Amazon Web-Services Course Notes With ZeroCost Academy

Getting Started with AWS

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Getting Started with AWS

Amazon Web Services (AWS) provides computing resources and services that you can use to build applications within minutes at pay-as-you-go pricing. For example, you can rent a server on AWS that you can connect to, configure, secure, and run just as you would a physical server. The difference is the virtual server runs on top of a planet-scale network managed by AWS.

You pay for your virtual server only while it runs, with no up-front purchase costs or ongoing maintenance costs. Backed by the AWS network, your virtual server can do things no physical server can, such as automatically scaling into multiple servers when demand for your application increases.

Using AWS to build your Internet application is like purchasing electricity from a power company instead of running your own generator, and it provides many of the same benefits: capacity exactly matches your need, you pay only for what you use, economies of scale result in lower costs, and the service is provided by a vendor experienced in running large-scale networks.

In addition, AWS can offer significant cost savings, up to 80%, compared to the equivalent on-premises deployments. For more information about cost, see the Total Cost of Ownership Whitepaper.

What Can I Do with AWS?

You can run nearly anything on AWS that you would run on physical hardware: websites, applications, databases, mobile apps, email campaigns, distributed data analysis, media storage, and private networks. The services we provide are designed to work together so that you can build complete solutions. There are currently dozens of services, with more being added each year.

The following diagram shows the categories of functionality offered by AWS.
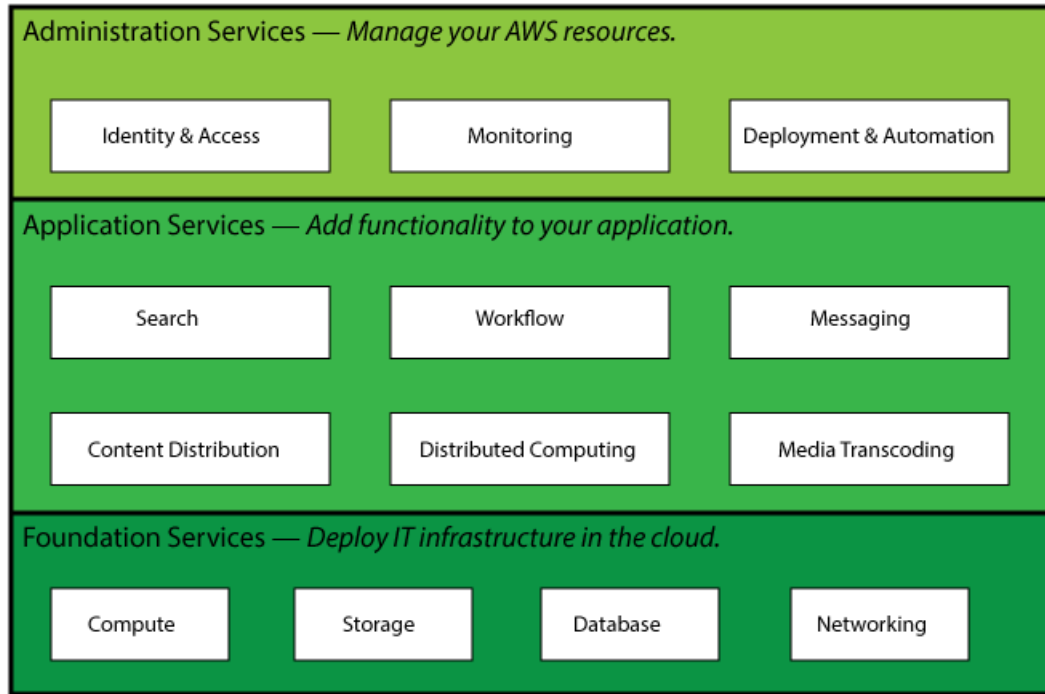
In each category, there are one or more services. For example, AWS offers five database services, each one optimized for a certain type of use. With so many offerings, you can design an AWS solution that is tailored to your needs.

What Services Should I Look at First?

AWS offers a variety of services, and it can be hard to decide where to start. Consider first what you want to do with AWS. In this section, we'll look at some common uses of AWS and the specific services that those uses require.

I want to...

Topics

Store Files

AWS provides highly scalable, reliable, secure, fast storage for your digital files.

Store Files on AWS (p. 17) walks you through the process of storing digital files on AWS.

Amazon Web Service	Free usage tier?	What it does
 Amazon Simple Storage Service (Amazon S3)	Yes - 5 GB storage - 20,000 Get requests - 2,000 Put requests	Stores and retrieves digital files.

Host a Website

AWS provides many ways to host your website in order to suit the needs of large-scale enterprises, startups, and individuals.

Topics
- Static Website (HTML, CSS, JavaScript, etc.) (p. 4)
- Dynamic Website (PHP & MySQL, .NET & SQL Server, etc.) (p. 5)

Static Website (HTML, CSS, JavaScript, etc.)

A static website does not require server-side processing and relies only on client-side technologies such as HTML, CSS, and JavaScript.

For a walkthrough of setting up and configuring a static website on AWS, see Getting Started with AWS AWS Static Website Hosting. To stay within the free usage tier, skip steps 5 and 6, which use Amazon Route 53, a service outside of the free usage tier.

The following web services are useful for creating a static website.

Amazon Web Service	Free usage tier?	What it does
Amazon Simple Storage Service (Amazon S3)	Yes • 5 GB storage • 20,000 Get requests • 2,000 Put requests	Stores files and can be configured to deliver them to browsers using an Internet URL.
Amazon Route 53	No	Attaches a custom domain name (e.g., `http://example.com`) to AWS resources.
Amazon CloudFront	Yes • 50 GB data transfer • 2,000,000 requests per month	Speeds up access to the website by caching the files in edge locations around the world.

Dynamic Website (PHP & MySQL, .NET & SQL Server, etc.)

A dynamic website uses server-side processing to build pages that are customized to visitor's requests. Dynamic websites require server-side technologies such as PHP, Java, or .NET.

For a walkthrough of setting up a dynamic website on Linux, see Getting Started with AWS Computing Basics for Linux, which describes setting up a dynamic website that uses Apache, PHP and MySQL.

For a walkthrough of setting up a dynamic website on Windows, see Getting Started with AWS Computing Basics for Windows, which describes setting up a dynamic website that uses IIS, .NET, and SQL Server.

For a walk-through of setting up a WordPress blog on Windows, see Deploying a WordPress Blog on Your Amazon EC2 Instance in the *Amazon Elastic Compute Cloud Microsoft Windows Guide*. To learn how to set up a WordPress blog on Linux, see Tutorial: Hosting a WordPress Blog with Amazon EC2.

