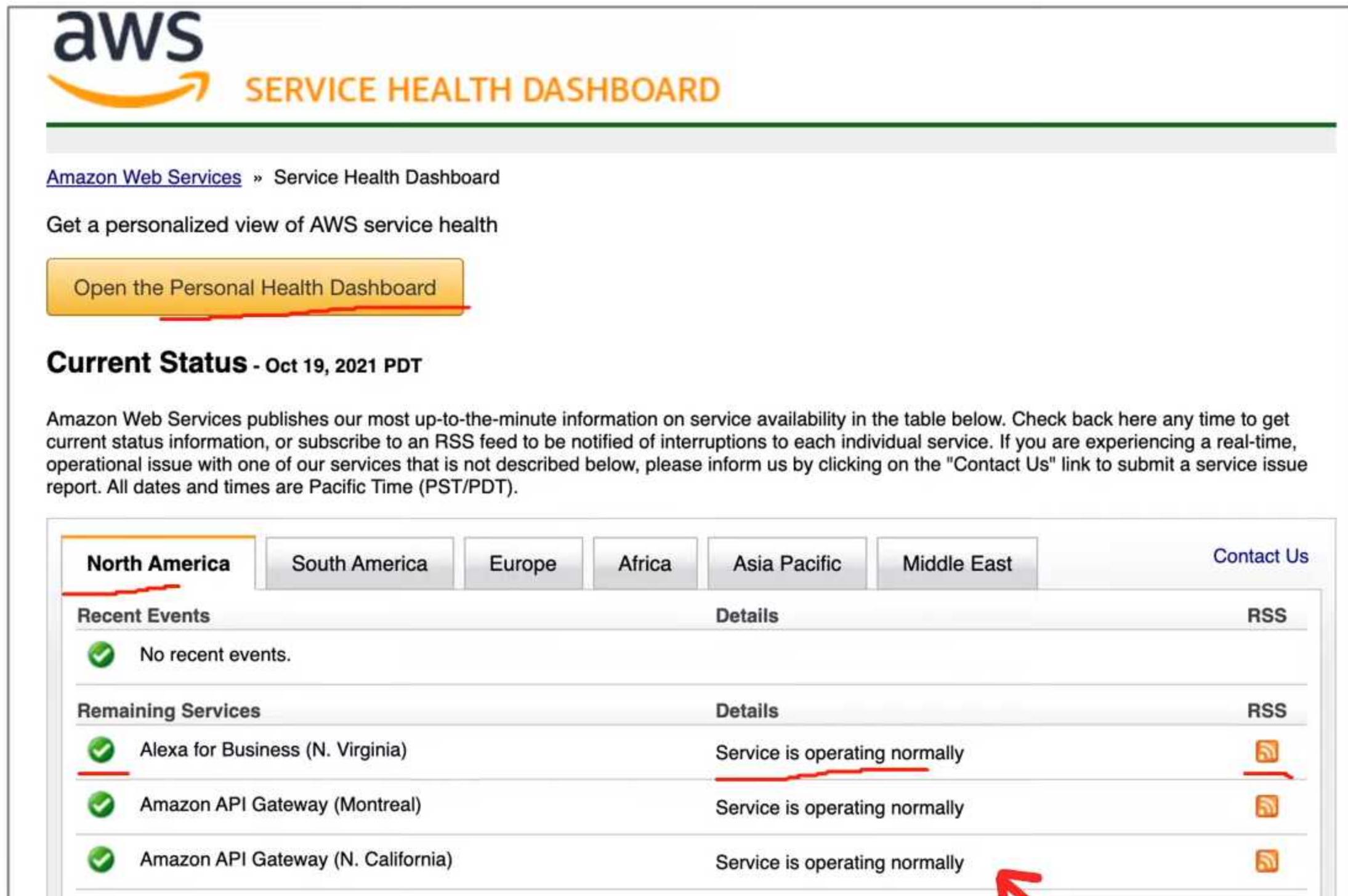
- 10%
- 25%
- 100%



Service Health Dashboard

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The **Service Health Dashboard** shows the general status of AWS services,



The screenshot shows the AWS Service Health Dashboard. At the top, there's a navigation bar with the AWS logo and the text "SERVICE HEALTH DASHBOARD". Below it, a breadcrumb trail says "Amazon Web Services » Service Health Dashboard". A button labeled "Open the Personal Health Dashboard" is highlighted with a red underline. The main section is titled "Current Status - Oct 19, 2021 PDT". It includes a note about staying up-to-date with service availability and a "Contact Us" link. A horizontal menu bar at the top of the status table allows switching between regions: North America (underlined), South America, Europe, Africa, Asia Pacific, and Middle East. The "Contact Us" link is also in this bar. The "Recent Events" section shows "No recent events." The "Remaining Services" section lists three services: Alexa for Business (N. Virginia), Amazon API Gateway (Montreal), and Amazon API Gateway (N. California). Each service entry has a green checkmark icon, the service name, a "Details" link, and an "RSS" feed link. The "Details" links for all three services show the status "Service is operating normally".

