

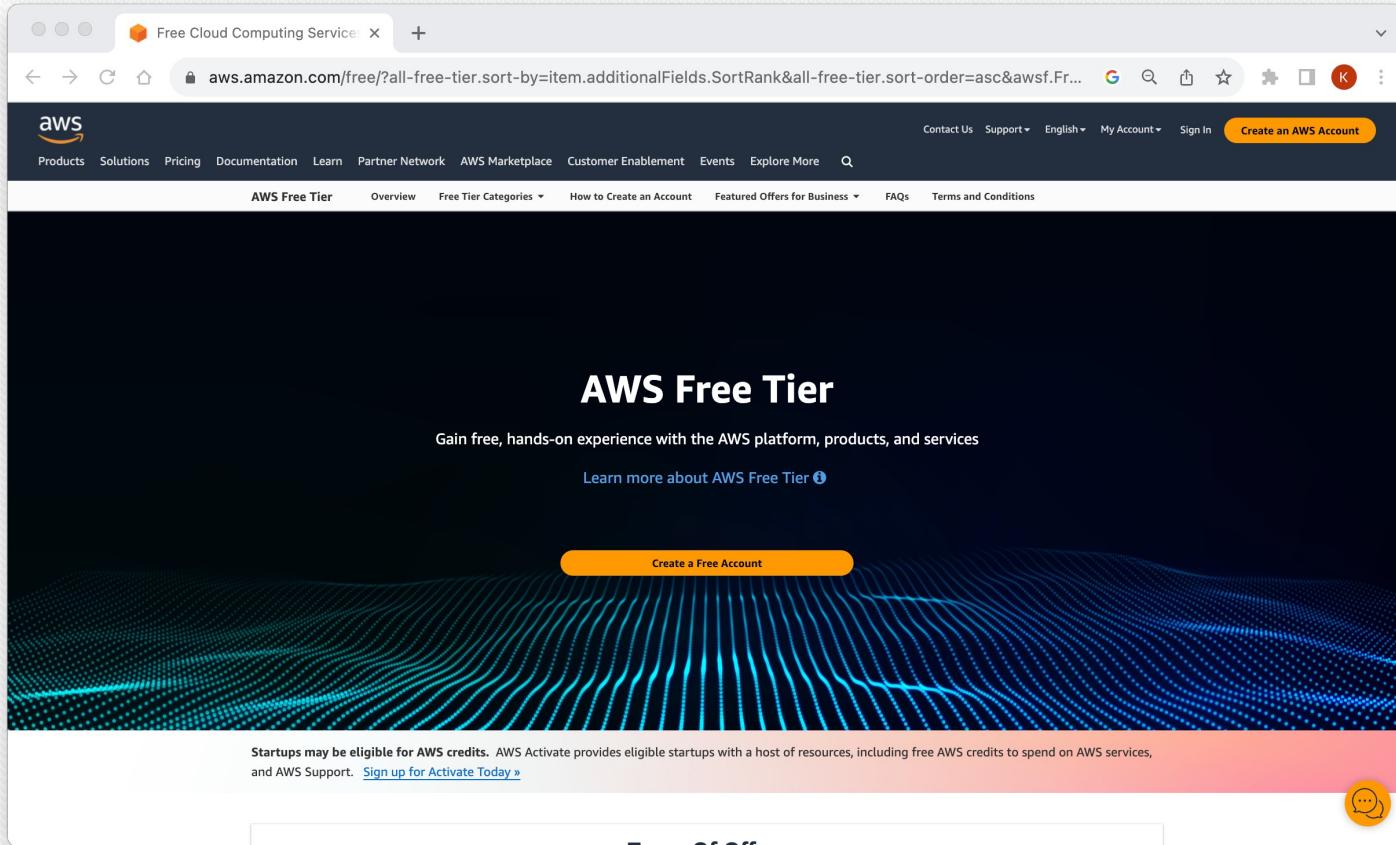
# SDSU Computer Science

Ken Gamradt

Fall 2023

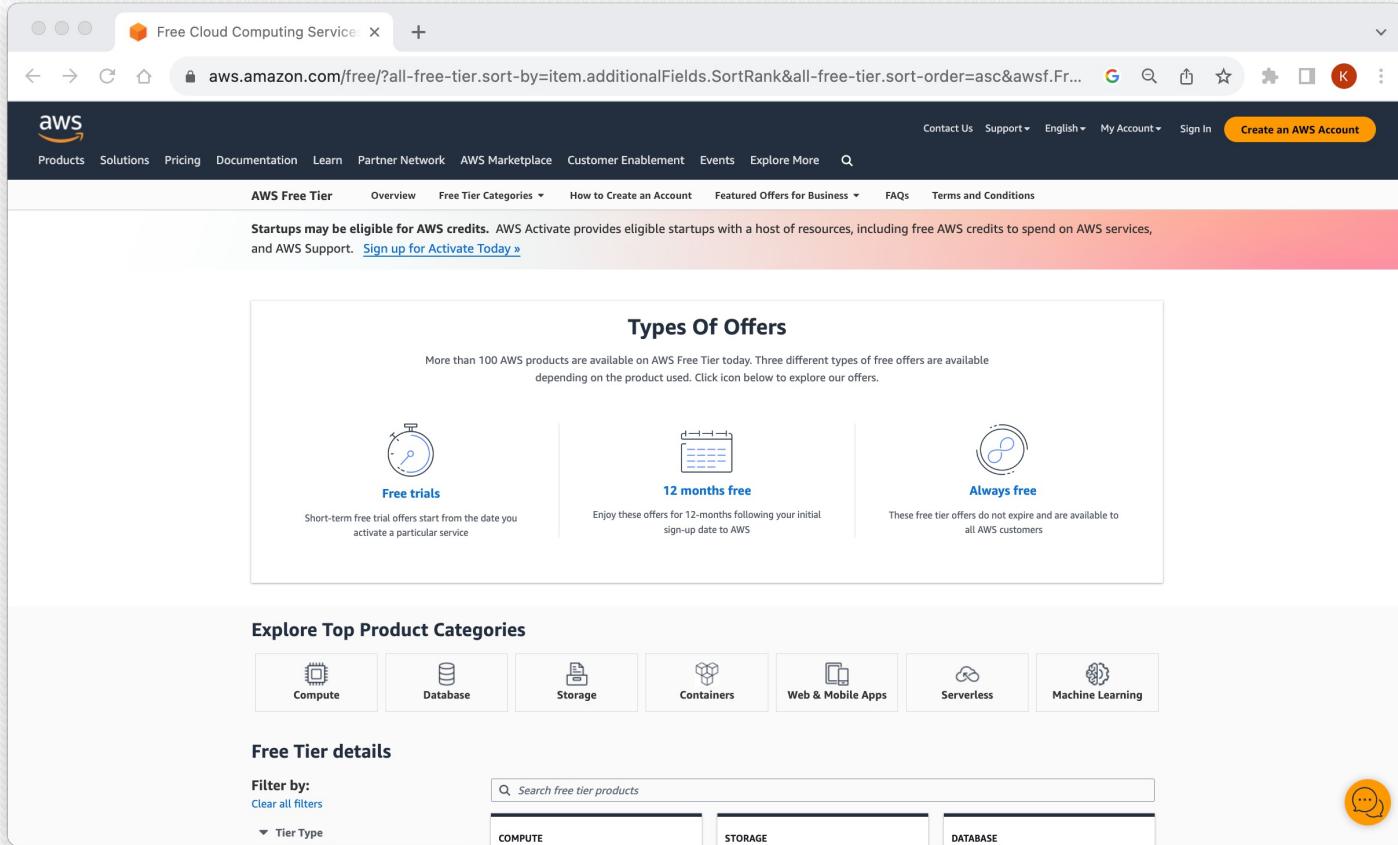
AWS Accounts

# AWS Free Tier



The screenshot shows the AWS Free Tier landing page. At the top, there's a navigation bar with links for Products, Solutions, Pricing, Documentation, Learn, Partner Network, AWS Marketplace, Customer Enablement, Events, Explore More, Contact Us, Support, English, My Account, Sign In, and a prominent yellow "Create an AWS Account" button. Below the navigation is a secondary menu with links for AWS Free Tier, Overview, Free Tier Categories, How to Create an Account, Featured Offers for Business, FAQs, and Terms and Conditions. The main content area features a large, dark background image of a digital wave pattern. In the center, the words "AWS Free Tier" are displayed in white. Below this, a sub-headline reads "Gain free, hands-on experience with the AWS platform, products, and services". A blue "Learn more about AWS Free Tier" button is present. At the bottom of the page, a pink banner contains the text "Startups may be eligible for AWS credits. AWS Activate provides eligible startups with a host of resources, including free AWS credits to spend on AWS services, and AWS Support. [Sign up for Activate Today »](#)". A "Create a Free Account" button is located at the very bottom.

# AWS Free Tier



The screenshot shows the AWS Free Tier landing page. At the top, there's a navigation bar with links for Products, Solutions, Pricing, Documentation, Learn, Partner Network, AWS Marketplace, Customer Enablement, Events, Explore More, Contact Us, Support, English, My Account, Sign In, and Create an AWS Account.

The main content area has a red banner at the top stating: "Startups may be eligible for AWS credits. AWS Activate provides eligible startups with a host of resources, including free AWS credits to spend on AWS services, and AWS Support. [Sign up for Activate Today »](#)".