The following web services are useful for creating a dynamic website.

Amazon Web Service	Free usage tier?	What it does
Amazon Elastic Compute Cloud (Amazon EC2)	Yes 750 hours per month of a t1.micro instance, launched using an AMI that is eligible under the free usage tier	Launches a virtual server that runs your web server and performs server-side processing.You can run your database on this server or on Amazon Relational Database Service (Amazon RDS).
Amazon Elastic Block Store (Amazon EBS)	Yes • 30 GB of EBS storage • 2 million I/O operations • 1 GB of snapshot storage	Provides a persistent file system for your virtual server; stores data even if your virtual server is terminated.
Amazon CloudWatch	Yes • 10 metrics • 10 alarms • 1,000,000 API requests	Collects and reports metrics on your AWS resources.

Amazon Web Service	Free usage tier?	What it does
Auto Scaling	N/A There is no charge for this service. You may be charged for AWS resources it manages. To use this service under the free usage tier, ensure that it does not launch more than 750 hours' worth of Amazon EC2 running time in a month.	Adds or removes virtual servers to handle peaks and lulls in traffic. Requires CloudWatch.
Elastic Load Balancing	Yes • 750 hours of ELB per month • 15 GB data processing	Distributes traffic among multiple virtual servers.

You might also want to consider the AWS application management services. By using an application management service, you can leverage other AWS services without having to manage each of them separately and manually.

• **Application container:** with AWS Elastic Beanstalk, you can focus on the code and let the service manage the rest. AWS Elastic Beanstalk helps you deploy, manage, and scale web applications and web services. AWS Elastic Beanstalk supports popular languages and frameworks, including Docker, Java, .NET, Node.js, PHP, Python, and Ruby.
• **Application automation:** AWS OpsWorks gives you the flexibility to define a software stack and helps you deploy, operate, and automate applications. Start with templates for common technologies, or build your own stack to support your architecture and perform any task you can script.

For additional information about deployment and resource management on AWS, go to Deployment and Management on AWS.

Run a Database

Most applications use a back-end database to store information. AWS offers a variety of database services. The following services are a good place to start.

Topics

Relational Database

A relational database is organized into tables that are related to each other by key values. It is the traditional type of database.

The Amazon Relational Database Service User Guide walks you through the process of launching a relational database on AWS. *To stay within the free usage tier, launch a t1.micro instance.*

Amazon Web Service	Free usage tier?	What it does
Amazon RDS	Yes • 750 hours per month of a t1.micro DB instance • 20 GB of DB storage • 20 GB of backups • 10 million I/O operations	Runs MySQL, Oracle, or SQL Server database engine on AWS.

NoSQL Database

A NoSQL database uses key-value pairs to retrieve and append data, with the goal of improving performance compared to relational databases.

Amazon DynamoDB: Getting Startedwalks you through the process of launching a NoSQL database on DynamoDB. *To stay within the free usage tier, note the usage limits below.* For information about read and write capacity units, see Provisioned Throughput in Amazon DynamoDB.

Amazon Web Service	Free usage tier?	What it does	
DynamoDB	Yes • 100 MB of storage • 5 units of write capacity • 10 units of read capacity	Yes • 100 MB of storage • 5 units of write capacity • 10 units of read capacity	

Deploy an Application

AWS offers application management services that help you build, deploy, and scale applications.You can use an application management service to leverage other AWS services without having to manage each of them separately and manually.

Amazon Web Service	Summary
  AWS Elastic Beanstalk	**Application container:** with AWS Elastic Beanstalk, you can focus on the code and let the service manage the rest. AWS Elastic Beanstalk helps you deploy, manage, and scale web applications and web services. AWS Elastic Beanstalk supports popular languages and frameworks, including Docker, Java, .NET, Node.js, PHP, Python, and Ruby.
  AWS OpsWorks	**Application automation:** AWS OpsWorks gives you the flexibility to define a software stack and helps you deploy, operate, and automate applications. Start with templates for common technologies, or build your own stack to support your architecture and perform any task you can script.

You can also use resource management services, such as AWS CloudFormation, Amazon CloudWatch, and Auto Scaling, to create your own deployment and management solution. For additional information, go to Deployment and Management on AWS.

When you're ready to get started with an application management or resource management service, go to Deploy an Application on AWS (p. 25).

Free Tier Usage

Application management services are provided at no additional charge — you pay only for the underlying AWS resources you use. To make sure you stay within the limits of the free usage tier, follow these guidelines:

- **AWS Elastic Beanstalk**: By default, AWS Elastic Beanstalk launches applications on resources that comply with free tier usage.To delete instances and prevent new ones from being created, first disable Auto Scaling. For more details, go to Configuring Auto Scaling with AWS Elastic Beanstalk.
- **AWS OpsWorks**: Make sure any server or database instances you launch are t1.micro instances.

Create a Network

You can create virtual private clouds on AWS. These can be isolated from the Internet, or you can add a public-facing subnet that makes part of your network accessible from the Internet.You can also create a hardware virtual private network (VPN) connection between your network and AWS in order to create a hybrid solution in which part of your IT infrastructure runs in your physical data center and part of it runs in your virtual private cloud on AWS.

The Amazon Virtual Private Cloud Getting Started Guide shows how to launch a virtual cloud with both private and Internet-facing subnets. *In order to stay within the limits of the free usage tier, any Amazon EC2 instances that you launch in the virtual cloud should be t1.micro instances*.

Amazon Web Service	Free usage tier?	What it does
Amazon Virtual Private Cloud (Amazon VPC)	N/A There is no charge for this service. You may be charged for the AWS resources that it deploys.	Provisions a logically isolated section of the AWS cloud into a virtual cloud that you define.

Manage My AWS Resources

AWS provides several services that help you monitor, manage, and configure your AWS account and resources. The following services are a good place to start.

Amazon Web Service	Free usage tier?	What it does
AWS Identity and Access Management (IAM)	N/A There is no charge for this service.	Configures access to your AWS resources, and creates users on your AWS account.
Amazon CloudWatch (CloudWatch)	Yes • 10 metrics • 10 alarms • 1,000,000 API requests	Collects and reports metrics on your AWS resources.You can set alarms on these metrics to trigger actions.
AWS CloudFormation	N/A There is no charge for this service. You may be charged for the AWS resources it manages.	Simplifies AWS resource modeling and provisioning, for anything from a single Amazon EC2 instance to a multi-tier application.You can use sample templates or create your own. AWS CloudFormation can be integrated with other development and management tools.

