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What Is AWS Billing and Cost Management?

AWS Billing and Cost Management is the service that you use to pay your AWS bill, monitor your usage, and budget your costs.

AWS automatically charges the credit card you provided when you signed up for a new account with AWS. Charges appear on your credit card bill monthly. You can view or update credit card information, and designate a different credit card for AWS to charge, on the Payment Methods page in the Billing and Cost Management console. For more information about accessing the console, see Opening the Billing and Cost Management Console and Dashboard (p. 37).

Note
If you chose India as your contact address country when you signed up, you might be an Amazon Internet Services Pvt. Ltd (AISPL) customer, and you might need to approve the charges before your credit card can be billed. For more information about paying as an AISPL customer, see Pay your AISPL bill (p. 117).

Topics
- Features in Billing and Cost Management (p. 1)
- Are You a First-Time Billing User? (p. 2)
- Related Services (p. 2)

Features in Billing and Cost Management

The Billing and Cost Management service provides features that you can use to estimate and plan your AWS costs, receive alerts if your costs exceed a threshold that you set, assess your biggest investments in AWS resources, and, if you work with multiple AWS accounts, simplify your accounting.

Analyzing Costs with Graphs

The AWS Billing and Cost Management console includes the no-cost Cost Explorer (p. 37) tool for viewing your AWS cost data as a graph. With Cost Explorer, you can filter graphs by values such as API operation, Availability Zone, AWS service, custom cost allocation tag, Amazon EC2 instance type, purchase option, region, usage type, usage type group, and more. If you use consolidated billing, you can also filter by member account. In addition, you can see a forecast of future costs based on your historical cost data.

Budgets

You can use budgets to track your AWS usage and costs. Budgets use the cost visualization provided by Cost Explorer to show you the status of your budgets, to provide forecasts of your estimated costs, and to track your AWS usage, including your free tier usage. You can also use budgets to create Amazon SNS notifications that notify you when you go over your budgeted amounts, or when your estimated costs exceed your budgets.

For more information about budgets, see Managing Your Costs with Budgets (p. 67).

Payment Currencies

You can view your estimated bills and pay your AWS invoices in your preferred currency by setting a payment currency.
AWS Billing and Cost Management User Guide

Are You a First-Time Billing User?

AWS converts your bill to your preferred currency after your bill is finalized. Until then, all of the preferred currency amounts shown in the console are estimated in USD. AWS guarantees your exchange rate, so that refunds use the same exchange rate as your original transaction.

Additional details:
- AWS Marketplace and DevPay invoices are not eligible for this service and are processed in USD.
- This service is available only if your default payment method is Visa or MasterCard.
- The rates change daily. The rate applied to your invoice is the current rate when your invoice is created. You can check the current rate on the Billing and Cost Management console.
- You can switch back to USD.
- Currency conversion is provided by Amazon Services LLC.

AWS Cost and Usage reports

You can choose to have AWS publish billing reports to an Amazon Simple Storage Service (Amazon S3) bucket that you own. You can receive reports that break down your costs by the hour or month, by product or product resource, or by tags that you define yourself. AWS updates the report in your bucket once a day in comma-separated value (CSV) format. You can view the reports using spreadsheet software such as Microsoft Excel or Apache OpenOffice Calc, or access them from an application using the Amazon S3 API.

Important
If you use the consolidated billing feature in AWS Organizations, the Amazon S3 bucket that you designate to receive the billing reports must be owned by the master account in your organization. You can't receive billing reports in a bucket that is owned by a member account. If you use consolidated billing, you can also have your costs broken down by member account.

For more information about each of these reports and how to configure them, see Understanding Your Usage with Billing Reports (p. 16).

Are You a First-Time Billing User?

If you're new to the AWS Billing and Cost Management service, we recommend that you begin with the Getting Started (p. 4) section, which shows you how to use the Billing and Cost Management console.

If you're new to AWS, we recommend that you review Getting Started with AWS. This guide has useful general information about using AWS and managing your account.

Related Services

IAM

The Billing and Cost Management service is tightly integrated with the AWS Identity and Access Management (IAM) service. You can use IAM with Billing and Cost Management to ensure that other people who work in your account have only as much access as they need to get their job done.

For more information about how to allow or deny access to your billing information, see Controlling Access (p. 118).

The IAM service is also how you control access to all of your AWS resources, not just your billing information, so it's important to familiarize yourself with the basic concepts and best practices of IAM before you get too far along with setting up the structure of your AWS account.
For details about how to work with IAM and why it's important to do so, see IAM Concepts and IAM Best Practices in the IAM User Guide.

AWS Organizations (Consolidated Billing)

The AWS platform is designed to accommodate every size of company, from small startups to enterprises. If your company is large, or likely to grow, you might want to set up multiple AWS accounts that reflect your company’s structure. For example, you can have one account for the entire company and accounts for each employee, you can have an account for the entire company with IAM users for each employee, or you can have an account for the entire company, accounts for each department or team within the company, and accounts for each employee.

If you set up multiple AWS accounts, you can choose to have each account receive a bill (that is, function as a payer account), or you can use the consolidated billing feature of AWS Organizations to consolidate multiple member accounts under your master account. Consolidated billing is designed to simplify your accounting and let you take advantage of lower-priced usage tiers for many services. For more information, see Consolidated Billing for Organizations (p. 130).
Getting Started

The following steps discuss a few of the most common tasks you're likely to perform when using the Billing and Cost Management console.

Topics
- Step 1: Review Your Usage (p. 4)
- Step 2: Turn on Reports (p. 4)
- Step 3: Download or Print Your Bill (p. 6)
- Step 4: Set Up Alerts to Monitor Charges to Your Account (p. 6)
- Step 5: Get Answers to Questions About Your Bill (p. 8)
- Where Do I Go from Here? (p. 8)

Step 1: Review Your Usage

Billing and Cost Management offers you a number of different ways to view and monitor your AWS usage. Here's how to quickly check to see what you've used so far in the current month.

To open the Billing and Cost Management console and review your usage and charges

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at https://console.aws.amazon.com/billing/. The console opens to the Dashboard, where you can see your current month-to-date usage graphs.
2. On the navigation pane, choose the applicable option:
   - **Cost Explorer**
     Choose **Cost Explorer** to track and analyze your AWS usage. Cost Explorer is free for all accounts. For more information about Cost Explorer, see Analyzing Your Costs with Cost Explorer (p. 37).
   - **Budgets**
     Choose **Budgets** to manage budgets for your account. For more information about budgets, see Monitoring Your Usage and Costs (p. 36).
     You can also check the status of your free tier with the provided AWS Free Tier usage alerts using AWS Budgets. For more information about AWS Free Tier usage alerts, see AWS Free Tier Usage Alerts Using AWS Budgets (p. 11).
   - **Bills**
     Choose **Bills** to see details about your current charges.
   - **Payment History**
     Choose **Payment History** to see your past payment transactions.

Step 2: Turn on Reports

In addition to the features described in step 1, AWS Billing and Cost Management offers a set of billing reports about your AWS usage. The reports show you which AWS services that you used, the amount of time that you used them, the amount of data that you transferred in and out of storage, the average storage space that you use, and more.
Billing and Cost Management can deliver your reports to an Amazon S3 bucket that you create. Amazon S3 is the AWS Cloud storage offering. The Amazon S3 bucket must be owned by the payer account. Reports cannot be delivered to a bucket owned by a linked account.

Create an Amazon S3 bucket for your reports

1. Open the Amazon S3 console at https://console.aws.amazon.com/s3/.
2. Choose Create Bucket.
3. In the dialog box, for Bucket Name, enter the name for your bucket.
   
   **Note**
   Your bucket name must be all lowercase, from 3 to 63 characters long, and cannot contain spaces. You can use lowercase letters, numbers, hyphens (-), and periods (.) in your bucket name.
4. Choose the region that you want your Amazon S3 bucket to be in.
5. (Optional) If you choose Set Up Logging, you can enable access logs that track who accesses your Amazon S3 bucket. Choose the bucket that you want the access logs to be delivered to, and the name of a folder that you want the logs to be stored in.
6. Choose Create.

Grant Billing and Cost Management permission to deliver reports to your Amazon S3 bucket

1. Open the Amazon S3 console at https://console.aws.amazon.com/s3/.
2. Choose the bucket in which you want to receive reports.
3. Choose Permissions.
4. Choose Bucket Policy.
5. Paste the following text into the bucket policy editor.

```json
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": {
        "AWS": "386209384616"
      },
      "Action": [
        "s3:GetBucketAcl",
        "s3:GetBucketPolicy"
      ],
      "Resource": "arn:aws:s3:::bucketname"
    },
    {
      "Effect": "Allow",
      "Principal": {
        "AWS": "386209384616"
      },
      "Action": "s3:PutObject",
      "Resource": "arn:aws:s3:::bucketname/*"
    }
  ]
}
```

6. Replace `bucketname` with the name of your bucket. Don't replace the Principal number 386209384616. AWS uses that account to deliver reports to the S3 bucket.
7. Choose Save.
Create an AWS Cost and Usage report

2. On the navigation pane, choose Reports.
3. Choose Create report.
4. For Report name, type a name for your report.
5. For Time unit, choose Hourly if you want the line items in the report to be aggregated by the hour. Choose Daily if you want the line items in the report to be aggregated by the day.
6. For Include, to include the IDs of each individual resource in the report, select Resource IDs. To include manifests that enable you to upload the report to Amazon Redshift or Amazon QuickSight, select Redshift Manifest or QuickSight Manifest. If you select a manifest, your report is stored with .gz compression.
7. For Enable support for..., select whether you want to upload your AWS Cost and Usage report to Amazon Redshift or Amazon QuickSight.
8. Choose Next.
9. For S3 bucket, type the name of the S3 bucket where you want the reports to be delivered, and choose Verify. The bucket must have appropriate permissions to be valid. For more information on adding permissions to the bucket, see Setting Bucket and Object Access Permissions.
10. For Report path prefix, type the prefix that you want to prepend to the name of your report.
11. Choose Next.
12. After you have reviewed the settings for your report, choose Review and Complete.

Step 3: Download or Print Your Bill

AWS Billing and Cost Management closes the billing period at midnight on the last day of each month, and then calculates your bill. Most bills are ready for you to download by the seventh accounting day of the month.

To download your bill

2. On the navigation pane, choose Bills.
3. For Date, choose the month of the bill you want to work with.
4. Choose Download CSV to download a comma-separated variable file, or choose Print.

Step 4: Set Up Alerts to Monitor Charges to Your Account

If you use the AWS Free Tier, Billing and Cost Management automatically provides AWS Free Tier usage alerts via AWS Budgets to track your free tier usage and notify you when you go over the free tier limits or are forecasted to go over the free tier limits. AWS sends these notifications to the email that you used to create your AWS account.

In addition to the free tier usage alerts, you can use budgets to notify you when your monthly charges for using an AWS product exceed or are forecasted to exceed a threshold that you set.
Step 4: Set Up Alerts to Monitor Charges to Your Account

By default, IAM users don't have access to billing information, and therefore do not have access to billing alerts or budgets. If you are logged in to AWS as an IAM user, verify that the AWS account owner has granted IAM users access to the billing information. For more information about IAM restrictions, see Granting Access to Your Billing Information and Tools (p. 118).

**Note**
If your account is linked to a reseller account, billing alerts are not available for your account.

**To enable billing alerts**

Before you create a budget, you must enable billing alerts. You need to do this only once. After you enable billing alerts, you can't turn them off.

2. On the navigation pane, choose Preferences.
4. Choose Save preferences.

**To create a billing alarm**

1. (Optional) If you want to send your alert to an AWS-managed distribution list instead of a single email address, follow these steps to set up an Amazon Simple Notification Service (Amazon SNS) notification list. If you want to send your alert to a single email address, go to step 2.

   To create an Amazon SNS notification list:
   a. Open the Amazon SNS console at https://console.aws.amazon.com/sns/v2/home.
   b. On the navigation pane, choose SNS Home.
   c. In the Common actions section, choose Create topic.
   d. In the dialog box, for Topic name, enter the name for your notification list.
   e. (Optional) If you want to use this notification list to send SMS messages, for Display name, enter the name you want to appear on your SMS messages.
   f. Choose Create topic.
2. Open the CloudWatch console at https://console.aws.amazon.com/cloudwatch/.
3. If necessary, change the region on the navigation bar to US East (N. Virginia). The billing metric data is stored in this region, even for resources in other regions.
4. On the navigation pane, under Metrics, choose Billing.
5. In the list of billing metrics, select the check box next to Currency USD, for the metric named EstimatedCharges.
6. Choose Create Alarm.
7. Define the alarm as follows.
   a. If you want the alarm to trigger as soon as you go over the free tier, set When my total AWS charges for the month exceed to $.01. This means that you receive a notification as soon as you incur a charge. Otherwise, set it to the amount you want to trigger the alarm, and you will be notified when you go over that amount.
   b. Choose the New list link next to the send a notification to box.
   c. When prompted, enter your email address or choose your Amazon SNS notification from the drop down list.
   d. Choose Create Alarm.
8. In the Confirm new email addresses dialog box, confirm the email address or choose I will do it later. If you don't confirm the email address now, the alarm remains in the Pending state.
confirmation status until you do so, and does not send an alert. To view the status of your alarm, choose **Alarms** in the navigation pane.

For more information about CloudWatch alarms, see Monitor Your Estimated Charges Using Amazon CloudWatch in the *Amazon CloudWatch User Guide*.

### Step 5: Get Answers to Questions About Your Bill

If you have questions about your bill, see the AWS Knowledge Center. If you don't find the answer you're looking for in the Knowledge Center, you can access account and billing support free of charge. For more information about AWS Support, see Contacting Customer Support About Your Bill (p. 143). For information about closing your account, see close your account (p. 110).

### Where Do I Go from Here?

Explore some of the features designed to help you dig a little deeper and streamline your accounting practices.

- Tracking Your AWS Free Tier Usage (p. 11)
- Understanding Your Usage with Billing Reports (p. 16)
- Analyzing Your Costs with Cost Explorer (p. 37)
- Managing Your Costs with Budgets (p. 67)
- Consolidated Billing for Organizations (p. 130)
Using the Free Tier

You can try some AWS services free of charge, within certain usage limits. AWS calls this the AWS Free Tier. The free tier is designed to give you hands-on experience with a range of AWS services at no charge. For example, you can explore AWS as a platform for your business by setting up a test website with a server, alarms, and database. You can also try out services for developers, such as AWS CodePipeline, AWS Data Pipeline, and AWS Device Farm.

When you create an AWS account, you are automatically signed up for the free tier for 12 months. Your free tier eligibility expires at the end of the 12-month period. When your free tier expires, AWS starts charging the regular rates for any AWS services and resources that you are using.

To avoid charges while on the free tier, you must keep your usage below the free tier limits. You are charged for any usage that exceeds the limits. To help you stay within the limits, you can track your free tier usage and set a billing alarm to notify you if you start incurring charges. For more information, see Free Tier Limits (p. 10), Tracking Your AWS Free Tier Usage (p. 11). For tips about avoiding unexpected charges, see Avoiding Unexpected Charges (p. 97). Contact AWS Customer Support if you require additional explanation of unexpected charges on your bill.

If you don't use the full benefits provided by the free tier in a given month, the benefits don't roll over to the next month. To maximize your free tier benefits, be sure to spend time with AWS each month, trying out the services that you're curious about.

For more information about which services offer a free tier, see AWS Free Tier.

Topics
- Eligibility for the Free Tier (p. 9)
- Free Tier Limits (p. 10)
- Tracking Your AWS Free Tier Usage (p. 11)

Eligibility for the Free Tier

You receive the benefits of the free tier automatically for 12 months after you sign up for an AWS account. If you exceed the usage limits of the free tier, use a service that does not provide free tier benefits, or continue to use AWS after you are no longer eligible for the free tier, you are charged at the standard billing rates for your AWS usage. For a list of services that offer free tier benefits, see AWS Free Tier.

If you have an existing AWS account but you're not sure if it's still eligible for the free tier, open the Billing and Cost Management console. If your account is eligible for the free tier, you will see a message in the Alerts & Notifications section, as shown in the following screenshot.

You can also choose Bills in the navigation pane of the console to see when you created your AWS account. In the Date drop down box, you'll find one bill for each month since you opened your account, even if you did not have charges.
If your company creates your AWS account through AWS Organizations, free tier eligibility for all member accounts begins on the day the organization is created. For more information, see the AWS Organizations User Guide.

When your free tier eligibility is coming to an end, AWS sends a notification to the email address that you used when you signed up for AWS. If you decide to continue using AWS after your free tier eligibility ends, be sure to clean up any resources that you no longer need to avoid being charged for their use. If you decide not to continue using AWS, you can close your account.

Free Tier Limits

All services that offer a free tier have limits on what you can use without being charged. Many services have multiple types of limits. For example, Amazon EC2 has limits on both the type of instance you can use, and how many hours you can use in one month. Amazon S3 has a limit on how much storage you can use, and also on how often you can call certain operations each month. For example, the free tier covers the first 20,000 times you retrieve a file from Amazon S3, but you are charged for additional file retrievals. Each service has limits that are unique to that service.

Some of the most common limits are by time, such as hourly or by the minute, or by requests, which are the requests you send to the service, also known as API operations. For more information about free tier limits, see AWS Free Tier.

Topics

- Hourly Usage in the Free Tier (p. 10)
- Amazon Machine Images (p. 11)

Hourly Usage in the Free Tier

Some services, such as Amazon EC2, Amazon RDS, and Elastic Load Balancing, charge for usage on an hourly basis. The free tier for these services provides you with a monthly allotment of hours for the first 12 months. For example, the free tier for Amazon EC2 provides you with 750 hours usage of Linux (any combination of t2.micro and t1.micro instances), plus 750 hours usage of Windows (any combination of t2.micro and t1.micro instances). How you divide this allotment is up to you. For example, you can use one Linux instance continuously for a month, or 10 Linux instances for 75 hours a month.

In some cases, leaving your resources running maximizes your free tier benefits. For example, if you run an Amazon EC2 instance for only a portion of an hour, AWS counts that as an entire hour. Therefore, if you stop and start an Amazon EC2 instance three times in a single hour, you use up three hours of your monthly allotment. The following diagram illustrates how this works. Both the red and green usage scenarios below use up three hours of your monthly allotment.
Amazon Machine Images

When you start an Amazon EC2 instance, you must select an Amazon Machine Image (AMI) that is eligible for the free tier. Because of licensing restrictions, some AMIs are not eligible for the free tier.

**Important**

Third-party applications or services from AWS Marketplace are not eligible for the free tier.

AMIs that are eligible for the free tier are marked in the Amazon EC2 Launch Wizard as **Free tier eligible**. The free tier allotment for Linux and Microsoft Windows instances is counted separately; you can run 750 hours of a Linux t2.micro or t1.micro instance plus 750 hours of a Windows t2.micro or t1.micro instance each month for the first 12 months.

For more information, see Amazon EC2 Pricing.

### Tracking Your AWS Free Tier Usage

You can track your AWS Free Tier usage to help you stay under the free tier limits. AWS automatically provides alerts through AWS Budgets to notify you by email when you exceed the free tier limits or when you are forecast to go over the free tier limits. You can also view the **Top Free Tier Services by Usage** table on the Billing and Cost Management dashboard to see which five services you've used the most and how much you've used them.

**Topics**
- [AWS Free Tier Usage Alerts Using AWS Budgets](#)
- [Top Free Tier Services Table](#)

### AWS Free Tier Usage Alerts Using AWS Budgets

AWS automatically provides AWS Free Tier usage alerts using AWS Budgets to help you track your free tier usage. These budgets allow AWS to notify you when you’re close to exceeding the free tier limits or are forecast to exceed the free tier limits. You can also use the budgets to plan how you use AWS resources to avoid exceeding the free tier limits. Any usage over the free tier limits is charged at the regular rate.

When you exceed the free tier limits or are forecast to exceed them, AWS sends an alert to the email address that you used to create your account. You can change which email address that AWS uses for the alerts on the Billing and Cost Management console. AWS sends the notifications when you either go over 100% of your available free tier or are forecasted to go over 101%. The AWS Free Tier usage alert forecast does not use the Cost Explorer forecasting, and instead assumes that your usage remains steady throughout the month. For example, if you use 50 Amazon EC2 hours over five days, the forecast assumes that you are using 50 EC2 hours every five days. Only one notification per usage type is sent during a month. Usage types are the units that each service uses to measure the usage of a specific type of resource. For example, the **BoxUsage:t2.micro(Hrs)** usage type filters by the running hours of Amazon EC2 t2.micro instances.

**Important**
If you launch more AWS resources than the free tier covers in a short period of time, you can exceed the free tier limits before AWS can proactively notify you about exceeding the free tier usage limits. If that happens, AWS still notifies you that your incurred usage exceeded the free tier limit.
AWS Free Tier usage alerts cover non-expiring free tier offerings, such as the first 25 GB of DynamoDB storage or the first ten custom CloudWatch metrics. The alerts also cover free tier offerings that expire after 12 months, such as the 750 hours per month of Amazon EC2 Windows t2.micro instance usage and the first five GB of standard Amazon S3 storage. Services that are not covered by the free tier usage alerts include the following:

- AWS Directory Service
- Amazon Lightsail
- Amazon Redshift
- Amazon AppStream 2.0
- Amazon WorkSpaces

AWS Free Tier usage alerts are enabled automatically for all individual accounts, but not for a master account in an organization in AWS Organizations. If you are an owner of a master account in an organization, you can opt in to the usage alerts on the Preferences page on the Billing and Cost Management console. The same free tier limit applies to all accounts in an organization (both master and member accounts), so the same budget also applies to all the accounts. For example, if Alejandro has a member account and uses 400 Amazon EC2 hours and Mary has a member account and uses 400 Amazon EC2 hours, for a total of 800 hours, the organization has exceeded the free tier limit by 50 Amazon EC2 hours.

**To opt in or out of AWS Free Tier usage alerts**

You can opt in to or out of the AWS Free Tier usage alerts through the Billing and Cost Management console.

2. In the navigation pane, choose Preferences.
3. Under Cost Management Preferences, select Receive Free Tier Usage Alerts to opt in to free tier usage alerts. To opt out, clear the Receive Free Tier Usage Alerts check box.

**To change the email address for free tier usage alerts**

AWS sends free tier usage alerts to the email address that you used when you created your account. You can change the email address on the Billing and Cost Management console.

2. In the navigation pane, choose Preferences.
3. Under Cost Management Preferences, under Receive Free Tier Usage Alerts, for Email Address, type the email address where you want to receive the usage alerts.
4. Scroll to the end of the page and choose the Save preferences button.

**Top Free Tier Services Table**

If you are eligible for the free tier and you use a free tier offering, you can track your usage with the Top Free Tier Services by Usage table on the dashboard of the Billing and Cost Management console. The table doesn't appear if any of following conditions are true:

- You use an AWS service that doesn't offer a free tier.
- Your free tier has expired.
- You access AWS through Amazon Internet Services Pvt. Ltd (AISPL).
• You access AWS through AWS Organizations, but you don't use the master account.
• You exceed the free tier limits for one of the following services: Amazon Elastic Compute Cloud, Amazon Simple Storage Service, Amazon Relational Database Service, Amazon CloudFront, Amazon Cognito Sync, and Amazon ElastiCache.
• You exceed the free tier data transfer limits, such as the 50 GB Data Transfer Out limit for Amazon CloudFront.

The Top Free Tier Service by Usage table shows how much you've used of the free tier limits for your top five services, along with a forecast of how much you are predicted to use by the end of the month. The table shows usage as both a percentage of the free tier limit and as a ratio of the free tier limit. For example, if you use 3 GB of the free tier Amazon S3 storage, the table shows 60% and 3/5 GB.

The table is grouped by service limit. This means that a service might have multiple lines, and you can track each free tier limit closely. For example, each month you get 5 GB of Amazon S3 storage and 2,000 Amazon S3 Put operations. The free tier usage table will have two lines, one for S3 - Storage and one for S3 - Puts, as shown in the following screenshot.

To see more details about your free tier usage, including all of your active free tier services, choose View All in the Top Free Tier Services by Usage table. The detailed table includes additional information such as the free tier limits and a status icon to alert you if you have exceeded the limits, or are predicted to exceed the limits.
Viewing Your Bill

You receive AWS invoices monthly for usage charges and recurring fees. For one-time fees, such as fees for purchasing an All Upfront Reserved Instance, you are charged immediately.

At any time, you can view estimated charges for the current month and final charges for previous months. This section describes how to view your monthly bill and past bills and how to receive and read billing reports.

Topics

• Viewing Your Monthly Charges (p. 14)
• Getting an Invoice Emailed to You (p. 15)
• Understanding Your Usage with Billing Reports (p. 16)
• Managing Your Payments (p. 114)

Viewing Your Monthly Charges

At the end of a billing cycle or at the time you choose to incur a one-time fee, AWS charges the credit card you have on file and issues your invoice as a PDF file. You can download the PDF from the Account Activity page in the Billing and Cost Management console using the following steps.

Note
IAM users need explicit permission to see some of the pages in the Billing and Cost Management console. For more information, see Controlling Access (p. 118).

To view your monthly charges

2. In the navigation pane, choose Bills.
3. For Date, choose a month.

The Summary section displays a summary and details of your charges for that month. It is not an invoice, however, until the month’s activity closes and AWS calculates final charges.

If you use the consolidated billing feature in AWS Organizations, the Bills page lists totals for all accounts on the Consolidated Bill Details tab. Choose the Bill Details by Account tab to see the activity for each account in the organization. For more information about consolidated billing, see Consolidated Billing for Organizations (p. 130).

To view your charges for a different month

• On the Bills page, select the month you want from the Date list.

To download a copy of your charges as a PDF document

1. On the Bills page, select a month from the Date list for which all activity is closed.
2. On the Summary tab, choose Usage Charges and Recurring Fees.
3. Choose the Invoice <invoiceID> link.
To download a monthly report

- Choose the Download CSV button, and then choose the appropriate option.

Getting an Invoice Emailed to You

Follow these steps to have a PDF copy of your monthly invoice sent to the email address associated with your account.

2. Choose Preferences on the navigation pane.
3. Select the Receive PDF Invoice by Email check box.
4. Choose Save preferences.
Understanding Your Usage with Billing Reports

The AWS Cost and Usage report provides information about your use of AWS resources and estimated costs for that usage. Other reports are currently available but are scheduled to be retired. We recommend that you use the AWS Cost and Usage report instead. For more information, see the following topics.

Topics
- AWS Cost and Usage Report (p. 16)
- Other Reports (p. 33)

AWS Cost and Usage Report

The AWS Cost and Usage report tracks your AWS usage and provides estimated charges associated with your AWS account. The report contains line items for each unique combination of AWS product, usage type, and operation that your AWS account uses. You can customize the AWS Cost and Usage report to aggregate the information either by the hour or by the day.

If you use the consolidated billing feature in AWS Organizations, this report is available only to the master account and includes activity for all the member accounts that are associated with the master account. Member account owners can obtain the report only from the master account owner. For more information, see Consolidated Billing for Organizations (p. 130).

AWS delivers the report files to an Amazon S3 bucket that you specify in your account and updates the report up to three times a day. The reports that AWS generates throughout the month are estimated and are subject to change during the rest of the month, as you incur more usage. AWS finalizes the report at the end of each month. Finalized reports have the calculations for your blended and unblended costs, and cover all of your usage for the month. AWS might update reports after they have been finalized if AWS applies refunds, credits, or support fees to your usage for the month after finalizing your bill. You can set this as a preference when creating or editing your report. The report is available starting within 24 hours of the date that you created a report on the Reports page of the Billing and Cost Management console.

You can either download the report from the Amazon S3 console or upload the report into Amazon Redshift or Amazon QuickSight. For more information about uploading to Amazon Redshift, see Uploading an AWS Cost and Usage Report to Amazon Redshift (p. 20). For more information about uploading to Amazon QuickSight, see Create a Data Set Using Amazon S3 Files in the Amazon QuickSight User Guide. If you chose to create Amazon Redshift and Amazon QuickSight manifests when you created your report, Billing and Cost Management provides the Amazon S3 data and Amazon QuickSight manifests for you.

Note
AWS supports five AWS Cost and Usage reports per account. The reports are free of charge, but standard Amazon S3 storage rates apply.

Topics
- Managing AWS Cost and Usage Reports (p. 17)
- Cost and Usage Report Details (p. 22)
- Reserved Instances (p. 29)
Managing AWS Cost and Usage Reports

Use the following topics for information about managing your AWS Cost and Usage report.

Topics
- Controlling Access to Your AWS Cost and Usage Report Files (p. 17)
- Getting Started (p. 17)
- Viewing Your AWS Cost and Usage Reports (p. 18)
- Viewing AWS Cost and Usage Report Files in Amazon S3 (p. 18)
- Editing an AWS Cost and Usage Report (p. 20)
- Uploading an AWS Cost and Usage Report to Amazon Redshift (p. 20)

Controlling Access to Your AWS Cost and Usage Report Files

Anyone who has permissions to access the specified Amazon S3 bucket can see your billing report files. Make sure that only people who have a business need to see your billing report files have this access. If necessary, you can edit the bucket policy to control access to the contents of the bucket. For more information about editing bucket policies, see Access Control in the Amazon Simple Storage Service Developer Guide.

Getting Started

See the following topics for information about getting started with the AWS Cost and Usage report.

Topics
- Setting Up an Amazon S3 Bucket for AWS Cost and Usage Reports (p. 17)
- Creating an AWS Cost and Usage report (p. 17)

Setting Up an Amazon S3 Bucket for AWS Cost and Usage Reports

To receive billing reports, you must have an Amazon S3 bucket in your AWS account to store the reports in. You can specify an existing bucket or create one. To create a bucket, see Creating a Bucket in the Amazon Simple Storage Service Console User Guide.

You also must apply a resource-based permissions policy to your Amazon S3 bucket to allow AWS to write files to the bucket. For an example bucket policy and information about how to apply your policy to a bucket, see Step 2: Turn on Reports (p. 4).

Note
Storing the billing reports data in your Amazon S3 bucket is billed at standard Amazon S3 rates.

Creating an AWS Cost and Usage report

Use the Reports page of the Billing and Cost Management console to create an AWS Cost and Usage report.

To create an AWS Cost and Usage report

2. On the navigation pane, choose Reports.
3. Choose Create report.
4. For **Report name**, type a name for your report.
5. For **Time unit**, choose **Hourly** if you want the line items in the report to be aggregated by the hour. Choose **Daily** if you want the line items in the report to be aggregated by the day.
6. For **Include**, to include the IDs of each individual resource in the report, select **Resource IDs**.
7. For **Enable support for**, select whether you want to upload your AWS Cost and Usage report to Amazon Redshift or Amazon QuickSight. If you select a manifest, your report is stored with .gz compression.
8. For **Data refresh settings**, select whether you want the AWS Cost and Usage report to refresh if AWS applies refunds, credits, or support fees to your account after finalizing your bill. When a report refreshes, a new report is upload to Amazon S3.
9. Choose **Next**.
10. For **Amazon S3 bucket**, type the name of the Amazon S3 bucket where you want the reports to be delivered and choose **Verify**. The bucket must have appropriate permissions to be valid. For more information on adding permissions to the bucket, see Setting Bucket and Object Access Permissions in the Amazon Simple Storage Service Console User Guide.
11. For **Report path prefix**, type the report path prefix that you want prepended to the name of your report.
12. Choose **Next**.
13. After you have reviewed the settings for your report, choose **Review and Complete**.

**Note**

It can take up to 24 hours for AWS to start delivering reports to your Amazon S3 bucket. After delivery starts, AWS updates the AWS Cost and Usage report files at least once a day.

**Viewing Your AWS Cost and Usage Reports**

You can use the Billing and Cost Management console to see a list of the AWS Cost and Usage reports that AWS is generating for you.