An **icon** and **details** will indicate the status of each AWS Service



AWS Personal Health Dashboard

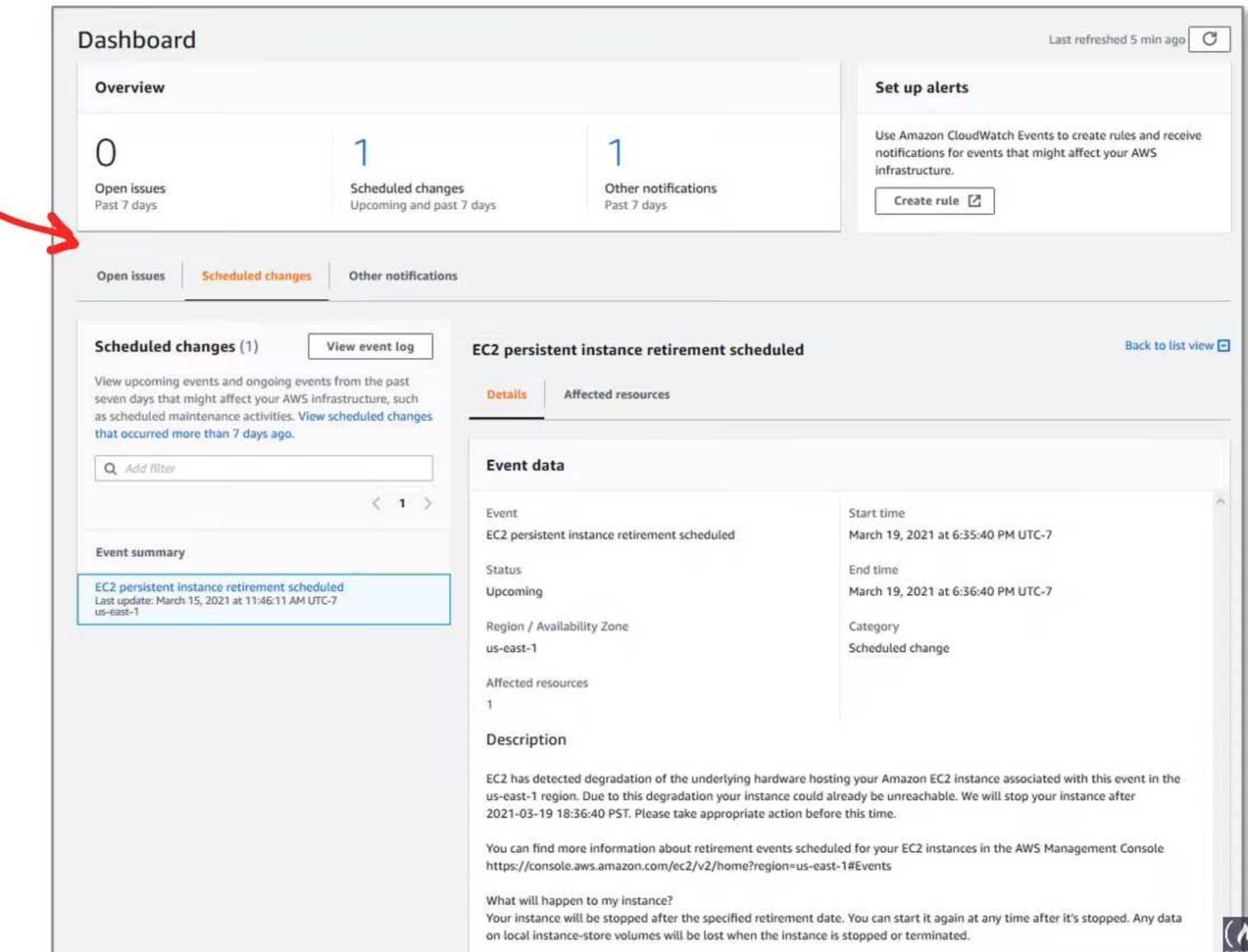
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AWS Personal Health Dashboard provides **alerts and guidance** for AWS events that might affect your environment.

All AWS customers can access the Personal Health Dashboard.

The Personal Health Dashboard shows recent events to help you manage active events, and shows proactive notifications so that you can plan for scheduled activities

Use these alerts to get notified about changes that can affect your AWS resources, and then follow the guidance to diagnose and resolve issues.



The screenshot shows the AWS Personal Health Dashboard interface. At the top, there's a summary section with three metrics: 0 Open issues (Past 7 days), 1 Scheduled changes (Upcoming and past 7 days), and 1 Other notifications (Past 7 days). A red arrow points from the text "All AWS customers can access the Personal Health Dashboard." to the "Scheduled changes" metric. Below this is a table for the "Scheduled changes" event:

Scheduled changes (1)	
View event log	
View upcoming events and ongoing events from the past seven days that might affect your AWS infrastructure, such as scheduled maintenance activities. View scheduled changes that occurred more than 7 days ago.	
<input type="text"/> Add filter	
< 1 >	
Event summary	
EC2 persistent instance retirement scheduled Last update: March 15, 2021 at 11:46:11 AM UTC-7 us-east-1	

To the right of the event table, there's a detailed view for the "EC2 persistent instance retirement scheduled" event. It includes sections for "Event data", "Affected resources", "Description", and "What will happen to my instance?".

Event data

- Event: EC2 persistent instance retirement scheduled
- Status: Upcoming
- Region / Availability Zone: us-east-1
- Affected resources: 1

Description

EC2 has detected degradation of the underlying hardware hosting your Amazon EC2 instance associated with this event in the us-east-1 region. Due to this degradation your instance could already be unreachable. We will stop your instance after 2021-03-19 18:36:40 PST. Please take appropriate action before this time.