Amazon Web Service	Free usage tier?	What it does
Auto Scaling	N/A There is no charge for this service. You may be charged for AWS resources it manages. To use this service under the free usage tier, ensure that it does not launch more than 750 hours worth of Amazon EC2 running time in a month.	Adds or removes virtual servers to handle peaks and lulls in traffic. Requires CloudWatch.
AWS Data Pipeline (AWS Data Pipeline)	Yes • 3 low-frequency preconditions • 5 low-frequency activities	Orchestrates the movement and processing of data on AWS as well as on-premise data sources.

There is, of course, more you can do with AWS than these few scenarios. For further ideas, see AWS Solutions.

How Do I Get Started with the Free Usage Tier?

When you create a new AWS account, you can test-drive some of the services and learn about AWS without charge. AWS calls this the AWS Free Usage Tier.

You are eligible for the free tier for one year after you open your AWS account. After a year has passed, you will no longer be eligible for the free tier and will be charged any applicable fees for your AWS usage.

If you exceed the usage limits of the free tier or you use a service that is not on the free tier, you will be charged at the normal AWS billing rates.

To use AWS for free

Unused capacity under the free tier does not roll over from month to month; it's a use-it-or-lose-it model. To maximize your benefit from the free tier, be sure to spend time each month with AWS, investigating the services you're curious about.The tutorials at What Should I Try First? (p. 17) walk you through some common tasks you can try on the AWS free tier: storing files, running a virtual server, and deploying an application.

Use an AWS Account Created Less Than a Year Ago

If you're not sure when you created your account, open Account Activity. If you see a message like the following at the top of the page, your AWS account is less than a year old.

You are eligible for the AWS Free Usage Tier. See the Getting Started Guide AWS Free Usage Tier to learn how to get started with the free usage tier.

You can also click **Current Statement** on the same page and then scroll down to your earliest statement to see when you created your account and how much time you have left on the free tier.

Note
If your account is more than one year old, you are no longer eligible for the free tier and will be charged any applicable fees for your AWS usage.

If your company created your AWS account, check whether the account uses consolidated billing. Consolidated billing combines payment for multiple AWS accounts under a single AWS account, called the paying account. In consolidated billing, the creation date of the paying account determines free tier eligibility.

Use Only Services That Offer a Free Usage Tier

AWS Free Usage Tier lists the services that offer free tier usage.

Stay Within the Limits of the Free Usage Tier for the Services You Use

The free tier is designed for a single user to create resources on AWS and test the free tier services with small amounts of data and traffic. For details about limits under the free tier for an individual service, go to AWS Free Usage Tier, and then click the service that you're interested in.

To fully understand how the free tier works for a particular service, you may need to investigate the service further. For example, in addition to a 5 GB storage limit, the Amazon S3 free tier also limits monthly Get requests, Put requests, and outbound data transfer. For additional information about what usage terms mean, see the AWS Documentation for the service.

Hourly Usage on the Free Usage Tier

Some services, such as Amazon EC2, Amazon RDS, and Elastic Load Balancing, track hourly usage. The free tier of these services provides a monthly allotment of hours. For example, the free tier of Amazon EC2 provides 750 hours of running a t1.micro instance. (An instance is considered to be running from the time you start it until the time you stop it.) You can run 1 micro instance continuously for a month, or 10 micro instances for 75 hours a month. How you spend your free tier allotment is up to you.

In some cases, leaving your resources running can actually maximize your free-tier usage. For example, if you run an EC2 instance for only a portion of an hour, AWS counts that as an entire hour. If you stop and start an EC2 instance three times in an hour, you'll have used up three hours of your free-tier allotment.

The following diagram illustrates how this works. Both the red and green usage scenarios below use up three hours of your monthly free-tier allotment.
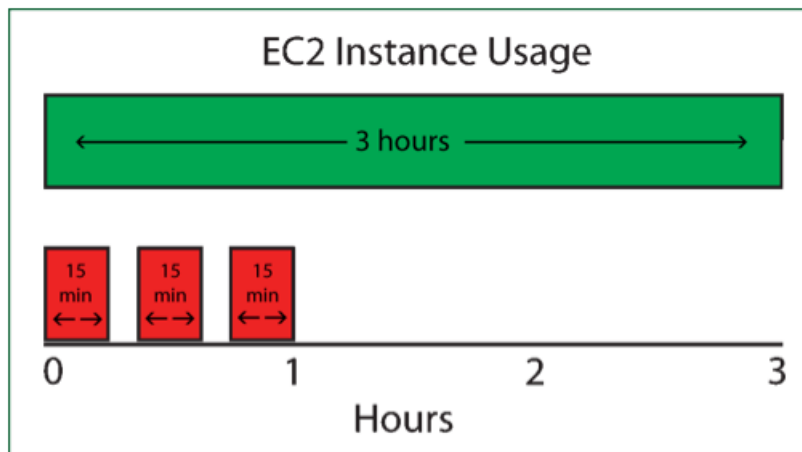
If you plan to use an AWS resources only intermittently, leaving it running can actually maximize your free-tier usage.

Machine Images Eligible for the Free Usage Tier

If you start an Amazon EC2 instance, be sure to select an Amazon Machine Image (AMI) that is compatible with the free tier. An AMI describes the configuration that is loaded onto the virtual server when it's created and specifies the operating system, and pre-loaded applications. Because of licensing restrictions, some AMIs are not available under the free tier.

AMIs that are available under the free tier are marked in the Amazon EC2 Launch Wizard as **Free Tier Eligible**. Both Linux and Microsoft Windows AMIs are available under the free tier. The free tier allotment for Linux and Microsoft Windows instances is counted separately; you can run 750 hours of a Linux t1.micro instance *and* 750 hours of a Windows t1.micro instance in the free tier each month.

For a complete walk-through of how to launch a virtual server on the free tier, see Run a Virtual Server on AWS (p. 23), in this guide.

Outbound Data Transfer on the Free Usage Tier

As you use the free tier, you'll also need to monitor the number of web service requests you make and your outbound Internet data transfer. Under the free tier, you are allowed 15 GB of outbound data transfer per month across all AWS services.

Create a Billing Alert to Warn You If Your Usage Exceeds the Free Usage Tier

Even if you're careful about how you use the free tier, it's a good idea to create a billing alert that will warn you if you exceed free tier usage. Billing alerts can help protect you against unknowingly accruing charges if you inadvertently use a service outside of the free tier or if traffic exceeds your expectations.

To set a billing alert for the free tier

1. Open the Billing console at https://console.aws.amazon.com/billing/home?#.
2. In the navigation pane, click **Preferences**, and then select **Receive Billing Alerts**.

3. Click **Save Preferences**.

   Note
   Billing alerts are not enabled immediately. For best results, wait at least 15 minutes before
   proceeding to the next step.