**To view your AWS Cost and Usage reports**

2. On the navigation pane, choose **Reports**. Your AWS Cost and Usage reports are listed on the **Reports** page.

**Viewing AWS Cost and Usage Report Files in Amazon S3**

The AWS Cost and Usage report is a .csv file or a collection of .csv files that is stored in an Amazon S3 bucket. During the report period, AWS delivers a new report and a new manifest file each time the report is updated. The new report includes all the information included in the previous report, as well as information new to the current report. AWS builds on previous reports until the end of the billing period. After the end of the billing period, AWS generates a new report with none of the information from the previous report. The size of an individual report can grow to more than a gigabyte and might exceed the capacity of desktop spreadsheet applications to display every line. If a report is larger than most applications can handle, AWS splits the report into multiple files that are stored in the same folder in the Amazon S3 bucket.

The AWS Cost and Usage report uses the following Amazon S3 organization and naming conventions:

```
<report-prefix>/<report-name>/yyyyymmdd-yyyymmdd/<assemblyId>/<report-name>-<file-number>.csv.<zip|gz>
```
• **report-prefix** = The prefix that you assign to the report.
• **report-name** = The name that you assign to the report.
• **yyyymmdd-yyyymmdd** = The range of dates that you specify for the report. Reports are finalized at the end of the date range.
• **assemblyId** = An ID that AWS creates each time that the report is updated.
• **file-number** = If the update includes a large file, AWS might split it into multiple files. The file-number tracks the different files in an update.
• **csv** = The format of the report files.
• **zip or gz** = The type of compression applied to the report files.

For example, your report could be delivered as a collection of the following files:

```
<example-report-prefix>/example-report-name/20160101-20160131/<123456789>/example-report-name-1.csv.<zip>
<example-report-prefix>/example-report-name/20160101-20160131/<123456789>/example-report-name-2.csv.<zip>
<example-report-prefix>/example-report-name/20160101-20160131/<123456789>/example-report-name-3.csv.<zip>
<example-report-prefix>/example-report-name/20160101-20160131/<123456789>/example-report-name-Manifest.json
```

AWS delivers all reports in a report date range to the same report-prefix/report-name/yyyyymmdd-yyyyymmdd folder. AWS gives each report a unique ID and delivers it to the assemblyId subfolder in the date range folder. If the report is too large for a single file, the report is split into multiple files and delivered to the same assemblyId folder.

When the AWS Cost and Usage report is updated, AWS creates and delivers a manifest file. The manifest file lists all of the detail columns that are included in the report to date, a list of report files if the report was split into multiple files, the time period covered by the report, and other information. Manifest files also are stored in the date range and assemblyId folders, using the following naming conventions:

```
<report-prefix>/<report-name>/YYYYMMDD-YYYYMMDD/<report-name>-Manifest.json
<report-prefix>/<report-name>/YYYYMMDD-YYYYMMDD/<assemblyId>/<report-name>-Manifest.json
```

Each time that AWS creates a new AWS Cost and Usage report for a date range, it overwrites the manifest file stored in the date range folder with an updated manifest file. AWS delivers the same updated manifest file to the assemblyId folder along with the files for that update. Manifest files in the assemblyId folder aren't overwritten.

If you chose the option to include an Amazon Redshift manifest in your AWS Cost and Usage report, AWS also creates and delivers an Amazon Redshift manifest file and a file with the SQL commands that you need to upload your report into Amazon Redshift. You can open the SQL file with a regular text editor. The manifest and SQL files use the following naming conventions:

```
<report-prefix>/<report-name>/YYYYMMDD-YYYYMMDD/<assemblyId>/<report-name>-RedshiftManifest.json
<report-prefix>/<report-name>/YYYYMMDD-YYYYMMDD/<assemblyId>/<report-name>-RedshiftCommands.sql
```

If you use the commands in the RedshiftCommands file, you don't need to open the RedshiftManifest file.
Important

The RedshiftManifest file determines which report files the copy command in the RedshiftCommands file uploads. Deleting or removing the RedshiftManifest file breaks the copy command in the RedshiftCommands file.

Editing an AWS Cost and Usage Report

Use the Reports page of the Billing and Cost Management console to edit an AWS Cost and Usage report.

Note
You can’t edit the report name.

To edit an AWS Cost and Usage report

2. On the navigation pane, choose Reports.
3. Select the report that you want to edit and choose Edit report.
4. For Time unit, choose Hourly if you want the line items in the report to be aggregated by the hour. Choose Daily if you want the line items in the report to be aggregated by the day.
5. For Include, to include the IDs of each individual resource in the report, select Resource IDs.
6. For Enable support for, select whether you want to upload your AWS Cost and Usage report to Amazon Redshift or Amazon QuickSight. If you select a manifest, your report is stored with .gz compression.
7. For Data refresh settings, select whether you want the AWS Cost and Usage report to refresh if AWS applies refunds, credits, or support fees to your account after finalizing your bill. When a report refreshes, a new report is uploaded to Amazon S3, and the report manifest file is updated to reflect the location of the refreshed report.
8. For Amazon S3 bucket, type the name of the Amazon S3 bucket where you want the reports to be delivered and choose Verify. The bucket must have appropriate permissions to be valid. For more information on adding permissions to the bucket, see Setting Bucket and Object Access Permissions in the Amazon Simple Storage Service Console User Guide.
9. For Report path prefix, type the report path prefix that you want prepended to the name of your report.
10. For Compression, choose how you want Cost Explorer to compress your reports.
11. Choose Save.

Uploading an AWS Cost and Usage Report to Amazon Redshift

You can upload AWS Cost and Usage reports to Amazon Redshift, allowing you to analyze your AWS costs and usage.

Important

Amazon Redshift columns are case insensitive and have stricter character limitations than user-defined tags. To prevent conflicts between Amazon Redshift and user-defined tags, AWS replaces your tags with the tags userTag0, userTag1, userTag2, etc. After you create an Amazon Redshift table and upload your report into it, you can create an Amazon Redshift table that maps the AWS-defined tags to your user-defined tags. The tag table allows you to look up your original tags.

For example, if you have the tags OWNER and Owner, Amazon Redshift doesn’t allow you to create a table with two columns named "owner." Instead, you create a report table with the columns userTag0 and userTag1 instead of OWNER and Owner, and then create a table with the columns remappedUserTag and userTag. The remappedUserTag column stores the
AWS-defined tags userTag0 and userTag1, and the userTag column stores your original tags, OWNER and Owner.

AWS provides the commands to create your Amazon Redshift table, upload your report, create your tag table, and insert all of the tag rows into your tag table. The commands are provided to you in the RedshiftCommands.sql file that is stored alongside your manifest file in Amazon S3, and in the Redshift file Helper file in the Billing and Cost Management console. AWS also provides a RedshiftManifest file, which controls which report the commands in the RedshiftCommand file uploads. Deleting or removing the RedshiftManifest file breaks the copy command in the RedshiftCommands file.

To find the RedshiftCommands.sql file in the Billing and Cost Management console
2. In the navigation pane, choose Reports.
3. Choose the arrow next to the report that you want to upload to Amazon Redshift.
5. Copy the commands from the dialog box and paste them into your SQL client.

The following procedure assumes familiarity with databases and Amazon Redshift.

To upload an AWS Cost and Usage report to Amazon Redshift
1. Create an Amazon Redshift cluster. For more information, see Creating a Cluster in the Amazon Redshift Cluster Management Guide.
2. Sign in to the AWS Management Console and open the Amazon S3 console at https://console.aws.amazon.com/s3/.
3. Navigate to the Amazon S3 location where you store your AWS Cost and Usage report.
4. Open the RedshiftCommands.sql file. The file contains customized commands to create an Amazon Redshift table, upload the AWS Cost and Usage report from Amazon S3, and create a tag table that allows user-defined tags to be imported into Amazon Redshift.
5. In the copy command, replace <AWS_ROLE> with the ARN of an IAM role that has permissions to access the Amazon S3 bucket where you store your AWS Cost and Usage reports, and replace <S3_BUCKET_REGION> with the region that your Amazon S3 bucket is in (e.g., us-east-1).
6. Use a SQL client to connect to the cluster. For more information, see Accessing Amazon Redshift Clusters and Databases in the Amazon Redshift Cluster Management Guide.
7. Copy the SQL commands from the RedshiftCommands.sql file to your SQL client in the following order:
   - create table – This command creates an Amazon Redshift table with a schema customized to match your report.
   - copy – This command uses the provided IAM role to upload the AWS Cost and Usage report files from S3 to Amazon Redshift.
   - create tag table – This command creates a table that allows you to map AWS-defined tags to your user-defined tags.
   - insert – These commands insert the user-defined tags into the tag table.
8. After you have copied all of the data from your AWS Cost and Usage reports into Amazon Redshift, you can query the data using SQL. For more information about querying data in Amazon Redshift, see Amazon Redshift SQL in the Amazon Redshift Database Developer Guide.

The number of columns in the AWS Cost and Usage report can change from month to month, such as when a new cost allocation tag is created or a service adds a new product attribute. We recommend that
you copy the data from your AWS Cost and Usage report into a new table every month and then copy the columns that interest you into a separate month-by-month table.

Cost and Usage Report Details

The AWS Cost and Usage report contains details about your usage. The following sections describe most of the items and columns in the report.

All time intervals include the start time and exclude the end time. All times are in UTC. For example, an AWS Cost and Usage report with a `bill/BillingPeriodStartDate` of 2015-11-01T00:00:00Z and a `bill/BillingPeriodEndDate` of 2015-12-01T00:00:00Z includes the first moment of November, but doesn't include the first moment of December.

Topics

- Identity Details (p. 22)
- Billing Details (p. 22)
- Line Item Details (p. 23)
- Reservation Details (p. 26)
- Pricing Details (p. 28)
- Product Details (p. 28)
- Resource Tags (p. 29)

Identity Details

Columns under the `identity` header are static fields that appear in every AWS Cost and Usage report. You can use the identity line items in the AWS Cost and Usage report to find specific line items that have been split across multiple AWS Cost and Usage report files. This includes the following columns:

- **identity/LineItemId**
  - An ID that uniquely identifies every line item in a single given version of the AWS Cost and Usage report. The line item ID isn't consistent between different AWS Cost and Usage reports and can't be used to identify the same line item across different AWS Cost and Usage reports.

  For example, the AWS Cost and Usage report created for November 29 can be large enough to require multiple files. The `LineItemId` is consistent between the November 29 AWS Cost and Usage report files, but doesn't match the `LineItemId` for the same resource in the November 30 AWS Cost and Usage report.

- **identity/TimeInterval**
  - The time interval that this line item applies to, in the following format: `YYYY-MM-DDTHH:mm:ssZ/ YYYY-MM-DDTHH:mm:ssZ`. The time interval is in UTC and can be either daily or hourly, depending on the granularity of the report.

  For example, 2017-11-01T00:00:00Z/2017-12-01T00:00:00Z includes the entire month of November, 2017.

Billing Details

Columns under the `bill` header are static fields that appear in every AWS Cost and Usage report. You can use the billing line items in the AWS Cost and Usage report to find details about the specific bill covered by the report, such as the charge type and the beginning and end of the billing period. This includes the following columns:
Report Details

**bill/InvoiceId**

The ID associated with a specific line item. Until the report is final, the `InvoiceId` is blank.

**bill/BillingEntity**

The AWS seller that your account is with. Possible values are the following:
- **AWS** – Amazon Web Services, Inc. The entity that sells AWS services.
- **AISPL** – Amazon Internet Services Pvt. Ltd. The local Indian entity that acts as a reseller for AWS services in India.
- **AWS Marketplace** – The entity that supports the sale of solutions built on top of the AWS platform by third-party software providers.

**bill/BillType**

The type of bill that this report covers. There are three bill types:
- **Anniversary** – Line items for services that you used during the month
- **Purchase** – Line items for upfront service fees
- **Refund** – Line items for refunds

**bill/PayerAccountId**

The account ID of the paying account. For an organization, this is the account ID of the master account.

**bill/BillingPeriodStartDate**

The start date of the billing period that is covered by this report, in UTC. The format is `YYYY-MM-DDTHH:mm:ssZ`.

**bill/BillingPeriodEndDate**

The end date of the billing period that is covered by this report, in UTC. The format is `YYYY-MM-DDTHH:mm:ssZ`.

**Line Item Details**

Columns under the `lineItem` header are static fields that appear in every AWS Cost and Usage report. They cover all of the cost and usage information for your usage. This includes the following columns:

**lineItem/UsageAccountId**

The ID of the account that used this line item. For organizations, this can be either the master or a member account. You can use this field to track costs or usage by account.

**lineItem/LineItemType**

The type of charge covered by this line item. There are seven possible types:
- **Credits** – Any credits that AWS applied to your bill. Check the `Description` column for details. AWS might update reports after they have been finalized if AWS applies a credit to your account for the month after finalizing your bill.
- **Discounted Usage** – The rate for any instances for which you had Reserved Instance (RI) benefits.
- **Fee** – Any upfront annual fee that you paid for subscriptions. For example, the upfront fee that you paid for an All Upfront RI or a Partial Upfront RI.
- **Refund** – Negative charges that AWS refunded money to you for. Check the `Description` column for details. AWS might update reports after they have been finalized if AWS applies a refund to your account for the month after finalizing your bill.
• **RI Fee** – The monthly recurring fee for subscriptions. For example, the recurring fee for **Partial Upfront RIs** and **No Upfront RIs** that you pay every month.

• **Tax** – Any taxes that AWS applied to your bill: for example, VAT or US sales tax.

• **Usage** – Any usage that is charged at On-Demand Instance rates.

**lineItem/UsageStartDate**

The start date and time for the line item in UTC, inclusive. The format is `YYYY-MM-DDTHH:mm:ssZ`.

**lineItem/UsageEndDate**

The end date and time for the corresponding line item in UTC, exclusive. The format is `YYYY-MM-DDTHH:mm:ssZ`.

**lineItem/ProductCode**

The product code of the product measured by this line item. For example, Amazon EC2 is the product code for Amazon Elastic Compute Cloud.

**lineItem/UsageType**

The usage details of this line item. For example, `USW2-BoxUsage:m2.2xlarge` describes an M2 High Memory Double Extra Large instance in the US West (Oregon) Region.

**lineItem/Operation**

The specific AWS operation covered by this line item. Describes the specific usage of the line item. For example, a value of `RunInstances` indicates the operation of an Amazon EC2 instance.

**lineItem/AvailabilityZone**

The Availability Zone that hosts this line item, such as `us-east-1a` or `us-east-1b`.

*(Optional) lineItem/ResourceId*

If you chose to include individual resources IDs in your report, this column contains the ID of the resource that you provisioned. For example, an Amazon S3 storage bucket, an Amazon EC2 compute instance, or an Amazon RDS database can each have a resource ID. This field is blank for usage types that aren't associated with an instantiated host, such as data transfers and API requests, and line item types such as discounts, credits, and taxes. The following table shows a list of resource identifiers for common AWS services.

**AWS Resource Identifiers**

<table>
<thead>
<tr>
<th>AWS Service</th>
<th>Resource Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon CloudFront</td>
<td>Distribution ID</td>
</tr>
<tr>
<td>Amazon CloudSearch</td>
<td>Search domain</td>
</tr>
<tr>
<td>Amazon DynamoDB</td>
<td>DynamoDB table</td>
</tr>
<tr>
<td>Amazon Elastic Compute Cloud - Amazon EBS</td>
<td>Amazon EBS volume</td>
</tr>
<tr>
<td>Amazon Elastic Compute Cloud</td>
<td>Instance ID</td>
</tr>
<tr>
<td>Amazon Elastic Compute Cloud - CloudWatch</td>
<td>CloudWatch charges for an instance ID</td>
</tr>
<tr>
<td>Amazon EMR</td>
<td>MapReduce cluster</td>
</tr>
<tr>
<td>Amazon ElastiCache</td>
<td>Cache cluster</td>
</tr>
<tr>
<td>Amazon Elasticsearch Service</td>
<td>Search domain</td>
</tr>
<tr>
<td>Amazon Glacier</td>
<td>Vault</td>
</tr>
</tbody>
</table>

Version 2.0
Report Details

<table>
<thead>
<tr>
<th>AWS Service</th>
<th>Resource Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon Relational Database Service</td>
<td>Database</td>
</tr>
<tr>
<td>Amazon Redshift</td>
<td>Amazon Redshift cluster</td>
</tr>
<tr>
<td>Amazon Simple Storage Service</td>
<td>Amazon S3 bucket</td>
</tr>
<tr>
<td>Amazon Virtual Private Cloud</td>
<td>VPN ID</td>
</tr>
<tr>
<td>AWS Lambda</td>
<td>Lambda function name</td>
</tr>
</tbody>
</table>

**lineItem/UsageAmount**

The amount of usage that you incurred during the specified time period. For all reserved units, use the `reservation/TotalReservedUnits` column instead.

**lineItem/LegalEntity**

The provider of your AWS services. Possible values are the following:

- **Amazon Web Services, Inc.** – The entity that sells AWS services.
- **Amazon Internet Services Pvt. Ltd** – The local Indian entity that acts as a reseller for AWS services in India.

**lineItem/NormalizationFactor**

AWS can apply all regional Linux or Unix Amazon EC2 and Amazon RDS RI discounts to all instance sizes in an instance family and AWS Region, as long as the instance has shared tenancy. This also applies to RI discounts for member accounts in an organization. All new and existing Amazon EC2 and Amazon RDS size-flexible RIs are sized according to a normalization factor that is based on the instance size. The following table shows the normalization factor that AWS applies to each instance size.

**Normalization Factors for Amazon EC2 size-flexible RIs**

<table>
<thead>
<tr>
<th>Instance Size</th>
<th>Normalization Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>nano</td>
<td>0.25</td>
</tr>
<tr>
<td>micro</td>
<td>0.5</td>
</tr>
<tr>
<td>small</td>
<td>1</td>
</tr>
<tr>
<td>medium</td>
<td>2</td>
</tr>
<tr>
<td>large</td>
<td>4</td>
</tr>
<tr>
<td>xlarge</td>
<td>8</td>
</tr>
<tr>
<td>2xlarge</td>
<td>16</td>
</tr>
<tr>
<td>4xlarge</td>
<td>32</td>
</tr>
<tr>
<td>8xlarge</td>
<td>64</td>
</tr>
<tr>
<td>10xlarge</td>
<td>80</td>
</tr>
<tr>
<td>16xlarge</td>
<td>128</td>
</tr>
<tr>
<td>32xlarge</td>
<td>256</td>
</tr>
</tbody>
</table>
**Report Details**

**lineItem/NormalizedUsageAmount**

The amount of usage that you incurred, in normalized units, for size-flexible RIs. The NormalizedUsageAmount is equal to UsageAmount multiplied by NormalizationFactor.

**lineItem/CurrencyCode**

The currency that this line item is shown in.

**lineItem/UnblendedRate**

The uncombined rate for specific usage. For line items that have an RI discount applied to them, the UnblendedRate is zero. Line items with an RI discount have a UsageType of Discounted Usage.

**lineItem/UnblendedCost**

The UnblendedCost comes from the UnblendedRate multiplied by the UsageAmount.

**lineItem/BlendedRate**

The BlendedRate represents the average cost incurred for each SKU across an organization. For example, the Amazon S3 blended rates are the total cost of storage divided by the amount of data stored per month. For accounts with RIs, the blended rates are calculated as the average costs of the Reserved Instances and the On-Demand Instances.

Blended rates are calculated at the master account level and used to allocate costs to each member account. For more information, see Blended Rates and Costs.

**lineItem/BlendedCost**

The BlendedRate multiplied by the UsageAmount.

**lineItem/LineItemDescription**

The description of the line item type. For example, the description of a usage line item summarizes what type of usage you incurred during a specific time period.

For size-flexible RIs, the description corresponds to the RI whose benefit was applied. For example, if a line item corresponds to a t2.micro and a t2.small RI was applied to the usage, the line item/description displays t2.small.

---

**Note**

The description for a usage line item with an RI discount contains the pricing plan covered by the line item.

**lineItem/TaxType**

The type of tax that AWS applied to this line item.

---

**Reservation Details**

You can use the reservation columns to find out more about a reserved resource. The columns include but are not limited to the following:

**reservation/AvailabilityZone**

The Availability Zone of the resource that is associated with this line item.

**reservation/NormalizedUnitsPerReservation**

The number of normalized units for each instance of a reservation subscription.

**reservation/NumberOfReservations**

The number of reservations that are covered by this subscription. For example, one RI subscription might have four associated RI reservations.
reservation/ReservationARN

The ARN of the RI that this line item benefited from.

reservation/TotalReservedNormalizedUnits

The total number of reserved normalized units for all instances for a reservation subscription. AWS computes total normalized units by multiplying the reservation/NormalizedUnitsPerReservation by the reservation/NumberOfReservations.

reservation/TotalReservedUnits

The total number of reserved units in a subscription. For an RI, this is the total number of hours across all RIs in this subscription. This is calculated by multiplying the NumberOfReservations by the UnitsPerReservation.

reservation/UnitsPerReservation

The number of usage units reserved by a single reservation in a given subscription, such as how many hours a single Amazon EC2 RI has reserved.

reservation/AmortizedUpfrontFeeForBillingPeriod

The initial upfront payment for All Upfront RIs and Partial Upfront RIs, amortized over this month. Because there are no upfront fees for No Upfront RIs, the value for No Upfront RIs is 0.

This tells you how much the upfront fee for this reservation costs you for this billing period.

reservation/unusedQuantity

The number of RI hours that you didn't use during this billing period.

reservation/UnusedNormalizedUnitQuantity

The number of unused normalized units for a size-flexible regional RI that you didn't use during this billing period.

reservation/unusedRecurringFee

The recurring fees associated with your unused reservation hours for Partial Upfront and No Upfront RIs.

Because All Upfront RIs do not have recurring fees greater than 0, the value for All Upfront RIs is 0.

reservation/UnusedAmortizedUpfrontFeeForBillingPeriod

The amortized portion of the initial upfront fee for All Upfront RIs and Partial Upfront RIs. Because there are no upfront payments for No Upfront RIs, the value for No Upfront RIs is 0.

reservation/AmortizedUpfrontCostForUsage

The initial upfront payment for All Upfront RIs and Partial Upfront RIs amortized for usage time. Because there are no upfront payments for No Upfront RIs, the value for a No Upfront RI is 0.

reservation/RecurringFeeForUsage

For Partial Upfront RIs and No Upfront RIs, this is the recurring fee amortized for usage time. Because All Upfront RIs do not have recurring fee payments greater than 0, the value for All Upfront RIs is 0.

reservation/EffectiveCost

The total effective cost of your usage with RI rates applied. This is calculated by taking the amortizedUpfrontCostForUsage and adding it to the recurringFeeForUsage.
Pricing Details

You can use the pricing columns to find information about the prices for a line item. The columns include but are not limited to the following:

- **pricing/LeaseContractLength**
  The length of time that your RI is reserved for.
- **pricing/publicOnDemandCost**
  The total cost for the line item based on public On-Demand Instance rates.
- **pricing/publicOnDemandRate**
  The public On-Demand Instance rate in this billing period for the specific line item of usage.
- **pricing/PurchaseOption**
  How you chose to pay for this line item. Valid values are All Upfront, Partial Upfront, and No Upfront.
- **pricing/rateType**
  The type of rate that applies to this line item, such as Fixed.
- **pricing/RateUnit**
  The pricing unit that AWS used for calculating your usage cost. For example, the pricing unit for Amazon EC2 instance usage is in hours.
- **pricing/term**
  Whether your AWS usage is Reserved or On-Demand.

Product Details

You can use the product columns to find information about the service and type of line item. Different services include different product columns in their reports. Examples include the following:

- **product/sku**
  A unique code for a product. The SKU is created by combining the ProductCode, UsageType, and Operation. For size-flexible RIs, the SKU uses the instance that was used. For example, if you used a t2.micro and AWS applied a t2.small RI discount to the usage, the line item SKU is created with the t2.micro.
- **product/instanceType**
  If you used Amazon EC2, the type of Amazon EC2 instance is included in the **product/InstanceType** column.
- **product/instanceTypeFamily**
  The instance family that is associated with the given usage: for example, t2 or m4.
- **product/operatingSystem**
  If you used Amazon EC2, the type of operating system of an Amazon EC2 instance is included in the **product/OperatingSystem** column.
- **product/ProductFamily**
  The category for the type of product: for example, compute for Amazon EC2 or storage for Amazon S3.
Reserved Instances

You can use the AWS Cost and Usage report to track your RI utilization, charges, and allocations. For more information, see the following topics.

Topics

- Reserved Instance Line Items (p. 29)
- Region Reserved Instance Line Items (p. 30)
- Amortizing Reserved Instances (p. 31)

Reserved Instance Line Items

Reserved Instances provide you a significant discount compared to On-Demand Instance pricing. Reserved Instances are not physical instances. They are a billing discount applied to the use of On-Demand Instances in your account. These On-Demand Instances must match certain attributes in order to benefit from the billing discount.

Upfront Fee

The Fee line item is added to your bill when you purchase an All Upfront or Partial Upfront RI. The following screenshot shows how this one-time fee appears in the AWS Cost and Usage report (some columns were omitted for clarity).
Reserved Instances

Recurring Monthly RI Fee

The RI Fee line item describes the recurring monthly charges that are associated with Partial Upfront and No Upfront RIs. The RI Fee is initially added to your bill on the day of purchase, and on the first day of each billing period thereafter. If you purchase an All Upfront RI, the RI Fee line item is not added to your bill.

The RI Fee is calculated by multiplying your discounted hourly rate and the number of hours in the month. The following screenshot shows how the recurring monthly charges appear in the report.

<table>
<thead>
<tr>
<th>LineItem</th>
<th>LineItemDescription</th>
<th>LineItemProductCode</th>
<th>LineItemUsageStartDate</th>
<th>LineItemUsageEndDate</th>
<th>LineItemDescription</th>
<th>LineItemNormalizedFactor</th>
<th>LineItemUnboundedCost</th>
<th>LineItemUnboundedAvailability</th>
<th>LineItemReservationARN</th>
<th>LineItemReservationTotalReservedNormalizedUnits</th>
<th>LineItemReservationTotalReservedUnits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI Fee</td>
<td></td>
<td>Amzn EC2</td>
<td>01/01/2021</td>
<td>01/31/2021</td>
<td>RI Fee</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note
Recurring monthly charges are recorded differently for RIs that have an Availability Zone (AZ) or region scope. For RIs that have an AZ scope, the corresponding AZ is shown in the reservation/AvailabilityZone column. For RIs that have a region scope, the reservation/AvailabilityZone column is empty. RIs with a region scope have values for the lineItem/NormalizationFactor and reservation/TotalReservedNormalizedUnits columns that show the instance size.

RI Discount Benefits

The Discounted Usage line item describes the instance usage that received a matching RI discount benefit, and is added to your bill when you have usage that matches one of your RIs. AWS calculates RI discount benefits based on matching usage, for example, the use of an instance that matches the instance reservation. If you have matching usage, the cost associated with the usage line item is always zero because the charges associated with RIs are already accounted for in the two other line items (the upfront fee and the recurring monthly charges). The following screenshot shows an example of usage that received an RI discount benefit.

<table>
<thead>
<tr>
<th>LineItem</th>
<th>LineItemDescription</th>
<th>LineItemProductCode</th>
<th>LineItemUsageStartDate</th>
<th>LineItemUsageEndDate</th>
<th>LineItemDescription</th>
<th>LineItemNormalizedFactor</th>
<th>LineItemUnboundedCost</th>
<th>LineItemUnboundedAvailability</th>
<th>LineItemReservationARN</th>
<th>LineItemReservationTotalReservedNormalizedUnits</th>
<th>LineItemReservationTotalReservedUnits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discounted Usage</td>
<td></td>
<td>Amzn EC2</td>
<td>01/01/2021</td>
<td>01/31/2021</td>
<td>Discounted Usage</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note
The value for UsageAmount in the Amazon EC2 DiscountedUsage line is the actual number of hours used. The value for NormalizedUsageAmount is the value for UsageAmount multiplied by the value for NormalizationFactor. The value for NormalizationFactor is determined by the instance size. When an RI benefit discount is applied to a matching line item of usage, the ARN value in the reservation/ReservationARN column for the initial upfront fees and recurring monthly charges matches the ARN value in the discounted usage line items.

For more information about mapping instance size to normalization factor, see Modifying the Instance Size of Your Reservations in the Amazon EC2 User Guide for Linux Instances.

Region Reserved Instance Line Items

Amazon EC2 Reserved Instances (RIs) that apply to a region provide Availability Zone flexibility and instance size flexibility. RIs that provide Availability Zone flexibility provide a discount on usage in any Availability Zone in the region. RIs that provide instance size flexibility provide a discount on usage, regardless of instance size within that family. To understand how instance size flexibility...
provided by your RI is applied to your usage, refer to the **lineItem/NormalizationFactor** and **lineItem/NormalizedUsageAmount** columns.

**Note**
Instance size flexibility is supported only by Linux/Unix Reserved Instances with default tenancy that are assigned to a region.

For example, let’s say that you purchase one m4.xlarge RI in a given region. This m4.xlarge RI can be applied automatically to all m4 instance usage in the same region. In the following image, AWS applied the m4.xlarge to two separate m4.large instances.

The two m4.large usage line items have different ResourceType values, and both received a discount benefit from the single m4.xlarge RI. This is shown by matching the **reservationARN** value across the usage and recurring monthly charge line items.

The following screenshot shows an account that has subscriptions for two m4.large RIs, with one RI in each subscription. In this example, the account uses a single instance of m4.xlarge for an hour and receives a separate discount benefit from each of the two m4.large RIs.

The single hour of m4.xlarge usage is split into two lines of 0.5 hours (both usage lines still retain the same ResourceType) because different RI subscriptions were applied to each portion of that single hour. The **reservationARN** for each 0.5 hour matches the corresponding RI subscription.

For more information about RI purchase options, see **Billing Benefits and Payment Options** in the Amazon EC2 User Guide for Linux Instances.

### Amortizing Reserved Instances

Amortizing is when you distribute one-time reservation costs across the billing period that is affected by that cost. That enables you to see your costs in accrual based accounting as opposed to cash based accounting. For example, if you pay $365 for an All Upfront RI for one year and you have a matching instances that uses that RI, that instance costs you $1 a day, amortized.

You can see the data that Billing and Cost Management uses to calculate your amortized costs in the following AWS Cost and Usage report columns.

### Reserved Instance Inventory

You can use the following columns to track your Reserved Instance inventory. The values for these columns appear only for RI subscription line items (also known as RI Fee line items), and not for the actual instances using the RIs.

**reservation/UpfrontValue**

The initial upfront payment value for All Upfront RIs and Partial Upfront RIs.
Because there are no upfront payments for No Upfront RIs, the value for this line for No Upfront RIs is 0.

**reservation/startTime**

The start time for a Reserved Instance reservation.

**reservation/endTime**

The end time for a Reserved Instance reservation.

**reservation/modificationStatus**

The modification status of a Reserved Instance reservation. For example, if you bought an RI and never modified it, the value is Original. If you bought an RI and modified it using the console or API, the value is System. If you bought an RI and modified it with CS's help, the value is Manual. If you bought an RI and modified it with CS's help, and AWS calculated estimated costs for the RI, the value is ManualWithData.

Valid values are: Original, System, ManualWithData, and Manual.

### Amortization Data for the Billing Period

You can use the following columns to understand the amortized costs of your RIs for the billing period. The values for these columns appear only for RI subscription line items (also known as RI Fee line items), and not for the actual instances using the RIs.

**reservation/amortizedUpfrontFeeForBillingPeriod**

The initial upfront payment for All Upfront RIs and Partial Upfront RIs, amortized over this month. Because there are no upfront fees for No Upfront RIs, the value for No Upfront RIs is 0.