You can find more information about retirement events scheduled for your EC2 instances in the AWS Management Console <https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#Events>

What will happen to my instance?

Your instance will be stopped after the specified retirement date. You can start it again at any time after it's stopped. Any data on local instance-store volumes will be lost when the instance is stopped or terminated.

At the bottom right, there's a "SUBSCRIBE" button with a bell icon.

AWS Abuse

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AWS Trust & Safety is a team that specifically deals with abuses occurring on the AWS platform for the following issues:

Spam

You are receiving unwanted emails from an AWS-owned IP address, or AWS resources are used to spam websites or forums.

Port scanning

Your logs show that one or more AWS-owned IP addresses are sending packets to multiple ports on your server. You also believe this is an attempt to discover unsecured ports.

Denial-of-service (DoS) attacks

Your logs show that one or more AWS-owned IP addresses are used to flood ports on your resources with packets. You also believe that this is an attempt to overwhelm or crash your server or the software running on your server.

Intrusion attempts:

Your logs show that one or more AWS-owned IP addresses are used to attempt to log in to your resources.

Hosting prohibited content:

You have evidence that AWS resources are used to host or distribute prohibited content, such as illegal content or copyrighted content without the consent of the copyright holder.

Distributing malware

You have evidence that AWS resources are used to distribute software that was knowingly created to compromise or cause harm to computers or machines that it's installed on.



AWS Support does not deal with Abuse tickets. You need to contact abuse@amazonaws.com or fill out the Report Amazon AWS abuse form.



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SUBSCRIBE

AWS Free-Tier

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AWS has a free-tier which allows you to use AWS at no cost

- for the first 12 months of signup
- Or free usage up to a certain monthly limit forever



EC2 Web Server

t2.micro 750 hours per month for 1 year



RDS Database (MySQL or Postgres)

t2.db.micro 750 hours per month for 1 year



ELB Load Balancer

750 hours per month for 1 year

The Best Deals

Amazon CloudFront Homepage Video

50 GB data-transfer out in total for 1 year

Amazon Connect Toll Free Number

90 minutes of call-time per month for 1 year

Amazon ElastiCache Caching

cache.t3.micro 750 hours per month for 1 year

Amazon ElasticSearch Service Full Text Search

750 hours per month for 1 year

PinPoint Campaign / Marketing Emails

5,000 targeted users per month for 1 year

SES Emails sent by your web-application

62,000 emails per month forever

AWS CodePipeline CI/CD

1 Pipeline free

AWS CodeBuild Building Code

100 build minutes per month forever

AWS Lambda Serverless Compute

1M free request per month

3.2M seconds of compute time per month



AWS Credits

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AWS Promotional Credits (or AWS Credits for short) are the equivalent to USD dollars on the AWS platform. AWS Credits can be earned several ways:

- Joining the AWS Activate startup program
- Winning Hackathons
- Participating in Surveys
- ...

Summary

Total amount remaining	Total amount used
\$500.00	\$332.00

Redeem credit



AWS Credits generally have an expiry date attached to them.

AWS Credits can be used for most services but there are exceptions where AWS Credits cannot be used eg. Purchasing a domain via Route53



AWS Partner Network (APN)

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partner
network

The AWS Partner Network (APN) is a global partner program for AWS. Joining the APN will open your organization up to business opportunities and allows exclusives trainings and marketing events



When joining the APN you can either be a:

Consulting Partner – you help companies utilize AWS

Technology Partner – you build technology ontop of AWS as a service offering

- A partner belongs to a specific Tier: Select, Advanced or Premier
- Different tiers have different Annual fee commitments
- Different tiers have different Knowledge requirements
 - AWS Certification
 - AWS APN-Exclusive Certifications
- You can get back Promotional AWS Credits
- You can have unique speaking opportunities in the official AWS marketing channels. Eg blogs, webinars
- Being part of the APN is a requirement to be a Sponsor with a vendor booth at AWS Events



AWS Budgets

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AWS Budgets give you the ability to setup alerts if you **exceed** or are **approaching** your defined budget

Create **Cost, Usage or Reservation** Budgets

It can be tracked at the **monthly, quarterly, or yearly levels**, with customizable start and end dates

Alerts support **EC2, RDS, Redshift, and ElastiCache** reservations.



AWS Budgets can be used to Forecast costs but is limited compared to Cost Explorer or doing your analysis with AWS Cost and Usage Reports along with a Business Intelligence tool

Budget based on a fixed cost or plan your upfront based on your chosen level

Can be easily managed from the **AWS Budgets** dashboard or via the **Budgets API**.

Get Notified by providing an email or **Chatbot** and threshold how close to the current or forecasted budget

Choose your budget amount in \$\$\$

Budgeted amount

\$100

Last month's cost \$126.59

Usage unit(s)

Usage Type Group

EC2: Running Hours (Hrs) 

Usage Type

Budgeted amount

100

Hrs

Last month's usage 2260.54 Hrs

Choose based a different kind of unit



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AWS Budgets

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You have a list of budgets:



Overview Info

Budgets (3) Info

Find a budget Show all budgets

Name	Thresholds	Budget	Amount used	Forecasted am...	Current vs. budgeted	Forecasted vs. bud...
AWS Credits Budgets	⚠️ Exceeded (1)	\$200.00	\$318.79	\$392.07	159.39%	196.03
MinecraftServerBudget	✅ OK	\$100.00	\$0.00	-	0.00%	-
Overall Costs	⚠️ Exceeded (1)	\$100.00	\$393.77	\$539.28	393.77%	539.28