4. Open the CloudWatch Management console at https://console.aws.amazon.com/cloudwatch.

5. If necessary, change the region in the navigation bar to **US East (N. Virginia)**. Billing metric data is
   stored in the US East region, even for instances in other regions.
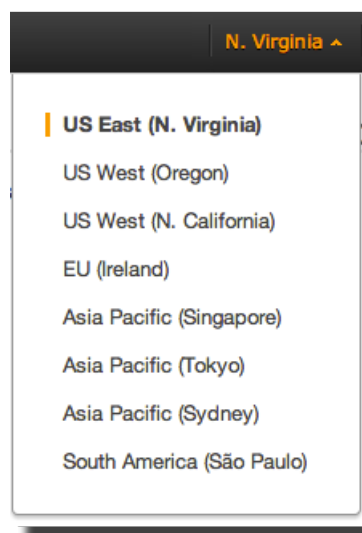
6. In the navigation pane, click **Alarms**, and then in the **Alarms** pane, click **Create Alarm**.

7. In the list of CloudWatch metrics, click **Billing Metrics**.
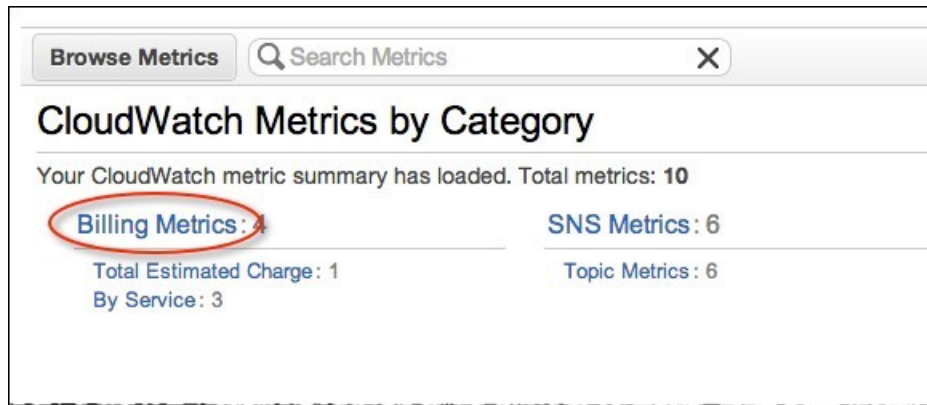
8. In the list of billing metrics, select the **EstimatedCharges** metric.
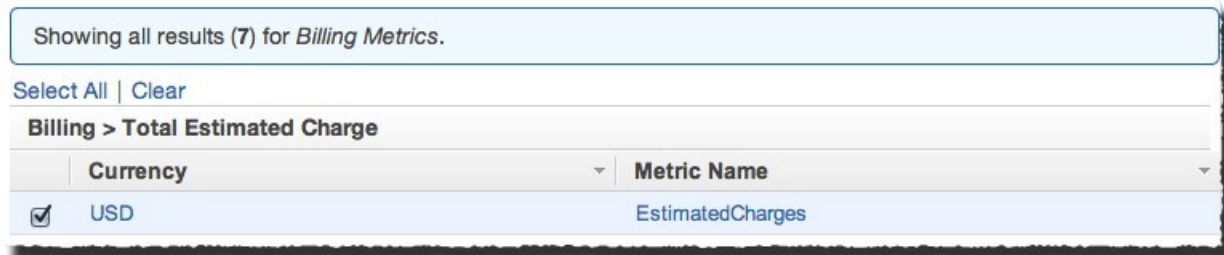
9. Click **Next**.
10. Define the alarm:

   a. Under **Alarm Threshold**, enter a **Name** and **Description** for your alarm.
   b. Set the **Whenever charges for** operator and value to **>0**. This setting indicates that you would like to be notified when the value of the EstimatedCharges metric exceeds zero; i.e., as soon as a charge is incurred.
   c. Under **Actions,** leave the **Whenever this alarm** box set to the default value of **State is ALARM**.
   d. To create a notification list for the **Send notification to** box, click the **New list** link next to the box.
   e. In the **Send notification to** box, type **NotifyMe**.
   f. In the **Email list** box, enter your email address.

   In the following example, the topic name is NotifyMe and the email address is me@example.com.

11. Make sure the alarm settings are similar to the preceding image, then click **Create Alarm**.
12. In the **Confirm new email addresses** dialog box, click **I will do it later**. (You can also confirm your email address now, if you prefer.)

After you've confirmed your email address, you'll receive an email as soon as your account's usage exceeds the free tier limits. At that point, you can decide whether to terminate the AWS resources that have exceeded the free tier limits, or keep them running and be billed at standard AWS rates.

What Should I Try First?

The following tutorials will get you started launching and using resources on AWS, while staying within the limits of the free usage tier. The tutorials use the AWS Management Console to interact with AWS.

Topics

Store Files on AWS

You can use Amazon Simple Storage Service (Amazon S3) to store digital files on AWS. Files stored in Amazon S3 are called *objects*, and every object is stored in a location called a *bucket*. To create a bucket and upload a file, follow these steps.

To allocate storage on AWS

1. Open the Amazon S3 console at https://console.aws.amazon.com/s3/.
2. In the Amazon S3 console, click **Create Bucket**.
3. In the **Create a Bucket — Select a Bucket Name and Region** dialog box, in the *Bucket Name* box, enter a bucket name.

   The bucket name you choose must be unique across all existing bucket names in Amazon S3. After you create a bucket, you cannot change its name.

   For this tutorial, select a bucket name between 3 and 63 characters long, composed of lowercase letters and numbers. In this tutorial we use `example123`, but you will need to use a unique bucket name of your own choosing.

4. In the **Region** box, select a geographic region that is close to you.

5. When the settings are as you want them, click **Create**.

   When Amazon S3 successfully creates your bucket, the console displays its name in the **All Buckets** pane. This bucket is where you'll upload your files.