This tells you how much the upfront fee for this reservation costs you for this billing period.

**reservation/unusedQuantity**

The number of RI hours that you didn't use during this billing period.

**reservation/unusedNormalizedUnitQuantity**

The number of unused normalized units for a size-flexible regional RI that you didn't use during this billing period.

**reservation/unusedRecurringFee**

The recurring fees associated with your unused reservation hours for Partial Upfront and No Upfront RIs.

Because All Upfront RIs do not have recurring fees greater than 0, the value for All Upfront RIs is 0.

**reservation/unusedAmortizedUpfrontFeeForBillingPeriod**

The amortized portion of the initial upfront fee for All Upfront RIs and Partial Upfront RIs. Because there are no upfront payments for No Upfront RIs, the value for No Upfront RIs is 0.

### Reserved Instance Effective Costs

You can use the following columns to understand your effective cost at the instance level. The values for these columns appear only for instance usage line items (also known as Discounted Usage boxUsage line items).

**reservation/amortizedUpfrontCostForUsage**

The initial upfront payment for All Upfront RIs and Partial Upfront RIs amortized for usage time. Because there are no upfront payments for No Upfront RIs, the value for a No Upfront RI is 0.
**reservation/recurringFeeForUsage**

For Partial Upfront RIs and No Upfront RIs, this is the recurring fee amortized for usage time. Because All Upfront RIs do not have recurring fee payments greater than 0, the value for All Upfront RIs is 0.

**reservation/effectiveCost**

The total effective cost of your usage with RI rates applied. This is calculated by taking the amortizedUpfrontCostForUsage and adding it to the recurringFeeForUsage.

---

### Other Reports

**Important**

The following reports will be unavailable at a later date. We strongly recommend that you use the AWS Cost and Usage Report (p. 16) instead.

**Topics**

- Detailed Billing Report (p. 33)
- Detailed Billing Report with Resources and Tags (p. 33)
- Monthly Report (p. 34)
- Monthly Cost Allocation Report (p. 34)
- Amazon EC2 Usage and Reserved Instance Utilization Reports (p. 34)
- AWS Usage Reports (p. 35)

---

**Detailed Billing Report**

**Important**

The Detailed Billing Report will be unavailable at a later date. We strongly recommend that you use the AWS Cost and Usage Report (p. 16) instead.

Detailed billing reports are similar to AWS Cost and Usage reports. They contain similar information about your charges, but calculate the individual line items differently. If you sign up for both the detailed billing report and the AWS Cost and Usage reports, the line items will not match. When the reports are finalized at the end of the month, the total cost should align.

AWS stores the detailed billing reports in Amazon S3 as CSV files using the following naming convention:

```
AWS account number-aws-billing-detailed-line-items-yyyy-mm.csv.zip
```

AWS recreates the detailed billing report multiple times a day, overwriting the report. When AWS overwrites a report, the line items might be in a different order than they were in the previous report. At the end of the month, AWS creates a final report. For the next month, AWS creates a new report file instead of overwriting the final report from the previous month. Reports for previous months remain in your S3 bucket until you delete them.

---

**Detailed Billing Report with Resources and Tags**

**Important**

The Detailed Billing Report with Resources and Tags will be unavailable at a later date. We strongly recommend that you use the AWS Cost and Usage Report (p. 16) instead.

The detailed billing report with resources and tags adds additional dimensions by which you can view your AWS charges. This report includes resource identifiers for many of the AWS services. Amazon EC2,
for example, provides a ResourceID value for each Amazon EC2 instance that is run under your account. You can use this field for viewing your charges for each AWS resource, as well as for data filtering and aggregation.

In addition, any cost allocation tags you have applied to your resources are appended to each line item in the report. You can filter or aggregate on these tags. For more information about creating these tags, see Using Cost Allocation Tags (p. 74). You are not required to create and use cost allocation tags to get the detailed billing report with resources and tags.

Note
This report contains line items for every hour of operation for every resource and can grow quite large. The report is compressed into a ZIP file, but might exceed the maximum number of rows you can display in a desktop spreadsheet application.

Monthly Report

Important
The Monthly Report will be unavailable at a later date. We strongly recommend that you use the AWS Cost and Usage Report (p. 16) instead.

You can download a monthly report of your estimated AWS charges from the Bills page of the Billing and Cost Management console. If you use the consolidated billing feature in AWS Organizations, this report is available only for a master account and includes activity for all the member accounts. Member account owners can obtain the monthly report only from the master account owner. For more information, see Consolidated Billing for Organizations (p. 130).

The report contains line items for each unique combination of AWS product, usage type, and operation that the account uses. The estimated report is updated up to several times per day. You can get reports for previous months by selecting the statement period, starting with the report for the month when you signed up for monthly reports. Reports from before you signed up are not available.

Monthly Cost Allocation Report

Important
The Monthly Cost Allocation Report will be unavailable at a later date. We strongly recommend that you use the AWS Cost and Usage Report (p. 16) instead.

You can create custom cost allocation tag sets for your AWS resources that can describe the business dimensions of your AWS usage. These tag sets enable you to organize and track your AWS costs. Many AWS services expose tagging in their feature sets. You create the tags within those services by using the console, API, or the AWS command line interface (CLI). For more information, see Using Cost Allocation Tags (p. 74).

After you create your tags, you can obtain a monthly cost allocation report, which is essentially the monthly report with your cost allocation tag sets included.

Amazon EC2 Usage and Reserved Instance Utilization Reports

Important
The Amazon EC2 Usage and Reserved Instance Utilization Reports will be unavailable after June 30, 2017. We strongly recommend that you use the AWS Cost and Usage Report (p. 16) instead.

Instance Usage Report

The instance usage report displays data about your Amazon EC2 instances. For more information, see the Instance Usage Reports in the Amazon EC2 User Guide for Linux Instances.
Reserved Instance Utilization Report

The Reserved Instance Utilization report displays data about how an account used its Reserved Instances. For more information, see Reserved Instance Utilization Report in the Amazon EC2 User Guide for Linux Instances.

AWS Usage Reports

Important
The AWS Usage Reports will be unavailable at a later date. We strongly recommend that you use the AWS Cost and Usage Report (p. 16) instead.

You can download dynamically generated AWS usage reports. Each report covers a single service, and you can choose which usage type, operation, and time period to include. You can also choose how the data is aggregated.
Monitoring Your Usage and Costs

You can monitor your AWS usage with the following methods:

**Topics**
- Reading Your Dashboard Graphs (p. 36)
- Analyzing Your Costs with Cost Explorer (p. 37)
- Accessing Reserved Instance Recommendations (p. 59)
- Monitoring Charges with Alerts and Notifications (p. 65)
- Managing Your Costs with Budgets (p. 67)
- Using Cost Allocation Tags (p. 74)
- Using the AWS Price List API (p. 87)
- Logging Billing and Cost Management API Calls with AWS CloudTrail (p. 95)
- Avoiding Unexpected Charges (p. 97)

**Reading Your Dashboard Graphs**

Even if you're using the free tier, it's a good idea to periodically check the Billing and Cost Management console dashboard. From the dashboard, you can check various graphs that show different breakdowns of your AWS usage.

On the dashboard you can view the following graphs:

- **Spend Summary**
- **Month-to-Date Spend by Service**
- **Month-to-Date Top Services by Spend**

**Spend Summary**

The **Spend Summary** graph shows you how much you spent last month, the estimated costs of your AWS usage for the month-to-date, and a forecast for how much you are likely to spend this month. The forecast is an estimate based on your past AWS costs, so your actual monthly costs might not match the forecast.

**Month-to-Date Spend by Service**

The **Month-to-Date Spend by Service** graph shows the top services that you use most, and the proportion of your costs that that service contributed to. The **Month-to-Date Spend by Service** graph does not include forecasting.

**Month-to-Date Top Services by Spend**

The **Month-to-Date Top Services by Spend** graph shows the services that you use most, along with the costs accrued for the month-to-date. The **Month-to-Date Top Services by Spend** graph does not include forecasting.
Opening the Billing and Cost Management Console and Dashboard

To open the Billing and Cost Management console and dashboard

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

  The console opens to the Dashboard, where you can see your current month-to-date usage graphs.

Analyzing Your Costs with Cost Explorer

Cost Explorer is a tool that allows you to view and analyze your costs. You can view your costs as either a cash-based view (costs are recorded when cash is received or paid) with unblended costs or as an accrual-based view (costs are recorded when income is earned or costs are incurred). You can view data for up to the last 13 months, forecast how much you are likely to spend for the next three months, and get recommendations for what Reserved Instances to purchase. You can use Cost Explorer to see patterns in how much you spend on AWS resources over time, identify areas that need further inquiry, and see trends that you can use to understand your costs. You can also specify time ranges for the data, and view time data by day or by month.

You can view your costs and usage using the Cost Explorer user interface free of charge. You can also access your data programmatically using the Cost Explorer API. Each paginated API request incurs a charge of $0.01.

In addition, Cost Explorer provides preconfigured views that display at-a-glance information about your cost trends and give you a head start on customizing views that suit your needs.

When you first sign up for Cost Explorer, AWS prepares the data about your costs for the current month and the last three months, and then calculates the forecast for the next three months. The current month’s data is available for viewing in about 24 hours. The rest of your data takes a few days longer. Cost Explorer updates your cost data at least once every 24 hours. After you sign up, Cost Explorer can display up to 12 months of historical data (if you have that much), the current month, and the forecasted costs for the next three months.

Cost Explorer uses the same dataset that is used to generate the AWS Cost and Usage reports and the detailed billing reports. For a comprehensive review of the data, you can download it into a comma-separated value (.csv) file.

Topics

- Enabling Cost Explorer (p. 38)
- Starting Cost Explorer (p. 38)
- Choosing Time Ranges for the Data That You Want to View (p. 39)
- Forecasting with Cost Explorer (p. 40)
- Selecting a Style for Your Chart (p. 41)
- Filtering the Data That You Want to View (p. 41)
- Grouping Data by Filter Type (p. 47)
- Choosing Advanced Options (p. 47)
- Using Preconfigured Reports (p. 49)
- Creating and Saving Custom Reports (p. 50)
- Reading the Cost Explorer Chart (p. 54)
Enabling Cost Explorer

You can enable Cost Explorer for your account using this procedure. After you enable Cost Explorer, AWS prepares the data about your costs for the current month and the last three months, and then calculates the forecast for the next three months. The current month's data is available for viewing in about 24 hours. The rest of your data takes a few days longer. Cost Explorer updates your cost data at least once every 24 hours.

By default you can launch Cost Explorer if your account is a member account in an organization. The master account can, however, block your access. For more information, see Consolidated Billing for Organizations (p. 130).

Note
An account's status with an organization affects what cost and usage data is visible:

- When a standalone account joins an organization, the account no longer has access to cost and usage data from the time range when the account was a standalone account.
- If a member account leaves an organization and becomes a standalone account, the account no longer has access to cost and usage data from the time range when the account was a member of the organization. The account has access only to the data that is generated as a standalone account.
- If a member account leaves organization A to join organization B, the account no longer has access to cost and usage data from the time range when the account was a member of organization A. The account has access only to the data that is generated as a member of organization B.
- If an account rejoins an organization that it previously belonged to, the account regains access to its historical cost and usage data.

Signing up to receive the AWS Cost and Usage Report or the Detailed Billing Report does not automatically enable Cost Explorer. You must still enable it by performing the following procedure.

To sign up for Cost Explorer

2. On the navigation pane, choose Cost Explorer.

For more information about controlling access to Cost Explorer see Controlling Access for Cost Explorer (p. 58).

Starting Cost Explorer

Start Cost Explorer by opening the Billing and Cost Management console and choosing Launch Cost Explorer.
To open Cost Explorer

2. In the navigation pane, choose Cost Explorer.

Cost Explorer opens to the Monthly Amazon EC2 running hours costs and usage saved report.

Choosing Time Ranges for the Data That You Want to View

You can choose to view your cost data in monthly or daily levels of granularity. You can use preconfigured time ranges or set custom start and end dates.

To set the granularity and time range for your data

1. Start Cost Explorer.
2. Choose a time granularity of Daily or Monthly.
3. For your monthly or daily data, open the calendar and define a custom period for your report or choose a preconfigured period at the bottom of the calendar. You can choose from a number of historical or forecast time periods. The name of the period that you choose is displayed in the calendar.
4. Choose Apply.

Historical Time Range Options

In Cost Explorer, months are defined as calendar months. Days are defined as 12:00:00 AM to 11:59:59 PM. Based on these definitions, when you choose Last 3 Months for a date range, you see cost data for three previous months, not including the present month. For example, if you view your chart on June 6, 2017 and select Last 3 Months, your chart includes data for March, April, and May 2017. All times are in Universal Coordinated Time (UTC).

You can choose time ranges for both your past costs and your forecasted future costs.

The following list defines each time range option for your past costs in Cost Explorer.

- Custom
  - Displays data for the time range for the From and To dates that you specify with calendar controls.
- 7D (Last 7 Days)
  - Displays cost data from the current day and the previous six days.
- 14D (Last 14 Days)
  - Displays cost data from the current day and the previous 13 days.
- MTD (Month-to-Date)
  - Displays cost data for the current calendar month.
- 1M (Last Month)
  - Displays cost data from the last month.
- 3M (Last 3 Months)
Includes cost data from the previous three months but does not include the current month.

- **6M (Last 6 Months)**

Includes cost data from the previous six months but does not include the current month.

- **YTD (Year-to-Date)**

Displays cost data from the current calendar year.

- **1Y (Last Year)**

Displays cost data from the last calendar year.

### Forecast Time Range Options

The following list defines each time range option for your forecast costs in Cost Explorer. You can select a **Historical** time period and a **Forecasted** period to display together. For example, you can select a **Historical** period of one month (1M) and select a **Forecasted** period of three months (3M). Your report will include historical data for the previous month plus forecasted data for the next 3 months. To clear a **Historical** time period and see only the forecast, choose the **Historical** period again.

- **Custom**

  Displays forecast data for the time range in the **From** and **To** dates that you specify with calendar controls.

- **EOM (End of Month)**

  Displays data for the historical time period that you choose plus a forecast to the end of the current month.

- **+1M**

  Displays forecast data for the current day plus the next month.

- **+3M**

  Displays forecast data for the current day and the next 3 months.

### Forecasting with Cost Explorer

You create a forecast by selecting a future time range for your report. For more information, see **Choosing Time Ranges for the Data That You Want to View** (p. 39). The following discussion talks about the accuracy of the forecasts created by Cost Explorer and how to read them.

A forecast is a prediction of how much you will use AWS over the forecast time period you selected, based on your past usage. Forecasting provides an estimate of what your AWS bill will be, and enables you to use alarms and budgets for amounts that you are predicted to use. Because forecasts are predictions, the forecasted billing amounts are estimated, and might differ from your actual charges for each statement period.

Like weather forecasts, billing forecasts can vary in accuracy. Different ranges of accuracy have different confidence intervals. The higher the confidence interval, the more likely the forecast is to be correct. For example, suppose you have a budget set to 100 dollars, and you've used 75 dollars in the past three weeks. Cost Explorer forecasts that there is an 80% probability that your billed costs will be in the 90 to 100 dollar range, and a 95% probability that your billed costs will be in to 80 to 110 dollar range.

Cost Explorer forecasts have confidence intervals of 95% and 80%. If AWS does not have enough data to forecast within a 95% confidence interval, Cost Explorer does not show a forecast.
Reading Forecasts

How you read the Cost Explorer forecasts depends on the type of chart that you're using. Forecasts are available for both line and bar charts.

When you use line charts, there are two sets of lines on either side of your costs line. The pair of lines that are closest to the cost line indicate the 80% confidence interval, and the pair of lines that are furthest from the cost line indicate the 95% confidence interval. The wider the range included in the forecast, the higher the probability that your bill will fall in the forecasted range.

When you are using bar charts, there are two sets of lines on either side of the top of your bar. The closer, darker lines indicate the 80% confidence interval, and the further, fainter lines indicate the 95% confidence interval. The wider the range included in the forecast, the higher the probability that your bill will fall in the forecasted range.

Using Forecasts with Consolidated Billing

If you use the consolidated billing feature in AWS Organizations, the forecasts are calculated with the data from all the accounts. If you add a new member account to an organization, forecasts will be less accurate until the new spending patterns of the organization are analyzed. For more information about consolidated billing, see Consolidated Billing for Organizations (p. 130).

Selecting a Style for Your Chart

Cost Explorer provides two styles for charting your cost data - bar charts (Bar) or line graphs (Line). You can set the style by using the view drop down.

Filtering the Data That You Want to View

With Cost Explorer, you can filter how you view your AWS costs by one or more of the following values:

- API operation
- Availability Zone (AZ)
- Billing Entity
- Include All
- Instance Type
- Legal Entity
- Linked Account
- Platform
- Purchase Option
- Region
- Service
- Tag
- Tenancy
- Usage Type
- Usage Type Group

You can use Cost Explorer to see which service you use the most, which Availability Zone (AZ) most of your traffic is in, which linked account uses AWS the most, and more. You can also apply multiple filters
to look at intersecting datasets. For example, you can use the Linked Account and Services filters to identify the linked account that spent the most money on Amazon EC2.

To filter your data

1. Open Cost Explorer.
2. For Filters, choose a value. After you make a selection, a new control appears with additional options.
3. In the new control, select the items from each list that you want to display in the chart, or begin typing in the search box to have Cost Explorer autocomplete your selection. After you choose your filters, choose Apply filters.

   **Note**
   Each time that you apply filters to your costs, Cost Explorer creates a new chart. You can, however, use your browser's bookmark feature to save configuration settings (p. 55) for repeated use. Forecasts are not saved, and the most recent forecast is displayed when you revisit your saved chart.

You can continue refining your cost analysis by using multiple filters, by grouping your data by filter type, and by using the options in the Advanced Options tab.

Combining Filters to Show Data in Common

Cost Explorer displays a chart that represents the data in common to the filters you've selected, which means that you can use filters together to analyze subsets of cost data. For example, if you set the Service filter to show costs related to Amazon EC2 and Amazon RDS services, and then select Reserved using the Purchase Option filter, the cost chart shows how much money Reserved instances on Amazon EC2 and Amazon RDS cost for each of the three months specified.

   **Note**
   The RI Utilization reports allow filtering by only one service at a time, and only for the following services: Amazon EC2, Amazon Redshift, Amazon RDS, ElastiCache

Filters and Logical Operations (AND/OR)

When you select multiple filters, and values for each filter, Cost Explorer applies rules that emulate the logical AND and OR operators to your selections. Within each filter, Cost Explorer emulates the logical OR filter to your selection of filter types. In other words, the chart it displays adds the aggregate costs for each item together. Using the previous example, you see bars for both of the selected services, Amazon EC2 and Amazon RDS.

When you select multiple filters, Cost Explorer applies the logical AND operator to your selections. In other words, if you use the Services filter and specify Amazon EC2 and Amazon RDS costs for inclusion, and then also apply the Purchase Options filter to select a single type of purchase option, you see only the Non-Reserved charges incurred by Amazon EC2 and Amazon RDS.

Filter and Group Options

In Cost Explorer, you can filter by the following groups:

- **API Operation**
  Requests made to and tasks performed by a service, such as write and get requests to Amazon S3.
- **Availability Zone**
  Distinct locations within a region that are insulated from failures in other Availability Zones. They provide inexpensive, low-latency network connectivity to other Availability Zones in the same region.
• **Billing Entity**

The organization that bills the customer for a service. For AWS service charges, AWS is the billing entity. For third party services sold through AWS Marketplace, AWS Marketplace is the billing entity.

• **Instance Type**

Type of RI that you specified when you launched an Amazon EC2 host, Amazon RDS instance class, Amazon Redshift node, or Amazon ElastiCache node. The instance type determines the hardware of the computer used to host your instance.

• **Legal Entity**

The provider of your AWS services. For AWS service charges, AWS is the legal entity. For AWS service charges in India, AISPL is the legal entity.

• **Linked Account**

Member accounts in an organization. For more information, see [Consolidated Billing for Organizations](#).

• **Platform**

The operating system that your RI runs on. Platform is either **Linux** or **Windows**.

• **Purchase Option**

The method you choose to pay for your Amazon EC2 instances, including Reserved Instances, Spot Instances, Scheduled Reserved Instances, and On-Demand Instances.

• **Region**

Geographic areas where AWS hosts your resources.

• **Service**

AWS products. To learn what's available, see [AWS Products and Services](#). You can use this dimension to filter costs by specific AWS Marketplace software, including your costs for AMIs, web services, and desktop apps. See the [What is AWS Marketplace?](#) guide for more information.

  **Note**

  The RI Utilization reports allow filtering by only one service at a time, and only for the following services:

  Amazon EC2, Amazon Redshift, Amazon RDS, ElastiCache

• **Tag**

Label that you can use to track costs associated with specific areas/entities within your business. For more information about working with tags, see [Applying User-Defined Cost Allocation Tags](#).

• **Tenancy**

Specifies whether you share an Amazon EC2 RI with another user or not. Tenancy is either **Dedicated** or **Default**.

• **Usage Type**

Usage types are the units that each service uses to measure the usage of a specific type of resource. For example, the **BoxUsage:t2.micro(Hrs)** usage type filters by the running hours of Amazon EC2 t2.micro instances.

• **Usage Type Group**

Usage type groups are filters that collect a specific category of usage type filters into one filter. For example, **BoxUsage:c1.medium(Hrs)**, **BoxUsage:m3.xlarge(Hrs)**, and **BoxUsage:t1.micro(Hrs)** are all filters for Amazon EC2 instance running hours, so they are collected into the **EC2: Running Hours** filter.
Usage type groups are available for Amazon EC2, DynamoDB, and Amazon S3. The specific groups available to your account depend on what services you've used. The list of groups that might be available includes but is not limited to the following:

- **DDB: Data Transfer - Internet (In)**
  Filters by costs associated with how many GB are transferred to your DynamoDB databases.

- **DDB: Data Transfer - Internet (Out)**
  Filters by costs associated with how many GB are transferred from your DynamoDB databases.

- **DDB: Indexed Data Storage**
  Filters by costs associated with how many GB that you have stored in DynamoDB.

- **DDB: Provisioned Throughput Capacity - Read**
  Filters by costs associated with how many units of read capacity that your DynamoDB databases used.

- **DDB: Provisioned Throughput Capacity - Write**
  Filters by costs associated with how many units of write capacity that your DynamoDB databases used.

- **EC2: CloudWatch - Alarms**
  Filters by costs associated with how many CloudWatch alarms that you have.

- **EC2: CloudWatch - Metrics**
  Filters by costs associated with how many CloudWatch metrics that you have.

- **EC2: CloudWatch - Requests**
  Filters by costs associated with how many CloudWatch requests that you make.

- **EC2: Data Transfer - CloudFront (Out)**
  Filters by costs associated with how many GB are transferred from your Amazon EC2 instances to a CloudFront distribution.

- **EC2: Data Transfer - CloudFront (In)**
  Filters by costs associated with how many GB are transferred to your Amazon EC2 instances from a CloudFront distribution.

- **EC2: Data Transfer - Inter AZ**
  Filters by costs associated with how many GB are transferred into, out of, or between your Amazon EC2 instances in different Availability Zones.

- **EC2: Data Transfer - Internet (In)**
  Filters by costs associated with how many GB are transferred to your Amazon EC2 instances from outside of the AWS network.

- **EC2: Data Transfer - Internet (Out)**
  Filters by costs associated with how many GB are transferred from an Amazon EC2 instance to a host outside of the AWS network.

- **EC2: Data Transfer - Region to Region (In)**
  Filters by costs associated with how many GB are transferred to your Amazon EC2 instances from a different AWS Region.

- **EC2: Data Transfer - Region to Region (Out)**
  Filters by costs associated with how many GB are transferred from your Amazon EC2 instances to a different AWS Region.
Filters by costs associated with how many GB are transferred from your Amazon EC2 instances to a different AWS Region.

- **EC2: EBS - I/O Requests**
  Filters by costs associated with how many I/O requests that you make to your Amazon EBS volumes.

- **EC2: EBS - Magnetic**
  Filters by costs associated with how many GB that you have stored on Amazon EBS Magnetic volumes.

- **EC2: EBS - Provisioned IOPS**
  Filters by costs associated with how many IOPS-months that you have provisioned for Amazon EBS.

- **EC2: EBS - SSD(gp2)**
  Filters by costs associated with how many GB per month of General Purpose storage that your Amazon EBS volumes use.

- **EC2: EBS - SSD(io1)**
  Filters by costs associated with how many GB per month of Provisioned IOPS SSD storage that your Amazon EBS volumes use.

- **EC2: EBS - Snapshots**
  Filters by costs associated with how many GB per month that your Amazon EBS snapshots store.

- **EC2: EBS - Optimized**
  Filters by costs associated with how many MB per instance hour that your Amazon EBS-optimized instances use.

- **EC2: ELB - Running Hours**
  Filters by costs associated with how many hours that your Elastic Load Balancing load balancers ran.

- **EC2: Elastic IP - Additional Address**
  Filters by costs associated with how many Elastic IP addresses that you have attached to running Amazon EC2 instances.

- **EC2: Elastic IP - Idle Address**
  Filters by costs associated with Elastic IP addresses that you have that are not attached to running Amazon EC2 instances.

- **EC2: NAT Gateway - Data Processed**
  Filters by costs associated with how many GB that your network address translation gateways (NAT gateways) processed.

- **EC2: NAT Gateway - Running Hours**
  Filters by costs associated with how many hours that your NAT gateways ran.

- **EC2: Running Hours**
  Filters by costs associated with how many hours that your Amazon EC2 instances ran.

- **ElastiCache: Running Hours**
  Filters by costs associated with how many hours that your Amazon ElastiCache nodes ran.

- **ElastiCache: Storage**
  Filters by costs associated with how many GB that you have stored in Amazon ElastiCache.

- **RDS: Running Hours**
Filters by costs associated with how many hours that your Amazon RDS databases ran.

- **RDS: Data Transfer – CloudFront – In**
  Filters by costs associated with how many GB are transferred into Amazon RDS from a CloudFront distribution.

- **RDS: Data Transfer – CloudFront – Out**
  Filters by costs associated with how many GB are transferred from a CloudFront distribution to Amazon RDS data transfers.

- **RDS: Data Transfer – Direct Connect Locations – In**
  Filters by costs associated with how many GB are transferred into Amazon RDS through a Direct Connect network connection.

- **RDS: Data Transfer – Direct Connect Locations – Out**
  Filters by costs associated with how many GB are transferred from Amazon RDS through a Direct Connect network connection.

- **RDS: Data Transfer – InterAZ**
  Filters by costs associated with how many GB are transferred into, out of, or between Amazon RDS buckets in different Availability Zones.

- **RDS: Data Transfer – Internet – In**
  Filters by costs associated with how many GB are transferred to your Amazon RDS databases.

- **RDS: Data Transfer – Internet – Out**
  Filters by costs associated with how many GB are transferred from your Amazon RDS databases.

- **RDS: Data Transfer – Region to Region – In**
  Filters by costs associated with how many GB are transferred to your Amazon RDS instances from a different AWS Region.

- **RDS: Data Transfer – Region to Region – Out**
  Filters by costs associated with how many GB are transferred from your Amazon RDS instances to a different AWS Region.

- **RDS: I/O Requests**
  Filters by costs associated with how many I/O requests that you make to your Amazon RDS instance.

- **RDS: Provisioned IOPS**
  Filters by costs associated with how many IOPS-months that you have provisioned for Amazon RDS.

- **RDS: Storage**
  Filters by costs associated with how many GB that you have stored in Amazon RDS.

- **Redshift: DataScanned**
  Filters by costs associated with how many GB that your Amazon Redshift nodes scanned.

- **Redshift: Running Hours**
  Filters by costs associated with how many hours that your Amazon Redshift nodes ran.

- **S3: API Requests - Standard**
  Filters by costs associated with GET and all other standard storage Amazon S3 requests.

- **S3: Data Transfer - CloudFront (In)**
Filters by costs associated with how many GB are transferred into Amazon S3 from a CloudFront distribution.

- **S3: Data Transfer - CloudFront (Out)**
  Filters by costs associated with how many GB are transferred from a CloudFront distribution to Amazon S3 data transfers, such as how much data was uploaded from your Amazon S3 bucket to your CloudFront distribution.

- **S3: Data Transfer - Inter AZ**
  Filters by costs associated with how many GB are transferred into, out of, or between Amazon S3 buckets in different Availability Zones.

- **S3: Data Transfer - Internet (In)**
  Filters by costs associated with how many GB are transferred to an Amazon S3 bucket from outside of the AWS network.

- **S3: Data Transfer - Internet (Out)**
  Filters by costs associated with how many GB are transferred from an Amazon S3 bucket to a host outside of the AWS network.

- **S3: Data Transfer - Region to Region (In)**
  Filters by costs associated with how many GB are transferred to Amazon S3 from a different AWS Region.

- **S3: Data Transfer - Region to Region (Out)**
  Filters by costs associated with how many GB are transferred from Amazon S3 to a different AWS Region.

- **S3: Storage - Standard**
  Filters by costs associated with how many GB that you have stored in Amazon S3.

**Grouping Data by Filter Type**

Use the Group by button to have Cost Explorer display the cost data groups by filter type. By default, Cost Explorer does not use grouping. Forecasting is not available for charts that have grouping. If you don't select a Group by option, Cost Explorer displays total costs for the specified date range.

**To group your data by filter type**

1. Launch Cost Explorer.
2. (Optional) Use the Filter controls to configure a view of your cost data.
3. Choose Group By to group by the option that you want. The data table beneath the chart also groups your cost figures by the option you selected.

**Choosing Advanced Options**

You can customize how you view your data in Cost Explorer using Advanced Options to include or exclude specific types of data. The following types of data are included by default.
Refunds

Any refunds that you received. Refunds are listed as a separate line item in the data table. They do not appear as an item in the chart because they represent a negative value in the calculation of your costs. The chart displays only positive values.

Credits

Any AWS credits that are applied to your account.

Upfront reservation fees

Any upfront fees that are charged to your account. When you purchase an All Upfront or Partial Upfront Reserved Instance from AWS, you pay an upfront fee in exchange for a lower rate for using the instance. The upfront fees can result in spikes in the chart for the days or months when you make your purchases.

Recurring reservation charges

Any recurring charges to your account. When you purchase a Partial Upfront or No Upfront Reserved Instance from AWS, you pay a recurring charge in exchange for a lower rate for using the instance. The recurring charges can result in spikes on the first day of every month, when AWS charges your account.

Taxes

Any taxes that are associated with the charges or fees in your cost chart. Cost Explorer adds all taxes together as a single component of your costs. If you select five or fewer filters, Cost Explorer displays your tax expenses as a single bar. If you select six or more filters, Cost Explorer displays five bars, stacks, or lines, and then aggregates all remaining items, including taxes, into a sixth bar, stack slice, or plot line that is labeled Other.

If you choose to omit RI upfront fees, RI recurring charges, or Support charges from your chart, Cost Explorer continues to include any taxes that are associated with the charges.

Cost Explorer displays your tax costs in the chart only when you choose Monthly drop down. When you filter your cost chart, the following rules govern the inclusion of taxes:
1. Taxes are excluded if you select non-Linked Account filters, either singly or in combination with other filters.
2. Taxes are included if you select the Linked Accounts filters.

Support charges

Any charges that AWS charges you for a support plan. When you purchase a support plan from AWS, you pay a monthly charge in exchange for service support. The monthly charges can result in spikes on the first day of every month, when AWS charges your account.

Other subscription costs

Other applicable subscription costs that are not covered by the other data categories. These costs can include data such as AWS training fees, AWS competency fees, out-of-cycle charges such as registering a domain with Route 53, and more.