You can see your budget history, download it as a CSV



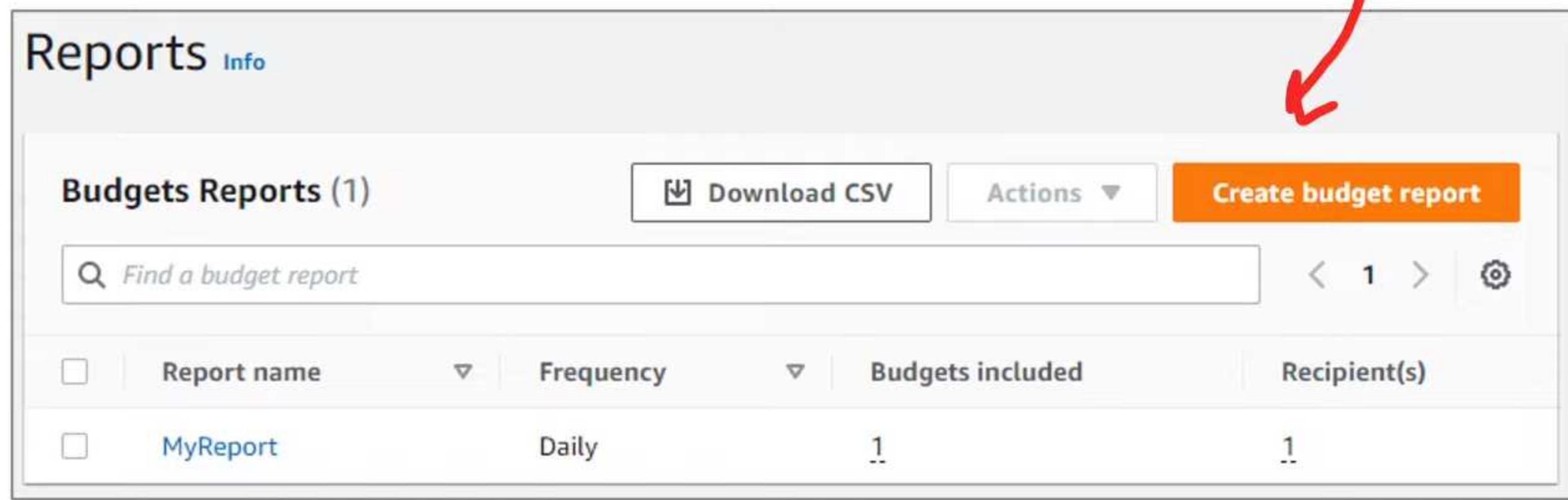
- **first two budgets are free of charge**
- Each budget is **\$0.02 per day ~\$0.60 USD / month**
- **20,000 budgets limit**



AWS Budget Reports

Cheat sheets, Practice Exams and Flash cards  www.exampro.co/clf-c01

AWS Budget Report is used alongside AWS Budgets to create and send daily, weekly, or monthly reports to monitor the performance of your AWS Budget that will be emailed to specific emails.



A red arrow points from the text above to the 'Create budget report' button in the screenshot.

Report name	Frequency	Budgets included	Recipient(s)
MyReport	Daily	1	1

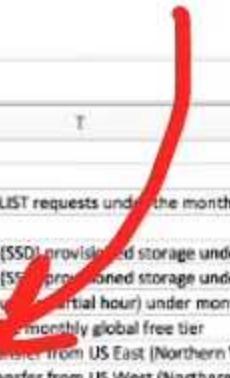
AWS Budget Reports serve as a more convenient way of staying on top of reports since they are delivered to your email instead of logging into the AWS Management Console

AWS Cost and Usage Reports (CUR)

Cheat sheets, Practice Exams and Flash cards www.exampro.co/clf-c01



Generate a **detailed spreadsheet**, enabling you to
better analyze and understand your AWS costs