### Types Of Offers

More than 100 AWS products are available on AWS Free Tier today. Three different types of free offers are available depending on the product used. Click icon below to explore our offers.

**Free trials**: Short-term free trial offers start from the date you activate a particular service.

**12 months free**: Enjoy these offers for 12-months following your initial sign-up date to AWS.

**Always free**: These free tier offers do not expire and are available to all AWS customers.

### Explore Top Product Categories

Icons for Compute, Database, Storage, Containers, Web & Mobile Apps, Serverless, and Machine Learning.

### Free Tier details

Filter by: [Clear all filters](#)

Search free tier products

Tier Type: COMPUTE, STORAGE, DATABASE

A yellow circular icon with a speech bubble and a question mark is located in the bottom right corner.

# AWS Free Tier

The screenshot shows the AWS Free Tier landing page. At the top, there's a search bar with the placeholder "Search free tier products". Below the search bar, there are two sections of filters: "Tier Type" and "Product Categories".

**Tier Type:**

- Featured
- 12 Months Free
- Always Free
- Trials

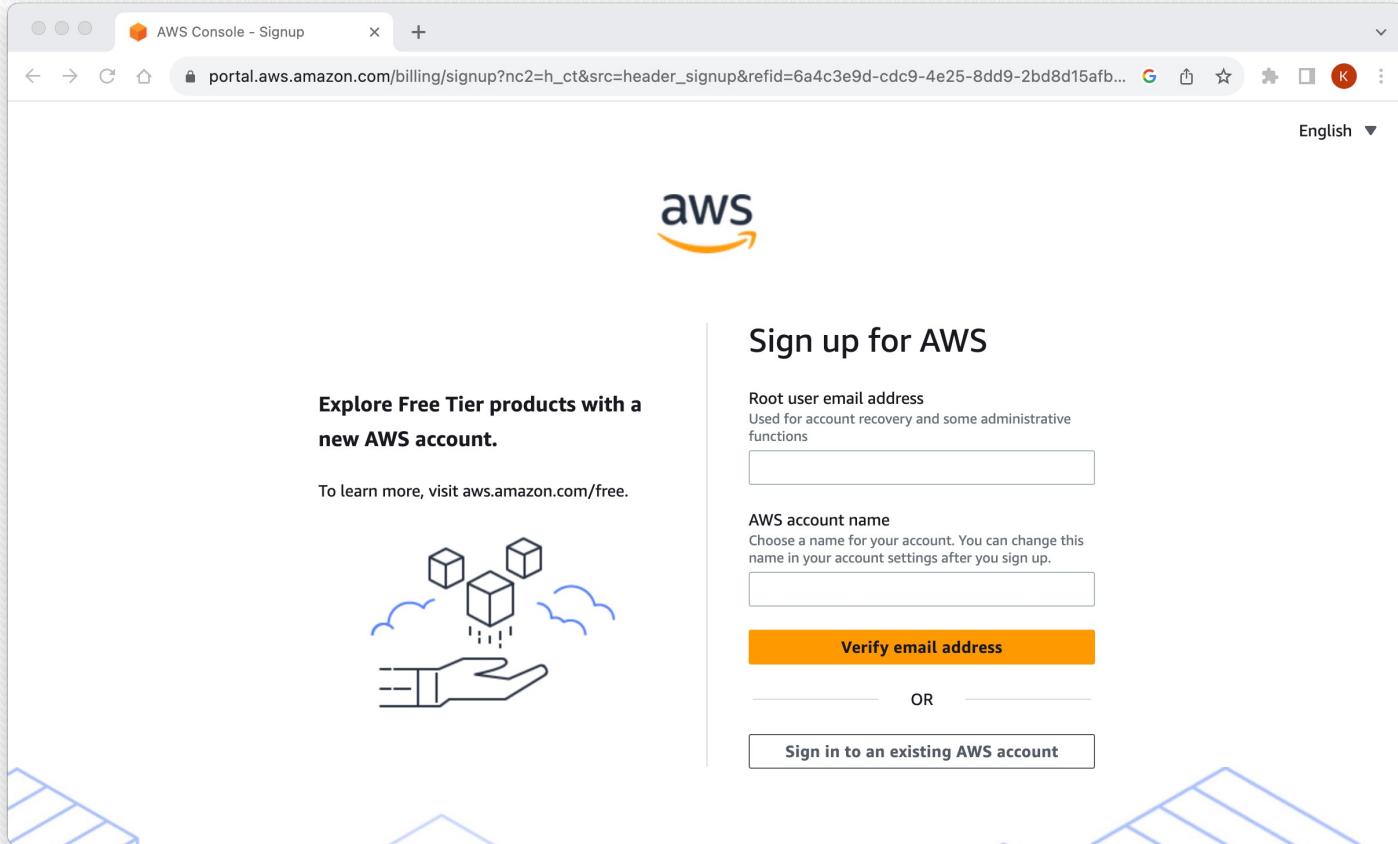
**Product Categories:**

- Analytics
- Application Integration
- Business Productivity
- Compute
- Containers
- Customer Engagement
- Database
- Developer tools
- End User Computing
- Front-End Web & Mobile
- Game Tech
- Internet of Things
- Machine Learning
- Management & Governance
- Media Services
- Migration & Transfer
- Networking & Content Delivery
- Robotics
- Security, Identity, & Compliance

The main content area displays six service cards:

- COMPUTE**: Free Tier, 12 MONTHS FREE. **Amazon EC2**: **750 Hours** per month. Resizable compute capacity in the Cloud. 750 hours per month of m4.small instance.
- STORAGE**: Free Tier, 12 MONTHS FREE. **Amazon S3**: **5 GB** of standard storage. Secure, durable, and scalable object storage infrastructure. 5 GB of Standard Storage.
- DATABASE**: Free Tier, 12 MONTHS FREE. **Amazon RDS**: **750 Hours** per month of database usage (applicable DB engines). Managed Relational Database Service for MySQL, PostgreSQL, MariaDB, or SQL Server.
- DATABASE**: Free Tier, ALWAYS FREE. **Amazon DynamoDB**: **25 GB** of storage. Fast and flexible NoSQL database with seamless scalability. 25 GB of Storage.
- MACHINE LEARNING**: NEW. Free Tier, FREE TRIAL. **Amazon SageMaker**: **2 Months** free trial. Machine learning for every data scientist and developer. 250 hours per month of ml.t3.medium on.
- COMPUTE**: Free Tier, ALWAYS FREE. **AWS Lambda**: **1 Million** free requests per month. Compute service that runs your code in response to events and automatically manages the compute resources. 1,000,000 free requests per month.

# Amazon Web Services (AWS)



A screenshot of a web browser displaying the AWS Signup page. The URL in the address bar is [portal.aws.amazon.com/billing/signup?nc2=h\\_ct&src=header\\_signup&refid=6a4c3e9d-cdc9-4e25-8dd9-2bd8d15afb...](https://portal.aws.amazon.com/billing/signup?nc2=h_ct&src=header_signup&refid=6a4c3e9d-cdc9-4e25-8dd9-2bd8d15afb...). The page features the AWS logo at the top left. In the center, there's a call-to-action button labeled "Sign up for AWS". To the left of the main form, there's a section titled "Explore Free Tier products with a new AWS account." It includes a link to [aws.amazon.com/free](https://aws.amazon.com/free) and a small icon of a hand holding three cubes. The main form contains fields for "Root user email address" and "AWS account name", both represented by input boxes. Below these fields is a large orange "Verify email address" button. A horizontal line with the word "OR" in the center separates this from a "Sign in to an existing AWS account" button. The page is set against a background with abstract blue and white geometric shapes.

# Amazon Web Services (AWS)

The screenshot shows a web browser window for the AWS Signup page at [portal.aws.amazon.com/billing/signup#/start/password](https://portal.aws.amazon.com/billing/signup#/start/password). The page features the AWS logo and the heading "Sign up for AWS". A green success message box states: "It's you! Your email address has been successfully verified." Below this, there is a note about the importance of creating a password. The "Create your password" section contains fields for "Root user password" and "Confirm root user password". A large orange "Continue (step 1 of 5)" button is at the bottom. On the left side, there is a callout for "Explore Free Tier products with a new AWS account" and a link to [aws.amazon.com/free](https://aws.amazon.com/free). An illustration of a hand holding three cubes is also present.

# Amazon Web Services (AWS)

The screenshot shows the AWS Signup page at [portal.aws.amazon.com/billing/signup#/account](https://portal.aws.amazon.com/billing/signup#/account). The page features the AWS logo and a "Sign up for AWS" button. On the left, there's a section titled "Free Tier offers" with three options: "Always free" (never expires), "12 months free" (start from initial sign-up date), and "Trials" (start from service activation date). On the right, there are "Contact Information" fields for "How do you plan to use AWS?", "Who should we contact about this account?", "Full Name", "Phone Number" (with a dropdown for country code +1 and a field for 222-333-4444), and "Country or Region" (set to United States).

AWS Console - Signup

portal.aws.amazon.com/billing/signup#/account

English ▾

**aws**

**Sign up for AWS**

**Free Tier offers**

All AWS accounts can explore 3 different types of free offers, depending on the product used.

**Always free**  
Never expires

**12 months free**  
Start from initial sign-up date

**Trials**  
Start from service activation date

**Contact Information**

How do you plan to use AWS?