To upload a File

1. In the Amazon S3 console, select the bucket that you previously created to contain your files. In our example, we will select the `example123` bucket.
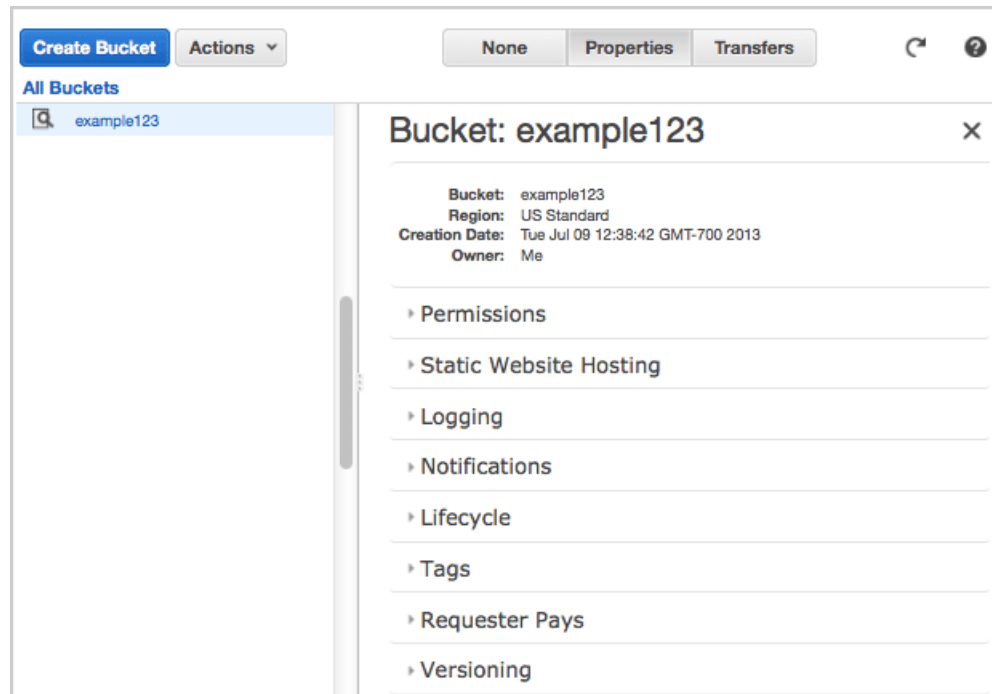
2. Click **Actions**, and then click **Upload**.
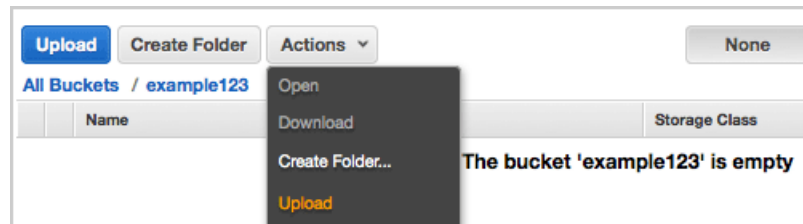
3. In the **Upload — Select Files** dialog box, click **Add Files**.
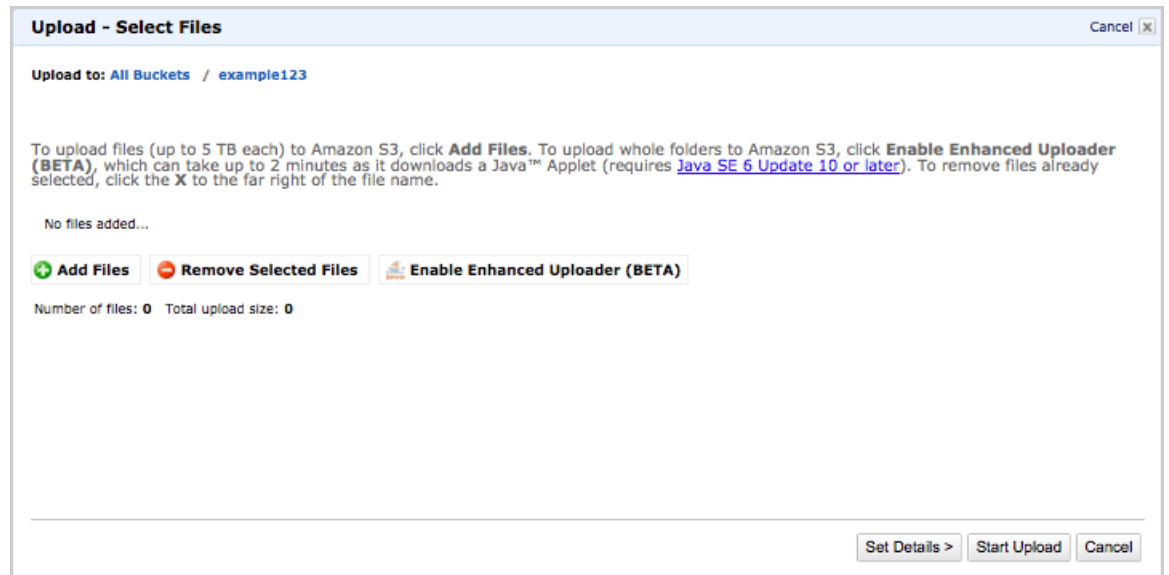
4. In the **File Upload** dialog box, select files to upload. *In order to stay within the limits of the free usage tier, the total size of the files you upload should be less than 5 GB.*

5. Click **Open**.

6. In the **Upload   Select Files** dialog box, click **Start Upload**.
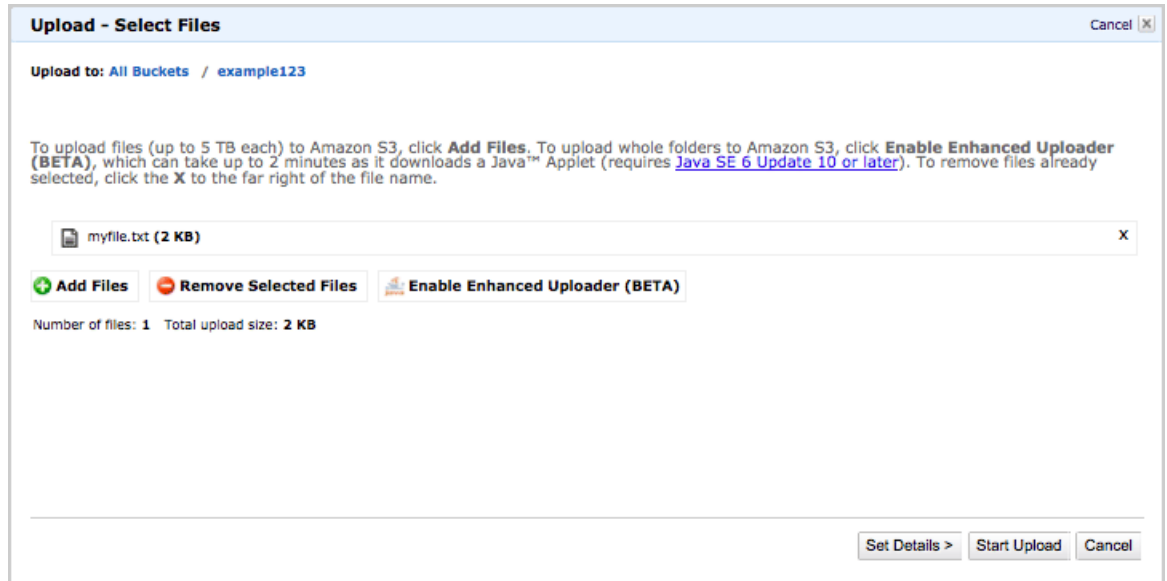
7. When your files have finished uploading, they will appear as shown in the following image.
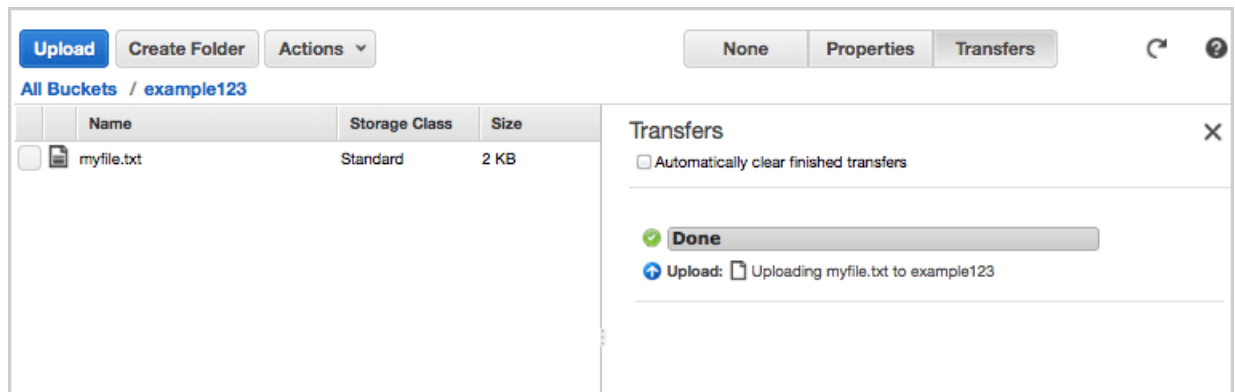
Make a File Public