M	N	O	P	R	S	T
LineItem/ProductCode	LineItem/UsageType	LineItem/Operation	LineItem/AvailabilityZone	LineItem/UsageAmount	LineItem/CurrencyCode	LineItem/LineItemDescription
AmazonEC2	CW:AlarmMonitorUsage	Unknown		0.00134409	USD	\$0.00 per alarm-month - first 10 alarms
AmazonS3	Requests-Tier1	ListAllMyBuckets		2	USD	\$0.00 per request - PUT, COPY, POST, or LIST requests under the monthly global free tier
AmazonEC2	CW:AlarmMonitorUsage	Unknown		0.00134409	USD	\$0.00 per alarm-month - first 10 alarms
AmazonEC2	APS2-EBS:VolumeUsage gp2	CreateVolume-Gp2		0.01344086	USD	\$0.00 per GB-month of General Purpose (SSD) provisioned storage under monthly free tier
AmazonEC2	APS2-EBS:VolumeUsage gp2	CreateVolume-Gp2		0.01344086	USD	\$0.00 per GB-month of General Purpose (SSD) provisioned storage under monthly free tier
AmazonEC2	USW2-BoxUsage t2.micro	RunInstances-0002	us-west-2a	1	USD	\$0.00 per Windows t2.micro instance-hour (or partial hour) under monthly free tier
AmazonEC2	USW2-USE1-AWS-Out-Bytes	PublicIP-Out		0.00000176	USD	\$0.00 per GB - data transfer out under the monthly global free tier
AmazonEC2	USW2-USE1-AWS-In-Bytes	PublicIP-In		0.00000138	USD	\$0.00 per GB - US West (Oregon) data transfer from US East (Northern Virginia)
AmazonEC2	USW2-USW1-AWS-In-Bytes	PublicIP-In		0.00000149	USD	\$0.00 per GB - US West (Oregon) data transfer from US West (Northern California)
AmazonS3	Requests-Tier1	ListAllMyBuckets		2	USD	\$0.00 per request - PUT, COPY, POST, or LIST requests under the monthly global free tier
AmazonEC2	USW2-DataTransfer-Out-Bytes	RunInstances		0.00038144	USD	\$0.00 per GB - data transfer out under the monthly global free tier
AmazonEC2	USW2-USW1-AWS-Out-Bytes	PublicIP-Out		0.00000174	USD	\$0.00 per GB - data transfer out under the monthly global free tier
AmazonEC2	USW2-DataTransfer-In-Bytes	RunInstances		0.00030951	USD	\$0.00 per GB - data transfer in per month
AmazonEC2	USW2-BoxUsage t2.micro	RunInstances-0002	us-west-2a	1	USD	\$0.00 per Windows t2.micro instance-hour (or partial hour) under monthly free tier
AmazonEC2	USW2-USW1-AWS-Out-Bytes	PublicIP-Out		0.00000349	USD	\$0.00 per GB - data transfer out under the monthly global free tier
AmazonEC2	USW2-USW1-AWS-In-Bytes	PublicIP-In		0.00000276	USD	\$0.00 per GB - US West (Oregon) data transfer from US West (Northern California)
AmazonEC2	APS2-EBS:VolumeUsage gp2	CreateVolume-Gp2		0.01344086	USD	\$0.00 per GB-month of General Purpose (SSD) provisioned storage under monthly free tier
AmazonEC2	CW:AlarmMonitorUsage	Unknown		0.00134409	USD	\$0.00 per alarm-month - first 10 alarms
AmazonEC2	USW2-BoxUsage t2.micro	RunInstances-0002	us-west-2a	1	USD	\$0.00 per Windows t2.micro instance-hour (or partial hour) under monthly free tier
AmazonEC2	USW2-DataTransfer-Regional-Bytes	PublicIP-Out		0.00000349	USD	\$0.00 per GB - regional data transfer under the monthly global free tier
AmazonEC2	USW2-DataTransfer-In-Bytes	RunInstances		0.00032071	USD	\$0.00 per GB - data transfer in per month
AmazonEC2	USW2-DataTransfer-Regional-Bytes	PublicIP-In		0.00000302	USD	\$0.00 per GB - regional data transfer under the monthly global free tier
AmazonEC2	USW2-USE1-AWS-Out-Bytes	PublicIP-Out		0.00000176	USD	\$0.00 per GB - data transfer out under the monthly global free tier
AmazonEC2	USW2-DataTransfer-Out-Bytes	RunInstances		0.00045736	USD	\$0.00 per GB - data transfer out under the monthly global free tier
AmazonEC2	USW2-DataTransfer-In-Bytes	RunInstances		0.00036737	USD	\$0.00 per GB - data transfer in per month
AmazonEC2	USW2-APN2-AWS-In-Bytes	PublicIP-In		0.00000005	USD	\$0.00 per GB - US West (Oregon) data transfer from Asia Pacific (Seoul)
AmazonEC2	USW2-APN2-AWS-Out-Bytes	PublicIP-Out		0.00000018	USD	\$0.00 per GB - data transfer out under the monthly global free tier
AmazonEC2	USW2-USE1-AWS-In-Bytes	PublicIP-In		0.00000153	USD	\$0.00 per GB - US West (Oregon) data transfer from US East (Northern Virginia)
AmazonEC2	USW2-DataTransfer-Out-Bytes	RunInstances		0.00039945	USD	\$0.00 per GB - data transfer out under the monthly global free tier
AmazonEC2	CW:AlarmMonitorUsage	Unknown		0.00134409	USD	\$0.00 per alarm-month - first 10 alarms

choose the granularity of your data by
selecting hourly, daily or monthly

The report will contain Cost Allocation Tags

CUR data is stored in a CSV (GZIP) or
Parquet format in your selected S3 bucket



Places the reports into S3



Use Athena to turn the report into a queryable database



Use QuickSight to visualize your billing data as graphs

Cost Allocation Tags

Cheat sheets, Practice Exams and Flash cards www.exampro.co/clf-c01

Cost Allocation Tags are optional metadata that can be attached to AWS resource so when you generate out a Cost and Usage Report you can use that data to better analyze your data.

There are **two types** of tags:

- User-Defined
 - Eg Project
- AWS Generated
 - E.g. aws:createdBy

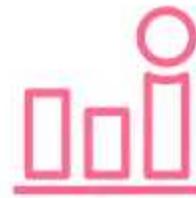
The screenshot shows the AWS Cost Allocation Tags interface. At the top, there are two tabs: "User-defined cost allocation tags" and "AWS-generated cost allocation tags". The "AWS-generated cost allocation tags" tab is selected, indicated by an orange underline. Below the tabs, there is a search bar labeled "Search for a tag key" and a pagination control showing page 1 of 1. A red arrow points from the text "There are **two types** of tags:" to the "User-defined cost allocation tags" tab. Another red arrow points from the text "You have to **activate** the tags you want to show up in the report" to the "Activate" button for the "aws:createdBy" tag in the list.