You can exclude these data types from your chart using the following procedure.

To exclude data from your chart

2. In the navigation pane, choose Cost Explorer.

Note
Cost Explorer is available in any AWS account for no cost.
4. In the right pane, under **Advanced Options**, under **Include costs related to**, deselect the data type that you want to exclude.

In addition to the costs that Cost Explorer includes, you can show specific costs such as untagged resources or blended costs. This allows you to see the following alternate views of your costs.

**Show only untagged resources**

By default, Cost Explorer includes costs both for resources that have cost allocation tags and for resources that don't have cost allocation tags. To find untagged resources that add to your costs, select **Show only untagged resources**. For more information about cost allocation tags, see Using Cost Allocation Tags (p. 74).

**Show blended costs**

If you use the consolidated billing feature in AWS Organizations, you can view costs using **blended rates**. For more information, see Blended Rates (p. 140).

**Show amortized costs**

By default, Cost Explorer shows the fees for Reserved Instances as a spike on the day that you're charged, but if you choose to show costs as amortized costs, the costs are amortized over the billing period. This means that the costs are broken out into the effective daily rate. AWS estimates your amortized costs by combining your unblended costs with the amortized portion of your upfront and recurring reservation fees. For the daily view, Cost Explorer shows the unused portion of your upfront reservation fees and recurring RI charges on the first of the month.

For example, suppose that Alejandro purchases a Partial Upfront t2.micro RI for a one-year term at $30 dollars upfront, with a monthly fee of $2.48. Cost Explorer shows the costs for this RI as a spike on the first of the month. If Alejandro chooses **Amortized costs** for a 30-day month, the Cost Explorer chart shows a daily effective rate of $0.168, which is the EC2 effective rate multiplied by the number of hours in a day.

Amortized costs are not available for billing periods prior to 2018. If you want to see how much of your reservation was unused, group by purchase option.

You can show these specific costs by using the following procedure.

**To show specific cost types in your chart**

2. In the navigation pane, choose **Cost Explorer**.
3. On the **Cost Explorer** page, choose **Launch Cost Explorer**.
   
   **Note**
   
   Cost Explorer is available in any AWS account for no cost.
4. In the right pane, under **Advanced Options**, under **Other**, select the cost type that you want to show.

**Using Preconfigured Reports**

Cost Explorer provides preconfigured views that are designed to give you at-a-glance visibility into your costs and usage. You can use these views to quickly identify unusual costs, and then you can customize the view to investigate in more detail.

The preconfigured views display charts based on fixed filter settings. They provide quick access to information that is most commonly useful to an organization. All the preconfigured views display a
Creating Custom Reports

chart. Under the chart, the page shows a data table that displays the cost figures that were used to create the chart. You can also download a CSV report that contains the line items that are used to generate the views.

Preconfigured views are available for monthly and daily time ranges. If you use the consolidated billing feature, you have the option to view member accounts in a monthly time-range format. You access the preconfigured reports by using the Reports drop down in the Billing and Cost Management console.

For more information about how the chart displays services and how the data table displays cost figures, see Reading the Cost Explorer Chart (p. 54) and Reading the Cost Explorer Data Table (p. 55), respectively.

To open the preconfigured reports

2. In the navigation pane, choose Cost Explorer.
4. For the Reports drop down list, choose the view that you want.

In all the preconfigured views, a data table below the chart displays the actual figures that were used to generate the chart.

Note
Charges for your current billing period shown on these reports are estimated. Estimated charges shown on this page, or shown on any notifications that we send to you, may differ from your actual charges for this statement period. This is because estimated charges presented on this page do not include usage charges accrued during this statement period after the date you view this page. One-time fees and subscription charges are assessed separately from usage and recurring charges, on the date that they occur.

Creating and Saving Custom Reports

To create a custom Cost Explorer report for visualizing your costs, choose the New report dropdown list on the Cost Explorer console, choose one of the following report types, and then modify the report filters.

Topics
- Cost and Usage Reports (p. 50)
- RI Utilization and Savings Reports (p. 50)
- RI Coverage Reports (p. 53)
- Saving a Report (p. 54)

Cost and Usage Reports

The Cost and Usage reports show how you use services and how your costs are distributed by service. To create your custom report, you can use all the features that are discussed in Analyzing Your Costs with Cost Explorer (p. 37).

RI Utilization and Savings Reports

The RI Utilization and Savings reports show how much of your Amazon EC2, Amazon Redshift, Amazon RDS, and Amazon ElastiCache Reserved Instance (RIs) that you use, how much you saved by using RIs, how much you overspent on RIs, and your net savings from purchasing RIs during the selected time range. This helps you to see if you have purchased too many RIs.
The RI Utilization and Savings charts display the number of Reserved Instance (RI) hours that your account uses, helping you to understand and monitor your combined usage (utilization) across all of your RIs and services. It also shows how much you saved over On-Demand Instance costs by purchasing a reservation, the amortized costs of your unused reservations, and your total net savings from purchasing reservations. AWS calculates your total net savings by subtracting the costs of your unused reservations from your reservations savings.

The following table shows an example of potential savings (all costs are in USD).

### RI Utilization and Savings Example

<table>
<thead>
<tr>
<th>Account</th>
<th>RI Utilization</th>
<th>RI Hours Purchased</th>
<th>RI Hours Used</th>
<th>RI Hours Unused</th>
<th>On-Demand Cost of RI Hours Used</th>
<th>Effective RI Cost</th>
<th>Net Savings</th>
<th>Total Potential Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martha</td>
<td>0.50</td>
<td>100</td>
<td>50</td>
<td>50</td>
<td>$200</td>
<td>$150</td>
<td>$50</td>
<td>$250</td>
</tr>
<tr>
<td>Liu Jie</td>
<td>0.75</td>
<td>100</td>
<td>75</td>
<td>25</td>
<td>$300</td>
<td>$150</td>
<td>$150</td>
<td>$250</td>
</tr>
<tr>
<td>Saanvi</td>
<td>1.00</td>
<td>50</td>
<td>50</td>
<td>0</td>
<td>$200</td>
<td>$75</td>
<td>$125</td>
<td>$125</td>
</tr>
</tbody>
</table>

As shown in the preceding table, Martha, Liu Jie, and Saanvi purchase RIs at $1.50 an hour and On-Demand hours at $4.00 an hour. Breaking down this example further, you can see how much each of them saves by purchasing RIs:

- Martha purchases 100 RI hours for $150. She uses 50 hours, which would cost $200 if she used On-Demand Instances. She saves $50, which is the cost of 50 On-Demand hours minus the cost of the RI. She could optimize her savings by using more of her purchased RI hours, by converting her RI to cover other instances, or by selling her RIs on the RI Marketplace. For more information about selling an RI on the RI Marketplace, see [Selling on the Reserved Instance Marketplace](https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/SellReservedInstances.html) in the Amazon EC2 User Guide for Linux Instances.
- Liu Jie purchases 100 RI hours for $150. He uses 75 of them, which would cost $300 if he used On-Demand Instances. So he saves $150, which is the cost of 300 On-Demand hours minus the cost of the RI.
- Saanvi purchases 50 RI hours for $75. She uses all 50 of them, which would cost $200 if she used On-Demand Instances. So she saves $125, which is the cost of 200 On-Demand hours minus the cost of the RI.

The reports allow you to define a utilization threshold, known as a *utilization target*, and identify RIs that meet your utilization target and RIs that are underutilized. The chart shows RI utilization as the percentage of purchased RI hours that are used by matching instances, rounded to the nearest percentage.

Target utilization is shown on the chart as a dotted line in the chart and in the table under the chart as a colored RI utilization status bar. RIs with a red status bar are RIs with no hours used. RIs with a yellow status bar are under your utilization target. RIs with a green status bar have met your utilization target. Instances with a gray bar are not using reservations. You can change the utilization target in the Display Options section. To remove the utilization target line from the chart, clear the Show target line on chart check box. You can also create budgets that enable AWS to notify you if you fall below your utilization targets. For more information, see [Managing Your Costs with Budgets](https://docs.aws.amazon.com/AWSCostExplorer/latest/UserGuide/cost-explorer-billing-budgets.html) (p. 67).

You can filter the chart to analyze the purchasing accounts, instance types, and more. RI reports use a combination of RI-specific filters and regular Cost Explorer filters. The RI-specific filters are available only for the Cost Explorer RI Utilization and Savings and RI Coverage reports. They are not available anywhere else that AWS uses Cost Explorer filters. The following filters are available:
Creating Custom Reports

- **Availability Zone** – Filter your RI usage by specific Availability Zones.
- **Instance Type** – Filter your RI usage by specific instance types, such as `t2.micro` or `m3.medium`. This also applies to Amazon RDS instance classes, such as `db.m4`, and Amazon Redshift and ElastiCache node types, such as `dc2.large`.
- **Linked Account** – Filter your reservations by specific member accounts.
- **Platform** – Filter your RI usage by platform, such as `Linux` or `Windows`. This also applies to Amazon RDS database engines.
- **Region** – Filter your RI usage by specific regions, such as US East (N. Virginia) or Asia Pacific (Singapore).
- **Scope** (Amazon EC2–specific) – Filter your Amazon EC2 usage to show RIs that are purchased for use in specific Availability Zones or regions.
- **Tenancy** (Amazon EC2–specific) – Filter your Amazon EC2 usage by tenancy, such as `Dedicated` or `Default`. An RI with a `Dedicated` tenancy is reserved for a single tenant, and an RI with a `Default` tenancy might share hardware with another RI.

In addition to changing your utilization target and filtering your RIs, you can choose a single RI or a group of RIs to show in the chart. To choose a single RI or a selection of RIs to see in the chart, select the check box next to the RI in the table under the chart. You can select up to 10 leases at one time.

Cost Explorer shows the combined utilization across all of your RIs in the chart and shows utilization for individual RI reservations in the table under the chart. The table also includes a subset of the information for each RI reservation. You can find the following information for each reservation in the downloadable .csv file:

- **ACCOUNT NAME** – The name of the account that owns the RI reservation.
- **RESERVATION STATUS** – The status of your RI reservation, such as `Active` or `Expired`.
- **SUBSCRIPTION ID** – The unique subscription ID for the RI reservation.
- **RESERVATION ID** – The unique ID for the RI reservation.
- **INSTANCE TYPE** – The RI instance class, instance type, or node type, such as `t2.micro`, `db.m4`, or `dc2.large`.
- **RI UTILIZATION** – The percentage of purchased RI hours that were used by matching instances.
- **RI HOURS PURCHASED** – The number of purchased hours for the RI reservation.
- **RI HOURS USED** – The number of purchased hours that were used by matching instances.
- **RI HOURS UNUSED** – The number of purchased hours that were not used by matching instances.
- **ACCOUNT ID** – The unique ID of the account that owns the RI reservation.
- **START DATE** – The date that the RI starts.
- **END DATE** – The date that the RI expires.
- **NUMBERS OF RIS** – The numbers of RIs that are associated with the reservation.
- **SCOPE** – Whether this RI is for a specific Availability Zone or region.
- **REGION** – The region that the RI is available in.
- **AVAILABILITY ZONE** – The Availability Zone that the RI is available in.
- **PLATFORM** (Amazon EC2) – The platform that this RI is for.
- **TENANCY** (Amazon EC2) – Whether this RI is for a shared or dedicated instance.
- **PAYMENT OPTION** – Whether this RI is a Full Upfront, Partial Upfront, or No Upfront RI.
- **OFFERING TYPE** – Whether this RI is Convertible or Standard.
- **NET SAVINGS** – The amount that Cost Explorer estimates that you saved by purchasing reservations.
- **ON-DEMAND COST OF RI HOURS USED** – The cost of the RI hours that you used, based on the public On-Demand prices.
• **AMORTIZED UPFRONT FEE** – The upfront cost of this reservation, amortized over the RI period.
• **AMORTIZED RECURRING FEE** – The monthly cost of this reservation, amortized over the RI period.
• **TOTAL AMORTIZED FEE** – The combined amortized upfront and amortized recurring costs of the RI hours that you purchased.
• **POTENTIAL SAVINGS** – The total potential savings that you might see if you use your entire RI.
• **ON-DEMAND RATE** – The On-Demand rate of the RI hours that you used. When you view the On-Demand rates for an extended period of time, the On-Demand rate reflects any price changes made during that time period. Note that price changes are reflected in the On-Demand rate when viewing an extended time range.
• **EFFECTIVE RI RATE** – The effective rate of your RI.
• **RI COST OF UNUSED HOURS** – The cost of your unused RI hours.

You can use this information to track how many RI usage hours you used and how many RI hours you reserved but didn't use during the selected time range.

The Daily RI Utilization chart displays your RI utilization for the previous three months on a daily basis. The Monthly RI Utilization chart displays your RI utilization for the previous 12 months on a monthly basis.

**RI Coverage Reports**

The RI Coverage reports show how many of your Amazon EC2, Amazon Redshift, Amazon RDS, and Amazon ElastiCache instance hours are covered by RIs, how much you spent on On-Demand Instances, and how much you might have saved had you purchased more reservations. This allows you to see if you have under-purchased RIs.

The RI coverage charts display the percentage of instance hours that your account used that were covered by reservations, helping you to understand and monitor the combined coverage across all of your RIs. It also shows how much you spent on On-Demand Instances, and how much you might have saved had you purchased more reservations.

You can define a threshold for how much coverage you want from RIs, known as a **coverage target**, which allows you to see where you can reserve more RIs.

Target coverage is shown on the chart as a dotted line, and the average coverage is shown in the table under the chart as a colored status bar. Instances with a red status bar are instances with no RI coverage. Instances with a yellow status bar are under your coverage target. Instances with a green status bar have met your coverage target. Instances with a gray bar are not using reservations. You can change the coverage target in the **Display Options** section. To remove the coverage target line from the chart, clear the **Show target line on chart** check box. You can also create coverage budgets that enable AWS to notify you if you fall below your coverage target. For more information, see Managing Your Costs with Budgets (p. 67).

The RI coverage reports use the Cost Explorer filters instead of the RI Utilization filters. You can filter the chart to analyze the purchasing accounts, instance types, and more. RI reports use a combination of RI-specific filters and regular Cost Explorer filters. The RI-specific filters are available only for the Cost Explorer RI Utilization and Savings and RI Coverage reports, and are not available anywhere else that AWS uses Cost Explorer filters. The following filters are available:

• **Availability Zone** – Filter your RI usage by specific Availability Zones.
• **Instance Type** – Filter your RI usage by specific instance types, such as **t2.micro** or **m3.medium**. This also applies to Amazon RDS instance classes such as **db.m4**.
• **Linked Account** – Filter your RI usage by specific linked accounts.
• **Platform** – Filter your RI usage by platform, such as **Linux** or **Windows**. This also applies to Amazon RDS database engines.
• **Region** – Filter your RI usage by specific regions, such as US East (N. Virginia) or Asia Pacific (Singapore).

• **Scope** (Amazon EC2-specific) – Filter your Amazon EC2 usage to show RIs that are purchased for use in specific Availability Zones or regions.

• **Tenancy** (Amazon EC2-specific) – Filter your Amazon EC2 usage by tenancy, such as Dedicated or Default. A Dedicated RI is reserved for a single tenant, while a Default RI might share hardware with another RI.

In addition to changing your coverage target and filtering your instance types with the available filters, you can choose a single instance type or a group of instance types to show in the chart. To choose a single instance type or a selection of instance types to see in the chart, select the check box next to the instance type in the table under the chart. You can select up to 10 instances at one time.

Cost Explorer shows the combined coverage across all of your instance types in the chart and shows coverage for individual instance types in the table under the chart. The table also includes a subset of the information for each instance type. You can find the following information for each instance type in the downloadable .csv file:

- **INSTANCE TYPE** (Amazon EC2), **INSTANCE CLASS** (Amazon RDS), or **NODE TYPE** (Amazon Redshift or Amazon ElastiCache) – The RI instance class, instance type, or node type, such as t2.micro, db.m4, or dc2.large.

- **DATABASE ENGINE** (Amazon RDS–specific) – Filter your Amazon RDS coverage to show RIs that cover a specific database engine, such as **Amazon Aurora**, MySQL, or **Oracle**.

- **DEPLOYMENT OPTION** (Amazon RDS–specific) – Filter your Amazon RDS coverage to show RIs that cover a specific deployment option, such as **Multi-AZ** deployments.

- **REGION** – The region that the instance ran in, such as **us-east-1**.

- **PLATFORM** (Amazon EC2) – The platform that this RI is for.

- **TENANCY** – (Amazon EC2) Whether this RI is for a shared, dedicated, or host instance.

- **AVERAGE COVERAGE** – The average number of usage hours that are covered by a reservation.

- **RI COVERED HOURS** – The number of usage hours that are covered by reservations.

- **ON-DEMAND HOURS** – The number of usage hours that are not covered by reservations.

- **ON-DEMAND COST** – The amount that you spent on On-Demand Instances.

- **TOTAL RUNNING HOURS** – The total number of usage hours, both covered and uncovered.

You can use this information to track how many hours you use, and how many of those hours are covered by RIs.

The daily chart displays the number of RI hours that your account used on a daily basis for the last three months. The monthly chart displays your RI coverage for the previous 12 months, listed by month.

**Saving a Report**

After you finish editing the Cost Explorer settings for your new report, choose **Save as...**. Enter a name for your report, and then choose **Save Report**.

**Reading the Cost Explorer Chart**

When using **Group By**, the Cost Explorer chart displays data for up to six values within the **Group By** filter. If your data contains additional values, the chart displays five bars or lines, and then aggregates all remaining items in a sixth. The data table below the chart, however, breaks out the data for individual services that are aggregated in the chart.
Reading the Cost Explorer Data Table

Below each Cost Explorer chart is a data table, which displays the cost figures that the chart represents. If your chart is using a grouping, then the table displays the aggregate amounts for the filter types that you choose for your chart. If your chart is not using a grouping, then the table displays the aggregate amounts for your past and forecasted cost data. You can download (p. 55) the .csv file that contains the complete data set for your chart.

**Note**
For the RI Utilization and Savings report, the maximum table size is 20 rows. If the data exceeds the maximum table size, it appears in a truncated form.

In the grouped data table, each row is a value for one of the filter type options: API operations, Availability Zones, AWS services, custom cost allocation tags, instance types, linked accounts, purchase options, region, usage type, or usage type group. The columns represent time intervals. For example, the following data table shows the account's costs for selected services for the last three months, with an aggregated total for the three months in the last column.

**Note**
Data transfer costs are included in the services with which they are associated, such as Amazon EC2 or Amazon S3. They are not represented as either a separate line item in the data table or a bar in the chart.

In the ungrouped data table, the row is your costs. The columns represent time intervals.

Downloading the CSV

When you want to review comprehensive detail, you can download a CSV file of the cost data that Cost Explorer uses to generate the chart, which is the same data that appears in the data table under the chart. The data table sometimes does not display the complete data set used for the chart. For more information, see Reading the Cost Explorer Data Table (p. 55).

**To download a CSV file**
1. Launch Cost Explorer.
2. Configure Cost Explorer to use the options that you want to see in the CSV.
3. Choose **Download CSV**.

Saving Your Cost Explorer Configuration with Bookmarks or Favorites

You can save your date, filter, chart style, group by, and advanced settings by saving the Cost Explorer URLs as favorites or bookmarks in your browser. When you return to the link that you saved, Cost Explorer refreshes the page using current cost data for time range you selected, and displays the most recent forecast. This feature makes it easy to save a configuration that you're likely to refresh and return to often. You can also save a configuration for a specific, unchanging range of time by using the **Custom** time range and setting fixed start and end dates for your chart.

**Warning**
If you want to save a number of configurations, make sure to give each bookmark or favorite a unique name, so that you don't overwrite older configurations when you save a new URL.

Managing Your Cost Explorer Reports

You can save the results of a Cost Explorer query as a Cost Explorer report. This allows you to track your Cost Explorer results and forecasts over time.
Creating a Cost Explorer Report

You can use the console to save the results of a Cost Explorer query as a report.

**Note**
Cost Explorer reports can be modified. We strongly recommend that you do not use them for auditing purposes.

**To save a Cost Explorer report**

2. In the navigation pane, choose Cost Explorer.
   **Note**
   Cost Explorer is available in any AWS account for no cost.
4. Choose New report. This resets all of your Cost Explorer settings to your default settings.
5. For the report name text field, enter a name for your report.
7. Choose Save report.
8. In the Save report dialog box, choose Continue.

Viewing a Cost Explorer Report

You can use the console to view saved Cost Explorer reports.

**To view your saved reports**

2. In the navigation pane, choose Cost Explorer.
   **Note**
   Cost Explorer is available in any AWS account for no cost.
4. On the report drop down menu, choose View/Manage all reports.
5. To return to the Cost Explorer page, choose Back.

Editing a Cost Explorer Report

You can use the console to edit Cost Explorer reports.

**To edit your report**

2. In the navigation pane, choose **Cost Explorer**.
3. On the **Cost Explorer** page, choose **Launch Cost Explorer**.

   **Note**
   Cost Explorer is available in any AWS account for no cost.

4. On the report drop down menu, choose the report that you want to edit.

   **Note**
   You cannot edit the preconfigured reports. If you choose one of the preconfigured reports as a starting point for a report, enter a new report name in the report name field and continue with this procedure.

5. Customize your Cost Explorer settings.
6. Choose **Save report**.
7. In the **Save report** dialog box, choose **Continue**.

### Deleting a Cost Explorer Report

You can use the console to delete saved Cost Explorer reports.

**To delete a saved report**

2. In the navigation pane, choose **Cost Explorer**.
3. On the **Cost Explorer** page, choose **Launch Cost Explorer**.

   **Note**
   Cost Explorer is available in any AWS account for no cost.
4. On the report drop down menu, choose **View/Manage all reports**.
5. Next to the report that you want to delete, select the check box.
6. On the navigation bar, choose **Delete**.
7. In the **Delete Report** dialog box, choose **Delete**.

### Using the AWS Cost Explorer API

The Cost Explorer API allows you to programmatically query your cost and usage data. You can query for aggregated data such as total monthly costs or total daily usage. You can also query for granular data, such as the number of daily write operations for DynamoDB database tables in your production environment.

If you use a programming language for which AWS provides an SDK, we recommend that you use the SDK. All the AWS SDKs greatly simplify the process of signing requests and save you a significant amount of time when compared with using the Price List Service API. In addition, the SDKs integrate easily with your development environment and provide easy access to related commands.

For more information about available SDKs, see [Tools for Amazon Web Services](https://aws.amazon.com/tools/). For more information about the AWS Cost Explorer API, see the [AWS Billing and Cost Management API Reference](https://docs.aws.amazon.com/billing/latest/utilities/).

### Service Endpoint

Service Endpoint
The Cost Explorer API provides the following endpoint:

- https://ce.us-east-1.amazonaws.com

**Granting IAM Permissions to Use the AWS Cost Explorer API**

An IAM user must be granted explicit permission to query the AWS Cost Explorer API. For the policy that grants the necessary permissions to an IAM user, see Example 12: View costs and usage (p. 129).

**Controlling Access for Cost Explorer**

How you manage access to the information in Cost Explorer depends on how your AWS account is set up. Your account might be set up to use the AWS Identity and Access Management (IAM) service to grant different levels of access to different IAM users. Your account might be part of consolidated billing in AWS Organizations, in which case it is either a master account or a member account. For information about managing access to Billing and Cost Management pages, see Controlling Access (p. 118). For more information about consolidated billing, see Consolidated Billing for Organizations (p. 130).

**Granting Cost Explorer Access**

You can enable Cost Explorer only if you are the owner of the AWS account and you signed in to the account with your root credentials. If you are the owner of a master account in an organization, enabling Cost Explorer enables Cost Explorer for all the organization accounts. In other words, all member accounts in the organization are also granted access. You can’t grant or deny access individually.

**Cost Explorer and IAM Users**

An AWS account owner who is not using consolidated billing has full access to all Billing and Cost Management information, including Cost Explorer. After you enable Cost Explorer, you should interact with Cost Explorer as an IAM user. If you have permission to view the Billing and Cost Management console, you can use Cost Explorer.

An IAM user must be granted explicit permission to view pages in the Billing and Cost Management console. With the appropriate permissions, the IAM user can view costs for the AWS account to which the IAM user belongs. For the policy that grants the necessary permissions to an IAM user, see Controlling Access (p. 118).

**Consolidated Billing Considerations**

The owner of the master account in an organization has full access to all Billing and Cost Management information for costs incurred by the master account and by member accounts, and can view all costs in Cost Explorer. The owner of a member account in an organization can see costs for the member account, but can’t see costs for any other account in the organization. For more information, see Consolidated Billing for Organizations (p. 130).

**Note**

An account’s status with an organization affects what cost and usage data is visible:

- When a standalone account joins an organization, the account no longer has access to cost and usage data from the time range when the account was a standalone account.
- If a member account leaves an organization and becomes a standalone account, the account no longer has access to cost and usage data from the time range when the account was a member of the organization. The account has access only to the data that is generated as a standalone account.
If a member account leaves organization A to join organization B, the account no longer has access to cost and usage data from the time range when the account was a member of organization A. The account has access only to the data that is generated as a member of organization B.

If an account rejoins an organization that it previously belonged to, the account regains access to its historical cost and usage data.

Accessing Reserved Instance Recommendations

If you enable Cost Explorer, you automatically get Amazon EC2 and Amazon RDS Reserved Instance (RI) purchase recommendations that could help you reduce your costs. RIs provide a discounted hourly rate (up to 75%) compared to On-Demand pricing. Cost Explorer generates your RI recommendations using the following process:

- Identifies your On-Demand EC2 or RDS usage during a specific time period
- Collects your usage into categories that are eligible for an RI
- Simulates every combination of RIs in each category of usage
- Identifies the best number of each type of RI to purchase to maximize your estimated savings

For example, Cost Explorer automatically aggregates your Linux, shared tenancy, and c4 family usage in the US West (Oregon) region and recommends that you buy size-flexible regional RIs to apply to the c4 family usage. Cost Explorer recommends the smallest size instance in an instance family. This makes it easier to purchase a size-flexible RI. Cost Explorer also shows the equal number of normalized units so that you can purchase any instance size that you want. For this example, your RI recommendation would be for c4.large, because that is the smallest size instance in the c4 instance family.

Cost Explorer recommendations are based on a single account or organization usage of the past seven, 30, or 60 days. Cost Explorer ignores usage that is already covered by an RI. EC2 recommendations are for RIs scoped to Region, not Availability Zones, and your estimated savings reflects the application of those RIs to your EC2 instance usage. RDS recommendations are scoped to either Single-AZ or Multi-AZ RIs. Cost Explorer updates your recommendations at least once every 24 hours.

Note
Cost Explorer does not forecast your Amazon EC2 or Amazon RDS usage, or take forecasts into account when recommending RIs. Instead, Cost Explorer assumes that your historical usage reflects your future usage when determining which RIs to recommend.

Topics
- RI Recommendations for Size-Flexible RIs (p. 59)
- Viewing the Cost Explorer RI Recommendations (p. 60)
- Reading the Cost Explorer RI Recommendations (p. 60)
- Modifying Your RI Recommendations (p. 61)
- Saving Your RI Recommendations (p. 62)
- Using Your RI Recommendations (p. 65)

RI Recommendations for Size-Flexible RIs

Cost Explorer also considers the benefits of size-flexible regional RIs when generating your RI purchase recommendations. Size-flexible regional RIs help maximize your estimated savings across eligible instance families in your recommendations. AWS uses the concept of normalized units to compare
the various sizes within an instance family. Cost Explorer uses the smallest normalization factor to represent the instance type that it recommends. For more information, see Instance Size Flexibility for EC2 Reserved Instances.

For example, let’s say you own an EC2 RI for a c4.8xlarge. This RI applies to any usage of a Linux/UNIX c4 instance with shared tenancy in the same region as the RI, such as the following instances:

- One c4.8xlarge instance
- Two c4.4xlarge instances
- Four c4.2xlarge instances
- Sixteen c4.large instances

It also includes combinations of EC2 usage, such as one c4.4xlarge and eight c4.large instances.

If you own an RI that is smaller than the instance that you are running, you will be charged the prorated, On-Demand price for the excess. This means that you could buy an RI for a c4.4xlarge, use a c4.4xlarge instance most of the time, but occasionally scale up to a c4.8xlarge instance. Some of your c4.8xlarge usage is covered by the purchased RI, and the rest is charged at On-Demand prices. For more information, see How Reserved Instances Are Applied in the Amazon Elastic Compute Cloud User Guide.

**Viewing the Cost Explorer RI Recommendations**

To view your RI recommendations, use the following procedure.

**To view your RI recommendations**

   The console opens to the Dashboard, where you can see your current month-to-date usage graphs.
2. In the navigation pane, choose Cost Explorer.
4. On the navigation bar, choose the menu. Under RI Recommendations, choose the service that you want recommendations for. The default recommendation is for RIs with a one-year term and a payment option of Partial Upfront (based on your previous seven days of usage).

**Reading the Cost Explorer RI Recommendations**

At the top of the RI recommendation page there are three numbers: your Estimated Annual Savings, your Savings vs. On-Demand, and your Purchase Recommendations. Your Estimated Annual Savings is how much Cost Explorer calculates that you could save by purchasing all the recommended RIs. Your Savings vs. On-Demand is your estimated savings as a percentage of your current costs. Your Purchase Recommendations is how many different RI purchase options that Cost Explorer found for you. The pane on the right has four parameters that control what settings Cost Explorer uses to generate your recommendations.
Reserved Instance Recommendations

Based on your past 7 days of EC2 usage, we've identified 6 one-year, all-upfront, standard RI purchase recommendations, estimated $12,361 annually, representing a savings of 42% versus on-demand costs. You can take action on these recommendations through the EC2 RI Purchase Console.

Sort by:

Monthly Estimated Savings

Purchase Recommendations (6)

Buy 31 m4.large reserved instances
US East (N. Virginia) | Linux/UNIX | Shared
Based on your past 7 days of on-demand usage, we recommend purchasing 31 m4.large reserved instances to cover 124 normalized units per hour of m4family usage to maximize savings.

View Associated EC2 Usage

At the bottom of the page are three savings estimates. The table shows the different purchase recommendations and details about the recommendations. If you want to see the usage that Cost Explorer based a recommendation on, choose the View Usage in Cost Explorer link in the recommendation details. This takes you to a report that shows the exact parameters that Cost Explorer used to generate your recommendation. The report also shows your costs and associated usage grouped by Purchase Option, so that you can view the On-Demand Instance usage that your recommendation is based on.

You can sort your recommendations by Monthly Estimated Savings, Upfront RI Cost, Purchase recommendation, or Instance Type.

Modifying Your RI Recommendations

You can change the information that Cost Explorer uses when it creates your recommendations, and you can also change the types of recommendations that you want. This allows you to see recommendations for the RIs that work best for you, such as All UpFront RIs with a one-year term, based on your last 30 days of usage.

Note

Instead of forecasting your future usage, Cost Explorer assumes that your future usage is the same as your previous usage. Cost Explorer also assumes that you are renewing any expiring RIs.
To modify Your RI recommendations


   The console opens to the Dashboard, where you can see your current month-to-date usage graphs.

2. In the navigation pane, choose Cost Explorer.


4. On the navigation bar, choose the menu, choose RI Recommendations, and then choose the service that you want to modify the recommendations for.

5. In the RI Recommendation Parameters pane, change the parameters that you want to change. Your estimated savings update automatically.
   
   a. For RI term, select the RI term that you want.
   b. For Offering class, select the RI class that you want.
   c. For Payment option, select the purchase option that you want.
   d. For Based on the past, select how many days of usage that you want your RI recommendations to be based on.

Saving Your RI Recommendations

You can save your RI recommendations as a CSV file.