By default, a file uploaded to Amazon S3 can be accessed only by the AWS account that was used to upload it. If you want to make the file freely accessible to anyone on the Internet to view or download from a URL, you must make the file public.

To make a file public

1. Open the Amazon S3 console at https://console.aws.amazon.com/s3/.

2. In the Amazon S3 console, select the bucket that you created to contain your files. In our example, we will select the `example123` bucket.

3. Right-click the file you uploaded.

4. Click **Make Public**.
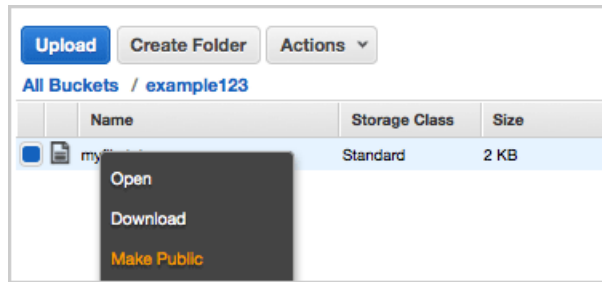
5. Click **OK** to confirm making the file public.

Anyone on the Internet can now view and/or download the file.This traffic counts against your free usage tier allotment of 20,000 Get requests each month. To protect yourself from unexpected traffic that might exceed the limits of the free usage tier, you can make the file private, or you can delete the file at the end of this tutorial.

View a File Stored on AWS

All files that are stored on Amazon S3 have a URL associated with them. Using this link, you can access the file from an application such as a web browser.

To view a file stored on AWS

1. In the Amazon S3 console, select the bucket that you created to contain your files. In our example, we will select the `example123` bucket.
2. Click the file you uploaded.
3. Click **Properties**.
4. Click the URL that appears after **Link**. The file will appear in your browser. If the file is in a format that your browser can't display, you will be prompted to download the file.
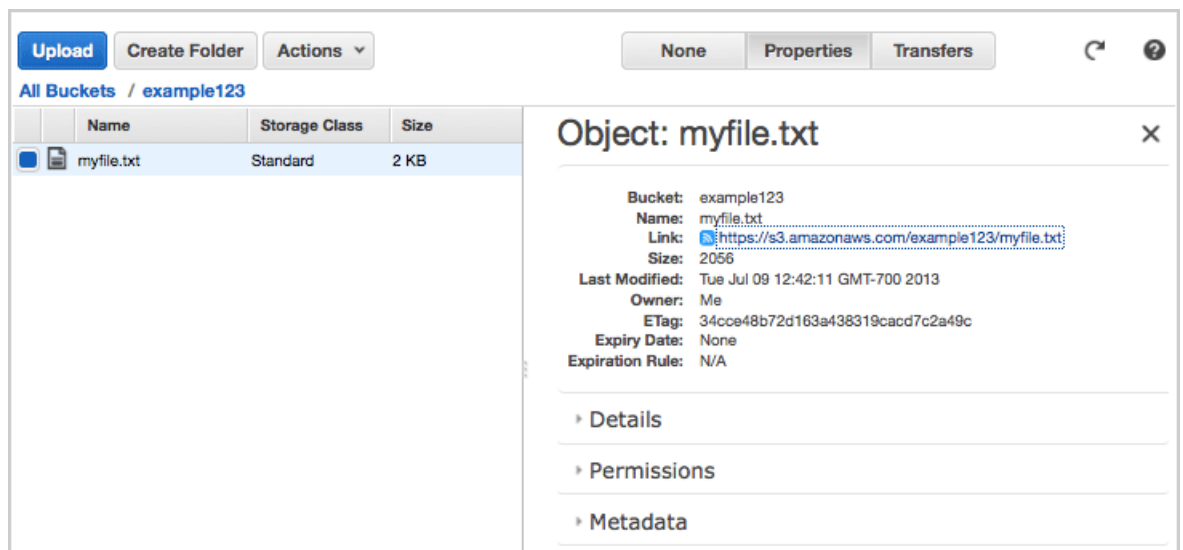
Make a File Private

If you've made a file public, you can return it to its private condition.