Tag key	Status
aws:createdBy	Active
aws:cloudformation:stack-name	Inactive
aws:ec2launchtemplate:id	Inactive



Billing Alerts/Alarms

Cheat sheets, Practice Exams and Flash cards [👉 www.exampro.co/clf-c01](http://www.exampro.co/clf-c01)



You can create your own Alarms in CloudWatch Alarms to monitor spend. They are commonly called “Billing Alarms”

You first need to turn on **Billing Alerts**



Go create a CloudWatch Alarm and you can choose Billing as your Metric



Billing Alarms are much more flexible than AWS Budgets and ideal for more complex use-cases for monitoring spend and usage

Specify metric and conditions

Metric

Graph

This alarm will trigger when the blue line goes above the red line for 1 datapoints within 6 hours.

No unit

EstimatedCharges

10/21 10/23 10/25

Namespace: AWS/Billing

Metric name: EstimatedCharges

Currency: USD

Statistic: Maximum

Period: 6 hours

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The screenshot shows the AWS CloudWatch Metrics console interface for creating a new alarm. On the left, there's a 'Cost Management Preferences' sidebar with checkboxes for 'Receive Free Tier Usage Alerts' and 'Receive Billing Alerts'. The 'Receive Billing Alerts' checkbox is checked, and the email address 'andrew@exampro.co' is entered. Below this is a 'Metric' section with a graph showing 'EstimatedCharges' over time (10/21 to 10/25). A blue line represents the metric, and a red line represents the threshold. The graph shows a sharp increase in charges starting around 10/23. The right side of the screen displays the 'Specify metric and conditions' form, which includes fields for Namespace (set to AWS/Billing), Metric name (set to EstimatedCharges), Currency (set to USD), Statistic (set to Maximum), and Period (set to 6 hours). A large red arrow points from the 'Billing' button on the AWS Billing dashboard to the 'Metric' section of the CloudWatch Metrics console, indicating the connection between the two.