To save your RI recommendations

1. On the Reserved Instance Recommendations page, in the parameter pane, change the parameters that you want to change. Your estimated savings update automatically.

2. Above the recommendation table, choose Download CSV.

The CSV file contains the following columns.

RI Recommendation CSV Columns

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Service</th>
<th>Column Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendation Date</td>
<td>EC2, RDS</td>
<td>The date that Cost Explorer generated your recommendation.</td>
</tr>
<tr>
<td>Owner Account</td>
<td></td>
<td>The master account that is associated with your recommendation.</td>
</tr>
<tr>
<td>Instance Type</td>
<td></td>
<td>The type of instance that the recommendation is generated for (for example, m4.large or t2.nano). For size-flexible recommendations, Cost Explorer aggregates</td>
</tr>
<tr>
<td><strong>Column Name</strong></td>
<td><strong>Service</strong></td>
<td><strong>Column Explanation</strong></td>
</tr>
<tr>
<td>----------------</td>
<td>------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>all usage in an organization (for example, the m4 family) and shows a recommendation for the smallest instance type RI that is available for purchase (for example, m4.large).</td>
<td>EC2, RDS</td>
<td>Size Flexible Recommendation&lt;br&gt;Whether a recommended RI is size-flexible.</td>
</tr>
<tr>
<td>Max hourly usage in Historical Period</td>
<td>EC2, RDS</td>
<td>The maximum number of instance hours used in an hour over the period chosen for generating recommendations.</td>
</tr>
<tr>
<td>Min hourly usage in Historical Period</td>
<td>EC2, RDS</td>
<td>The minimum number of instance hours used in an hour over the period chosen for generating recommendations.</td>
</tr>
<tr>
<td>Average hourly usage in Historical Period</td>
<td>EC2, RDS</td>
<td>The average number of instance hours used per hour over the period chosen for generating recommendations.</td>
</tr>
<tr>
<td>Max hourly normalized unit usage in Historical Period</td>
<td>EC2, RDS</td>
<td>The maximum number of normalized units used in an hour over the period chosen for generating recommendations.</td>
</tr>
<tr>
<td>Min hourly normalized unit usage in Historical Period</td>
<td>EC2, RDS</td>
<td>The minimum number of normalized units used in an hour over the period chosen for generating recommendations.</td>
</tr>
<tr>
<td>Average hourly normalized unit usage in Historical Period</td>
<td>EC2, RDS</td>
<td>The average number of normalized units used per hour over the period chosen for generating recommendations.</td>
</tr>
<tr>
<td>Projected RI Utilization</td>
<td>EC2, RDS</td>
<td>How much of the recommended RI Cost Explorer estimates you’ll use.</td>
</tr>
<tr>
<td>Location</td>
<td>EC2, RDS</td>
<td>The region of the instances used to generate a recommendation. You should purchase the recommended RIs in the same region.</td>
</tr>
<tr>
<td>Projected RI Utilization</td>
<td></td>
<td>How much of the recommended RI Cost Explorer estimates you will use.</td>
</tr>
<tr>
<td>Column Name</td>
<td>Service</td>
<td>Column Explanation</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td>The region of the instances used to generate a recommendation. You should purchase the recommended RIs in the same region.</td>
</tr>
<tr>
<td>Tenancy</td>
<td>EC2, RDS</td>
<td>The tenancy for the recommended RI purchase. Valid values are shared or dedicated.</td>
</tr>
<tr>
<td>OS</td>
<td></td>
<td>The operating system and license model for the recommended RI instance type.</td>
</tr>
<tr>
<td>Term</td>
<td>EC2, RDS</td>
<td>The recommended term length for the recommendation.</td>
</tr>
<tr>
<td>Payment Option</td>
<td>EC2, RDS</td>
<td>The recommended payment option for the recommendation.</td>
</tr>
<tr>
<td>Recurring Monthly Cost</td>
<td>EC2, RDS</td>
<td>The recurring monthly cost of the recommend reservations.</td>
</tr>
<tr>
<td>Recommended Instance Quantity Purchase</td>
<td>EC2, RDS</td>
<td>How many instance reservations Cost Explorer recommends that you buy.</td>
</tr>
<tr>
<td>Recurring Monthly Cost</td>
<td></td>
<td>The recurring monthly cost of the recommend reservations.</td>
</tr>
<tr>
<td>Recommended Instance Quantity Purchase</td>
<td></td>
<td>How many reservations that Cost Explorer recommends that you buy.</td>
</tr>
<tr>
<td>Break Even Months</td>
<td>EC2, RDS</td>
<td>The estimated length of time before you recoup your upfront costs for this set of recommended reservations.</td>
</tr>
<tr>
<td>Database Engine</td>
<td>RDS</td>
<td>The kind of engine that the recommended RDS reserved instance runs, such as Aurora MySQL or MariaDB.</td>
</tr>
</tbody>
</table>
### Using Your RI Recommendations

To purchase the recommended reservations, you can go directly to the Amazon EC2 RI Purchase Console for Amazon EC2 instances or Reserved Instances for RDS instances. You can also save a CSV file of your recommendations and purchase the reservations at a later date.

**To use Amazon EC2 recommendations**

1. On the **Reserved Instance Recommendations** page, choose **EC2 RI Purchase Console** to go to the Amazon EC2 Purchase Console.
2. Purchase your RIs by following the instructions at **Buying Reserved Instances** in the *Amazon EC2 User Guide for Linux Instances*.

**To use Amazon RDS recommendations**

1. On the **Reserved Instances** page in the RDS console, choose **Purchase Reserved DB Instance**.
2. Purchase your reservations by following the instructions at **Working with Reserved DB Instances** in the *Amazon RDS User Guide*.

### Monitoring Charges with Alerts and Notifications

You can monitor your AWS costs by using CloudWatch. With CloudWatch, you can create billing alerts that notify you when your usage of your services exceeds thresholds that you define. You specify these threshold amounts when you create the billing alerts. When your usage exceeds these amounts, AWS sends you an email notification. You can also sign up to receive notifications when AWS prices change.

To create billing alerts and register for notifications, you must first enable them in the Billing and Cost Management console by using the following procedure.

**Note**

If your account is linked to a reseller account, billing alerts are not available for your account.

**To enable billing alerts**

Before you create a billing alarm, you must enable billing alerts. You need to do this only once. After you enable billing alerts, you can’t turn them off.

2. On the navigation pane, choose Preferences.
4. Choose Save preferences.

After you enable billing alerts, you can set them up and subscribe to notifications by using the following procedure.

To create a billing alarm

1. (Optional) If you want to send your alert to an AWS-managed distribution list instead of a single email address, follow these steps to set up an Amazon Simple Notification Service (Amazon SNS) notification list. If you want to send your alert to a single email address, go to step 2.

To create an Amazon SNS notification list:
   a. Open the Amazon SNS console at https://console.aws.amazon.com/sns/v2/home.
   b. On the navigation pane, choose SNS Home.
   c. In the Common actions section, choose Create topic.
   d. In the dialog box, for Topic name, enter the name for your notification list.
   e. (Optional) If you want to use this notification list to send SMS messages, for Display name, enter the name you want to appear on your SMS messages.
   f. Choose Create topic.

2. Open the CloudWatch console at https://console.aws.amazon.com/cloudwatch/.
3. If necessary, change the region on the navigation bar to US East (N. Virginia). The billing metric data is stored in this region, even for resources in other regions.
4. On the navigation pane, under Metrics, choose Billing.
5. In the list of billing metrics, select the check box next to Currency USD, for the metric named EstimatedCharges.
6. Choose Create Alarm.
7. Define the alarm as follows.
   a. If you want the alarm to trigger as soon as you go over the free tier, set When my total AWS charges for the month exceed to $.01. This means that you’ll receive a notification as soon as you incur a charge. Otherwise, set it to the amount you want to trigger the alarm, and you will be notified when you go over that amount.
   b. Choose the New list link next to the send a notification to box.
   c. When prompted, enter your email address or choose your Amazon SNS notification from the drop down.
   d. Choose Create Alarm.
8. In the Confirm new email addresses dialog box, confirm the email address or choose I will do it later. If you don’t confirm the email address now, the alarm remains in the Pending confirmation status until you do so, and does not send an alert. To view the status of your alarm, choose Alarms in the navigation pane.

To sign up for price update notifications

1. Sign in to the AWS Management Console and open the Amazon SNS console at https://console.aws.amazon.com/sns/v2/home.
2. If you are new to Amazon SNS, choose Get Started.
3. If necessary, change the region on the navigation bar to US East (N. Virginia). The billing metric data is stored in this region, even for resources in other regions.
4. On the navigation pane, choose **Subscriptions**.
5. Choose **Create Subscription**.
6. For **Topic ARN**, if you want to be notified every time a price changes, enter `arn:aws:sns:us-east-1:278350005181:price-list-api`. If you want to be notified about price changes once a day, enter `arn:aws:sns:us-east-1:278350005181:daily-aggregated-price-list-api` instead.
7. For **Protocol**, use the default **HTTP** setting.
8. For **Endpoint**, choose the format that you want to receive the notification in, such as SQS, Lambda, or email.
9. Choose **Create Subscription**.

### Managing Your Costs with Budgets

AWS Budgets enable you to plan your service usage, service costs, and instance reservations. Budgets provide you with a way to see the following information:

- How close your plan is to your budgeted amount or to the free tier limits
- Your usage-to-date, including how much you’ve used of your Reserved Instances (RIs)
- Your current estimated charges from AWS, and how much your predicted usage will accrue in charges by the end of the month
- How much of your budget has been used

AWS Budgets information is updated up to three times a day. Budgets track your unblended costs, subscriptions, refunds, and RIs. You can create the following types of budgets:

- **Cost budgets** – Plan how much you want to spend on a service.
- **Usage budgets** – Plan how much you want to use one or more services.
- **RI utilization budgets** – Define a utilization threshold, and receive alerts when your RI usage falls below that threshold. This lets you see if your RIs are unused or under-utilized.
- **RI coverage budgets** – Define a coverage threshold, and receive alerts when the number of your instance hours that are covered by RIs fall below that threshold. This lets you see how much of your instance usage is covered by a reservation.

You can create up to 20,000 budgets per standalone account or AWS Organizations master account. Your first two budgets are free of charge. Each additional budget costs $0.02 per day. You can set up optional notifications that warn you if you exceed, or are forecasted to exceed, your budgeted amount for cost or usage budgets, or fall below your budgeted amount for RI budgets. You can have notifications sent to an Amazon SNS topic, to an email address, or to both. For more information, see [Creating an Amazon SNS Topic for Budget Notifications](p. 73). AWS Free Tier usage alerts through AWS Budgets are provided for you, and do not count toward your budget limits.

If you use consolidated billing in an organization and you own the master account, you can use IAM policies to control access to budgets by member accounts. By default, owners of member accounts can create their own budgets but can't create or edit budgets for other users. You can use IAM to allow users in a member account to create, edit, delete, or read the budget for your master account. Do this, for example, to allow another account to administer your budget. For more information, see [Controlling Access](p. 118).

**Note**

There can be a delay between when you incur a charge and when you receive a notification from AWS Budgets for the charge. This is due to a delay between when an AWS resource is used and when that resource usage is billed. You might incur additional costs or usage that exceed your budget notification threshold before Budgets can notify you.
Creating a Budget

You can create budgets to track your service usage and costs and to track RI utilization and coverage. Single accounts and master and member accounts in an organization can, by default, create budgets.

To create a budget

2. In the navigation pane, choose Budgets.
3. At the top of the page, choose Create budget.
4. Under Budget details, for Budget Type, choose the type of budget that you want to create. This can be Cost, Usage, RI Utilization, or RI Coverage.
5. For Name, type the name of your budget. Your budget name must be unique within your account, and can use A-Z, a-z, spaces, and the following characters:
   \._/:=+-%@
6. For Period, choose how often you want the budget to reset the actual and forecasted spend. Choose Monthly for every month, Quarterly for every three months, and Annually for every year. For an RI Utilization or RI Coverage budget, you can also choose Daily.
7. If you are creating a cost budget or a usage budget, complete the following steps:
   a. (Optional) For Start date, choose the date that you want the budget to start on. If you do not specify a start date, your budget defaults to the first date of the current month. You can't set a start date for an RI utilization or RI coverage budget.
   b. (Optional) For End date, choose the date that you want the budget to end on. You can specify an end date up to 18 months in the future, or no end date. If you don't specify an end date, your budget recurs until you delete or update it. You can't set an end date for RI utilization or RI coverage budgets.
   c. For Budgeted Amount, enter the total amount that you want to use or spend for this budget period. Usage units are determined by your budget type. For example, costs are measured in dollars, EC2 instance hours are measured in hours, and data transfer is measured in GB. A budget tracks only one type of usage unit. You can't specify a budget amount for an RI utilization or RI coverage budget.
8. For Refine your budget, choose one or more of the following filters. Your choice of budget type determines the set of filters that is displayed on the console.

   Note
   If you are creating a usage report, you must choose Usage Type or Usage Type Group or both. You can create a usage budget for only one specific unit of measure at a time such as gigabyte (GB), gigabyte per month (GB-Month), hours (Hrs), or number of requests.
Creating a Budget

Usage Type Group

Choose one of the groups provided such as S3: Data Transfer – Internet (Out) (GB). A usage type group is a collection of usage types that have the same unit of measure. If you choose both the Usage Type Group and the Usage Type filters, Cost Explorer shows you usage types that are automatically constrained to the group unit of measure. For example, when you choose the group EC2: Running Hours (Hrs), and then you choose the EC2-Instances filter for Usage Type, Cost Explorer shows you only the usage types that are measured in hours.

Usage Type

Choose a filter such as S3, and then choose a usage type value such as DataTransfer-Out-Bytes (GB). You can create a usage budget only for a specific unit of measure. If you choose Usage Type but not Usage Type Group, Cost Explorer shows you all the available units of measure for the usage type.

Service

Choose an AWS service. To learn what's available, see AWS Products and Services. You can also use the Service dimension to filter costs by specific AWS Marketplace software. This includes your costs for specific AMIs, web services, and desktop apps. For more information, see What is AWS Marketplace?

Note

You can use this filter only for cost, RI utilization, or RI coverage budgets. Cost Explorer does not show revenue or usage for the AWS Marketplace software seller. The RI utilization and RI coverage reports allow filtering by only one service at a time, and only for the following services: Amazon EC2, Amazon Redshift, Amazon RDS, Amazon ElastiCache

Legal Entity

Choose the provider that provides your AWS services. For AWS services, AWS is the legal entity. For third-party services that are sold through AWS Marketplace, AWS Marketplace is the legal entity.

Linked Account

Choose an AWS account that is linked to the account for which you are creating the budget.

Tag

If you have activated any tags, choose a resource tag. A tag is a label that you can use to organize your resource costs and track them on a detailed level. There are AWS generated tags and user-defined tags. You must activate tags to use them. For more information, see Activating the AWS-Generated Cost Allocation Tag (p. 78) and Activating User-Defined Cost Allocation Tags (p. 82).

Purchase Option

Choose On Demand Instances or Standard Reserved Instances.

Availability Zone

Choose the Availability Zone in which the resource that you want to create a budget for is running.

API Operation

Choose an action such as CreateBucket.
Billing Entity

Choose the organization that bills you for a service. For AWS service charges, AWS is the billing entity. For third-party services that are sold through AWS Marketplace, AWS Marketplace is the billing entity.

Instance Type

Choose the type of instance that you want to track with this budget.

Platform

Choose the operating system that your RI runs on. Platform is either Linux or Windows.

Tenancy

Choose whether you share an RI with another user or not. Tenancy is either Dedicated or Default.

9. (Optional, cost budgets only) Under Refine your budget, for Advanced options, choose one or more of the following filters. If you are signed in from a member account in an organization instead of from a master account, you might not see all the advanced options.

Refunds

Any refunds that you received.

Credits

Any AWS credits that are applied to your account.

Upfront reservation fees

Any upfront fees that are charged to your account. When you purchase an All Upfront or Partial Upfront Reserved Instance from AWS, you pay an upfront fee in exchange for a lower rate for using the instance.

Recurring reservation charges

Any recurring charges to your account. When you purchase a Partial Upfront or No Upfront Reserved Instance from AWS, you pay a recurring charge in exchange for a lower rate for using the instance.

Taxes

Any taxes that are associated with the charges or fees in your budget.

Support charges

Any charges that AWS charges you for a support plan. When you purchase a support plan from AWS, you pay a monthly charge in exchange for service support.

Other subscription costs

Other applicable subscription costs that are not covered by the other data categories. These costs can include data such as AWS training fees, AWS competency fees, out-of-cycle charges such as registering a domain with Route 53, and more.

Use blended costs

The cost of the instance hours that you used. A blended rate doesn't include either the RI upfront costs or the RI discounted hourly rate.

Use amortized costs

The amortized cost of any reservation hours that you used. For more information about amortized costs, see Show amortized costs.
10. (Optional) Under **Notifications**, define the notifications that you want this budget to have. When you create this budget, AWS creates the budget notifications for you. A budget can have up to five budget notifications. If you don't want notifications, leave the **Notifications** fields blank.

    a. For **Notification Criteria**, type the amount that you want to be notified at. This can be either an absolute value or a percentage. For example, for a budget of 200 dollars, if you want to be notified at 160 dollars (80% of your budget), type "160" for an absolute budget, or "80" for a percentage budget.

    b. (Optional) For **Email contacts**, type the email addresses that you want the notifications to be sent to. Separate multiple email addresses with a comma. A notification can have up to 10 email addresses.

    To receive a notification, you must specify either an email address, an SNS topic, or both.

    c. (Optional) For **SNS topic ARN**, type or paste the ARN for your SNS topic, and then choose **Verify**. If you want to use an Amazon SNS topic for your notification but don't have one, see [Create a Topic](https://docs.aws.amazon.com/sns/latest/dg/sns-create-topic.html) in the *Amazon Simple Notification Service Developer Guide*.

    AWS verifies that your budget has permission to send notifications to your Amazon SNS topic by sending a test email to your Amazon SNS topic. If the Amazon SNS topic ARN is valid but the **Verify** step fails, check the Amazon SNS topic policy to make sure that it allows your budget to publish to that topic.

    For a sample policy and instructions on granting your budget permissions, see [Creating an Amazon SNS Topic for Budget Notifications](https://docs.aws.amazon.com/sns/latest/dg/sns-create-topic.html) (p. 73). A notification can be subscribed to only one Amazon SNS topic.

    To receive a notification, you must specify either an email address, an SNS topic, or both.

    d. (Optional) To create additional notifications with different thresholds, choose **Add new notification**.

11. Choose **Create**.

**Important**

When you finish creating a budget with SNS notifications, Amazon SNS sends a confirmation email to the email addresses that you specify. The subject line is **AWS Notification - Subscription Confirmation**. A recipient must choose **Confirm subscription** in the confirmation email to begin receiving notifications.

### Viewing Your Budgets

The **Budgets** dashboard shows you the state of your budgets at a glance. Your budgets are listed on the dashboard along with the following data:

- The usage or costs already accrued for that budget during this budget period
- Your forecasted usage or costs for the budget period
- The total usage or amount that you specified for the budget period
- A status bar that shows your usage or costs compared to your budgeted or forecasted amount
- A status bar that shows your forecasted usage or costs compared to your budgeted or forecasted amount

**To view your budgets**

2. On the navigation pane, choose **Budgets**.
3. To see the filters and cost variances for your budgets, choose the arrow icon that precedes the budget's name in your list of budgets (↑).

4. To change your dashboard columns, choose the gear icon in the upper-right corner.
   a. Clear the check boxes for the columns that you want to hide, or select the columns that you want to show.
   b. Choose **Done**.

**Editing a Budget**

You can edit budgets created after October 20, 2016. You can't edit the budget name.

**To edit a budget**

2. On the navigation pane, choose **Budgets**.
3. On the **Budgets** page, select the budget that you want to edit, and then choose **Edit**.
4. Change the parameters that you want to edit. You can't change the budget name.
5. Choose **Done**.

**Downloading a Budget**

You can download your budgets as a CSV file. The file includes all of the data for all of your budgets, such as Budget Name, Current Value and Forecasted Value, Budgeted Value, and more.

**To download a budget**

2. On the navigation pane, choose **Budgets**.
3. Choose **Download CSV**.
4. Open or save your file.

**Copying a Budget**

You can copy an existing budget to a new one. This allows you to retain the filters and notification settings from your original budget while still allowing you to make changes. Billing and Cost Management automatically populates the fields on the creation page for the new budget, where you can update the budget parameters.

Budgets created before October 20, 2016 can't be copied.

**To copy a budget**

Budgets use the same filters as Cost Explorer. For more information about the filters, see **Filtering the Data That You Want to View** (p. 41).

Deleting a Budget

You can delete your budgets and the associated notifications at any time. You can't recover a budget after you delete it.

To delete a budget

2. On the navigation pane, choose Budgets.
3. On the Budgets page, select the budgets that you want to delete, and then choose Delete.
4. In the Delete Budget box, choose Delete.

Creating an Amazon SNS Topic for Budget Notifications

When you create a budget that sends notifications to an Amazon Simple Notification Service (Amazon SNS) topic, you need to either have a pre-existing Amazon SNS topic or create an Amazon SNS topic. Amazon SNS topics allow you to send notifications over SMS in addition to email. Your budget must have permissions to send a notification to your topic.

To create an Amazon SNS topic and grant permissions to your budget, use the Amazon SNS console.

To create an Amazon SNS notification topic and grant permissions

1. Sign in to the AWS Management Console and open the Amazon SNS console at https://console.aws.amazon.com/sns/v2/home.
2. On the navigation pane, choose Topics.
3. On the Topics page, choose Create new topic.
4. In the dialog box, for Topic name, type the name for your notification topic.
5. In the dialog box, for Display name, type the name that you want displayed when you receive a notification.
6. Choose Create topic. Your topic appears in the list of topics on the Topics page.
7. Select your topic, and copy the ARN next to your topic name.
8. For Actions, choose Edit topic policy.
9. In the dialog box, choose Advanced view.
10. In the policy text field, after "Statement": [], add the following text:

```json
{
  "Statement":
  [
    
```
Using Cost Allocation Tags

A tag is a label that you or AWS assigns to an AWS resource. Each tag consists of a key and a value. A key can have more than one value. You can use tags to organize your resources, and cost allocation tags to track your AWS costs on a detailed level. After you activate cost allocation tags, AWS uses the cost allocation tags to organize your resource costs on your cost allocation report, to make it easier for you to categorize and track your AWS costs. AWS provides two types of cost allocation tags, an AWS generated tag and user-defined tags. AWS defines, creates, and applies the AWS generated tag for you, and you define, create, and apply user-defined tags. You must activate both types of tags separately before they can appear in Cost Explorer or on a cost allocation report.

The following diagram illustrates the concept. In the example, you've assigned and activated tags on two Amazon EC2 instances, one tag called Cost Center and another tag called Stack. Each of the tags has an
associated value. You also activated the AWS generated tag, createdBy before creating these resources. The createdBy tag tracks who created a resource. The user-defined tags use the user prefix, and the AWS generated tag uses the aws: prefix.

After you or AWS applies tags to your AWS resources (such as Amazon EC2 instances or Amazon S3 buckets) and you activate the tags in the Billing and Cost Management console, AWS generates a cost allocation report as a comma-separated value (CSV file) with your usage and costs grouped by your active tags. You can apply tags that represent business categories (such as cost centers, application names, or owners) to organize your costs across multiple services.

The cost allocation report includes all of your AWS costs for each billing period. The report includes both tagged and untagged resources, so that you can clearly organize the charges for resources. For example, if you tag resources with an application name, you can track the total cost of a single application that runs on those resources. The following screenshot shows a partial report with columns for each tag.

At the end of the billing cycle, the total charges (tagged and untagged) on the billing report with cost allocation tags reconciles with the total charges on your Bills page total and other billing reports for the same period.

You can also use tags to filter views in Cost Explorer. For more information about Cost Explorer, see Analyzing Your Costs with Cost Explorer (p. 37).

For more information about activating the AWS generated tag, see Activating the AWS-Generated Cost Allocation Tag (p. 78). For more information about applying and activating user-defined tags, see User-Defined Cost Allocation Tags (p. 79). All tags can take up to 24 hours to appear in the Billing and Cost Management console.
### AWS-Generated Cost Allocation Tags

The AWS generated tag `createdBy` is a tag that AWS defines and applies to supported AWS resources for cost allocation purposes. To use the AWS generated tag, a master account owner must activate it in the Billing and Cost Management console. When a master account owner activates the tag, the tag is also activated for all member accounts. After the tag is activated, AWS starts applying the tag to resources that are created after the AWS generated tag was activated. The AWS generated tag is available only in the Billing and Cost Management console and reports, and doesn't appear anywhere else in the AWS console, including the AWS Tag Editor. The `createdBy` tag does not count towards your tags per resource limit.

The `createdBy` tag uses the following key-value definition:

```plaintext
key = aws:createdBy

value = account-type:account-ID or access-key:user-name or role session name
```

Not all values include all of the value parameters. For example, the value for a AWS generated tag for a root account does not always have a user name.

Valid values for the `account-type` are Root, IAMUser, AssumedRole, and FederatedUser.

If the tag has an account-ID, then the `account-id` tracks the account number of the root account or federated user who created the resource. If the tag has an access-key, then the `access-key` tracks the IAM access key used, and, if applicable, the session role name.

The `user-name` is the user name, if one is available.

Here are some examples of tag values:

```plaintext
Root:1234567890
Root:1234567890:exampleUser
IAMUser:EXAMPLEACCESSKEY:exampleUser
AssumedRole:EXAMPLEACCESSKEY:exampleRole
FederatedUser:1234567890:exampleUser
```

For more information about IAM users, roles, and federation, see the [IAM User Guide](#).

AWS-generated cost allocation tags are applied on a best-effort basis. Issues with services that AWS-generated tags depend on, such as CloudTrail, can cause a gap in tagging.
The `createdBy` tag is applied only to the following services and resources after the following events:

<table>
<thead>
<tr>
<th>AWS Product</th>
<th>API or Console Event</th>
<th>Resource Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWS CloudFormation (AWS CloudFormation)</td>
<td>CreateStack</td>
<td>Stack</td>
</tr>
<tr>
<td>AWS Data Pipeline (AWS Data Pipeline)</td>
<td>CreatePipeline</td>
<td>Pipeline</td>
</tr>
<tr>
<td>Amazon Elastic Compute Cloud (Amazon EC2)</td>
<td>CreateCustomerGateway</td>
<td>Customer gateway</td>
</tr>
<tr>
<td></td>
<td>CreateDhcpOptions</td>
<td>DHCP options</td>
</tr>
<tr>
<td></td>
<td>CreateImage</td>
<td>Image</td>
</tr>
<tr>
<td></td>
<td>CreateInternetGateway</td>
<td>Internet gateway</td>
</tr>
<tr>
<td></td>
<td>CreateNetworkAcl</td>
<td>Network ACL</td>
</tr>
<tr>
<td></td>
<td>CreateNetworkInterface</td>
<td>Network interface</td>
</tr>
<tr>
<td></td>
<td>CreateRouteTable</td>
<td>Route table</td>
</tr>
<tr>
<td></td>
<td>CreateSecurityGroup</td>
<td>Security group</td>
</tr>
<tr>
<td></td>
<td>CreateSnapshot</td>
<td>Snapshot</td>
</tr>
<tr>
<td></td>
<td>CreateSubnet</td>
<td>Subnet</td>
</tr>
<tr>
<td></td>
<td>CreateVolume</td>
<td>Volume</td>
</tr>
<tr>
<td></td>
<td>CreateVpc</td>
<td>VPC</td>
</tr>
<tr>
<td></td>
<td>CreateVpcPeeringConnection</td>
<td>VPC peering connection</td>
</tr>
<tr>
<td></td>
<td>CreateVpnConnection</td>
<td>VPN connection</td>
</tr>
<tr>
<td></td>
<td>CreateVpnGateway</td>
<td>VPN gateway</td>
</tr>
<tr>
<td></td>
<td>PurchaseReservedInstancesOffering</td>
<td>Reserved-instance</td>
</tr>
<tr>
<td></td>
<td>RequestSpotInstances</td>
<td>Spot-instance-request</td>
</tr>
<tr>
<td></td>
<td>RunInstance</td>
<td>Instance</td>
</tr>
<tr>
<td>Amazon ElastiCache (ElastiCache)</td>
<td>CreateSnapshot</td>
<td>Snapshot</td>
</tr>
<tr>
<td></td>
<td>CreateCacheCluster</td>
<td>Cluster</td>
</tr>
<tr>
<td>AWS Elastic Beanstalk (Elastic Beanstalk)</td>
<td>CreateEnvironment</td>
<td>Environment</td>
</tr>
<tr>
<td></td>
<td>CreateApplication</td>
<td>Application</td>
</tr>
<tr>
<td>Elastic Load Balancing (Elastic Load Balancing)</td>
<td>CreateLoadBalancer</td>
<td>Loadbalancer</td>
</tr>
<tr>
<td>Amazon Glacier (Amazon Glacier)</td>
<td>CreateVault</td>
<td>Vault</td>
</tr>
</tbody>
</table>
AWS Product | API or Console Event | Resource Type
---|---|---
Amazon Kinesis (Kinesis) | CreateStream | Stream
Amazon Relational Database Service (Amazon RDS) | CreateDBInstanceReadReplica, CreateDBParameterGroup, CreateDBSnapshot, CreateDBSubnetGroup, CreateEventSubscription, CreateOptionGroup, PurchaseReservedDBInstancesOffering | Database, ParameterGroup, Snapshot, SubnetGroup, EventSubscription, OptionGroup, ReservedDBInstance
Amazon Redshift (Amazon Redshift) | CreateClusterParameterGroup, CreateClusterSnapshot, CreateClusterSubnetGroup, CreateCluster | ParameterGroup, Snapshot, SubnetGroup, Cluster
Amazon Route 53 (Route 53) | CreateHealthCheck, CreatedHostedZone | HealthCheck, HostedZone
Amazon Simple Storage Service (Amazon S3) | CreateBucket | Bucket
AWS Storage Gateway (AWS Storage Gateway) | ActivateGateway | Gateway

**Note**
The CreateDBSnapshot tag is not applied to the snapshot backup storage.

**Activating the AWS-Generated Cost Allocation Tag**

Master account owners can activate the AWS generated tag in the Billing and Cost Management console. When a master account owner activates the tag it is also activated for all member accounts. This tag is visible only in the Billing and Cost Management console and reports.

**To activate the AWS generated tag**

You can activate the `createdBy` tag in the Billing and Cost Management console.

2. In the navigation pane, choose *Cost Allocation Tags*.

It can take up to 24 hours for tags to activate.
Deactivating the AWS-Generated Cost Allocation Tag

Master account owners can deactivate the AWS generated tag in the Billing and Cost Management console. When a master account owner deactivates the tag it is also deactivated for all member accounts. After you deactivate the AWS generated tag, AWS no longer applies the tag to new resources. Previously tagged resources remain tagged.

To deactivate the AWS generated tag

2. In the navigation pane, choose Cost Allocation Tags.

It can take up to 24 hours for tags to deactivate.

AWS-Generated Cost Allocation Tag Restrictions

The following restrictions apply to the AWS generated tags:

- AWS generated tags can only be activated by master accounts.
- You can't update, edit, or delete AWS tags.
- AWS-generated cost allocation tags are not applied to resources that were created before the tag was activated.
- AWS generated tags are created using CloudTrail logs. CloudTrail logs over a certain size cause AWS generated tag creation to fail.
- Reserved prefix—aws:

  AWS-generated tag names and values are automatically assigned the aws: prefix, which you can't assign. AWS-generated tag names do not count towards the tag limit of 50. User-defined tag names have the prefix user: in the Cost Allocation Report.