Business - for your work, school, or organization

Personal - for your own projects

Who should we contact about this account?

Full Name

Phone Number

Country or Region

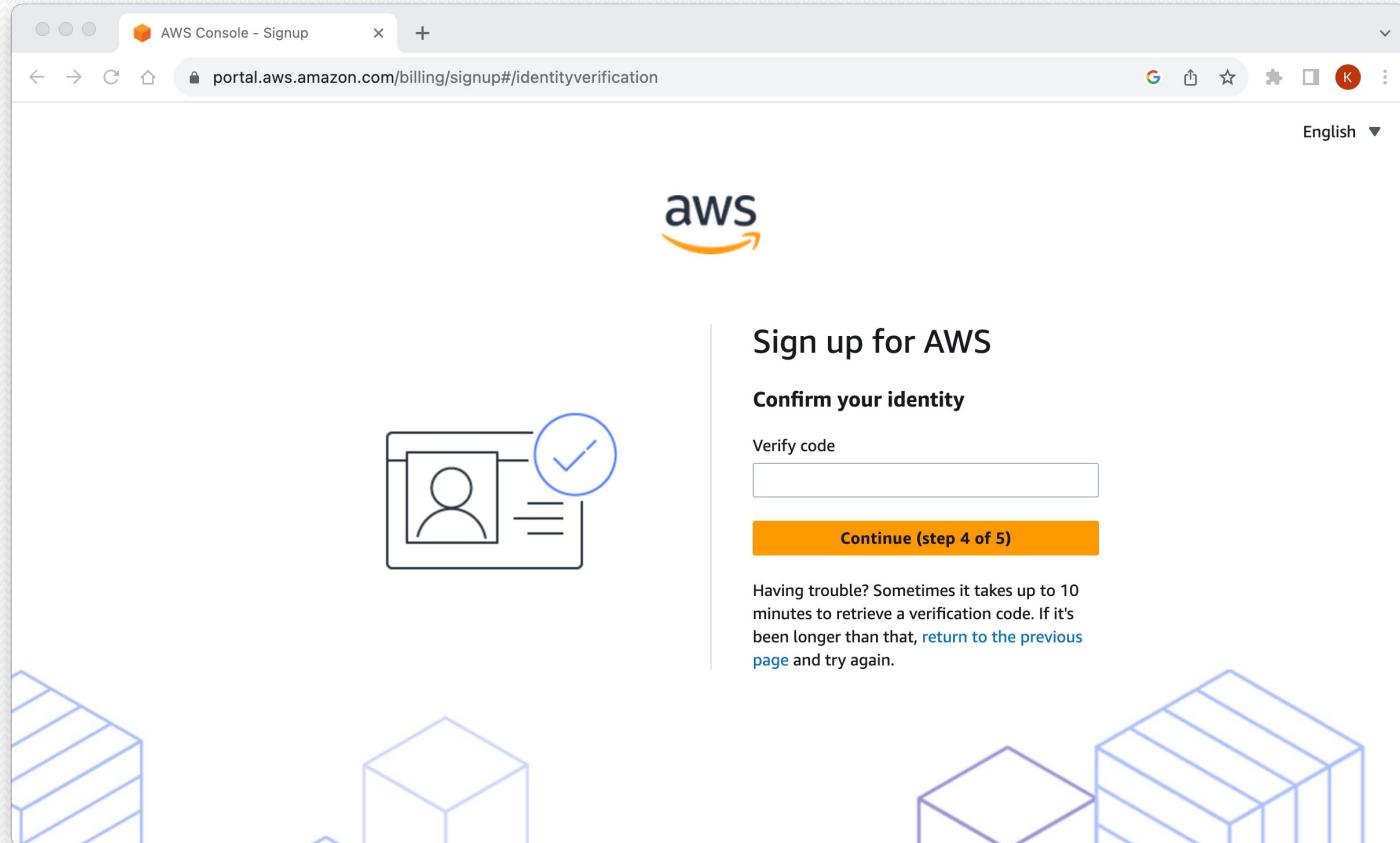
# Amazon Web Services (AWS)

The screenshot shows a web browser window for the AWS Signup process. The URL is [portal.aws.amazon.com/billing/signup#/paymentinformation](https://portal.aws.amazon.com/billing/signup#/paymentinformation). The page features the AWS logo at the top left. In the center, there's a large heading "Sign up for AWS". To the left, a section titled "Secure verification" contains a message: "We will not charge you for usage below AWS Free Tier limits. We may temporarily hold up to \$1 USD (or an equivalent amount in local currency) as a pending transaction for 3-5 days to verify your identity." Below this message is a shield icon with a checkmark inside. On the right side, there's a "Billing Information" section with fields for "Credit or Debit card number" (with a placeholder box), logos for VISA, MasterCard, AMEX, and DISCOVER, and a note that AWS accepts all major credit and debit cards. There are dropdown menus for "Expiration date" (Month and Year), a field for "Cardholder's name", and a field for "Billing address" with a radio button option "Use my contact address". The browser interface includes standard navigation buttons, a search bar, and a language selection for English.

# Amazon Web Services (AWS)

The screenshot shows a web browser window for the AWS Console Signup at [portal.aws.amazon.com/billing/signup#/identityverification](https://portal.aws.amazon.com/billing/signup#/identityverification). The page features the AWS logo and a large "Sign up for AWS" heading. On the left, there's an icon of a user profile with a checkmark. The main content area is titled "Confirm your identity" with the sub-instruction: "Before you can use your AWS account, you must verify your phone number. When you continue, the AWS automated system will contact you with a verification code." Below this, a question asks "How should we send you the verification code?" with two options: "Text message (SMS)" (selected) and "Voice call". Further down are fields for "Country or region code" (set to "United States (+1)") and "Mobile phone number" (an empty input field). At the bottom is a "Security check" section.

# Amazon Web Services (AWS)

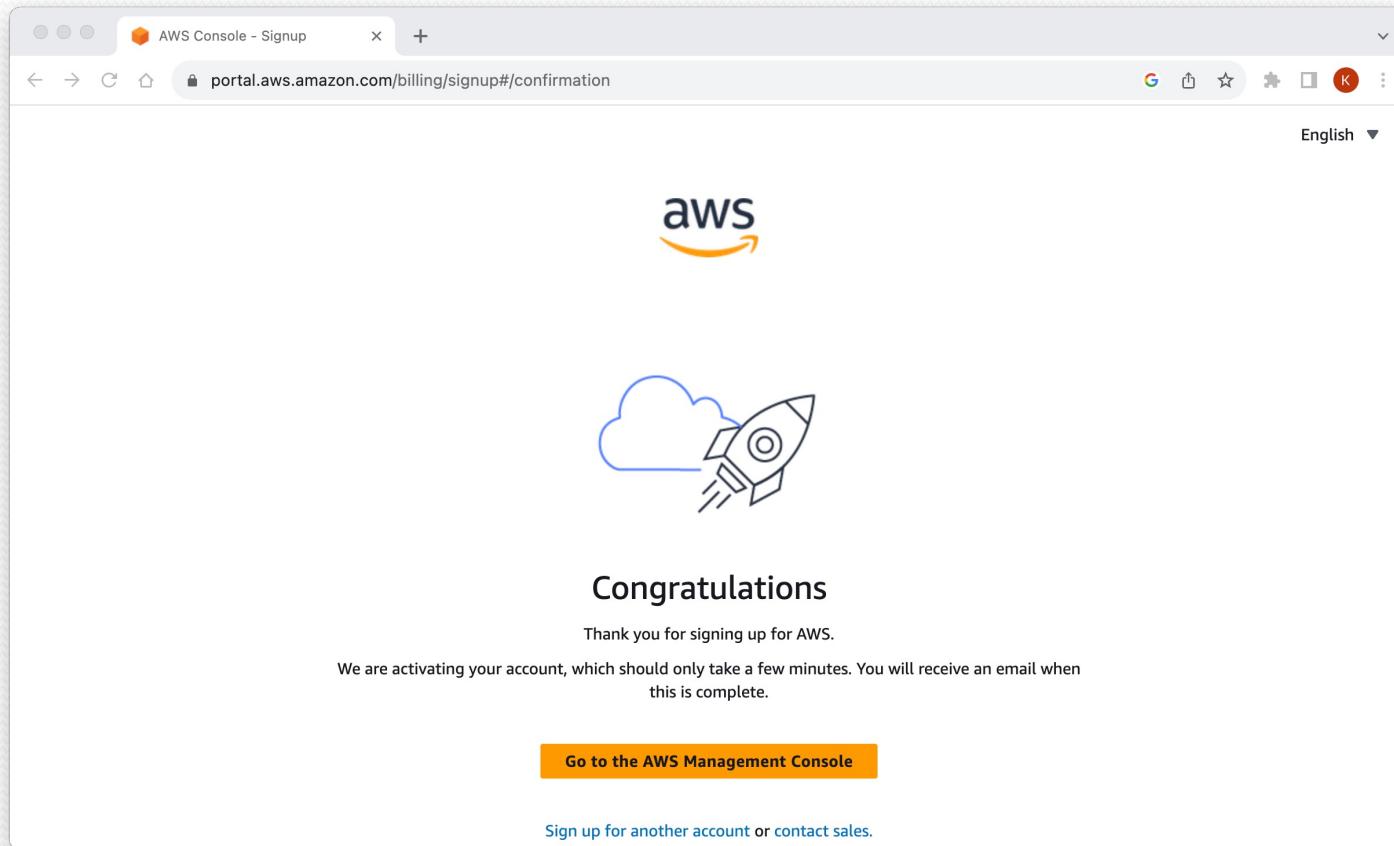


# Amazon Web Services (AWS)

The screenshot shows a web browser window for the AWS Console Signup at [portal.aws.amazon.com/billing/signup#/support](https://portal.aws.amazon.com/billing/signup#/support). The page title is "Sign up for AWS". The main heading is "Select a support plan". It says: "Choose a support plan for your business or personal account. [Compare plans and pricing examples](#)  You can change your plan anytime in the AWS Management Console." Three support plan options are listed:

- Basic support - Free**
  - Recommended for new users just getting started with AWS
  - 24x7 self-service access to AWS resources
  - For account and billing issues only
  - Access to Personal Health Dashboard & Trusted Advisor
- Developer support - From \$29/month**
  - Recommended for developers experimenting with AWS
  - Email access to AWS Support during business hours
  - 12 (business)-hour response times
- Business support - From \$100/month**
  - Recommended for running production workloads on AWS
  - 24x7 tech support via email, phone, and chat
  - 1-hour response times
  - Full set of Trusted Advisor best-practice recommendations

# Amazon Web Services (AWS)



# Amazon Web Services (AWS)

The screenshot shows two side-by-side web pages. On the left is the 'Amazon Web Services Sign-In' page, featuring the AWS logo and a 'Sign in' form. It includes options for 'Root user' (selected) or 'IAM user', a 'Root user email address' field containing 'username@example.com', and a 'Next' button. Below the form is a legal notice about customer agreements. At the bottom are links for 'New to AWS?' and 'Create a new AWS account'. On the right is the 'AWS Skill Builder' landing page, which has a dark background with large white text. It says 'AWS Skill Builder' and 'Your new learning center to access 500+ free digital courses'. It features a 'GET STARTED' button and an illustration of a 3D cube icon.

Amazon Web Services Sign-In

Sign in

Root user  
Account owner that performs tasks requiring unrestricted access. [Learn more](#)

IAM user  
User within an account that performs daily tasks. [Learn more](#)

Root user email address

username@example.com

Next

By continuing, you agree to the [AWS Customer Agreement](#) or other agreement for AWS services, and the [Privacy Notice](#). This site uses essential cookies. See our [Cookie Notice](#) for more information.

New to AWS?

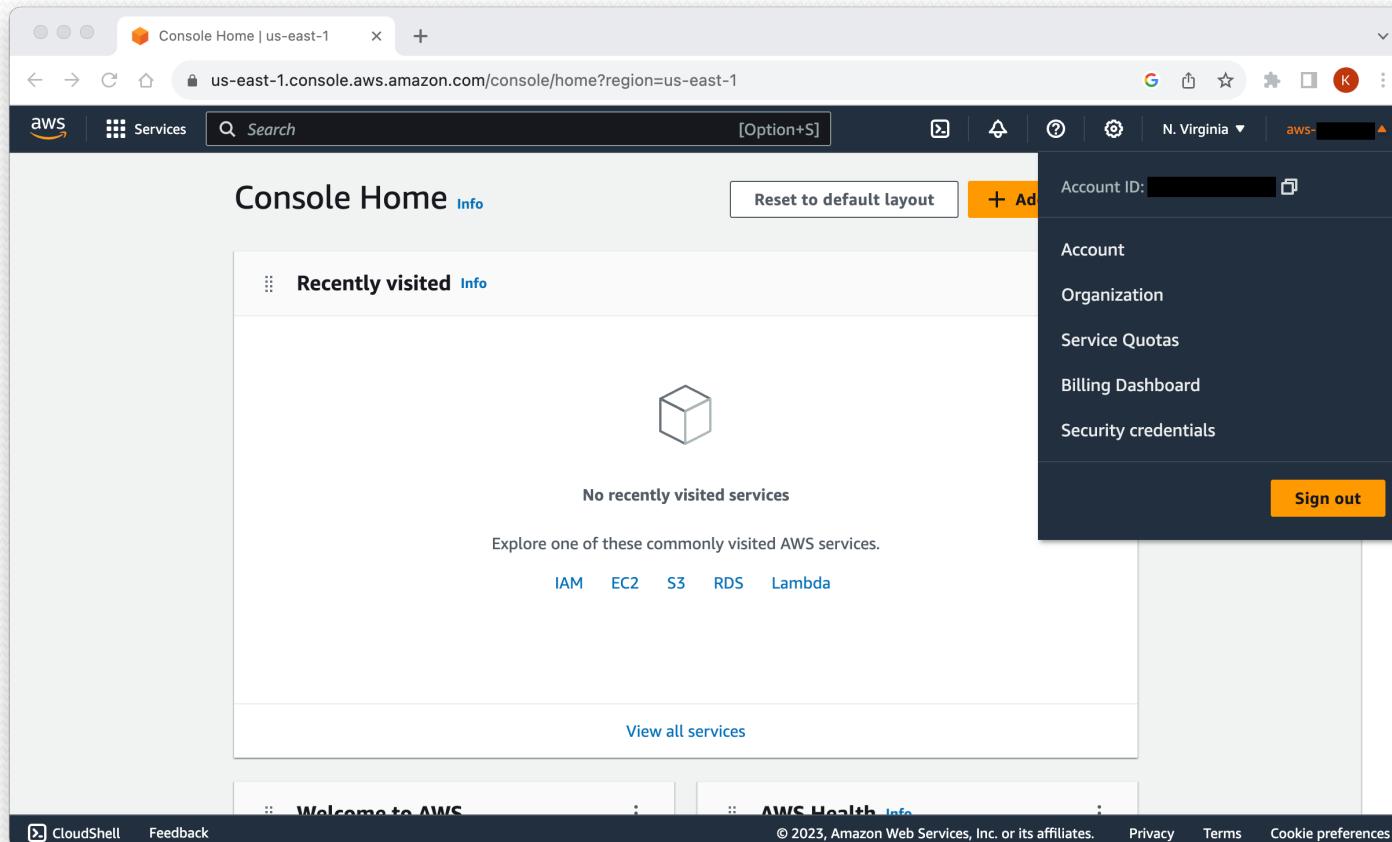
Create a new AWS account

## AWS Skill Builder

Your new learning center to access 500+ free digital courses

GET STARTED

# Management Console



# Regions (Free Tier mostly us-east-1)

N. Virginia ▲	
<b>US East (N. Virginia)</b>	<b>us-east-1</b>
US East (Ohio)	us-east-2
US West (N. California)	us-west-1
US West (Oregon)	us-west-2
Asia Pacific (Mumbai)	ap-south-1
Asia Pacific (Osaka)	ap-northeast-3
Asia Pacific (Seoul)	ap-northeast-2
Asia Pacific (Singapore)	ap-southeast-1
Asia Pacific (Sydney)	ap-southeast-2
Asia Pacific (Tokyo)	ap-northeast-1
Canada (Central)	ca-central-1
Europe (Frankfurt)	eu-central-1
Europe (Ireland)	eu-west-1

# Identity and Access Management (IAM)

The screenshot shows the AWS Management Console interface. On the left, a sidebar lists various AWS services with corresponding icons:

- End User Computing
- Front-end Web & Mobile
- Game Development
- Internet of Things
- Machine Learning
- Management & Governance
- Media Services
- Migration & Transfer
- Networking & Content Delivery
- Quantum Technologies
- Robotics
- Satellite
- Security, Identity, & Compliance
- Storage

The main content area displays detailed information about the IAM service and its associated services:

- GuardDuty**  
Intelligent Threat Detection to Protect Your AWS Accounts and Workloads
- IAM**  
Manage access to AWS resources
- IAM Identity Center**  
Manage workforce user access to multiple AWS accounts and cloud applications
- Amazon Inspector**  
Continual vulnerability management at scale
- Key Management Service**  
Securely Generate and Manage AWS Encryption Keys
- Amazon Macie**  
Amazon Macie classifies and secures your business-critical content.
- AWS Payment Cryptography**  
On-demand payment HSM functionality for card transactions and key management
- AWS Private Certificate Authority**  
Manage private certificates for your AWS services

# Create an account alias (IAM)

**Create alias for AWS account [REDACTED]** X

Preferred alias

Must be not more than 63 characters. Valid characters are a-z, 0-9, and - (hyphen).

New sign-in URL  
[https://aws-\[REDACTED\].signin.aws.amazon.com/console](https://aws-[REDACTED].signin.aws.amazon.com/console)

i IAM users will still be able to use the default URL containing the AWS account ID.