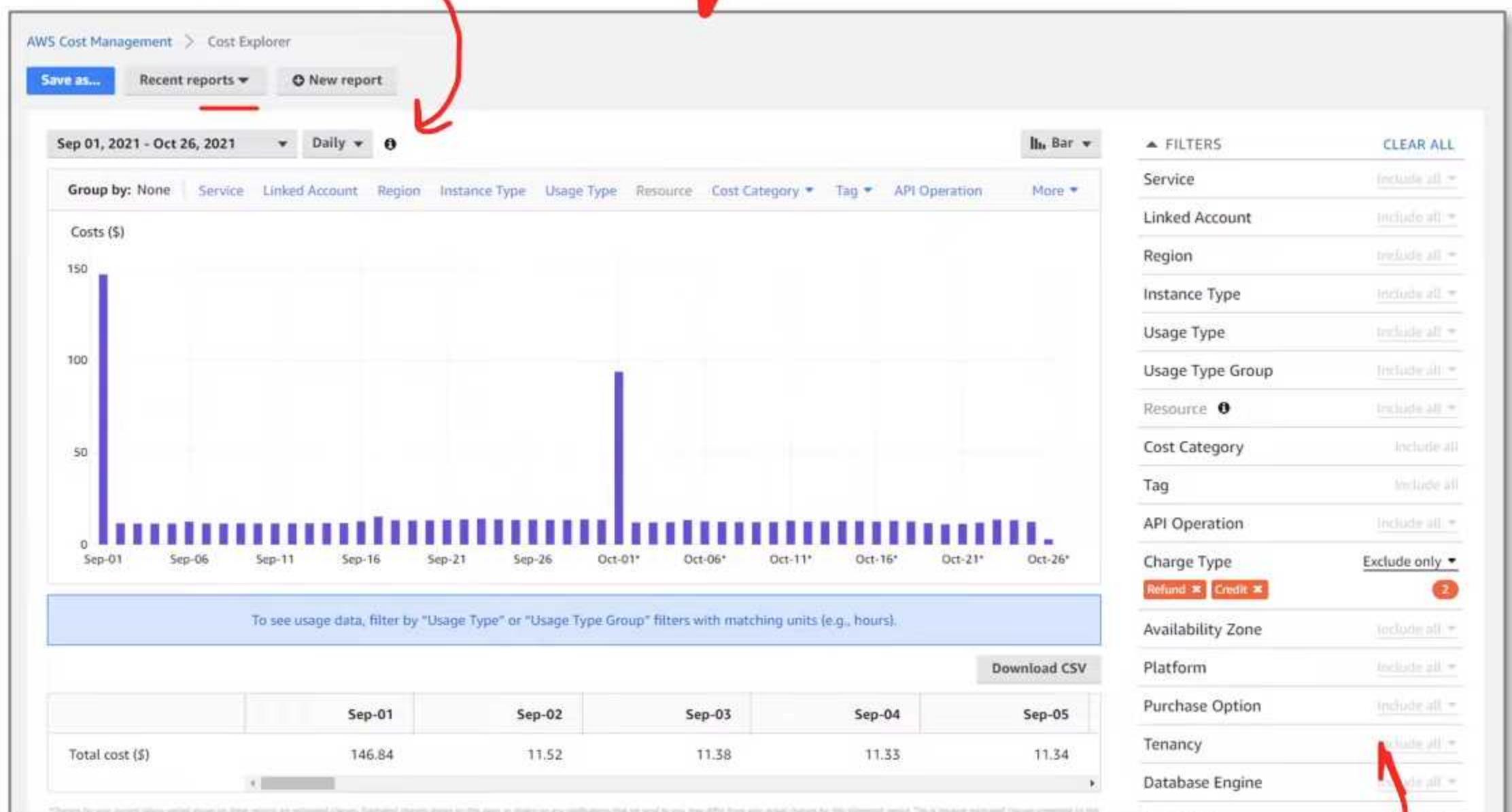
AWS Cost Explorer

Cheat sheets, Practice Exams and Flash cards www.exampro.co/clf-c01



AWS Cost Explorer lets you visualize, understand, and manage your AWS costs and usage over time.

Specific type range and aggregation

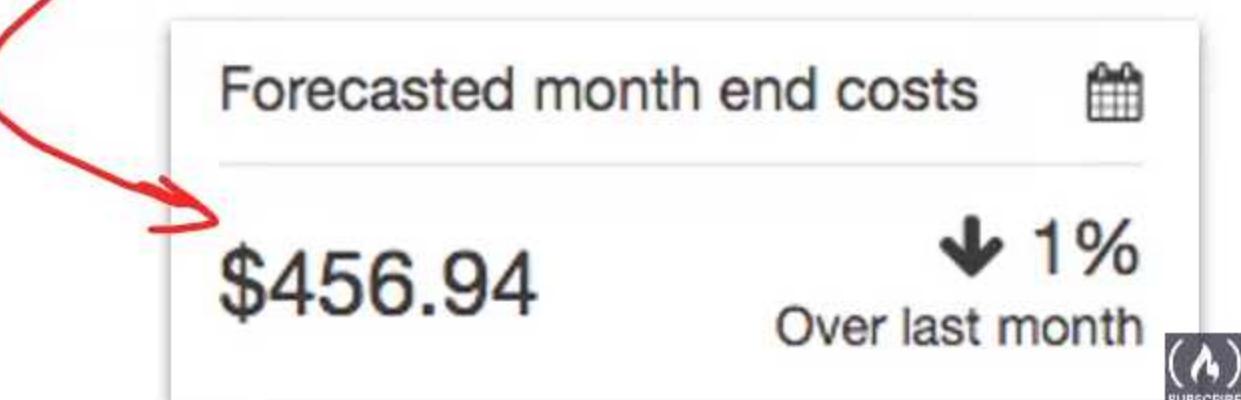


Robust filtering

Default reports help you gain insight into your cost drivers and usage trends.

The screenshot shows the 'Reports' section of the AWS Cost Explorer. It includes a 'Reports' dropdown, a '+ New report' button, and a list of default reports: 'Cost and Usage Reports', 'Monthly costs by service', 'Monthly costs by linked account', 'Monthly EC2 running hours costs and usage', 'Daily costs', 'AWS Marketplace', 'Reservation Reports', 'RI Utilization', and 'RI Coverage'. A red arrow points from the text 'Default reports help you gain insight into your cost drivers and usage trends.' to this list.

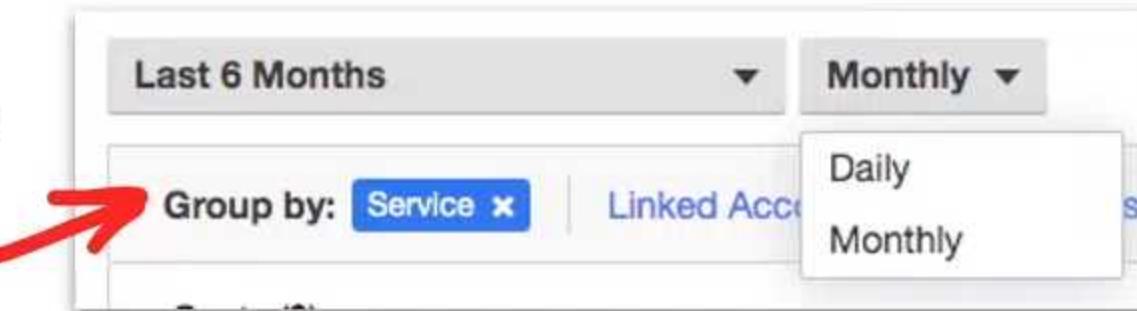
Use **forecasting** to get an idea of future costs