User-Defined Cost Allocation Tags

User-defined tags are tags that you define, create, and apply to resources. After you have created and applied them, you can activate them on the Billing and Cost Management console for cost allocation tracking. After you activate them, they appear on your cost allocation report. You can then use the tags on your cost allocation report to track your AWS costs. Tags are not applied to resources that were created before the tags were created.

Note

Only master accounts in an organization and single accounts that are not members of an organization have access to the Cost Allocation Tags manager in the Billing console.

Applying User-Defined Cost Allocation Tags

For ease of use and best results, use the AWS Tag Editor to create and apply user-defined tags. The Tag Editor provides a central, unified way to create and manage your user-defined tags. For more information, see Working with Tag Editor in Getting Started with the AWS Management Console.

For supported services, you can also apply tags to resources using the API or the AWS Management Console. Each AWS service has its own implementation of tags. You can work with these
implementations individually, or use Tag Editor to simplify the process. The following is a current list of services that support tags:

<table>
<thead>
<tr>
<th>AWS Product</th>
<th>For more information, see...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon API Gateway</td>
<td>Set up Tags for an API Stage in API Gateway in the <a href="https://docs.aws.amazon.com/apigateway/latest/developerguide/apigateway-get-started.html">API Gateway Developer Guide</a>.</td>
</tr>
<tr>
<td>Amazon Cognito</td>
<td>Adding Cost Allocation Tags to Your User Pool in the <a href="https://docs.aws.amazon.com/cognito/latest/developerguide/about-cognito-user-pool-attributes.html">Amazon Cognito Developer Guide</a>.</td>
</tr>
<tr>
<td>Amazon DynamoDB</td>
<td>Adding Tagging for DynamoDB in the <a href="https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/what-is.html">Amazon DynamoDB Developer Guide</a>.</td>
</tr>
<tr>
<td>Amazon Elastic Block Store (Amazon EBS)</td>
<td>Tagging Your Resources in the <a href="https://docs.aws.amazon.com/elasticloadbalancing/latest/ELB/UI/">Amazon Elastic Compute Cloud User Guide</a>. For information about avoiding unexpected charges associated with your Amazon EBS volumes and snapshots, see Amazon Elastic Block Store Volumes and Snapshots (p. 98).</td>
</tr>
<tr>
<td>Amazon Elasticsearch Service (Amazon ES)</td>
<td>Tagging Amazon Elasticsearch Service Domains in the <a href="https://docs.aws.amazon.com/elasticsearchservice/latest/developerguide/">Amazon Elasticsearch Service Developer Guide</a>.</td>
</tr>
<tr>
<td>Amazon Elastic Compute Cloud (Amazon EC2)</td>
<td>Tagging Your Resources in the <a href="https://docs.aws.amazon.com/elasticloadbalancing/latest/ELB/">Amazon Elastic Compute Cloud User Guide</a>. For information about avoiding unexpected charges associated with your Amazon EC2 instances, see Amazon EC2 Instances (p. 98).</td>
</tr>
<tr>
<td>Amazon EMR</td>
<td>Tagging Amazon EMR Clusters in the [Amazon EMR Developer Guide](<a href="https://docs.aws.amazon.com/emr/latest/">https://docs.aws.amazon.com/emr/latest/</a> EMRGuide/).</td>
</tr>
<tr>
<td>Amazon Glacier</td>
<td>Tagging Your Amazon Glacier Resources in the <a href="https://docs.aws.amazon.com/glacier/latest/glaciernational/">Amazon Glacier Developer Guide</a>.</td>
</tr>
<tr>
<td>Amazon Kinesis</td>
<td>Tagging Your Kinesis Streams in the <a href="https://docs.aws.amazon.com/kinesis/latest/dev/">Amazon Kinesis Developer Guide</a>.</td>
</tr>
</tbody>
</table>
### AWS Product

<table>
<thead>
<tr>
<th>AWS Product</th>
<th>For more information, see...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon Redshift</td>
<td>Tagging Resources in Amazon Redshift in the Amazon Redshift Cluster Management Guide.</td>
</tr>
<tr>
<td>Amazon Relational Database Service (Amazon RDS)</td>
<td>Tagging Amazon RDS Resources in the Amazon Relational Database Service User Guide.</td>
</tr>
<tr>
<td></td>
<td>For information about avoiding unexpected charges associated with your Amazon RDS databases,</td>
</tr>
<tr>
<td></td>
<td>see Storage Services (p. 99).</td>
</tr>
<tr>
<td>Amazon Route 53</td>
<td>Tagging Amazon Route 53 Resources in the Amazon Route 53 Developer Guide.</td>
</tr>
<tr>
<td>Amazon Simple Queue Service</td>
<td>Tagging Your Amazon SQS Queues in the Amazon Simple Queue Service Developer Guide.</td>
</tr>
<tr>
<td>Amazon Simple Storage Service (Amazon S3)</td>
<td>Billing and Reporting of Buckets in the Amazon Simple Storage Service Developer Guide.</td>
</tr>
<tr>
<td></td>
<td>For information about avoiding unexpected charges associated with your Amazon S3 buckets,</td>
</tr>
<tr>
<td></td>
<td>see Storage Services (p. 99).</td>
</tr>
<tr>
<td>Amazon Virtual Private Cloud (Amazon VPC)</td>
<td>Amazon VPC and Amazon EC2 resources that can be tagged are listed in Tagging Your Resources in</td>
</tr>
<tr>
<td></td>
<td>the Amazon Elastic Compute Cloud User Guide.</td>
</tr>
<tr>
<td>Amazon EC2 Auto Scaling</td>
<td>Tagging Auto Scaling Groups and Amazon EC2 Instances in the Amazon EC2 Auto Scaling Developer</td>
</tr>
<tr>
<td></td>
<td>Guide.</td>
</tr>
<tr>
<td>AWS CloudFormation</td>
<td>Tagging Your Member Resources in the AWS CloudFormation User Guide.</td>
</tr>
<tr>
<td>AWS Elastic Beanstalk</td>
<td>Tagging Your Environments and Applications in the AWS Elastic Beanstalk Developer Guide.</td>
</tr>
<tr>
<td></td>
<td>For information about avoiding unexpected charges associated with your Elastic Beanstalk</td>
</tr>
<tr>
<td></td>
<td>Environments, see Elastic Beanstalk Environments (p. 98).</td>
</tr>
<tr>
<td>AWS Lambda</td>
<td>Tagging Lambda Functions in the AWS Lambda Developer Guide.</td>
</tr>
<tr>
<td>Amazon WorkSpaces</td>
<td>Tag a WorkSpace in the Amazon WorkSpaces Administration Guide.</td>
</tr>
</tbody>
</table>

After you create and apply user-defined tags, you can activate them for cost allocation. If you activate your tags for cost allocation, it's a good idea to devise a set of tag keys that represent how you want to organize your costs. Your cost allocation report displays the tag keys as additional columns with the applicable values for each row, so it's easier to track your costs if you use a consistent set of tag keys.

**Note**

User-defined cost allocation tags created by linked accounts can take up to 24 hours to appear in the Billing and Cost Management console. To speed up the process, you can trigger a manual refresh. For more information, see Refreshing User-Defined Cost Allocation Tags (p. 82).
Some services launch other AWS resources that the service uses, such as Amazon EMR or AWS Marketplace launching an EC2 instance. If the supporting service (EC2) supports tagging, you can tag the supporting resources (such as the associated Amazon EC2 instance) for your report. For a full list of resources that can be tagged, use the Tag Editor to search. For more information about how to search for resources using Tag Editor, see Searching for Resources to Tag.

**Activating User-Defined Cost Allocation Tags**

In order for tags to appear on your billing reports, you must activate your applied tags in the billing console.

**To activate your tags**

2. In the navigation pane, choose Cost Allocation Tags.
3. Select the tags that you want to activate.
4. Choose Activate.

It can take up to 24 hours for tags to activate.

For an example of how tags appear in your billing report with cost allocation tags, see Viewing a Cost Allocation Report (p. 85).

**Refreshing User-Defined Cost Allocation Tags**

Cost allocation tags created by linked accounts can take up to 24 hours to appear in the Billing and Cost Management console. After the tags appear, you can activate them to be included in your cost allocation report. Every 24 hours, you can manually trigger a refresh of your cost allocation tags, shortening the wait time for your tags appear. After a refresh, AWS applies your tags and sends you an email when the refresh is complete.

Before you can refresh your tags, you must create them and apply them to your resources. For more information, see Applying User-Defined Cost Allocation Tags (p. 79).

**To refresh your cost allocation tags**

You can refresh your cost allocation tags in the Billing and Cost Management console.

2. In the navigation pane, choose Cost Allocation Tags.
3. Under Cost allocation tags, choose Refresh.

**User-Defined Tag Restrictions**

The following basic restrictions apply to tags:

- Maximum key length: 128 Unicode characters
- Maximum value length: 256 Unicode characters
- Case sensitive
- Maximum number of tags per resource: 50
• Maximum active tag keys for Billing and Cost Management reports: 500
• Reserved prefix—aws:

AWS-generated tag names and values are automatically assigned the aws: prefix, which you cannot assign. User-defined tag names have the prefix user: in the Cost Allocation Report.

• Use each key only once for each resource. If you attempt to use the same key twice on the same resource, your request will be rejected.
• You cannot tag a resource at the same time you create it. Tagging requires a separate action after the resource is created.
• You cannot backdate the application of a tag. This means that tags only start appearing on your cost allocation report after you apply them, and do not appear on earlier reports.
• Allowed characters are Unicode letters, whitespace, and numbers, plus the following special characters: + - = . _ : /

Note
If you need characters outside this allowed set, you can apply standard base-64 encoding to your tag. Billing and Cost Management does not encode or decode your tag for you.

Monthly Cost Allocation Report

The monthly cost allocation report lists the AWS usage for your account by product category and IAM user. The report contains the same line items as the detailed billing report (see Understanding Your Usage with Billing Reports (p. 16)) and additional columns for your tag keys. For more information, see the following topics:

Topics
• Setting Up a Monthly Cost Allocation Report (p. 83)
• Getting an Hourly Cost Allocation Report (p. 85)
• Viewing a Cost Allocation Report (p. 85)

Setting Up a Monthly Cost Allocation Report

By default, new tag keys that you add using the API or the AWS Management Console are automatically excluded from the cost allocation report. You can add them using the procedures described in this topic.

When you select tag keys to include in your cost allocation report, each key becomes an additional column that lists the value for each corresponding line item. Because you might use tags for more than just your cost allocation report (for example, tags for security or operational reasons), you can include or exclude individual tag keys for the report. This ensures that you're seeing meaningful billing information that helps organize your costs. A small number of consistent tag keys makes it easier to track your costs. For more information, see Viewing a Cost Allocation Report (p. 85).

Note
AWS stores billing reports in an Amazon S3 bucket that you create and own. You can retrieve these reports from the bucket using the Amazon S3 API, AWS Management Console for Amazon S3, or the Amazon S3 command line interface (CLI). You can't download the cost allocation report from the Account Activity page of the Billing and Cost Management console.

To set up the cost allocation report and activate tags
2. In the navigation pane, choose Preferences.
3. For **Receive Billing Reports**, select the check box. For **Save to S3 Bucket**, type a valid Amazon S3 bucket name, and then choose **Verify**.

4. In the **Report** list, select the check box for **Cost allocation report**.

5. Choose **Manage report tags**, as shown in the following screenshot.

![Screenshot of AWS console showing Manage report tags](image)

The page displays a list of tags you've created using either the API or the console for the applicable AWS service. Tag keys that currently appear in the report are selected, while the check boxes for excluded tag keys are cleared.

6. For **Filter**, choose **Inactive tags** in the drop down list, and then select the tags that you want to activate for your report.
7. Choose **Activate**.

If you own the master account in an organization, your cost allocation report includes all the usage, costs, and tags for the member accounts. By default, all keys registered by member accounts are available for you to include or exclude from your report. The detailed billing report with resources and tags also includes any cost allocation tag keys that you select using the preceding steps.

**Getting an Hourly Cost Allocation Report**

The cost allocation report is one of several reports that AWS publishes to an Amazon S3 bucket several times a day.

**Note**
During the current billing period (monthly), AWS generates an estimated Cost Allocation Report. The current month's file is overwritten throughout the billing period until a final report is generated at the end of the billing period. Then, a new file is created for the next billing period. The reports for the previous months remain in the designated Amazon S3 bucket.

**Viewing a Cost Allocation Report**

The following example tracks the charges for several cost centers and applications. Resources (such as Amazon EC2 instances and Amazon S3 buckets) are assigned tags like "Cost Center"="78925" and "Application"="Widget1". In the Cost Allocation Report, the user-defined tag keys have the prefix "user", such as "user:Cost Center" and "user:Application". AWS-generated tag keys have the prefix "aws". The keys are column headings identifying each tagged line item's value, such as "78925".
You can use a desktop spreadsheet application to create pivot tables that group the keys and the values for each key so that you can see combined values for tagged resources. The following example organizes information first by "Cost Center," and within each cost center further organizes the information by the "Application" tag.

Pick your keys carefully so that you have a consistent hierarchy of values. Otherwise, your report won't group costs effectively, and you'll have many line items.

**Note**
If you add or change the tags on a resource part way through a billing period, costs are split into two separate lines in your Cost Allocation Report. The first line will show costs before the update, and the second line will show costs after the update.

### Unallocated Resources in Your Report

Any charges that cannot be grouped by tags in your Cost Allocation Report default to the standard billing aggregation (organized by Account/Product/Line Item) and are included in your report. Situations where you can have unallocated costs include:

- You signed up for a Cost Allocation Report mid-month.
- Some resources aren't tagged for part, or all, of the billing period.
- You are using services that currently do not support tagging.
- Subscription-based charges, such as Premium Support and AWS Marketplace monthly fees, cannot be allocated.
- One-time fees, such as Amazon EC2 Reserved Instance upfront charges, cannot be allocated.
Unexpected Costs Associated with Tagged Resources

You can use cost allocation tags to see what resources are contributing to your usage and costs, but deleting or deactivating the resources doesn’t always reduce your costs. For more information on reducing unexpected costs, see Avoiding Unexpected Charges (p. 97).

Using the AWS Price List API

The Price List Service API (aka the Query API) and AWS Price List API (aka the Bulk API) enable you to query for the prices of AWS services using either JSON (with the Price List Service API) or HTML (with the AWS Price List API). 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.

Topics
• Using the Query API (p. 87)
• Using the Bulk API (p. 88)
• Setting Up Notifications (p. 94)

Using the Query API

AWS Price List Service API is a centralized and convenient way to programmatically query AWS for services, products, and pricing information. The Price List Service API uses standardized product attributes such as Location, Storage Class, and Operating System, and provides prices at the SKU level. You can use Price List Service to build cost control and scenario planning tools, reconcile billing data, forecast future spend for budgeting purposes, and provide cost benefit analyses that compare your internal workloads with AWS.

If you use a programming language for which AWS provides an SDK, we recommend that you use the SDK. All the AWS SDKs greatly simplify the process of signing requests and save you a significant amount of time when compared with using the Price List Service API. In addition, the SDKs integrate easily with your development environment and provide easy access to related commands.

Note
The Price List Service API provides pricing details for your information only. If there is a discrepancy between the offer file and a service pricing page, AWS charges the prices that are listed on the service pricing page. For more information about AWS service pricing, see Cloud Services Pricing.

For more information about available SDKs, see Tools for Amazon Web Services. For more information about the AWS Price List Service API, see the AWS Billing and Cost Management API Reference.

Service Endpoint

AWS Price List Service API provides the following two endpoints:

https://api.pricing.us-east-1.amazonaws.com
https://api.pricing.ap-south-1.amazonaws.com

Granting IAM Permissions to Use the AWS Price List Service API

An IAM user must be granted explicit permission to query the AWS Price List Service API. For the policy that grants the necessary permissions to an IAM user, see Example 11: Find products and prices (p. 129).
Using the Bulk API

The AWS Price List API is actually a URL that provides up-to-date pricing information on the current AWS products and services. To access pricing information using the AWS Price List API, download the offer file:

- **Offer file** – A JSON or CSV file that lists the products and prices for either a single AWS service in all regions or a single AWS service in a specific region. For more information, see Downloading an Offer File (p. 88).

To find a list of all available offer files, download the offer index file:

- **Offer index file** – A JSON file that lists the supported AWS services, with a URL for each offer file where you can download pricing details. The file also includes metadata about the offer index file itself, URLs for service offer files, and URLs for regional offer index files. For more information, see Downloading an Offer Index File (p. 88).

Offer files do not include information about expiring free tier offers or Amazon EC2 Spot Instances.

**Note**
The AWS Price List API provides pricing details for your information only. If there is a discrepancy between the offer file and a service pricing page, AWS charges the prices that are listed on the service pricing page. For more information about AWS service pricing, see Cloud Services Pricing.

**Topics**
- Downloading an Offer Index File (p. 88)
- Downloading an Offer File (p. 88)
- Finding Prices in an Offer File (p. 89)
- Reading an Offer File (p. 89)
- Reading the Offer Index File (p. 93)

To receive SNS notifications when prices change, see Setting Up Notifications (p. 94).

**Downloading an Offer Index File**

To download the offer index file, go to the following URL:

```
https://pricing.us-east-1.amazonaws.com/offers/v1.0/aws/index.json
```

The URL opens the offer index file. In the offer index file, search for the service that you want prices for. You need the service code to download the service-specific offer file. To download an offer index file for a specific service and region, find the service that you want prices for and open the regional offer index file.

For more information, see Reading the Offer Index File (p. 93).

**Downloading an Offer File**

To download the offer file for the service that you want, go to the URL for that offer file. For example, to download the current JSON version of the Amazon EC2 offer file, go to the following URL:

```
https://pricing.us-east-1.amazonaws.com/offers/v1.0/aws/AmazonEC2/current/index.json
```

Version 2.0
88
The offer index file includes the JSON URLs. To download the CSV version, replace the `.json` extension in the offer file URL with `.csv`. If you want to download the offer file for a specific service and you know the service code, replace the `AmazonEC2` in the URL with the service code to download the offer file for that service. If you do not know the service code, download the offer index file to find it. If you want to download the offer file for a specific service in a specific region and you know the service code and region, use the URL for that regional offer file. For example, to download the current JSON version of the Amazon EC2 offer file for US East (N. Virginia), use the following URL:

```
https://pricing.us-east-1.amazonaws.com/offers/v1.0/aws/AmazonEC2/current/us-east-1/index.json
```

If you access the offer files programmatically, you can use the offer index file to find the current URLs. For more information about the offer index file, see Finding Prices in an Offer File (p. 89) and Reading an Offer File (p. 89).

**Finding Prices in an Offer File**

You can use the offer files to find the prices and terms for a specific product. For example, you can find a list of Amazon EC2 instance prices.

The following procedures show how to find Amazon EC2 products by downloading an offer file as a CSV or JSON file and sorting the results.

**To find an EC2 Reserved Instance using the CSV file**

1. Download the EC2 CSV file.
2. Open the CSV file with your program of choice. For this example, we use Excel.
4. In the navigation bar of the spreadsheet, choose **Data**.
5. In the Data bar, choose **Sort**.
6. In the **Sort by** drop down list, choose column **TermType**, and then choose **OK**.
7. Scroll down until you find the value `reserved` in the **TermType** column. Products that are marked `reserved` in the **TermType** column have reserved rate pricing.

**To find an EC2 Reserved Instance using the JSON file**

1. Download the JSON file.
2. Open the JSON file with your program of choice. For this example, we use Notepad++.
3. Press **CTRL+F**.
4. For **Find what**, type `reserved`.
5. Choose **Find All in Current Document**.

The `reserved` search results open in a new pane at the bottom of the window.

**Reading an Offer File**

An offer file lists the products and prices for a single AWS service in all regions or a single AWS service in a specific region. Offer files are available as either CSV or JSON files. You can read the files in multiple ways, such as using a spreadsheet program to read and sort the CSV file, a text program to read the file, or a program that parses JSON.

Offer files include the following types of information:
• **Offer File Details** – File metadata about the offer file itself, such as the format version and the publication date.
• **Product Details** – Product metadata that lists the products in an offer file along with product information.
• **Pricing Details (Terms)** – Prices for all the products in this offer file.

**Note**
In a CSV file, the product and pricing details are combined into one section. In a JSON file, the product details and pricing details are in separate sections.

**Topics**
• CSV File (p. 90)
• JSON File (p. 90)
• Offer File Definitions (p. 91)

**CSV File**
The first five rows of the CSV are the metadata for the offer file. The sixth row has all the column names for the products and their attributes, such as the SKU, the `OfferTermCode`, the `RateCode`, the `TermType`, and more. The number of columns varies depending on the service. The first 12 columns contain all the pricing details, while the other columns contain the product details for a service.

**JSON File**
In the JSON files, the product details and pricing details are in separate sections. The same product can be offered under multiple terms, and the same term could apply to multiple products. For example, an EC2 instance is available for an Hourly or Reserved term. Use the SKU of a product to identify the terms that are available for that product.

A JSON offer file looks like this:

```json
{
    "formatVersion": "The version of the file format",
    "disclaimer": "The disclaimers for the offer file",
    "offerCode": "The code for the service",
    "version": "The version of the offer file",
    "publicationDate": "The publication date of the offer file",
    "Product Details": {
        "sku": {
            "sku": "The SKU of the product",
            "productFamily": "The product family of the product",
            "attributes": {
                "attributeName": "attributeValue",
            }
        }
    },
    "Pricing Details (Terms)": {
        "termType": {
            "sku": {
                "sku": "The offer term code of the product",
                "sku": "The SKU of the product",
                "effectiveDate": "The effective date of the pricing details",
                "termAttributesType": "The attribute type of the terms",
                "termAttributes": {
                    "attributeName": "attributeValue",
                }
            }
        }
    }
}
```
Offer File Definitions

Each of the sections in an offer file includes specific details about that product:

- **Offer File Details** – File metadata about the offer file itself, such as the format version and the publication date.
- **Product Details** – Product metadata that lists the products in an offer file along with product information.
- **Pricing Details (Terms)** – Prices for all the products in this offer file.

**Note**

In a CSV file, the product and pricing details are combined into one section. In a JSON file, the product details and pricing details are in separate sections.

The following lists provide definitions for each detail.

**Offer File Details**

This section provides metadata about the offer file itself.

**Format Version**

An attribute that tracks which format version the offer file is in. The `formatVersion` of the file is updated when the structure is changed. For example, the version will change from v1 to v2.

**Disclaimer**

Any disclaimers that apply to the offer file.

**Offer Code**

A unique code for the product of an AWS service. For example, `AmazonEC2` for Amazon EC2 or `AmazonS3` for Amazon S3.

**Version**

An attribute that tracks the version of the offer file. Each time a new file is published, it contains a new version number. For example, `20150409T022205` and `20150910T182105`.

**Publication Date**

The date and time (UTC) when an offer file was published. For example, `2015-04-09T02:22:05Z`, `2015-09-10T18:21:05Z`. 

---

Version 2.0

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Product Details

This section provides information about products in an AWS service offer file. Products are indexed by SKU.

**Product Details:** SKU

A unique code for a product. Use the SKU code to correlate product details and pricing. For example, a product with a SKU of HCNSHWWAJSGVAMH is available only for a price that also lists HCNSHWWAJSGVAMH as a SKU.

**Product Details:** SKU: Product Family

The category for the type of product. For example, compute for Amazon EC2 or storage for Amazon S3.

**Product Details:** SKU: Attributes

A list of all of the product attributes.

**Product Details:** SKU: Attributes: Attribute Name

The name of a product attribute. For example, Instance Type, Processor, or OS.

**Product Details:** SKU: Attributes: Attribute Value

The value of a product attribute. For example, m1.small (an instance type), xen (a type of processor), or Linux (a type of OS).

Pricing Details (Terms)

This section provides information about the prices for products in an AWS service offer file. Prices are indexed first by the terms (onDemand and reserved), and then by SKU.

**Pricing Details:** Term Type

The specific type of term that a term definition describes. The valid term types are reserved and onDemand.

**Pricing Details:** Term Type: SKU

A unique code for a product. Use the SKU code to correlate product details and pricing. For example, a product with a SKU of HCNSHWWAJSGVAMH is available only for a price that also lists HCNSHWWAJSGVAMH as a SKU.

**Pricing Details:** Term Type: SKU: Offer Term Code

A unique code for a specific type of term. For example, KCAKZHGHG. Product and price combinations are referenced by the SKU code followed by the term code, separated by a period. For example, U7ADXS4BEK5XXHRU.KCAKZHGHG.

**Pricing Details:** Term Type: SKU: Effective Date

The date that an offer file goes into effect. For example, if a term has an Effective Date of November 1, 2017, the price is not valid before November 1, 2017.

**Pricing Details:** Term Type: SKU: Term Attributes Type

A unique code for identifying what product and product offering are covered by a term. For example, an EC2-Reserved attribute type means that a term is available for EC2 reserved hosts.

**Pricing Details:** Term Type: SKU: Term Attributes

A list all of the attributes that are applicable to a term type, in the format attribute-name: attribute-value. For example, length of term and type of purchase covered by the term.
**Pricing Details:** Term Type: SKU: Term Attributes: Attribute Name

The name of a TermAttribute. You can use it to look up specific attributes. For example, you can look up terms by length or PurchaseOption.

**Pricing Details:** Term Type: SKU: Term Attributes: Attribute Value

The value of a TermAttribute. For example, terms can have a length of one year and a purchase option of All Upfront.

**Pricing Details:** Term Type: SKU: Price Dimensions

The pricing details for the offer file, such as how usage is measured, the currency that you can use to pay with, and the pricing tier limitations.

**Pricing Details:** Term Type: SKU: Price Dimensions: Rate Code

A unique code for a product/offer/pricing-tier combination. Product and term combinations can have multiple price dimensions, such as a free tier, a low use tier, and a high use tier.

**Pricing Details:** Term Type: SKU: Price Dimensions: Rate Code: Description

The description for a price or rate.

**Pricing Details:** Term Type: SKU: Price Dimensions: Rate Code: Unit

The type of unit that each service uses to measure usage for billing. For example, EC2 uses hours as a measuring unit, and S3 uses GB as a measuring unit.

**Pricing Details:** Term Type: SKU: Price Dimensions: Rate Code: Starting Range

The lower limit of the price tier covered by this price. For example, 0 GB or 1,001 API calls.

**Pricing Details:** Term Type: SKU: Price Dimensions: Rate Code: Ending Range

The upper limit of the price tier covered by this price. For example, 1,000 GB or 10,000 API calls.

**Pricing Details:** Term Type: SKU: Price Dimensions: Rate Code: Price Per Unit

A calculation of how much a single measured unit for a service costs.

**Pricing Details:** Term Type: SKU: Price Dimensions: Rate Code: Price Per Unit: Currency Code

A code that indicates the currency for prices for a specific product.

**Pricing Details:** Term Type: SKU: Price Dimensions: Rate Code: Price Per Unit: Currency Rate

The rate for a product in various supported currencies. For example, $1.2536 per unit.

---

**Reading the Offer Index File**

After you have the offer index file, you can use it to find an offer file.

**Topics**

- Offer Index File (p. 93)
- Offer Index Definitions (p. 94)

**Offer Index File**

The offer index file is available as a JSON file. You can read the file multiple ways, such as using a text program to read the JSON file or a program that parses the JSON.

The offer index file consists of two main sections: the metadata about the offer index file itself, and either a list of the services that AWS offers (for the offer index file) or a list of regions where a service is
offered (for the regional offer index file). The information about an offer file includes the URL where you can download the prices and a URL for a regional offer index file for that service.

The offer index file looks like this:

```json
{
  "formatVersion": "The version number for the offer index format",
  "disclaimer": "The disclaimers for this offer index",
  "publicationDate": "The publication date of this offer index",
  "offers": {
    "offerCode": {
      "offerCode": "The service that this price list is for",
      "currentVersionUrl": "The URL for this offer file",
      "currentRegionIndexUrl": "The URL for the regional offer index file"
    }
  }
}
```

**Offer Index Definitions**

The following list defines the terms that are used in the offer index file:

**FormatVersion**

An attribute that tracks which format version the offer index file is in. The `formatVersion` of the file is updated when the structure is changed. For example, the version will change from `v1` to `v2`.

**Disclaimer**

Any disclaimers that apply to the offer index file.

**PublicationDate**

The date and time (UTC) when an offer index file was published. For example, 2015-04-09T02:22:05Z, 2015-09-10T18:21:05Z.

**Offers**

A list of available offer files.

**Offers:OfferCode**

A unique code for the product of an AWS service. For example, AmazonEC2 or AmazonS3. The `OfferCode` is used as the lookup key for the index.

**Offers:CurrentVersionUrl**

The URL where you can download the most up-to-date offer file. 

**Offers:currentRegionIndexUrl**

A list of available regional offer files.

**Setting Up Notifications**

You can sign up to receive notifications when AWS prices change, such as when AWS cuts prices, when new instance types are launched, or when new services are introduced. You can sign up to be notified every time a price changes, or once a day. If you sign up to be notified once a day, the notification includes all price changes applied during that day.

**To sign up for price update notifications**

You can use the console to sign up for Amazon SNS notifications.
1. Sign in to the AWS Management Console and open the Amazon SNS console at https://console.aws.amazon.com/sns/v2/home.
2. If you are new to Amazon SNS, choose Get Started.
3. If necessary, change the region on the navigation bar to US East (N. Virginia). The billing metric data is stored in this region, even for resources in other regions.
4. On the navigation pane, choose Subscriptions.
5. Choose Create Subscription.
6. For Topic ARN, if you want to be notified every time a price changes, enter arn:aws:sns:us-east-1:278350005181:price-list-api. If you want to be notified about price changes once a day, enter arn:aws:sns:us-east-1:278350005181:daily-aggregated-price-list-api instead.
7. For Protocol, use the default HTTP setting.
8. For Endpoint, choose the format that you want to receive the notification in, such as SQS, Lambda, or email.
9. Choose Create Subscription.

Logging Billing and Cost Management API Calls with AWS CloudTrail

Billing and Cost Management is integrated with AWS CloudTrail, a service that provides a record of actions taken by a user, role, or an AWS service in Billing and Cost Management. If you create a trail, you can enable continuous delivery of CloudTrail events to an Amazon S3 bucket, Amazon CloudWatch Logs, and Amazon CloudWatch Events. Using the information collected by CloudTrail, you can determine the request that was made to Billing and Cost Management, the IP address from which the request was made, who made the request, when it was made, and additional details.

To learn more about CloudTrail, including how to configure and enable it, see the AWS CloudTrail User Guide.

Topics

- Billing and Cost Management Information in CloudTrail (p. 95)
- Example: Billing and Cost Management Log File Entries (p. 96)

Billing and Cost Management Information in CloudTrail

Billing and Cost Management supports logging the following actions as events in CloudTrail log files:

- AcceptFxPaymentCurrencyTermsAndConditions
- CloseAccount
- SetAccountContractMetadata
- SetAdditionalContacts
- SetContactAddress
- SetFxPaymentCurrency
- SetIAMAccessPreference
- SetPanInformation
- SetSecurityQuestions
Example: Billing and Cost Management Log File Entries

A trail is a configuration that enables delivery of events as log files to an Amazon S3 bucket that you specify. CloudTrail log files contain one or more log entries. An event represents a single request from any source and includes information about the requested action, the date and time of the action, request parameters, and so on. CloudTrail log files aren't an ordered stack trace of the public API calls, so they don't appear in any specific order.