Cancel Create alias

# Create an account alias (IAM)

## AWS Account

Account ID  
 [REDACTED]

Account Alias  
[Create](#)

Sign-in URL for IAM users in this account  
 [https://\[REDACTED\].signin.aws.amazon.com/console](https://[REDACTED].signin.aws.amazon.com/console)

# Activate billing for IAM users

The screenshot shows the AWS Billing interface. On the left, there's a navigation sidebar with the following menu items:

- Billing
- Home
- Billing**
  - Bills
  - Payments
  - Credits
  - Purchase orders
  - Cost & usage reports
  - Cost categories
  - Cost allocation tags
  - Free tier
  - Billing Conductor
- Cost Management**
  - Cost explorer
  - Budgets
  - Budgets reports
  - Savings Plans

The main content area has two sections:

- IAM user and role access to Billing information** Info  
A checkbox labeled "Activate IAM Access" is checked. At the bottom right are "Cancel" and "Update" buttons.
- Reserved instance marketplace settings**

The Reserved Instance Marketplace gives you the flexibility to sell the remaining full months on your Reserved Instances. Manage your Reserved Instance Marketplace disbursement and tax information using the following options.

[Manage seller and bank account information](#)  
You can update your business name and bank account information so we can disburse funds to the appropriate location.

[Manage tax settings](#)  
Change your tax information so that your 1099K or W-88EN is generated appropriately. Setting this information up also allows you to sell more than 200 transactions or \$20,000 in Reserved Instances.

# Billing Dashboard – Preferences – Billing Preferences

The screenshot shows the AWS Billing Dashboard with the following navigation path: AWS Billing > Billing preferences. The main title is "Billing preferences".

**Invoice delivery preferences** (Info)

PDF invoices delivered by email

**Alert preferences** (Info)

Receive AWS Free Tier alerts

Your AWS Free Tier usage alerts will be delivered to this account's root user email address if this is activated. You can add an additional recipient for these email alerts.

Additional email address to receive alerts - *optional*

*Email address (optional)*

Receive CloudWatch billing alerts

Once enabled, this preference cannot be disabled.

**Detailed billing reports (legacy)** (Info)

**Edit**

**Cost & usage reports**

- Cost categories
- Cost allocation tags
- Free tier
- Billing Conductor

**▼ Cost Management**

- Cost explorer
- Budgets
- Budgets reports
- Savings Plans

**▼ Preferences**

- Billing preferences** (highlighted)
- Payment preferences
- Consolidated billing
- Tax settings

**▼ Permissions**

- Affected policies

# Billing Dashboard – Cost Management – Budgets

The screenshot shows the AWS Billing Dashboard with the 'Budgets' section highlighted. The left sidebar lists various billing and cost management options. The main content area features a dark header 'AWS Billing' and a large title 'AWS Budgets'. Below it is a descriptive text: 'Set custom budgets that alert you when you exceed your budgeted thresholds'. A sub-section titled 'Start tracking your AWS costs and usage' includes a note about creating budgets and a 'Create a budget' button.

**Billing**

- Home
- Billing**
  - Bills
  - Payments
  - Credits
  - Purchase orders
  - Cost & usage reports
  - Cost categories
  - Cost allocation tags
  - Free tier
  - Billing Conductor
- Cost Management**
  - Cost explorer
  - Budgets**
  - Budgets reports
  - Savings Plans

AWS Billing

## AWS Budgets

Set custom budgets that alert you when you exceed your budgeted thresholds

AWS Budgets is your hub for creating, tracking, and inspecting your budgets.

**Start tracking your AWS costs and usage**

Once you have a budget created, AWS Budgets allows you to create budgets, forecast spend, and take action on your costs and usage from a single location.

**Create a budget**

# Billing Dashboard – Cost Management – Budgets

The screenshot shows the AWS Billing Dashboard with the following navigation path: AWS Billing > Budgets > Create budget. The main title is "Choose budget type".

**Budget setup**

- Use a template (simplified)**  
Use the recommended configurations. You can change some configuration options after the budget is created.
- Customize (advanced)**  
Customize a budget to set parameters specific to your use case. You can customize the time period, the start month, and specific accounts.

**Templates - new**  
Choose a template that best matches your use case.

- Zero spend budget**  
Create a budget that notifies you once your spending exceeds \$0.01 which is above the AWS Free Tier limits.
- Monthly cost budget**  
Create a monthly budget that notifies you if you exceed, or are forecasted to exceed, the budget amount.
- Daily Savings Plans coverage budget**
- Daily reservation utilization budget**

# Billing Dashboard – Cost Management – Budgets

The screenshot shows the AWS Billing Dashboard with the 'Budgets' section selected. The left sidebar includes links for Home, Billing (Bills, Payments, Credits, Purchase orders, Cost & usage reports, Cost categories, Cost allocation tags, Free tier), and Cost Management (Cost explorer, Budgets, Budgets reports). The main content area displays four budget types: Zero spend budget, Monthly cost budget (selected), Daily Savings Plans coverage budget, and Daily reservation utilization budget. Below this is a 'Monthly cost budget - Template' section with fields for Budget name (My Monthly Cost Budget), Enter your budgeted amount (\$ 5.00), and Email recipients (Separate email addresses using commas).

**Billing** X ⓘ

Home

▼ Billing

- Bills
- Payments
- Credits
- Purchase orders
- Cost & usage reports
- Cost categories
- Cost allocation tags
- Free tier
- Billing Conductor

▼ Cost Management

- Cost explorer
- Budgets**
- Budgets reports
- Cost explorer

**Zero spend budget**  
Create a budget that notifies you once your spending exceeds \$0.01 which is above the AWS Free Tier limits.

**Monthly cost budget**   
Create a monthly budget that notifies you if you exceed, or are forecasted to exceed, the budget amount.

**Daily Savings Plans coverage budget**  
Create a coverage budget for your Savings Plans that notifies you when you fall below the defined target.

**Daily reservation utilization budget**  
Create a utilization budget for your reservations that notifies you when you fall below the defined target.

**Monthly cost budget - Template**

**Budget name**  
Provide a descriptive name for this budget.

Names must be between 1-100 characters.

**Enter your budgeted amount (\$)**  
Last month's cost:

**Email recipients**  
Specify the email recipients you want to notify when the threshold has exceeded.

# Billing Dashboard – Cost Management – Budgets

**Billing** X ⓘ Your budget My Monthly Cost Budget has been created successfully. After creating a budget, it can take up to 24 hours to populate all of your spend data. **Submit feedback** X ⓘ

Home AWS Billing > Budgets > Overview

## Overview Info

Budgets (1) <small>Info</small>		<input type="button" value="Download CSV"/>	<input type="button" value="Actions ▾"/>	<input type="button" value="Create budget"/>			
<input type="text"/> Find a budget		<input type="button" value="Show all budgets ▾"/>		<input type="button" value="&lt; 1 &gt;"/>			
<input type="checkbox"/>	Name	▲	Thresholds	▼	Budget	Amou...	Fore...
<input type="checkbox"/>	<a href="#">My Monthly Cost Budget</a>		<input checked="" type="radio"/> OK		\$5.00	\$0.00	-

**Billing** X ⓘ Your budget My Monthly Cost Budget has been created successfully. After creating a budget, it can take up to 24 hours to populate all of your spend data. **Submit feedback** X ⓘ

Home AWS Billing > Budgets > Overview

## Overview Info

Budgets (1) <small>Info</small>		<input type="button" value="Download CSV"/>	<input type="button" value="Actions ▾"/>	<input type="button" value="Create budget"/>			
<input type="text"/> Find a budget		<input type="button" value="Show all budgets ▾"/>		<input type="button" value="&lt; 1 &gt;"/>			
<input type="checkbox"/>	Name	▲	Thresholds	▼	Budget	Amou...	Fore...
<input type="checkbox"/>	<a href="#">My Monthly Cost Budget</a>		<input checked="" type="radio"/> OK		\$5.00	\$0.00	-

**Billing** X ⓘ Your budget My Monthly Cost Budget has been created successfully. After creating a budget, it can take up to 24 hours to populate all of your spend data. **Submit feedback** X ⓘ

Home AWS Billing > Budgets > Overview

## Overview Info

Budgets (1) <small>Info</small>		<input type="button" value="Download CSV"/>	<input type="button" value="Actions ▾"/>	<input type="button" value="Create budget"/>			
<input type="text"/> Find a budget		<input type="button" value="Show all budgets ▾"/>		<input type="button" value="&lt; 1 &gt;"/>			
<input type="checkbox"/>	Name	▲	Thresholds	▼	Budget	Amou...	Fore...
<input type="checkbox"/>	<a href="#">My Monthly Cost Budget</a>		<input checked="" type="radio"/> OK		\$5.00	\$0.00	-

# Identity and Access Management (IAM)

The screenshot shows the AWS Identity and Access Management (IAM) service dashboard. The left sidebar contains navigation links for Identity and Access Management (IAM), including Dashboard, Access management, and Access reports. The main content area is titled "IAM Dashboard" and displays "Security recommendations". It lists two items: "Add MFA for root user" (warning icon) and "Root user has no active access keys" (checkmark icon). Below this is a section titled "IAM resources" showing counts for User groups (0), Users (0), Roles (2), Policies (0), and Identity providers (0).

**Identity and Access Management (IAM)**

Search IAM

**Dashboard**

**Access management**

- User groups
- Users
- Roles
- Policies
- Identity providers
- Account settings

**Access reports**

- Access analyzer
- Archive rules
- Analyzers

[IAM](#) > Dashboard

## IAM Dashboard

### Security recommendations 1

⚠ Add MFA for root user  
Add MFA for root user - Enable multi-factor authentication (MFA) for the root user to improve security for this account.  
✓ Root user has no active access keys  
Using access keys attached to an IAM user instead of the root user improves security.