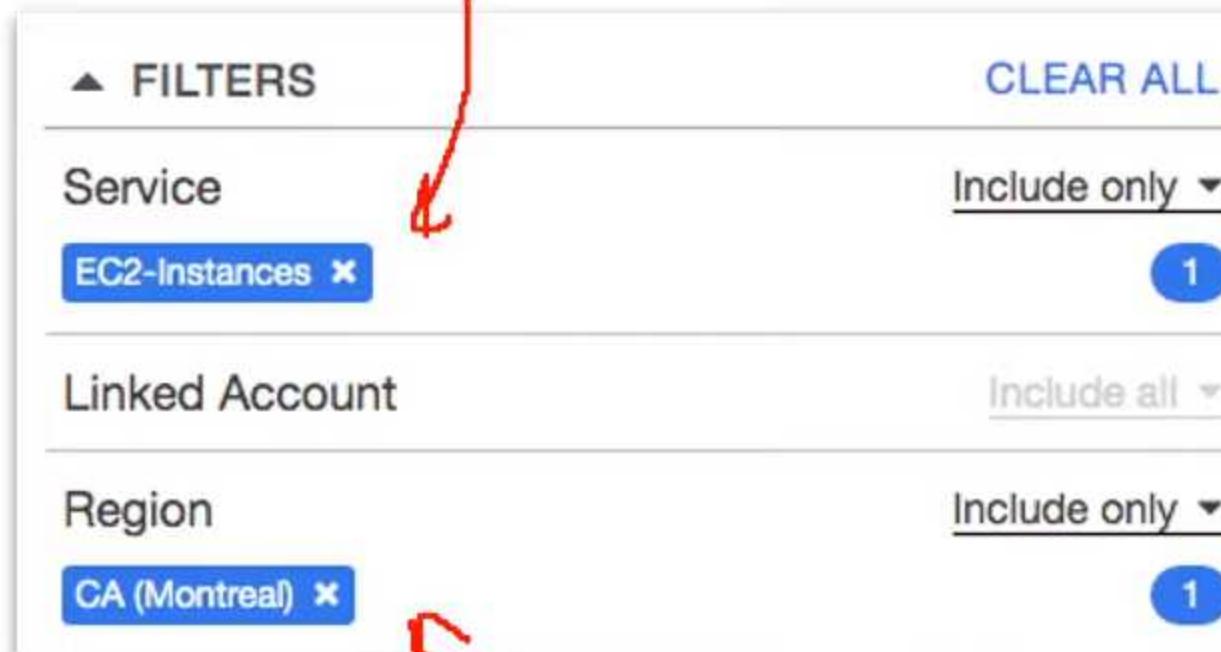
AWS Cost Explorer

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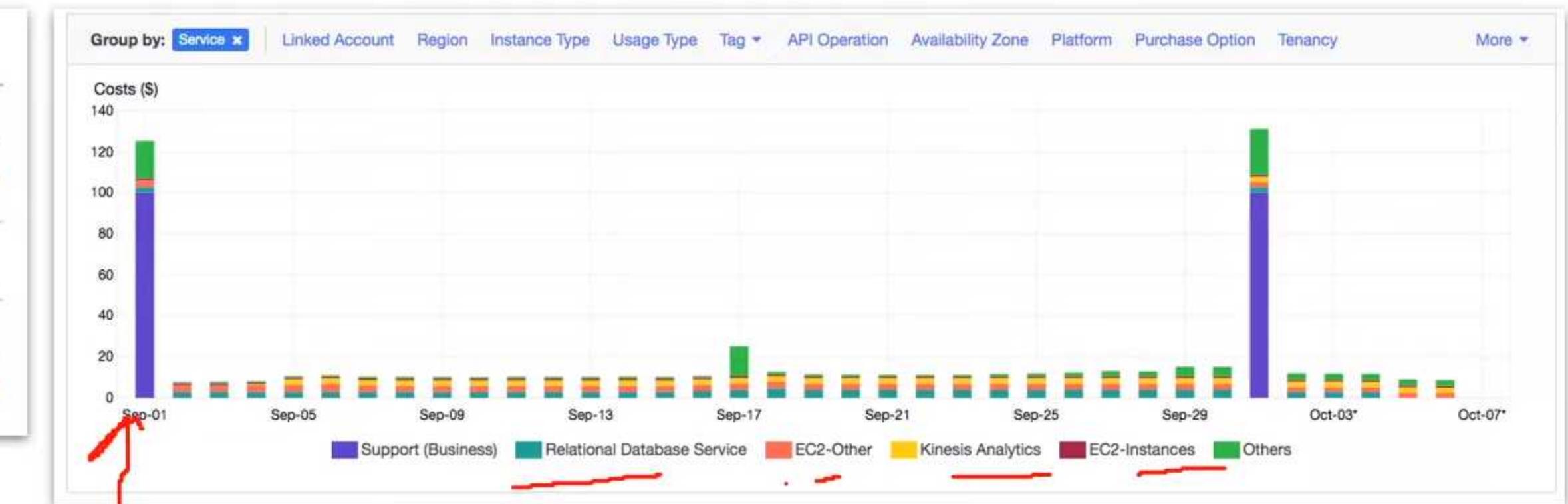
Choose if you want to view your data at a **monthly** or **daily** level of granularity



Use **filter** and **grouping** functionalities to dig even deeper into your data!



A screenshot of the AWS Cost Explorer filters sidebar. It includes sections for 'FILTERS', 'CLEAR ALL', 'Service' (selected 'EC2-Instances'), 'Linked Account' (selected 'Include all'), and 'Region' (selected 'CA (Montreal)'). Red arrows point from the text above to the 'Service' and 'Region' sections.



Cost Explorer shows up in **US-East-1**



AWS Pricing API

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With AWS you can programmatically access pricing information to get the latest price offering for services.

There are two versions of this API:

- Query API – The Pricing Service API via **JSON**
 - <https://api.pricing.us-east-1.amazonaws.com>
- Batch API – The Price List API via **HTML**
 - <https://pricing.us-east-1.amazonaws.com/offers/v1.0/aws/index.json>

You can also subscribe to Amazon Simple Notification Service (Amazon SNS) notifications to get alerts when prices for the services change.

AWS prices change periodically, such as when AWS cuts prices, when new instance types are launched, or when new services are introduced



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