The following example shows a CloudTrail log entry that demonstrates the `SetContactAddress` action.

```json
{
  "eventVersion": "1.05",
  "userIdentity": {
    "accountId": "444455556666",
    "accessKeyId": "AKIAIOSFODNN7EXAMPLE"
  },
  "eventTime": "2018-05-30T16:44:04Z",
  "eventSource": "billingconsole.amazonaws.com",
  "eventName": "SetContactAddress",
  "awsRegion": "us-east-1",
  "sourceIPAddress": "100.100.10.10",
  "requestParameters": {
    "website": "https://amazon.com",
    "city": "Seattle",
    "postalCode": "98108",
    "fullName": "Jane Doe",
    "districtOrCounty": null,
    "phoneNumber": "206-555-0100",
    "countryCode": "US",
    "addressLine1": "Nowhere Estates",
    "addressLine2": "100 Main Street",
    "company": "AnyCompany",
    "state": "Washington",
    "addressLine3": "Anytown, USA",
    ...}
```
Avoiding Unexpected Charges

Here are some suggestions to help you avoid unexpected charges on your bill. The first two items are for those who use the one-year AWS Free Tier. The next items address specific features or behaviors within individual services from AWS that can sometimes result in unexpected charges, particularly if you unsubscribe from the service or close your account.

Note
If you close your account or unsubscribe from a service, make sure that you take the appropriate steps for every region in which you've allocated AWS resources.

Topics
- Usage Exceeds Free Tier (p. 97)
- AWS Free Tier Expired (p. 97)
- Bill Received After Account Closure (p. 98)
- Elastic Beanstalk Environments (p. 98)
- Elastic Load Balancing (ELB) (p. 98)
- Services Started in AWS OpsWorks (p. 98)
- Amazon EC2 Instances (p. 98)
- Amazon Elastic Block Store Volumes and Snapshots (p. 98)
- Elastic IP Addresses (p. 99)
- Services Launched by Other Services (p. 99)
- Storage Services (p. 99)

Usage Exceeds Free Tier

If you use the free tier, make sure that your usage does not exceed the limits that are specified at AWS Free Tier. You are charged On-Demand Instance rates for any usage that exceeds the free tier limits. You can check your AWS Free Tier usage alerts and your free tier usage alerts on the Billing and Cost Management console.

Note
Free tier usage alerts are available only to master accounts in an organization. They are not available for individual member accounts in an organization.

For more information about tracking your free tier usage, see Tracking Your AWS Free Tier Usage (p. 11).

AWS Free Tier Expired

If you receive unexpected charges after a period of inactivity, your free tier period might have expired. Any resources that are allocated to your account after your free tier period expires begin to incur charges. To check for resources in use, open the AWS Management Console. Be sure to check each region where you have allocated resources.
For more information about free tier offerings and terms, see AWS Free Tier.

Bill Received After Account Closure

Each month’s usage is calculated and billed at the beginning of the following month. If you close your account, but use opt-in services during the month, you receive a bill for the opt-in service usage at the beginning of the following month.

Elastic Beanstalk Environments

Elastic Beanstalk is designed to ensure that all the resources that you need are running, which means that it automatically relaunches any services that you stop. To avoid this, you must terminate your Elastic Beanstalk environment before you terminate resources that Elastic Beanstalk has created. For more information, see Terminating an Environment in the AWS Elastic Beanstalk Developer Guide.

Elastic Load Balancing (ELB)

Like Elastic Beanstalk environments, ELB load balancers are designed to keep a minimum number of Amazon Elastic Compute Cloud (Amazon EC2) instances running. You must terminate your load balancer before you delete the Amazon EC2 instances that are registered with it. For more information, see Delete Your Load Balancer in the Elastic Load Balancing User Guide.

Services Started in AWS OpsWorks

If you use the AWS OpsWorks environment to create AWS resources, you must use AWS OpsWorks to terminate those resources or AWS OpsWorks restarts them. For example, if you use AWS OpsWorks to create an Amazon EC2 instance, but then terminate it by using the Amazon EC2 console, the AWS OpsWorks auto healing feature categorizes the instance as failed and restarts it. For more information, see AWS OpsWorks User Guide.

Amazon EC2 Instances

After you remove load balancers and Elastic Load Balancing environments, you can stop or terminate Amazon EC2 instances. Stopping an instance allows you to start it again later, but you might be charged for storage. Terminating an instance permanently deletes it. For more information, see Instance Lifecycle in the Amazon EC2 User Guide for Linux Instances, particularly Stop and Start Your Instance and Terminate Your Instance.

Note
Amazon EC2 instances serve as the foundation for multiple AWS services. They can appear in the Amazon EC2 console Instances list even if they were started by other services. For example, Amazon Relational Database Service (Amazon RDS) instances run on Amazon EC2 instances. If you terminate an underlying Amazon EC2 instance, the service that started it might interpret the termination as a failure and restart the instance. For example, the AWS OpsWorks service has a feature called auto healing that restarts resources when it detects failures. In general, it is a best practice to delete resources through the services that started them.

Additionally, if you create Amazon EC2 instances from an Amazon Machine Image (AMI) that is backed by an instance store, check Amazon S3 for the related bundle. Deregistering an AMI does not delete the bundle. For more information, see Deregistering Your AMI.

Amazon Elastic Block Store Volumes and Snapshots

Most Amazon EC2 instances are configured so that their associated Amazon EBS volumes are deleted when they are terminated, but it is possible to set up an instance that preserves its volume and the data.
Check the **Volumes** pane in the Amazon EC2 console for volumes that you don’t need anymore. For more information, see [Deleting an Amazon EBS Volume](#) in the *Amazon EC2 User Guide for Linux Instances*.

If you have stored snapshots of your Amazon EBS volumes and no longer need them, you should delete them as well. Deleting a volume does not automatically delete the associated snapshots.

**Note**
Deleting a snapshot might not reduce your organization’s data storage costs. Other snapshots might reference that snapshot’s data, and referenced data is always preserved. For example, when you take the first snapshot of a volume with 10 GiB of data, the size of the snapshot is also 10 GiB. Because snapshots are incremental, the second snapshot that you take of the same volume contains only blocks of data that changed since the first snapshot was taken. The second snapshot also references the data in the first snapshot. That is, if you modify 4 GiB of data and take a second snapshot, the size of the second snapshot is 4 GiB. In addition, the second snapshot references the unchanged 6 GiB in the first snapshot. For more information, see [How Incremental Snapshots Work](#).

In the following example, you are charged 0.70 cents per day for both snapshots. This charge can change daily.

<table>
<thead>
<tr>
<th>LineItem/ResourceId</th>
<th>LineItem/UsageAmount</th>
<th>LineItem/UnblendedCost</th>
<th>Product/Usagetype</th>
<th>ResourceTags/UsageUsage</th>
</tr>
</thead>
<tbody>
<tr>
<td>arn:aws:ec2:us-east-1:1123:snapshot/snap-A</td>
<td>10</td>
<td>0.50</td>
<td>EBS:SnapshotUsage</td>
<td>dev</td>
</tr>
<tr>
<td>arn:aws:ec2:us-east-1:1123:snapshot/snap-B</td>
<td>4</td>
<td>0.20</td>
<td>EBS:SnapshotUsage</td>
<td>dev</td>
</tr>
</tbody>
</table>

If you delete the first snapshot (snap-A in the first row of the preceding table), any data that is referenced by the second snapshot (snap-B in the second row of the preceding table) is preserved. Remember that the second snapshot contains the 4 GiB that you changed and references the 6 GiB in the first snapshot that you did not change. You are charged for storing 10 GiB of data consisting of 6 unchanged GiB from the first snapshot and 4 changed GiB from the second snapshot.

In the following example, you are charged 0.50 cents per day for storing the 10 GiB. This charge can change daily.

<table>
<thead>
<tr>
<th>LineItem/ResourceId</th>
<th>LineItem/UsageAmount</th>
<th>LineItem/UnblendedCost</th>
<th>Product/Usagetype</th>
<th>ResourceTags/UsageUsage</th>
</tr>
</thead>
<tbody>
<tr>
<td>arn:aws:ec2:us-east-1:1123:snapshot/snap-B</td>
<td>10</td>
<td>0.50</td>
<td>EBS:SnapshotUsage</td>
<td>dev</td>
</tr>
</tbody>
</table>

For more information about deleting snapshots, see [Deleting an Amazon EBS Snapshot](#).

**Elastic IP Addresses**

Any Elastic IP addresses that are attached to an instance that you terminate are unattached, but they are still allocated to you. If you don’t need that IP address anymore, release it to avoid additional charges. For more information, see [Releasing an Elastic IP Address](#) in the *Amazon EC2 User Guide for Linux Instances*.

**Services Launched by Other Services**

A number of AWS services can launch resources, so be sure to check for anything that might have launched through any service that you’ve used.

**Storage Services**

When you are minimizing costs for AWS resources, keep in mind that many services might incur storage costs, such as Amazon RDS and Amazon S3.
Managing Your Account

Use the procedures in this chapter to manage your account settings, your default currency, your alternate contacts, and more.

Topics

• Managing an AWS Account (p. 100)
• Managing an Account in India (p. 102)
• Closing an Account (p. 110)

Managing an AWS Account

Use the My Account pages of the Billing and Cost Management console to perform the following tasks:

• Edit your user name, password, or email address
• Edit your contact information
• Change the local currency associated with your account
• Add, update, or remove alternate contacts

Use the Tax Settings pages of the Billing and Cost Management console to perform the following tasks:

• Update tax registration numbers
• Remove tax registration numbers

To edit your AWS user name, password, or email address

You can change the name, password, and email address associated with your AWS account.

2. On the navigation bar, choose your account name, and then choose My Account.  
3. On the Account Settings page, next to Account Settings, choose Edit.  
4. Next to the field that you want to update, choose Edit.  
5. After you have entered your changes, choose Save changes.  
6. After you have made your changes, choose Done.

To edit your contact information

You can change the contact information associated with your AWS account, including your mailing address, telephone number, and website address.

2. On the navigation bar, choose your account name, and then choose My Account.
3. Under **Contact Information**, choose **Edit**.
4. For the fields that you want to change, type your updated information, and then choose **Update**.

**Note**
You can choose to add an email address for billing in the Alternate Contacts section to have AWS send a copy of billing-related emails to that email address. For example, AWS sends your Billing contact address a copy of your monthly bill.

**To change the local currency associated with your account**
2. On the navigation bar, choose your account name, and then choose **My Account**.
3. Scroll down to the **Payment Currency Preference** section. Next to **Payment Currency Preference**, choose **Edit**.
4. For **Select Payment Currency**, select the currency that you want to pay your bill in, and then choose **Update**.

**To add, update, or remove alternate contacts**
Alternate contacts enable AWS to contact another person about issues with your account, even if you are unavailable.
2. On the navigation bar, choose your account name, and then choose **My Account**.
3. Scroll down to the **Alternate Contacts** section, and then choose **Edit**.
4. For the fields that you want to change, type your updated information, and then choose **Update**.

**To update tax registration numbers**
You can update one or more tax registration numbers.
2. In the navigation pane, choose **Tax Settings**.
3. Under **Manage Tax Registration Numbers**, select the numbers that you want to edit.
4. For **Manage Tax Registration**, choose **Edit**.
5. Update the fields that you want to change and choose **Update**.

**To remove tax registration numbers**
You can remove one or more tax registration numbers.
2. In the navigation pane, choose **Tax Settings**.
3. Under **Manage Tax Registration Numbers**, select the tax registration numbers that you want to delete.
4. For **Manage Tax Registration**, choose **Delete**.
5. In the **Delete tax registration** dialog box, choose **Delete**.
Managing an Account in India

If you sign up for a new account and choose India for your contact address, your user agreement is with Amazon Internet Services Pvt. Ltd (AISPL), a local AWS seller in India. AISPL manages your billing, and your invoice total is listed in rupees instead of dollars. After you create an account with AISPL, you can't change the country in your contact information.

If you have an existing account with an India address, your account is either with AWS or AISPL, depending on when you opened the account. To learn whether your account is with AWS or AISPL, see the procedure Determining Which Company Your Account is With (p. 102). If you are an existing AWS customer, you can continue to use your AWS account. You also can choose to have both an AWS account and an AISPL account, though they can't be consolidated into the same payment family. For information about managing an AWS account, see Managing an AWS Account (p. 100).

If your account is with AISPL, follow the procedures in this chapter to manage your account. This chapter explains how to sign up for an AISPL account, edit information about your AISPL account, and add or edit your Permanent Account Number (PAN).

As part of the credit card verification during signup, AISPL charges your credit card 2 INR. AISPL refunds the 2 INR after verification is done. You might be redirected to your bank as part of the verification process.

Topics
- Determining Which Company Your Account Is With (p. 102)
- Signing Up for AISPL (p. 102)
- Managing Your AISPL Account (p. 103)
- Switching to AISPL FAQ (p. 105)

Determining Which Company Your Account Is With

AWS services are provided by both AWS and AISPL. Use this procedure to determine which seller your account is with.

To determine which company your account is with

2. In the page footer, look at the copyright notice. If the copyright is for Amazon Web Services, Inc., then your account is with AWS. If the copyright is for Amazon Internet Services Private Ltd., then your account is with AISPL.

Signing Up for AISPL

AISPL is a local seller of AWS. Use the following procedure to sign up for an AISPL account if your contact address is in India.

To sign up for an AISPL account

If your contact address is in India and you want to open an account, you sign up with AISPL instead of AWS.

1. Go to https://console.aws.amazon.com/, and then choose Sign In to the Console.
2. On the Sign In page, type the email address that you want to use.
3. Under your email address, select I am a new user, and then choose Sign in using our secure server.
4. For each of the login credential fields, type your information, and then choose Create account.
5. For each of the contact information fields, type your information.
6. After you have read the customer agreement, select the terms and conditions check box, and then choose Create Account and Continue.
7. On the Payment Information page, enter the payment method that you want to use.
8. Under PAN Information, choose No if you do not have a Permanent Account Number (PAN) or want to add it later. If you have a PAN and want to add it now, choose Yes, and in the PAN field type your PAN.
9. Choose Verify Card and Continue. You must provide your CVV as part of the verification process. AISPL charges your card 2 INR as part of the verification process. AISPL refunds the 2 INR after verification is done.
10. For Provide a telephone number, type your phone number. If you have a phone extension, for Ext, type your phone extension.
11. Choose Call Me Now. After a few moments, a four-digit pin will appear on your screen.
12. Accept the automated call from AISPL. On your phone keypad, type the four-digit pin displayed on your screen.
13. Once the automated call verifies your contact number, choose Continue to Select Your Support Plan.
14. On the Support Plan page, select your support plan, and then choose Continue. After your payment method is verified and your account is activated, you receive an email confirming the activation of your account.

Managing Your AISPL Account

Use the Account Settings and Tax Settings pages of the Billing and Cost Management console to perform the following tasks:

- Edit your user name, password, or email address
- Edit your contact information
- Add, update, or remove alternate contacts
- Add or edit a Permanent Account Number (PAN)
- Edit multiple Permanent Account Numbers (PANs)
- Edit multiple Goods and Services Tax Numbers (GSTs)
- View a tax invoice

To edit your user name, password, or email address

You can change the name, password, and email address associated with your AISPL account.

2. On the navigation bar, choose your account name, and then choose My Account.
3. Next to Account Settings, choose Edit.
4. Next to the field that you want to update, choose Edit.
5. After you have entered your changes, choose Save changes.
6. After you have made your changes, choose Done.
To edit your contact information

You can change the contact information associated with your AISPL account, including your mailing address, telephone number, and website address. You cannot change your country.

2. On the navigation bar, choose your account name, and then choose My Account.  
3. Under Contact Information, choose Edit.  
4. For the fields that you want to change, type your updated information, and then choose Update.

Note

You can choose to add an email address for billing in the Alternate Contacts section to have AISPL send a copy of billing-related emails to that email address. For example, AISPL sends a copy of your monthly bill to your Billing contact address.

To add, update, or remove alternate contacts

You can add alternate contacts to your account. Alternate contacts enable AISPL to contact another person about issues with your account, even if you are unavailable.

2. On the navigation bar, choose your account name, and then choose My Account.  
3. Scroll down to the Alternate Contacts section, and then choose Edit.  
4. For the fields that you want to change, type your updated information, and then choose Update.

To add or edit a PAN

You can add your Permanent Account Number (PAN) to your account and edit it.

2. In the navigation pane, choose Tax Settings.  
3. On the Tax Settings navigation bar, choose Edit.  
4. For Permanent Account Number (PAN), enter your PAN, and then choose Update.

To edit multiple PAN numbers

You can edit multiple Permanent Account Numbers (PANs) in your account.

2. In the navigation pane, choose Tax Settings.  
3. Under Manage Tax Registration Numbers, select the PAN numbers that you want to edit.  
4. For Manage Tax Registration, choose Edit.  
5. Update the fields that you want to change, and then choose Update.

To edit multiple GST numbers

You can edit multiple Goods and Services Tax numbers (GSTs) in your account.
2. On the navigation pane, choose Tax Settings.
3. Under Manage Tax Registration Numbers, select the GST numbers that you want to edit or choose Edit all.
4. For Manage Tax Registration, choose Edit.
5. Update the fields that you want to change and choose Update.

**To view a tax invoice**

You can view your tax invoices in the console.

2. On the navigation pane, choose Bills.
3. Under Other Details, for Tax Invoices, choose View Invoices.

**Switching to AISPL FAQ**

AWS is switching accounts that have an address in India from AWS to Amazon Internet Services Private Limited (AISPL). AISPL is a local legal Indian entity that acts as a reseller for AWS services in India.

This FAQ guides you through the changes.

**Topics**

- What's happening? (p. 106)
- Should I expect any AWS service downtime during the change to AISPL? (p. 106)
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- Will I be able to redeem any unused promotional credits after the change to AISPL? (p. 108)
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- How do I claim a reimbursement from AISPL for withholding taxes paid to Indian tax authorities? (p. 109)
- Will the 6% Equalization levy apply to services from AISPL? (p. 109)
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- How can I request to change my account to AISPL earlier? (p. 109)
- Will I be able to see my previous billing records with Amazon Web Services, Inc. after the change to AISPL? (p. 110)
- Will I have the same account number after the change to AISPL? (p. 110)
What's happening?

AWS accounts with registered addresses in India will be switched from Amazon Web Services, Inc. (AWS) to Amazon Internet Services Private Limited (AISPL). AISPL is a local legal Indian entity that acts as a reseller for AWS services in India.

Should I expect any AWS service downtime during the change to AISPL?

No, there will be no service downtime or interruptions resulting from this change. Your content, configurations, access rights, and security settings will remain the same.

Will I have access to the same AWS services after my account is changed to AISPL?

Access to and pricing of AWS services generally will remain the same following the contract change. However, Amazon DevPay will not be available from AISPL.

What will change?

Following the switch of your account from AWS to AISPL:

- Your contract will be with AISPL, and not Amazon Web Services, Inc. By continuing to use AWS services after the change, you are agreeing to sign up for a new Customer Agreement with AISPL. Your Customer Agreement with Amazon Web Services, Inc. will be terminated and will no longer apply to your account.
- Payments to AISPL will be in Indian Rupees (INR). You will no longer pay for your AWS services in U.S. dollars (USD).
- Service tax is owed to Indian tax authorities for services provided by AISPL, and AISPL will begin assessing, collecting, and remitting to the Indian government these taxes during invoicing. If you are currently self-assessing a service tax and providing your service tax registration number to Amazon Web Services, Inc., you will no longer need to do this after switching to AISPL.
- As your transactions with AISPL will be domestic India transactions, you might be required to pay an additional 10% of your invoice amount to the Indian tax authorities as withholding tax, if you so determine. You might be eligible to receive a refund from AISPL for certain withholding tax amounts paid (for more information, continue reading this FAQ).
- Certain services, such as Amazon DevPay, might not be available from AISPL.

What are the benefits to you?

India-based companies find it convenient to purchase AWS services from AISPL for many reasons, including paying in local currency (INR) and avoiding foreign currency transaction fees. Additionally, withholding tax rules and other reporting on invoices and payments to AISPL are more straightforward.
than transactions with non-Indian companies. Finally, as new Indian legislation and proposals might affect taxes on digital businesses and users of cloud services in the future, transactions with India-based companies can help avoid the uncertainty associated with cross-border transactions.

Which accounts will switch to AISPL?

The accounts that will switch are regular accounts that are not part of a consolidated billing structure.

Generally, all accounts registered with an address in India that are currently served by Amazon Web Services, Inc. will be changed to AISPL. You can check the registered address for your account by viewing the contact information on the AWS Management Console, available [here](#) and as shown in the following screenshots.

If your AWS account is part of an organization in the AWS Organizations service, you might be eligible to switch to AISPL. To be eligible, each account in an organization—the master account and all of its member accounts—must have a registered address in India. If all accounts within the organization are eligible, then the master account will be changed simultaneously with the member accounts.

If there are member accounts within an organization with a registered address outside of India, then these will need to be unlinked from the eligible master account before the organization can change to AISPL.

If any unlinked member accounts will continue to use AWS services under a contract with Amazon Web Services, Inc., you will need to add a payment method for each unlinked account or link that account to a separate master account (also under a contract with Amazon Web Services, Inc.).

For more information about consolidated billing, see [Consolidated Billing and AWS Organizations](#).
How do I manage the date for my change to AISPL?

We will notify customers of account change dates through email. If you would like to change this date or request to have your account remain with Amazon Web Services, Inc., please contact customer support through the AWS Support Center.

Will I be able to redeem any unused promotional credits after the change to AISPL?

Yes, you can redeem unused promotional credits after the change to AISPL. Following the acquisition of your account by AISPL, AISPL will be the entity offering such credits to you. Redeemed credits will be converted from U.S. dollars (USD) to Indian Rupees (INR).

I am a reseller/APN partner with Amazon Web Services, Inc. How will this affect me?

An AWS representative will contact you to determine the appropriate path to begin procuring services from AISPL. Or, if you would like to organize a timeline for your account change, please contact customer support through the AWS Support Center.

I am a customer with Amazon Web Services, Inc. and have prepaid balances for my Reserved Instances and domain names. What will happen to these?

The prepaid balances will continue to be available for use following the change.

Will there be a new website for AISPL accounts?

Not at the present time. AISPL accounts can be accessed from the current AWS website. When you sign in to the AWS Management Console after the change to AISPL, you will see "Amazon Internet Services Private Ltd." in the footer.

What will my commercial invoice look like after the change to AISPL?

Commercial invoices delivered by AISPL will look similar to commercial invoices delivered by Amazon Web Services, Inc., with the following changes:

- A greeting from AISPL
- A statement summary in Indian Rupees (INR)
- Detailed charges, credits and taxes in U.S. dollars (USD)
- Conversion rate from U.S. dollars (USD) to Indian Rupees (INR) at the time of invoice creation

What will my service tax invoice look like?

As a customer of AISPL, you will receive a separate, tax-compliant invoice from AISPL that contains details of the local taxes applicable to your services. Service tax invoices delivered by AISPL will contain the following:

- Name and address of AISPL in the invoice footer
- Customer name, address, and Permanent Account Number (PAN)
• Invoice number
• Permanent Account Number (PAN) of AISPL
• Service tax registration number of AISPL in the invoice footer
• Signature of the authorized signatory
• Detail of applicable services, including the following:
  • Service name
  • Service charge
  • Service tax
  • Swachh Bharat Cess
  • Krishi Kalyan Cess

**Note**
Customer name, address, and PAN are mandatory for transactions that exceed INR 200,000.

With this service tax invoice, you might be entitled to claim CENVAT Credit, depending on your eligibility.

### How do I claim a reimbursement from AISPL for withholding taxes paid to Indian tax authorities?

Because your transactions with AISPL will be domestic India transactions, you might be required to pay an additional 10% of your invoice amount to the Indian tax authorities as withholding tax, if you so determine. You will have the right to claim a reimbursement of this 10% payment from AISPL by furnishing specified documents and information within 90 days of the invoice. These include the following:

• A withholding tax certificate (evidence of the deposit of the amount)
• Details of the invoice against which withholding tax has been paid
• Your Indian billing address and Permanent Account Number (PAN)
• A copy of the canceled cheque or confirmation of the bank account, including National Electronic Fund Transfer (NEFT) details

After providing this documentation and the amounts are confirmed, AISPL will provide a refund.

### Will the 6% Equalization levy apply to services from AISPL?

No. The Equalization levy, where applicable, applies only to services provided by non-resident entities. Hence, any services provided by AISPL are not subject to the Equalization levy.

Currently, cloud services are not included in the scope of the Equalization levy, even for non-resident entities. However, this might change in the future. If this levy were extended to cover cloud services, you could be subject to the levy on the purchase of AWS services from Amazon Web Services, Inc.

### Do I have to take any steps to make the change to AISPL?

No, each eligible account will change to AISPL automatically upon its scheduled change date.

### How can I request to change my account to AISPL earlier?

We will notify customers of account change dates via email. If your account has a registered address in India and is currently served by Amazon Web Services, Inc., please contact customer support through the AWS Support Center if you would like to change to AISPL earlier. If your account is part of an organization in the AWS Organizations service, each account in the organization—the master account and all member accounts—must have a registered address in India to be eligible to change to AISPL.
You can check the registered address for your account by viewing the contact information on the AWS Management Console, available here.

Will I be able to see my previous billing records with Amazon Web Services, Inc. after the change to AISPL?

Yes, you will be able to see all previous records and billing history for your account.

Will I have the same account number after the change to AISPL?

Yes, your account number will remain the same.

Will the change to AISPL affect my procurement process?

Yes, AISPL is a separate legal entity from Amazon Web Services, Inc., so your procurement records, including internal accounts payable systems, will need to be updated to reflect AISPL as the provider (vendor) of AWS services. We will provide relevant AISPL billing information in email notifications and in the payment details section of your invoices.

I still have a question about the change to AISPL. Whom do I contact?

Please contact your account manager or customer support through the AWS Support Center.

What will happen to my Reserved Instances (RIs)?

There will be no changes to your RIs following the contract change. For RIs that you have fully paid in advance, no further action is required. For RIs for which you still receive a monthly invoice (that is, there was a partial or no upfront payment for the RI), you will continue to receive a USD invoice from Amazon Web Services, Inc. until the term expires. No further action is required.

Are there any special steps for paying AISPL invoices by credit card?

You can use the console to pay your AISPL bills. Credit card payments might require bank verification. For Visa and MasterCard payment methods, you will be redirected to your bank to verify your payment. For American Express payment methods, your payment will be processed by your bank, and no additional action from you is required. To learn more about managing your payments, see Managing Your Payments in India (p. 116).

Can I postpone having my AWS account switched to the India-based service provider, or can I have my AWS account excluded from the switch?

Contact the AWS Support Center with a request to either postpone the switch or exclude your account from the switch. To help us address any concerns you might have about the process, include the reason for your request.

Closing an Account

If you no longer need your AWS account, the root user of the account can close it. AWS can't close accounts on your behalf.
Before You Close Your AWS Account

Before closing your AWS account, you must pay all of the invoices for your account. If your account is the master account of an AWS organization, you must also close or unlink all member accounts.

In addition, you should retrieve all of your content from the account, including any applications and data that you will need later. For instructions on how to retrieve content from a particular AWS service, see the documentation for that service. You should then delete any content and terminate all AWS services in your account.

Closing Your AWS Account

To close your AWS account

1. Sign in as the root user of the account that you want to close, using the email address and password that are associated with the account. If you sign in as an IAM user or role, you can't close an account.

   Note
   By default, member accounts that you create with AWS Organizations don't have a password associated with the account's root user. To sign in, you must request a password for the root user. For more information, see Accessing and Administering the Member Accounts in Your Organization in the AWS Organizations User Guide.


3. On the navigation bar in the upper-right corner, choose your account name (or alias) and then choose My Account.

4. On the Account Settings page, scroll to the end of the page to the Close Account section. Read and ensure that you understand the text next to the check box. After you close an AWS account, you can no longer use it to access AWS services.

5. Select the check box to accept the terms and then choose Close Account.

6. In the confirmation box, choose Close Account.

Accessing Your AWS Account after Closure

After you close an AWS account in accordance with the process above, you can no longer use it to access AWS services, but for 90 days after your account is closed (the "Post-Closure Period"), you can view your AWS account's past billing information and access AWS Support.

During the Post-Closure Period, any content that you didn't delete and any AWS services that you didn't terminate before you closed your AWS account may be retained, but you can access any remaining content or AWS services only by reopening your account during the Post-Closure Period. You can reopen your AWS account by contacting AWS Support. If you choose to reopen your account, you can access the
content that you didn't delete and AWS services that you didn't terminate before closing your account, but you might be charged for the cost of running those AWS services during the Post-Closure Period. You can estimate the cost of running AWS services using the AWS Simple Monthly Calculator.

**After the Post-Closure Period**

After the Post-Closure Period, we permanently close your AWS account, and you can't reopen it. Any content that you didn't delete is deleted, and any AWS services that you didn't terminate are terminated. You also can't create a new AWS account using the same email address that was registered to your AWS account at the time of its closure.

**Your Payment Method**

We charge you through your designated payment method for any usage fees accrued before you closed your AWS account, and we might issue you any refunds that are due through that same payment method. In addition, if you have any active subscriptions (such as a Reserved Instance for which you have elected to pay in monthly installments), even after your account is closed, you might continue to be charged for the subscription through your designated payment method until the subscription expires or is sold in accordance with the terms governing the subscription. These charges and refunds might occur after you close your account. In addition, if you reopen your account, you might be charged for the cost of running AWS services (that you didn't terminate before closing your account) during the Post-Closure Period. Closing your AWS account doesn't affect payment methods that you use on Amazon.com or other Amazon websites.

**Your Agreement with AWS**

Your closure of your AWS account serves as notice to us that you want to terminate the AWS Customer Agreement or other agreement with AWS that governs that AWS account, solely with respect to that AWS account. If you reopen your AWS account during the Post-Closure Period, you agree that the same agreement terms will govern your access to and use of the Service Offerings through your reopened AWS account.

**AWS Account Closure FAQ**

This FAQ guides you through the changes.

**Topics**

- Q: I received an error message when I tried to close my AWS account. What do I need to do? (p. 112)
- Q: What happens when I close my AWS account? (p. 113)
- Q: What could I be charged if I reopen my AWS account? (p. 113)
- Q: Does closing a member account remove it from my organization? (p. 113)
- Q: Are you retaining my content after I close my account? (p. 113)
- Q: I have granted other AWS accounts access to my account’s AWS services. Can they access my AWS services after I have closed my account? (p. 113)

**Q: I received an error message when I tried to close my AWS account. What do I need to do?**

If you receive an error message while trying to close your AWS account, you can contact your account representative or contact us to open a billing or account support case for assistance. Common reasons why you might not be able to close your AWS account include the following:
• Your account is the master account of an AWS organization with open member accounts.
• You have unpaid invoices for your account.
• You have not signed in to the account as the root user.
• You are an active AWS Marketplace Seller.

Q: What happens when I close my AWS account?

When you close your AWS account, the following things happen:

• Your access to the AWS Management Console for the closed AWS account is restricted. You can still sign in to your AWS account to view your past billing information and access AWS Support during the Post-Closure Period. You can’t access any other AWS services or start any new AWS services in the closed account.
• Any remaining content and unterminated AWS services in your AWS account is deleted and terminated after the Post-Closure Period. You should retrieve all content from your AWS account before closing your AWS account. For instructions on how to retrieve your content, see documentation for that service.
• Billing for on-demand charges stops, but you’re billed for any usage that has accrued up until the time you closed your account, and you’re charged for that usage at the beginning of the next month. In addition, if you purchased any subscriptions with ongoing payment obligations, you might continue to be charged for them after your account is closed.

Q: What could I be charged if I reopen my AWS account?

If you reopen your AWS account during the Post-Closure Period, you might be billed for the cost of any AWS services not terminated before you closed your account. For example, if you reopen your AWS account 30 days after closure, your AWS account had only an active t-example.example Amazon EC2 instance at closure, and the price for a t-example.example Amazon EC2 instance in your region is $0.01 per hour, you might be charged for 30 days x 24 hours x $0.01 per hour = $7.20 for your AWS services.