### IAM resources

Resources in this AWS Account

User groups	Users	Roles	Policies	Identity providers
0	0	2	0	0

# Add MFA for root user (IAM)

- Multi-Factor Authentication (MFA) for IAM
  - <https://aws.amazon.com/iam/features/mfa/>

# Add MFA for root user (IAM)

IAM > [Security credentials](#) > Assign MFA device

Step 1  
**Select MFA device**

Step 2  
Set up device

## Select MFA device Info

**MFA device name**

**Device name**  
Enter a meaningful name to identify this device.  
  
Maximum 128 characters. Use alphanumeric and '+ = , . @ - \_' characters.

**MFA device**

Select an MFA device to use, in addition to your username and password, whenever you need to authenticate.

 Authenticator app  
Authenticate using a code generated by an app installed on your mobile device or

# Add MFA for root user (IAM)

MFA device

Select an MFA device to use, in addition to your username and password, whenever you need to authenticate.

 **Authenticator app**  
Authenticate using a code generated by an app installed on your mobile device or computer.

 **Security Key**  
Authenticate using a code generated by touching a YubiKey or other supported FIDO security key.

 **Hardware TOTP token**  
Authenticate using a code displayed on a hardware Time-

# Add MFA for root user (IAM)

The screenshot shows the 'Set up device' step in the AWS IAM process. The navigation bar at the top includes 'IAM > Security credentials > Assign MFA device'. The main title 'Set up device' has an 'Info' link. On the left, a sidebar lists 'Step 1: Select MFA device' (underlined) and 'Step 2: Set up device' (bolded). The main content area is titled 'Authenticator app' and describes it as a virtual MFA device running on a mobile device or computer. It provides two steps: 1. Install a compatible application like Google Authenticator, Duo Mobile, or Authy. A link 'See a list of compatible applications' is provided. 2. Open the authenticator app, choose 'Show QR code', and scan it. An alternative option is to type a secret key. A large blue button labeled 'Show QR code' is visible.

Set up device [Info](#)

Authenticator app

A virtual MFA device is an application running on your device that you can configure by scanning a QR code.

1

Install a compatible application such as Google Authenticator, Duo Mobile, or Authy app on your mobile device or computer.

See a list of compatible applications [↗](#)

2

Show QR code

Open your authenticator app, choose **Show QR code** on this page, then use the app to scan the code. Alternatively, you can type a secret key. [Show secret key](#)

# Add MFA for root user (IAM) – Block Alias

The screenshot shows the AWS IAM Security Credentials page. A prominent green info banner at the top states: "MFA device assigned. You can register up to 8 MFA devices of any combination of the currently supported MFA types with your AWS account root and IAM user. With multiple MFA devices, you only need one MFA device to sign in to the AWS console or create a session through the AWS CLI with that user." Below the banner, the "My security credentials" section is visible, showing account details for a "Root user". The account name is "aws-[REDACTED]", the email address is "[REDACTED]", the AWS account ID is "[REDACTED]", and the Canonical user ID is "[REDACTED]". The URL in the browser is "us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/security\_credentials".

# Add MFA for root user (IAM)

The screenshot shows the AWS Identity and Access Management (IAM) console. The left sidebar is titled "Identity and Access Management (IAM)" and includes a search bar and several navigation options under "Access management" such as User groups, Users, Roles, Policies, Identity providers, and Account settings. Under "Access reports", there are options for Access analyzer, Archive rules, and Analyzers.

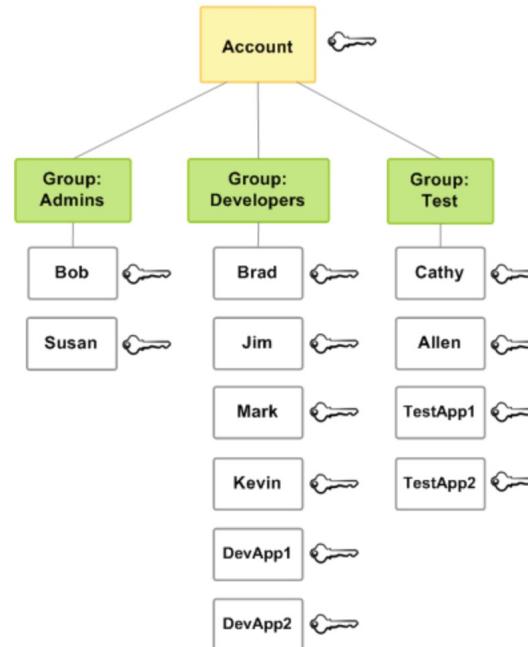
The main content area displays "Account details" for the root user. It shows the account name as "aws-[REDACTED]", the AWS account ID as "[REDACTED]", and the canonical user ID as "[REDACTED]". There is also a button to "Edit account name, email, and password".

A prominent section titled "Multi-factor authentication (MFA) (1)" provides instructions on using MFA for security. It includes a "Learn more" link and three buttons: "Remove", "Resync", and "Assign MFA device". Below this, a table lists the assigned MFA device:

Device type	Identifier	Certifications	Create
Virtual	arn:aws:iam::[REDACTED]:mfa/[REDACTED]	Not Applicable	3 min

# Create user group (IAM)

- IAM user groups
  - [https://docs.aws.amazon.com/IAM/latest/UserGuide/id\\_groups.html](https://docs.aws.amazon.com/IAM/latest/UserGuide/id_groups.html)



# Create user group (IAM)

The screenshot shows the AWS Identity and Access Management (IAM) console. The left sidebar is titled "Identity and Access Management (IAM)" and includes a search bar. The main navigation path is IAM > User groups > Create user group. The current step is "Name the group". A "User group name" input field contains "Admins", with a note below stating "Enter a meaningful name to identify this group." Below this, a note says "Maximum 128 characters. Use alphanumeric and '+-=,@-\_ ' characters." The next section, "Add users to the group - Optional (0)", has an "Info" link and a "Search" bar. The bottom of the screen shows a table header with columns: "User name", "Groups", "Last activity", and "Creation time".

Identity and Access Management (IAM)

Search IAM

IAM > User groups > Create user group

## Create user group

### Name the group

User group name  
Enter a meaningful name to identify this group.

Admins

Maximum 128 characters. Use alphanumeric and '+-=,@-\_ ' characters.

### Add users to the group - Optional (0) Info

An IAM user is an entity that you create in AWS to represent the person or application that uses it to interact with AWS. A user can belong to up to 10 groups.

Search

User name	Groups	Last activity	Creation time
-----------	--------	---------------	---------------

# Create user group (IAM)

**Identity and Access Management (IAM)** ×

Search IAM

[Dashboard](#)

**Access management**

- [User groups](#) (Selected)
- [Users](#)
- [Roles](#)
- [Policies](#)
- [Identity providers](#)
- [Account settings](#)

**Access reports**

- [Access analyzer](#)
- [Archive rules](#)
- [Analyzers](#)

**Attach permissions policies - *Optional***  
(Selected 1/876)

**Info**  
You can attach up to 10 policies to this user group. All the users in this group will have permissions that are defined in the selected policies.

Filter policies by property or policy name and press enter. 4 matches

["AdministratorAccess"](#)  [Clear filters](#)

	Policy name	Type	Description
<input checked="" type="checkbox"/>	AdministratorAccess	AWS managed - job function	Provides full acc
<input type="checkbox"/>	AdministratorAccess-Amplify	AWS managed	Grants account a
<input type="checkbox"/>	AWSAuditManagerAdministratorAccess	AWS managed	Provides adminis
<input type="checkbox"/>	AdministratorAccess-AWSElasticBeanstalk	AWS managed	Grants account a

[Cancel](#) Create group

# Create user group (IAM)

Identity and Access Management (IAM) X

Search IAM

Dashboard

Access management

- User groups
- Users
- Roles
- Policies
- Identity providers
- Account settings

Access reports

- Access analyzer
- Archive rules
- Analyzers

✓ Admins user group created. View group X i

IAM > User groups

User groups (1) Info

A user group is a collection of IAM users. Use groups to specify permissions for a collection of users.

Filter User groups by property or group name and press enter

Group name Users Permissions Creation time

Group name	Users	Permissions	Creation time
Admins	0	Defined	Now

# Create user (IAM)

The screenshot shows the AWS Identity and Access Management (IAM) service interface. On the left, a sidebar titled "Identity and Access Management (IAM)" contains a search bar and a list of navigation items under "Access management": User groups, **Users**, Roles, Policies, Identity providers, and Account settings. Under "Access reports", there are links for Access analyzer, Archive rules, and Analyzers. The main content area is titled "Users (0) Info" and describes an IAM user as an identity with long-term credentials used to interact with AWS. It features a "Create user" button, a search bar, and a table header with columns: User name, Path, Group, Last activity, and MFA. A message at the bottom states "No resources to display".

# Create user (IAM)

The screenshot shows the AWS IAM User Creation Wizard. On the left, a sidebar lists steps: Step 2 (Set permissions), Step 3 (Review and create), and Step 4 (Retrieve password). The main area is titled "User details". It shows a "User name" field with a redacted value, a note about character restrictions, and a checked checkbox for "Provide user access to the AWS Management Console - optional". A callout box asks if console access is for a person or an IAM user. Below, a "Console password" section offers "Autogenerated password" (selected) or "Custom password".