To make a public file private

1. Open the Amazon S3 console at https://console.aws.amazon.com/s3/.
2. In the Amazon S3 console, select the bucket that you created to contain your files. In our example, we will select the example123 bucket.
3. Click the file you uploaded.
4. Click **Properties**.
5. Click **Permissions**.
6. Clear the **Open/Download** check box for the **Grantee** Everyone.
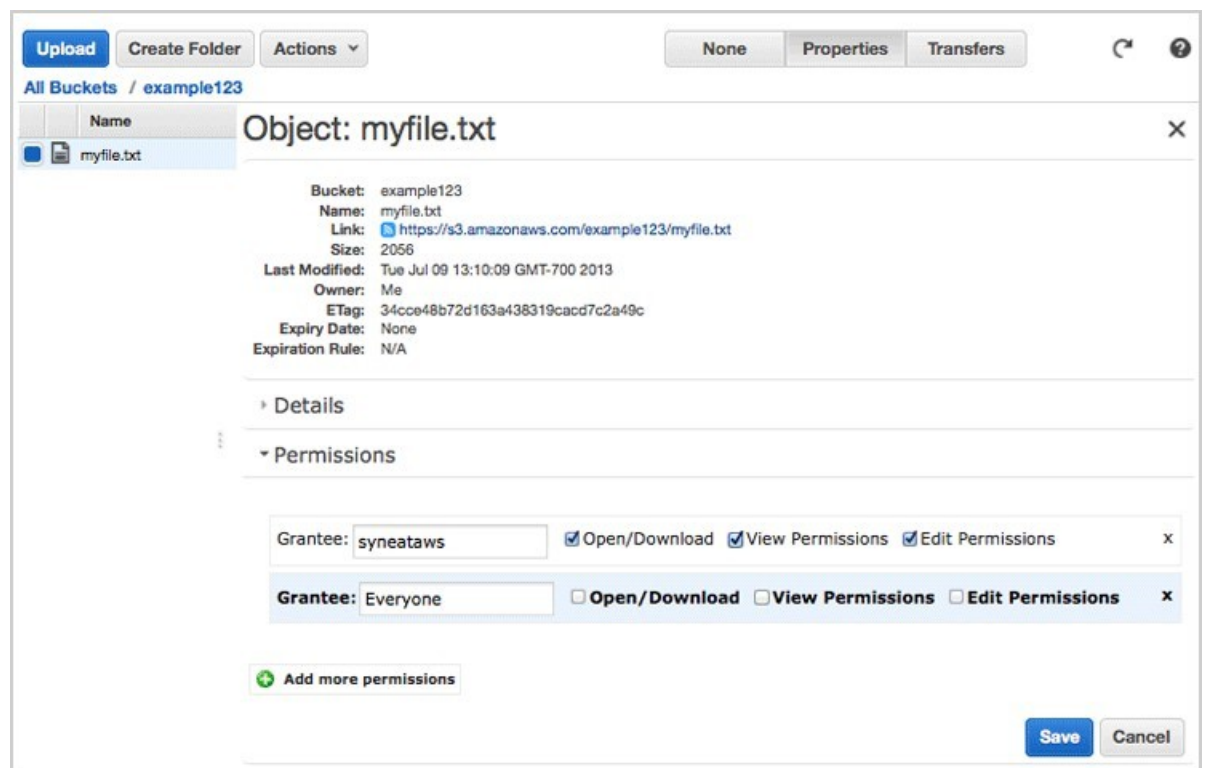
7. Click **Save**.

Delete a File and Bucket

When you are done with your investigation of storage on Amazon S3, you can use the following procedures to delete the resources you allocated on AWS.

To delete a file

1. Open the Amazon S3 console at https://console.aws.amazon.com/s3/.
2. In the **Buckets** pane, click the bucket where the file is stored.
3. Right-click the file you want to delete, and then click **Delete**.

4. In the confirmation message that appears, click **Yes, Delete**.

There is no charge for an empty bucket in Amazon S3, so you don't need to delete the bucket to avoid charges. If you want to delete the bucket, however, you can do so.

To delete a bucket, you must first delete all of the objects in it.

To delete a bucket

1. Continuing from the previous procedure, right-click the bucket you want to delete, and then click **Delete**.
2. In the confirmation message that appears, click **Yes, Delete**.

Run a Virtual Server on AWS

You can use Amazon Elastic Compute Cloud (Amazon EC2) to run and manage virtual servers on AWS. Your servers are launched as *EC2 instances* and initialized with a machine image called an *AMI*.

In the free usage tier, you can launch a t1.micro Amazon EC2 instance. Micro instances provide a small amount of consistent CPU resources and allow you to burst CPU capacity when additional cycles are available. A t1.micro instance is well suited for low-throughput applications and websites that consume significant compute cycles only occasionally.

To launch a virtual server

1. Open the Amazon EC2 console at https://console.aws.amazon.com/ec2/.
2. In the Amazon EC2 console, click **Launch Instance**.
3. The **Select an Amazon Machine Image (AMI)** page displays a list of available AMIs. Select an AMI that is marked **Free tier eligible**. This indicates that an AMI is compatible with the free usage tier. For the purposes of this tutorial, select the Amazon Linux AMI.
4. On the **Select an Instance Type** page, ensure the **t1.micro** instance is selected, as this is the only instance type you can run on the free usage tier.

    Click **Review and Launch** to accept the default settings and let the wizard complete the rest of steps for you.
5. On the **Review Instance Launch** page, you can review the settings for your instance. When you are satisfied with your selections, click **Launch**.
6. In the **Select an existing key pair or create a new key pair** dialog box, select **Create a new key pair**, enter a name for it, and then click **Download Key Pair**. This is the only chance for you to save the private key file, so be sure to download it. Save the private key file in a safe place.You'll need to provide the name of your key pair when you launch an instance and the corresponding private key each time you connect to the instance.

    When you are ready, select the acknowledgment check box, and then click **Launch Instances**.
7. It will take a few minutes for AWS to provision the server. When provisioning is complete, your EC2 instance appears in the EC2 console on the **Instances** page.

Connect to a Virtual Server on AWS

There are several ways to connect to a virtual server running on AWS; the most common way is to connect to it using SSH. The Amazon EC2 Console provides a Java SSH Client, called MindTerm, that you can use to connect to the virtual server directly from the console. This is the easiest way to connect to the virtual server, but requires that you access the Amazon EC2 console using a browser with Java enabled.

If, instead of using MindTerm, you'd prefer to connect to your EC2 instance using a command-line SSH client or tool such as PuTTy, see Connect to Your Instance in the *Amazon Elastic Compute Cloud User Guide*.

To connect to a virtual server from the Amazon EC2 Console

1. In the Amazon EC2 console, select your virtual server, and click **Connect**.
2. Click **A Java SSH client directly from my browser (Java required)**. This feature requires that you have Java enabled in your browser.

   - In **Private key path**, enter the location on your local machine where you saved your key pair. This is the PEM file you downloaded in the previous procedure.

     Note
     Do not change the default **User name**.

   - Click **Launch SSH Client**.