Step 2  
Set permissions

Step 3  
Review and create

Step 4  
Retrieve password

User details

User name

The user name can have up to 64 characters. Valid characters: A-Z, a-z, 0-9, and + = , . @ \_ - (hyphen)

Provide user access to the AWS Management Console - *optional*

If you're providing console access to a person, it's a [best practice](#) to manage their access in IAM Identity Center.

**Are you providing console access to a person?**

User type

Specify a user in Identity Center - Recommended

We recommend that you use Identity Center to provide console access to a person. With Identity Center, you can centrally manage user access to their AWS accounts and cloud applications.

I want to create an IAM user

We recommend that you create IAM users only if you need to enable programmatic access through access keys, service-specific credentials for AWS CodeCommit or Amazon Keyspaces, or a backup credential for emergency account access.

Console password

Autogenerated password

You can view the password after you create the user.

Custom password

# Create user (IAM)

account access.

**Console password**

Autogenerated password  
You can view the password after you create the user.

Custom password  
Enter a custom password for the user.  
\*\*\*\*\*

- Must be at least 8 characters long
- Must include at least three of the following mix of character types: uppercase letters (A-Z), lowercase letters (a-z), numbers (0-9), and symbols ! @ # \$ % ^ & \* ( ) \_ + - (hyphen) = [ ] { } | '

Show password

Users must create a new password at next sign-in - Recommended  
Users automatically get the [IAMUserChangePassword](#) policy to allow them to change their own password.

**Info** If you are creating programmatic access through access keys or service-specific credentials for AWS CodeCommit or Amazon Keypairs, you can generate them after you create this IAM user. [Learn more](#)

**Cancel** **Next**

# Create user (IAM)

The screenshot shows the AWS IAM User Creation Wizard at Step 2: Set permissions. On the left sidebar, the steps are listed: Step 1 (Specify user details), Step 2 (Set permissions, currently selected), Step 3 (Review and create), and Step 4 (Retrieve password). The main content area is titled "Set permissions" with the sub-section "Permissions options". It contains three options: "Add user to group" (selected), "Copy permissions", and "Attach policies directly". Below this, a table titled "User groups (1/1)" shows one group named "Admins" with 0 users, attached policy "AdministratorAccess", and created on "2023-09-...".

Step 1  
[Specify user details](#)

Step 2  
**Set permissions**

Step 3  
Review and create

Step 4  
Retrieve password

## Set permissions

Add user to an existing group or create a new one. Using groups is a best-practice way to manage user's permissions by job functions. [Learn more](#)

### Permissions options

- Add user to group  
Add user to an existing group, or create a new group. We recommend using groups to manage user permissions by job function.
- Copy permissions  
Copy all group memberships, attached managed policies, and inline policies from an existing user.
- Attach policies directly  
Attach a managed policy directly to a user. As a best practice, we recommend attaching policies to a group instead. Then, add the user to the appropriate group.

User groups (1/1)	
<input type="button" value="Create group"/>	
<input type="text" value="Search"/>	
<input checked="" type="checkbox"/> Group name <a href="#">Edit</a>	
<input checked="" type="checkbox"/> Admins	0
Attached policies: <a href="#">AdministratorAccess</a>	
Created: 2023-09-	

# Create user (IAM)

The screenshot shows the AWS IAM 'Create user' wizard at Step 3: Review and create. The left sidebar lists steps: Step 1 (Specify user details), Step 2 (Set permissions), Step 3 (Review and create), and Step 4 (Retrieve password). The main area displays user details, permissions summary, and optional tags.

**User details**

User name	Console password type	Require password reset
[REDACTED]	Custom password	No

**Permissions summary**

Name	Type	Used as
<a href="#">Admins</a>	Group	Permissions group

**Tags - optional**

Tags are key-value pairs you can add to AWS resources to help identify, organize, or search for resources. Choose any tags you want to associate with this user.

# Create user (IAM)

User created successfully

You can view and download the user's password and email instructions for signing in to the AWS Management Console.

[View user](#) [X](#) [i](#)

Step 1 [Specify user details](#)

Step 2 [Set permissions](#)

Step 3 [Review and create](#)

Step 4 **Retrieve password**

## Retrieve password

You can view and download the user's password below or email users instructions for signing in to the AWS Management Console. This is the only time you can view and download this password.

**Console sign-in details** [Email sign-in instructions](#)

Console sign-in URL  
 [https://aws-\[REDACTED\].signin.aws.amazon.com/console](https://aws-[REDACTED].signin.aws.amazon.com/console)

User name  
 [REDACTED]

Console password  
 \*\*\*\*\* [Show](#)

[Cancel](#) [Download .csv file](#) [Return to users list](#)

# Create user (IAM)

**Identity and Access Management (IAM)** X

Search IAM

Dashboard

▼ Access management

- User groups
- Users**
- Roles
- Policies
- Identity providers
- Account settings

▼ Access reports

- Access analyzer
- Archive rules
- Analyzers

**User created successfully**

You can view and download the user's password and email instructions for signing in to the AWS Management Console.

View user X

[IAM](#) > [Users](#)

**Users (1) Info**

An IAM user is an identity with long-term credentials that is used to interact with AWS in an account.

C Delete Create user

Search

<input type="checkbox"/>	User name	Path	Group:	Last activity	MFA
<input type="checkbox"/>	[REDACTED]	/	1	2	-

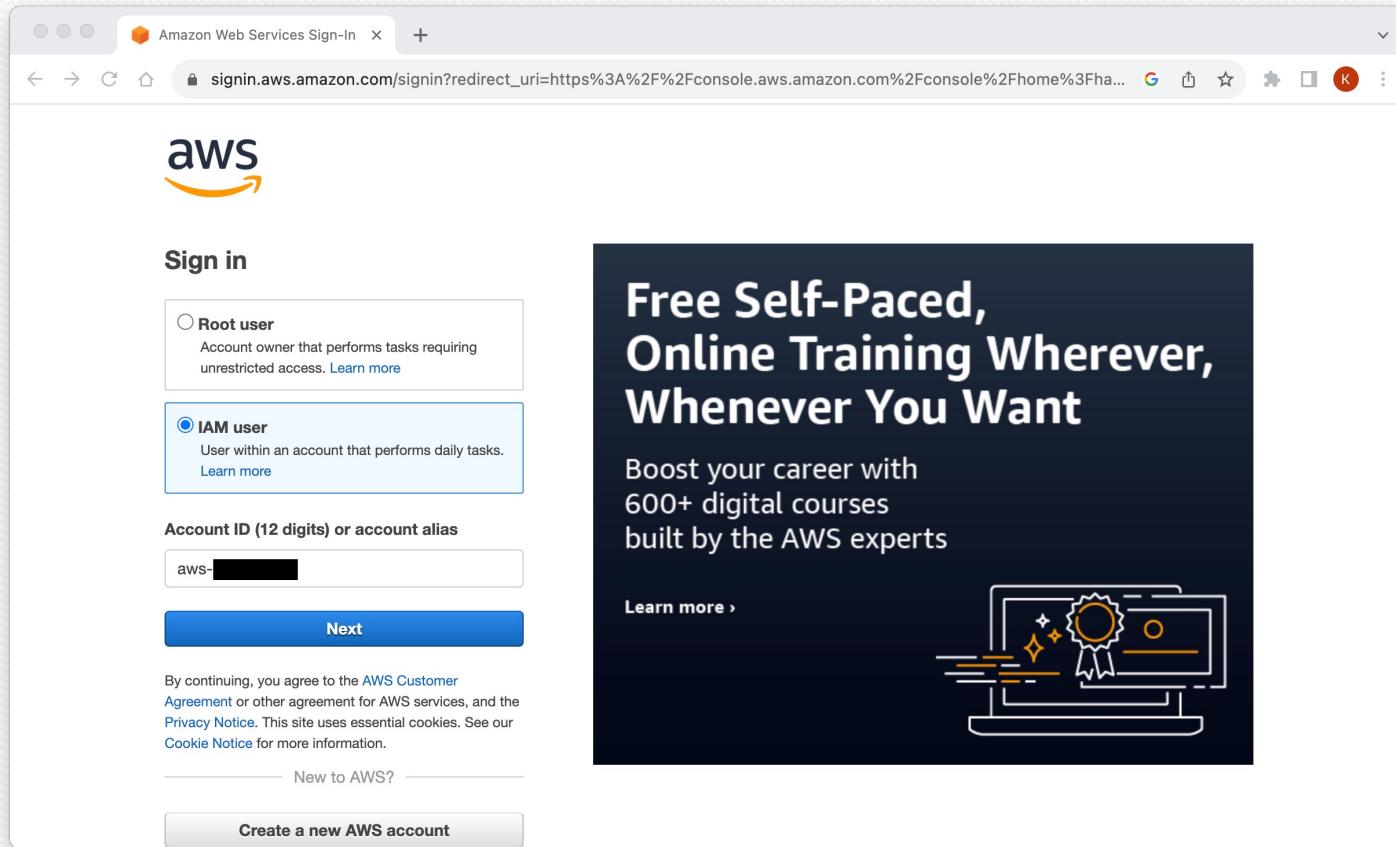
# Sign out root account

The screenshot shows the AWS Identity and Access Management (IAM) service interface. On the left, there's a navigation pane with a search bar and several menu items under 'Access management' like 'User groups', 'Users' (which is currently selected and highlighted in blue), 'Roles', 'Policies', 'Identity providers', and 'Account settings'. On the right, the main content area displays the 'Users' page. It shows a table with one user entry:

User name	Path	Groups
[REDACTED]	/	1

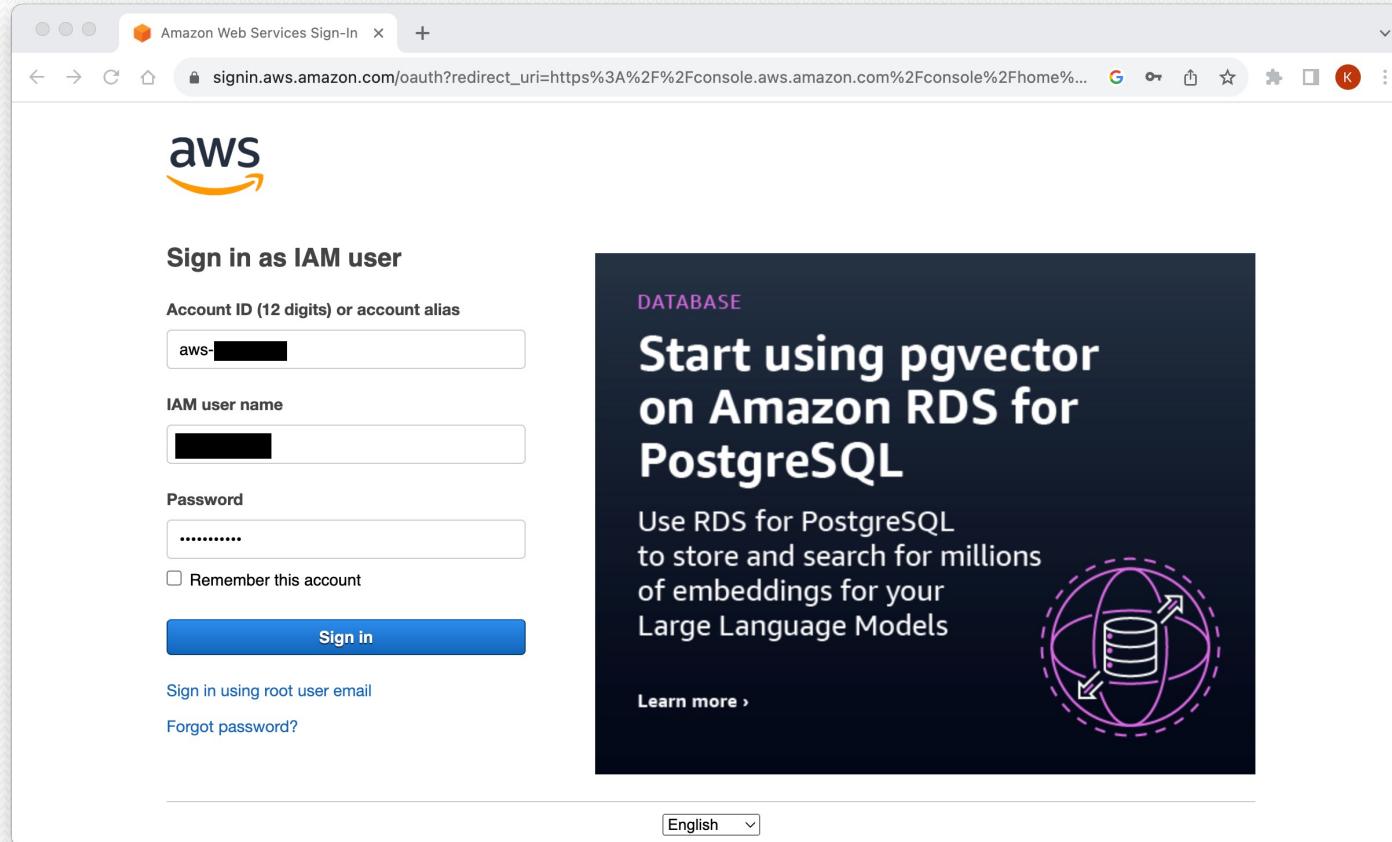
Below the table are buttons for 'Create user' and 'Delete'. Above the table, there's an info box: 'Users (1) Info: An IAM user is an identity with long-term credentials that is used to interact with AWS in an account.' On the far right, a dark sidebar contains links: 'Account ID: [REDACTED]', 'Account', 'Organization', 'Service Quotas', 'Billing Dashboard', 'Security credentials', and a prominent yellow 'Sign out' button, which is highlighted with a red box.

# Sign in IAM user account

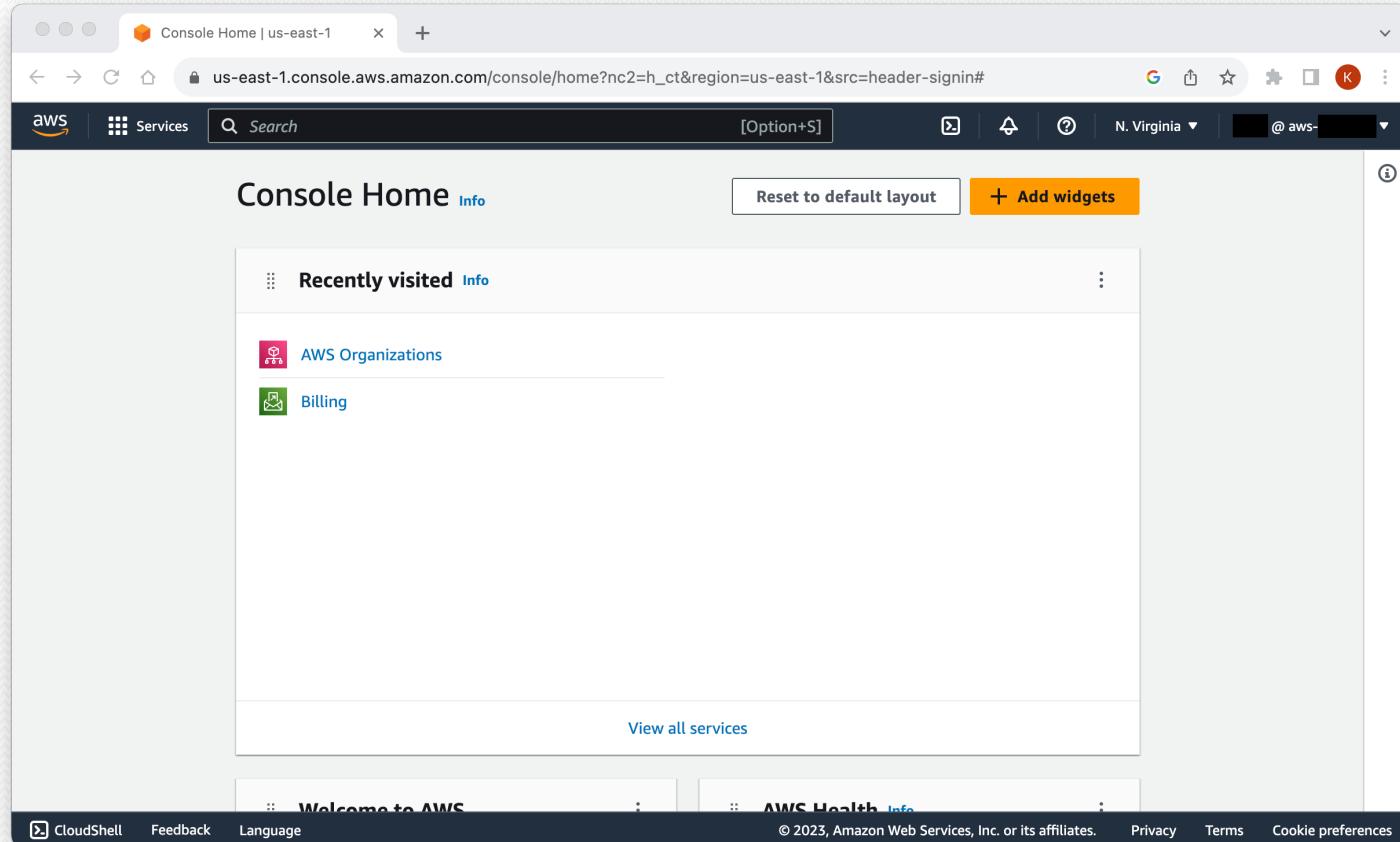


The screenshot shows the AWS Sign-In page. At the top, there's a navigation bar with the AWS logo and a search bar. Below it, the main title is "Sign in". There are two radio button options: "Root user" and "IAM user". The "IAM user" option is selected, indicated by a blue border around the radio button and the input field below it. The input field contains the text "aws-". Below the input field is a "Next" button. At the bottom of the form, there's a legal notice about agreeing to the AWS Customer Agreement and Privacy Notice, followed by links for "New to AWS?" and "Create a new AWS account". To the right of the sign-in form is a dark rectangular advertisement box with white text. It says "Free Self-Paced, Online Training Wherever, Whenever You Want" and "Boost your career with 600+ digital courses built by the AWS experts". It also has a "Learn more >" link and an icon of a certificate with a seal.

# Sign in IAM user account



# Sign in IAM user account



# Acknowledgements

- Neal Davis – Udemy
  - Introduction to Cloud Computing on AWS for Beginners
- Amazon Web Service (AWS)
  - <https://aws.amazon.com/>