3. If your browser displays a security warning, confirm the connection.
4. The first time you connect to your virtual server, MindTerm will ask you to confirm that you want to create the necessary local directories, and that you want to add the virtual server to your list of known hosts. In each **MindTerm — Confirmation** dialog box, click **Yes**.
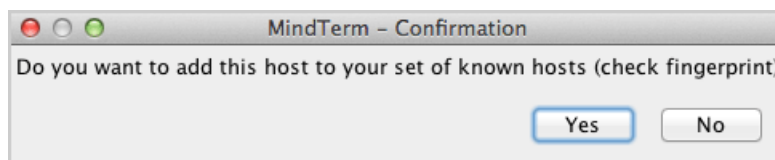
5. When you are connected, the **MindTerm** window will show connection information, including the server's hostkey fingerprint.
6. Type `pwd` to print the name of the current directory on the virtual server and confirm your connection.

You are now connected to the server and can use standard Linux commands such as `wget`, `scp`, and `yum install` to download and install software to the virtual server.

Note
Connection should proceed smoothly using the procedure above. If you are unable to connect to your EC2 instance, check the security groups for that instance and ensure that port 22 (SSH) is open. For more information, see Security Groups in the *Amazon Elastic Compute Cloud User Guide*.

Terminate a Virtual Server

The free usage tier provides 750 hours of a t1.micro virtual server instance a month. This is enough to run a virtual server instance continuously. So if you only need one instance running at a time, you can leave your instance running and remain on the free usage tier. When you are ready to terminate your server, however, you can do so using the following procedure.

To terminate a virtual server

1. In the Amazon EC2 console, select your virtual server.
2. Click **Actions** and select **Terminate**.
3. In the **Terminate Instances** dialog, click **Yes,Terminate**.

Deploy an Application on AWS

AWS offers several services that help you run applications in the cloud.

Choose a Service or Build a Solution

You can use an application management service, or you can build your own solution by using resource management services.

Application Management Services

AWS application management services help you leverage other AWS services without requiring you to manage each of them separately and manually:

- **Application container**: Use AWS Elastic Beanstalk if you want to focus on the code and let the service manage the rest.
- **Application automation**: Use AWS OpsWorks if you want the flexibility to define your own software stack and deploy, operate, and automate a variety of applications and architectures.

Resource Management Building Blocks

To create your own solution instead of using application management services, you can use these resource management services as building blocks:

- **Templated provisioning:** Use AWS CloudFormation to model, provision, and update AWS resources, for everything from a single Amazon EC2 instance to a multi-tier application.
- **Monitoring**: Use Amazon CloudWatch to monitor metric data, view graphs, and set alarms to help you troubleshoot.
- **Instance scaling**: Use Auto Scaling to scale your Amazon EC2 capacity up or down according to conditions you define.

You can use deployment and resource management services separately or together. AWS CloudFormation can provision Auto Scaling groups, CloudWatch alarms, AWS Elastic Beanstalk applications, and AWS OpsWorks stacks, in addition to other AWS resources.

For additional information about these services and how they differ, go to Deployment and Management on AWS.

Get Started

When you've decided on a service or combination of services, complete the appropriate tutorials:

Amazon Web Service	Tutorial
AWS Elastic Beanstalk	Getting Started Using AWS Elastic Beanstalk For information about using AWS Elastic Beanstalk within the limits of the free usage tier, go to Free Tier Usage (p. 8).
AWS OpsWorks	Getting Started with AWS OpsWorks For information about using AWS OpsWorks within the limits of the free usage tier, go to Free Tier Usage (p. 8).

Amazon Web Service	Tutorial
AWS CloudFormation	Updating a Stack
Amazon CloudWatch	Getting Started with CloudWatch
Auto Scaling	Getting Started with Auto Scaling

How Do I Interact with AWS?

AWS provides several tools that help you create and manage resources.

- **AWS Management Console** — A graphical user interface you access online at
  https://console.aws.amazon.com.The AWS Management Console is the fastest way to get started with
  AWS; there is nothing to install. Some services, however, have features that cannot be accessed from
  the console. For more information, see the service documentation.
- **AWS Command Line Interface (CLI)** — A text-based tool you install on your computer. It connects
  over the Internet to manage your AWS resources. Several command-line tools are available: the AWS
  CLI manages multiple AWS services through a single tool; many services offer custom CLIs that manage
  only that service; and there are Windows PowerShell tools for AWS. For more information, see
  "Command Line Tools" on the Tools for Amazon Web Services page.
- **Software Development Kits (SDKs)** — Class libraries and tools you add to your application so it can
  manage AWS resources. AWS offers SDKs in a variety of programming and scripting languages, as
  well as mobile SDKs for iOS and Android apps. The SDKs are the easiest way to write applications
  that manage AWS; they provide functions you can call to authenticate your application's connection to
  AWS. For more information, see Tools for Amazon Web Services.
- **Query APIs** — Low-level APIs that are exposed online through service- and region-specific endpoints
  (e.g., `https://dynamodb.us-west-2.amazonaws.com`).You call API actions by using HTTP
  requests.The APIs reflect the latest functionality of each service. If your application uses the API instead
  of an SDK, however, you must implement the functionality to generate the proper signatures to
  authenticate your requests.

Tracking Your AWS Usage

You can check your AWS usage and charges at any time on the Billing and Cost Management console. While you're using the free usage tier to explore AWS, it can be reassuring to check the charges for the current month and ensure that you aren't being billed.

To view a summary of current charges

*   Sign in to the AWS Management Console and open the Billing and Cost Management console at https://console.aws.amazon.com/billing/home#/.

    The default dashboard view shows the current month-to-date balance, as well as a graph of costs by service.

To view detailed charges by month or service

1. In the left navigation pane, click **Bills**.
2. The **Summary** and **Details** sections show the charges for the current month. To view charges for a different month, select a different **Date**.

    For Consolidated Billing customers, the **Bills** page lists totals for all accounts on the **Consolidated Bill Details** tab. Click the **Bill Details by Account** tab to see the activity for each account in the Consolidated Billing account family.
3. In the **Details** section, expand each service to view usage details, such as Amazon EC2 instance-hours or Amazon S3 requests.

    You can use the usage details and the AWS Simple Monthly Calculator to estimate the charges you'll see after your free tier period has ended.

Where Should I Go Next?

Once you've identified how you'd like to use AWS, you can read about the related services in the AWS Documentation. The Getting Started with AWS Guides are designed to help you learn how to perform tasks in AWS that span multiple services.

Use the AWS Management Console and the services on the free usage tier to test-drive AWS and gain experience with how the services work.

If you'd like to talk to other people using the services, see the AWS Discussion Forums.You can talk to other AWS users and members of the AWS team, marked by "@aws" at the end of their user names.

AWS offers a variety of ways to get help with the services, ranging from online help to personal support. For a list of options, go to Support Center.