Q: Does closing a member account remove it from my organization?

Closing an account removes it from an organization after the Post-Closure Period. Until then, a closed member account in an organization still counts toward your limit of accounts in the organization. You can remove an account from an organization to avoid it counting against the limit.

Q: Are you retaining my content after I close my account?

We don’t retain any content that you delete before account closure, but we might not delete your content during the Post-Closure Period. After the Post-Closure Period, any remaining content in your account is deleted. If you want to delete your content before that time, you should delete your content before closing your account.

Q: I have granted other AWS accounts access to my account's AWS services. Can they access my AWS services after I have closed my account?

No. After you close your AWS account, any access requests to your closed account's AWS services from other AWS accounts fail even if you have granted the other accounts permission to access your account's AWS services. If you reopen your AWS account, other AWS accounts can access your account's AWS services if you have granted the other accounts the necessary permissions.
Managing Your Payments

To open an AWS account, you must have a valid credit card on file. Use the procedures in this chapter to add, update, or remove credit cards and to make payments.

**Topics**
- Managing Your AWS Payments (p. 114)
- Managing Your Payments in India (p. 116)

## Managing Your AWS Payments

You can use the Payment Methods page of the Billing and Cost Management console to perform the following tasks:

- View payment methods associated with your account
- Add a credit card to your AWS account
- Designate a default credit card
- Update your credit card
- Confirm that your credit card is up to date
- Make a payment
- Remove a payment method from your AWS account

**Note**
If you have questions about payment methods, see [Contacting Customer Support About Your Bill](p. 143).

### To view payment methods associated with your AWS account

You can use the console to view the credit cards associated with your account.

2. In the navigation pane, choose Payment Methods.

### To add a credit card to your AWS account

You can use the console to add a credit card to your account.

2. In the navigation pane, choose Payment Methods.
3. Choose Add a card.
4. For the credit card fields, type the information, and then choose Continue.
5. For the credit card information fields, type your card billing address.
6. Choose Continue.

To designate a default credit card

2. In the navigation pane, choose Payment Methods.
3. Next to the credit card that you want to use as your default payment method, choose Make Default.

To update your credit card

You can update the name, address, or phone number associated with your credit card.

2. In the navigation pane, choose Payment Methods.
3. Next to the credit card that you want to edit, choose Edit.
4. Update the fields that you want to change.
5. At the bottom on the page, choose Update.

To confirm that your credit card is up-to-date

You must have a valid, unexpired credit card on file to make a payment.

2. In the navigation pane, choose Payment Methods.
3. Ensure that the Expires On date for your card is in the future. If your card has expired, add a new card or update your current card.

To make a payment

AWS charges your default payment method automatically at the beginning of each month. If that charge doesn't process successfully, you can use the console to update your credit card and make a payment.

2. In the navigation pane, choose Payment Methods.
3. On the Payment Methods page, ensure that the payment method that you want to use is set as your default payment method.
4. Confirm that your card has not expired.
5. Choose Make a Payment. You are redirected to the Payment History page.
6. If your account is not past due, the Payment History page shows only previous invoices and payment status. You don't need to take any action at this time.
7. If you see a banner that states that you have an overdue payment, choose Pay Now for the invoice that is overdue.

If you are a net-terms customer, and your account payment is overdue, contact Customer Service.

To remove a payment method from your AWS account

You can use the console to remove a payment method from your account.

2. In the navigation pane, choose Payment Methods.

3. Ensure that your account has another valid payment method set as the default.

4. Next to the payment method that you want to remove, choose Delete.

5. In the Delete Credit Card dialog box, choose Delete.

Managing Your Payments in India

If your account is with AISPL, follow the procedures in this section to manage your payment methods and payments, and to verify credit card payments with your bank. To learn whether your account is with AWS or AISPL, see the procedure Determining Which Company Your Account is With (p. 102).

- View credit cards associated with your account
- Add a credit card to your AISPL account
- Pay your AISPL bill
- Remove a credit card from your AISPL account
- Activate your subscription

**Note**
If you have questions about payment methods, see Contacting Customer Support About Your Bill (p. 143).

To view credit cards associated with your AISPL account

You can use the console to view the credit cards associated with your account.


2. In the navigation pane, choose Payment Methods.

To add a credit card to your AISPL account

You can use the console to add a credit card to your account.

**Note**
AISPL charges your card 2 INR as part of the credit card verification process. AISPL refunds the 2 INR after verification is complete.


2. In the navigation pane, choose Payment Methods.

3. Choose Add a card.

4. For the credit card fields, type the information, including the CVV, and then choose Continue.

5. For the credit card information fields, type your card billing address.

6. Choose Continue.

**Note**
You might be redirected to your bank to authorize the charge to your Visa or Mastercard.
To pay your AISPL bill

You can use the console to pay your AISPL bills.

2. In the navigation pane, choose Payment History.
3. Next to the invoice that you want to pay, choose Pay Now. You are redirected to your payment methods.
4. On the Payment Methods page, select the payment method that you want to use.
5. In the Make Payment box, type the three-digit or four-digit security code of your payment method, and then choose Make Payment.
6. For Visa and Mastercard payment methods, you are redirected to your bank to verify your payment. For American Express payment methods, your payment is processed by your bank, and no action from you is required. After your payment is verified, you are redirected to your account page. Your invoice shows the Pay Now link until your payment is processed by your bank.

To remove a credit card from your AISPL account

You can use the console to remove a credit card from your account.

2. In the navigation pane, choose Payment Methods.
3. Ensure that your account has another valid payment method set as the default.
4. Next to the card that you want to remove, choose Delete.

To activate your subscription

You can use the console to activate your subscription.

2. In the navigation pane, choose Payment History.
3. Next to the invoice for your subscription, choose Pay Now. You are redirected to your payment methods.
4. On the Payment Methods page, select the payment method that you want to use.
5. In the Make Payment box, type the three-digit or four-digit security code of your payment method, and then choose Make Payment.
6. For Visa and Mastercard payment methods, you are redirected to your bank to verify your payment. For American Express payment methods, your payment is processed by your bank, and no action from you is required. Once your payment is verified, your subscription is activated and you are redirected to your account page. Your invoice shows the Pay Now link until your payment is processed by your bank.
Controlling Access

AWS Billing and Cost Management integrates with the AWS Identity and Access Management (IAM) service so that you can control who in your organization has access to specific pages on the AWS Billing and Cost Management console. You can control access to invoices and detailed information about charges and account activity, budgets, payment methods, and credits.

Topics
- Granting Access to Your Billing Information and Tools (p. 118)
- Billing and Cost Management Permissions Reference (p. 119)

Granting Access to Your Billing Information and Tools

The AWS account owner can access billing information and tools by signing in to the AWS Management Console using the account password. However, we recommend that you don’t use the account password for everyday access to the account, and especially that you don’t share account credentials with others to give them access to your account.

Instead, you should create a special user identity called an IAM user for anyone who might need access to the account. This approach provides individual sign-in information for each user, and you can grant each user only the permissions that he or she needs to work with your account. For example, you can grant some users limited access to some of your billing information and tools, and grant others complete access to all of the information and tools. (We recommend that the account owner also access the account by using an IAM user identity.)

Note
IAM is a feature of your AWS account. If you are already signed up for a product that is integrated with IAM, you don’t need to do anything else to sign up for IAM, nor will you be charged for using it.

By default, IAM users do not have access to the AWS Billing and Cost Management console. You or your account administrator must grant users access. Do this by activating IAM user access to the Billing and Cost Management console and attaching an IAM policy, either managed or custom, to your users. You need to activate IAM user access for IAM policies to take affect. You need to activate IAM user access only once.

Note
Permissions for Cost Explorer apply to all accounts and linked accounts, regardless of IAM policies. For more information about Cost Explorer access, see Controlling Access for Cost Explorer (p. 58)

Activating Access to the Billing and Cost Management Console

To be able to grant your IAM users access to your account’s Billing and Cost Management console, you must activate the functionality.

To activate IAM user access to the Billing and Cost Management console

1. Sign in to the AWS Management Console with your root account credentials (the email address and password that you used to create your AWS account). Don’t sign in with your IAM user credentials.
2. On the navigation bar, choose your account name, and then choose **My Account**.
3. Next to **IAM User Access to Billing Information**, choose **Edit**.
4. Select the **Activate IAM Access** check box to activate access to the Billing and Cost Management pages. You can now use IAM policies to control which pages a user can access.

After you have activated IAM user access, you can attach IAM policies to grant or deny access to specific billing features. For more information about using policies to grant IAM users access to Billing and Cost Management features, see [Billing and Cost Management Permissions Reference](p. 119).

**Important**
When you activate IAM user access to the Billing and Cost Management console, you grant full access to all users who already have full access to the AWS APIs. You can restrict their access by applying an IAM policy that constrains their permissions. See Example **Example 4: Allow full access to AWS services but deny IAM users access to the Billing and Cost Management console** (p. 125).

### Billing and Cost Management Permissions Reference

This reference summarizes the default actions that are permitted in Billing and Cost Management for each type of billing user and the billing permissions that you can apply to your IAM users. The reference also provides examples of policies that you can use to allow or deny an IAM user access to your billing information and tools.

**Topics**

- User Types and Billing Permissions (p. 119)
- Billing Permissions Descriptions (p. 121)
- Billing and Cost Management Policy Examples (p. 123)

For a full discussion of AWS accounts and IAM users, see [What is IAM?](in the IAM User Guide).

### User Types and Billing Permissions

This table summarizes the default actions that are permitted in Billing and Cost Management for each type of billing user.
<table>
<thead>
<tr>
<th>User Type</th>
<th>Description</th>
<th>Billing Permissions</th>
</tr>
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</table>
| Account owner                     | The person or entity in whose name your AWS account is set up.                                                                                                                                                   | • Has full control of all Billing and Cost Management resources.  
  • Receives a monthly invoice of AWS charges.                                                                                                                                                                      |
| IAM user                          | A person or application defined as a user in an AWS account by an account owner or administrative user. Accounts can contain multiple IAM users.                                                                 | • Has permissions explicitly granted to the user or a group that includes the user.  
  • Can be granted permission to view Billing and Cost Management console pages. For more information, see Controlling Access (p. 118).  
  • Cannot close AWS accounts.                                                                                                                                                                                   |
| Organization master account owner | The person or entity associated with an AWS Organizations master account. The master account pays for AWS usage that is incurred by a member account in an organization.                                           | • Has full control of all Billing and Cost Management resources for the master account only.  
  • Receives a monthly invoice of AWS charges for the master account and member accounts.  
  • Views the activity of member accounts in the billing reports for the master account.                                                                                                                                 |
| Organization member account owner | The person or entity associated with an AWS Organizations member account. The master account pays for AWS usage that is incurred by a member account in an organization.                                           | • Does not have permission to review any usage reports or account activity except for its own. Does not have access to usage reports or account activity for other member accounts in the organization or for the master account.  
  • Does not have permission to view billing reports.  
  • Has permission to update account information only for its own account; cannot access other member accounts or the master account.                                                                                                                                 |

**Note**  
For more information about organization master and member accounts, see the [AWS Organizations User Guide](https://docs.aws.amazon.com组织 undermine user).
# Billing Permissions Descriptions

This table summarizes the permissions that you use to allow or deny IAM users access to your billing information and tools. For examples of policies that use these permissions, see Billing and Cost Management Policy Examples (p. 123).

<table>
<thead>
<tr>
<th>Permission Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| **ViewBilling**  | Allow or deny IAM users permission to view the following Billing and Cost Management console pages:  
• Billing Dashboard  
• Bills  
• Cost Explorer  
• Budgets  
• Payment History  
• Consolidated Billing  
• Preferences  
• Credits  
• Advance Payment (For more information about advance payments, see Consolidated Billing for Organizations (p. 130)). |
| **ModifyBilling** | Allow or deny IAM users permission to modify the following Billing and Cost Management console pages:  
• Budgets  
• Consolidated Billing  
• Preferences  
• Credits  

To allow IAM users to modify these console pages, you must allow both **ModifyBilling** and **ViewBilling**. For an example policy, see Example Example 6: Allow IAM users to modify billing information (p. 126). |
| **ViewAccount**  | Allow or deny IAM users permission to view the following Billing and Cost Management console pages:  
• Billing Dashboard  
• Account Settings |
| **ModifyAccount** | Allow or deny IAM users permission to modify Account Settings.  

To allow IAM users to modify account settings, you must allow both **ModifyAccount** and **ViewAccount**. |
<table>
<thead>
<tr>
<th>Permission Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For an example of a policy that explicitly denies an IAM user access to the Account Settings console page, see Example Example 8: Deny access to Account Settings, but allow full access to all other billing and usage information (p. 127).</td>
</tr>
<tr>
<td>ViewBudget</td>
<td>Allow or deny IAM users permission to view Budgets.</td>
</tr>
<tr>
<td></td>
<td>To allow IAM users to view budgets, you must also allow ViewBilling.</td>
</tr>
<tr>
<td>ModifyBudget</td>
<td>Allow or deny IAM users permission to modify Budgets.</td>
</tr>
<tr>
<td></td>
<td>To allow IAM users to view and modify budgets, you must also allow ViewBilling.</td>
</tr>
<tr>
<td>ViewPaymentMethods</td>
<td>Allow or deny IAM users permission to view Payment Methods.</td>
</tr>
<tr>
<td>ModifyPaymentMethods</td>
<td>Allow or deny IAM users permission to modify Payment Methods.</td>
</tr>
<tr>
<td></td>
<td>To allow users to modify payment methods, you must allow both ModifyPaymentMethods and ViewPaymentMethods.</td>
</tr>
<tr>
<td>DescribeReportDefinition</td>
<td>Allow or deny IAM users permission to view a AWS Cost and Usage Report using the API.</td>
</tr>
<tr>
<td></td>
<td>For an example policy, see Example Example 10: Create, view, or delete an AWS Cost and Usage report.</td>
</tr>
<tr>
<td>PutReportDefinitions</td>
<td>Allow or deny IAM users permission to create a AWS Cost and Usage Report using the API.</td>
</tr>
<tr>
<td></td>
<td>For an example policy, see Example Example 10: Create, view, or delete an AWS Cost and Usage report.</td>
</tr>
<tr>
<td>DeleteReportDefinition</td>
<td>Allow or deny IAM users permission to delete AWS Cost and Usage Report using the API.</td>
</tr>
<tr>
<td></td>
<td>For an example policy, see Example Example 10: Create, view, or delete an AWS Cost and Usage report.</td>
</tr>
<tr>
<td>ViewUsage</td>
<td>Allow or deny IAM users permission to view AWS usage Reports.</td>
</tr>
<tr>
<td></td>
<td>To allow IAM users to view usage reports, you must allow both ViewUsage and ViewBilling.</td>
</tr>
<tr>
<td></td>
<td>For an example policy, see Example Example 2: Allow IAM users to access the Reports console page.</td>
</tr>
<tr>
<td>Permission Name</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DescribeServices</td>
<td>Allow or deny IAM users permission to view AWS service products and pricing via AWS Price List Service API. To allow IAM users to use AWS Price List Service API, you must allow DescribeServices, GetAttributeValues, and GetProducts. For an example policy, see Example Example 11: Find products and prices.</td>
</tr>
<tr>
<td>GetAttributeValues</td>
<td>Allow or deny IAM users permission to view AWS service products and pricing via AWS Price List Service API. To allow IAM users to use AWS Price List Service API, you must allow DescribeServices, GetAttributeValues, and GetProducts. For an example policy, see Example Example 11: Find products and prices.</td>
</tr>
<tr>
<td>GetProducts</td>
<td>Allow or deny IAM users permission to view AWS service products and pricing via AWS Price List Service API. To allow IAM users to use AWS Price List Service API, you must allow DescribeServices, GetAttributeValues, and GetProducts. For an example policy, see Example Example 11: Find products and prices.</td>
</tr>
</tbody>
</table>

**Billing and Cost Management Policy Examples**

This topic contains example policies that you can attach to your IAM user or group to control access to your account's billing information and tools. The following basic rules apply to IAM policies:

- **Version** is always `2012-10-17`.
- **Effect** is always **Allow** or **Deny**.
- **Action** indicates access, and it can take a wild card (`*`).

For consoles, the action prefix in China is `awsbillingconsole`. Everywhere else it is `aws-portal`.

For the API, the action prefix is either `budgets` for budgets, or `cur` for AWS Cost and Usage reports.

- **Resource** is always `*` for the console.

For the budget API, the resource is the ARN of the budget.

- It's possible to have multiple statements in one policy.

**Note**

These policies require that you activate IAM user access to the AWS Billing and Cost Management console on the [Account Settings](https://aws.amazon.com) console page. For more information about
activating IAM user access, see Activating Access to the Billing and Cost Management
Console (p. 118).

Example Topics

• Example 1: Allow IAM users to view your billing information (p. 124)
• Example 2: Allow IAM users to access the Reports console page (p. 125)
• Example 3: Deny IAM users access to the Billing and Cost Management console (p. 125)
• Example 4: Allow full access to AWS services but deny IAM users access to the Billing and Cost
  Management console (p. 125)
• Example 5: Allow IAM users to view the Billing and Cost Management console, except Account
  Settings (p. 126)
• Example 6: Allow IAM users to modify billing information (p. 126)
• Example 7: Allow IAM users to create budgets (p. 126)
• Example 8: Deny access to Account Settings, but allow full access to all other billing and usage
  information (p. 127)
• Example 9: Deposit reports into an Amazon S3 bucket (p. 128)
• Example 10: Create, view, or delete an AWS Cost and Usage report (p. 128)
• Example 11: Find products and prices (p. 129)
• Example 12: View costs and usage (p. 129)

Example 1: Allow IAM users to view your billing information

To allow an IAM user to view your billing information without giving the IAM user access to sensitive
account information, such as your password and account activity reports, use a policy similar to
the following example policy. This policy allows IAM users to view the following Billing and Cost
Management console pages, without giving them access to the Account Settings or Reports console
pages:

• Dashboard
• Cost Explorer
• Bills
• Payment History
• Consolidated Billing
• Preferences
• Credits
• Advance Payment

{
   "Version": "2012-10-17",
   "Statement": [
      {
         "Effect": "Allow",
         "Action": "aws-portal:ViewBilling",
         "Resource": "*"
      }
   ]
}
Example 2: Allow IAM users to access the Reports console page

To allow an IAM user to access the Reports console page and to view the usage reports that contain account activity information, use a policy similar to this example policy:

```json
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "aws-portal:ViewUsage",
        "aws-portal:ViewBilling"
      ],
      "Resource": "*"
    }
  ]
}
```

Example 3: Deny IAM users access to the Billing and Cost Management console

To explicitly deny an IAM user access to the all Billing and Cost Management console pages, use a policy similar to this example policy:

```json
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Deny",
      "Action": "aws-portal:*",
      "Resource": "*"
    }
  ]
}
```

Example 4: Allow full access to AWS services but deny IAM users access to the Billing and Cost Management console

To enable full access to all AWS services but deny the IAM user access to everything on the Billing and Cost Management console, use the following policy. In this case, you should also deny user access to AWS Identity and Access Management (IAM), so that the users can't access the policies that control access to billing information and tools:

```json
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "*",
      "Resource": "*"
    },
    {
      "Effect": "Deny",
      "Action": [
        "aws-portal:*",
        "iam:*"
      ],
      "Resource": "*"
    }
  ]
}
```
Example 5: Allow IAM users to view the Billing and Cost Management console, except Account Settings

To protect your account password, contact information, and security questions, you can deny user access to Account Settings, while still enabling read-only access to the rest of the functionality in the Billing and Cost Management console. Applying this policy to an IAM user enables the user to view all the Billing and Cost Management console pages, including the Payments Method and Reports console pages, but denies the user access to Account Settings:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "aws-portal:View*",
      "Resource": "*"
    },
    {
      "Effect": "Deny",
      "Action": "aws-portal:*Account",
      "Resource": "*"
    }
  ]
}
```

Example 6: Allow IAM users to modify billing information

To allow IAM users to modify account billing information in the Billing and Cost Management console, you must also allow IAM users to view your billing information. The following policy example allows an IAM user to modify the Consolidated Billing, Preferences, and Credits console pages. It also allows an IAM user to view the following Billing and Cost Management console pages:

- Dashboard
- Cost Explorer
- Bills
- Payment History
- Advance Payment

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "aws-portal:*Billing",
      "Resource": "*"
    }
  ]
}
```

Example 7: Allow IAM users to create budgets

To apply this policy, the user must have IAM permissions to view your Billing console.
If you are in an organization, only the master account can create and manage budgets. Individual member accounts can’t create and manage budgets. You can grant member accounts read-only access to your budgets using an IAM policy. For more information, see Controlling Access (p. 118).

To allow IAM users to create budgets in the Billing and Cost Management console, you must also allow IAM users to view your billing information, create CloudWatch alarms, and create Amazon SNS notifications. The following policy example allows an IAM user to modify the **Budget** console page:

```json
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "Stmt1435216493000",
            "Effect": "Allow",
            "Action": [
                "aws-portal:ViewBilling",
                "aws-portal:ModifyBilling",
                "budgets:ViewBudget",
                "budgets:ModifyBudget"
            ],
            "Resource": [
                "*
            ]
        },
        {
            "Sid": "Stmt1435216514000",
            "Effect": "Allow",
            "Action": [
                "cloudwatch:*"
            ],
            "Resource": [
                "*
            ]
        },
        {
            "Sid": "Stmt1435216552000",
            "Effect": "Allow",
            "Action": [
                "sns:*"
            ],
            "Resource": [
                "arn:aws:sns:us-east-1"
            ]
        }
    ]
}
```

**Example 8: Deny access to Account Settings, but allow full access to all other billing and usage information**

To protect your account password, contact information, and security questions, you can deny IAM user access to **Account Settings**, while still enabling full access to the rest of the functionality in the Billing and Cost Management console, as shown in the following example:

```json
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "aws-portal:*Billing",
```
Example 9: Deposit reports into an Amazon S3 bucket

The following policy allows Billing and Cost Management to save your detailed AWS bills to an Amazon S3 bucket, as long as you own both the AWS account and the Amazon S3 bucket. Note that this policy must be applied to the Amazon S3 bucket, instead of to an IAM user. That is, it is a resource-based policy, not a user-based policy. You should deny IAM user access to the bucket for IAM users who do not need access to your bills.

Replace bucketname with the name of your bucket.

For more information, see Using Bucket Policies and User Policies.

```json
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Principal": {
                "AWS": "386209384616"
            },
            "Action": [
                "s3:GetBucketAcl",
                "s3:GetBucketPolicy"
            ],
            "Resource": "arn:aws:s3:::bucketname"
        },
        {
            "Effect": "Allow",
            "Principal": {
                "AWS": "386209384616"
            },
            "Action": "s3:PutObject",
            "Resource": "arn:aws:s3:::bucketname/*"
        }
    ]
}
```

Example 10: Create, view, or delete an AWS Cost and Usage report

This policy allows an IAM user to create, view, or delete an AWS Cost and Usage report using the API:

```json
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": "s3:ListBucket",
            "Resource": "arn:aws:s3:::bucketname"
        },
        {
            "Effect": "Allow",
            "Action": "s3:GetObject",
            "Resource": "arn:aws:s3:::bucketname/*"
        },
        {
            "Effect": "Allow",
            "Action": "s3:DeleteObject",
            "Resource": "arn:aws:s3:::bucketname/*"
        }
    ]
}
```
Example 11: Find products and prices

To allow an IAM user to use the AWS Price List Service API, use the following policy to grant them access:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "pricing:DescribeServices",
        "pricing:GetAttributeValues",
        "pricing:GetProducts"
      ],
      "Resource": [
        "*
      ]
    }
  ]
}
```

Example 12: View costs and usage

To allow IAM users to use the AWS Cost Explorer API, use the following policy to grant them access:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "ce:*"
      ],
      "Resource": [
        "*"
      ]
    }
  ]
}
```
Consolidated Billing for Organizations

You can use the consolidated billing feature in AWS Organizations to consolidate payment for multiple AWS accounts or multiple AISPL accounts. Each organization in AWS Organizations has a master account that pays the charges of all the member accounts. If you have access to the master account, you can see a combined view of the AWS charges that are incurred by the member accounts. You also can get a cost report for each member account. For more information about organizations, see the AWS Organizations User Guide.

Consolidated billing has the following benefits:

- **One bill** – You get one bill for multiple accounts.
- **Easy tracking** – You can track each account's charges, and download the cost data in .csv format.
- **Combined usage** – If you have multiple standalone accounts, your charges might decrease if you add the accounts to an organization. AWS combines usage from all accounts in the organization to qualify you for volume pricing discounts. For more information, see Volume Discounts (p. 132).
- **No extra fee** – Consolidated billing is offered at no additional cost.

AWS and AISPL accounts can't be consolidated together. If your contact address is in India, you can use AWS Organizations to consolidate Amazon Internet Services Pvt. Ltd (AISPL) accounts within your organization.

**Important**
When a member account leaves an organization, the member account can no longer access Cost Explorer data that was generated when the account was in the organization. The data is not deleted, and the master account in the organization can still access the data. If the member account rejoins the organization, the member account can access the data again.

**Topics**
- Consolidated Billing Process (p. 130)
- Consolidated Billing in India (p. 131)
- Effective Billing Date (p. 132)
- Billing and Account Activity (p. 132)
- Volume Discounts (p. 132)
- AWS Credits (p. 133)
- Reserved Instances (p. 134)
- Understanding Consolidated Bills (p. 137)
- AWS Support Charges for Accounts in an Organization (p. 141)

Consolidated Billing Process

AWS Organizations provides consolidated billing so that you can track the combined costs of all the member accounts in your organization. The following steps provide an overview of the process for creating an organization and viewing your consolidated bill:

1. Open the AWS Organizations console or the AWS Billing and Cost Management console. If you open the AWS Billing and Cost Management console, choose Consolidated Billing, and then choose Get started. You are redirected to the AWS Organizations console.
2. Choose **Create organization** on the AWS Organizations console.

3. Create an organization from the account that you want to be the master account of your new organization. For details, see **Creating an Organization**. The master account is responsible for paying the charges of all the member accounts.

4. (Optional) Create accounts that are automatically members of the organization. For details, see **Creating an AWS Account in Your Organization**.

5. (Optional) Invite existing accounts to join your organization. For details, see **Inviting an AWS Account to Join Your Organization**.

6. Each month AWS charges your master account for all the member accounts in a consolidated bill. The following illustration shows an example of a consolidated bill.

![Consolidated Billing Illustration](image)

The master account is billed for all charges of the member accounts. However, unless the organization is changed to support all features in the organization (not consolidated billing features only) and member accounts are explicitly restricted by policies, each member account is otherwise independent from the other member accounts. For example, the owner of a member account can sign up for AWS services, access resources, and use AWS Premium Support unless the master account restricts those actions. Each account owner continues to use their own IAM user name and password, with account permissions assigned independently of other accounts in the organization.

**Securing the Consolidated Billing Master Account**

The owner of the master account in an organization should secure the account by using **AWS Multi-Factor Authentication** and a strong password that has a minimum of eight characters with both uppercase and lowercase letters, at least one digit, and at least one special character. You can change your password on the **AWS Security Credentials** page.

---

**Consolidated Billing in India**

If you sign up for a new account and choose India for your contact address, your user agreement is with Amazon Internet Services Pvt. Ltd (AISPL), a local AWS seller in India. AISPL manages your billing, and your invoice total is listed in rupees instead of in dollars. After you create an account with AISPL, you can’t change the country in your contact information.

If you have an existing account with an India address, your account is either with AWS or AISPL, depending on when you opened the account. To learn whether your account is with AWS or AISPL, see the procedure **Determining Which Company Your Account is With**. If you are an existing AWS customer,
you can continue to use your AWS account. You also can choose to have both an AWS account and an AISPL account, although they can't be consolidated into the same organization. (Currently, you can't migrate an existing account from AWS to AISPL.) If you are in an AISPL organization, the master account can edit the PAN numbers of all member accounts.

If you create an organization from a master account that is with AISPL, then you can invite only other AISPL accounts to join your organization. You can't invite AWS accounts.

If you create an organization from a master account that is with AWS, then you can invite only other AWS accounts to join your organization. You can't invite AISPL accounts.

**Effective Billing Date**

When the member account owner accepts your request to join the organization, you immediately become responsible for the member account's charges. If the member account joins in the middle of the month, the master account is billed only for the latter part of the month. The member account's original owner is still billed for the first part of the month, as shown in the following diagram.

**Billing and Account Activity**

Each month, AWS charges the master account owner, and not the owners of the member accounts. To see the total usage and charges across all the accounts in an organization, see the Bills page of the master account. AWS updates the page multiple times each day. Additionally, AWS makes a downloadable cost report available each day.

Although the owners of the member accounts aren't charged, they can still see their usage and charges by going to their AWS Bills pages. They can't view or obtain data for the master account or any other member accounts on the bill.

**Volume Discounts**

For billing purposes, AWS treats all the accounts in the organization as if they were one account. Some services, such as Amazon EC2 and Amazon S3, have volume pricing tiers across certain usage dimensions that give you lower prices the more you use the service. With consolidated billing, AWS combines the usage from all accounts to determine which volume pricing tiers to apply, giving you a lower overall price whenever possible. AWS then allocates each member account a portion of the overall volume discount based on the account's usage.
The Bills page for each member account displays an average tiered rate that is calculated across all the accounts on the consolidated bill for the organization. For example, let’s say that Bob’s consolidated bill includes both Bob’s own account and Susan’s account. Bob’s account is the master account, so he pays the charges for both himself and Susan.

As shown in the following illustration, Bob transfers 8 TB of data during the month and Susan transfers 4 TB.

For the purposes of this example, AWS charges $0.17 per GB for the first 10 TB of data transferred and $0.13 for the next 40 TB. This translates into $174.08 per TB (≈ 0.17*1024) for the first 10 TB, and $133.12 per TB (≈ 0.13*1024) for the next 40 TB. Remember that 1 TB = 1024 GB.

For the 12 TB that Bob and Susan used, Bob’s master account is charged ($174.08 * 10 TB) + ($133.12 * 2 TB) = $1740.80 + $266.24 = $2,007.04.

The average cost-per-unit of data transfer out for the month is therefore $2,007.04 / 12 TB = $167.25 per TB. That is the average tiered rate that is shown on the Bills page and in the downloadable cost report for each member account on the consolidated bill.

Without the benefit of tiering across the consolidated bill, AWS would have charged Bob and Susan each $174.08 per TB for their usage, for a total of $2,088.96.

AWS Free Tier for Organizations

For services such as Amazon EC2 that support a free tier, AWS applies the free tier to the total usage across all accounts in an AWS organization. AWS does not apply the free tier to each account individually.

AWS provides budgets that track whether you exceed the free tier limits or are forecast to go over the free tier limits. Free tier budgets are not enabled for organizations by default. Master accounts can opt-in to free tier usage alerts through the Billing and Cost Management console. Free tier usage alerts aren’t available to individual member accounts.

For more information about free tiers, see AWS Free Usage Tier FAQs. For more information about AWS Free Tier usage alerts through AWS Budgets and opting in, see AWS Free Tier Usage Alerts Using AWS Budgets (p. 11).

AWS Credits

AWS credits are applied to bills to help cover costs that are associated with eligible services. For more information about eligible services, see Redeem Your AWS Promotional Credit. Credits are applied until they are exhausted or expire. The following rules specify how AWS applies credits to bills for single accounts and for organizations:

- The billing cycle begins on the first day of each month.
• If an account is owned on the first day of the month by an individual who is not part of an organization but who later in the month joins one, AWS applies credits to that individual's bill for their usage from the first day of the month until the day that they join the organization.
• If an account is owned on the first day of the month by an organization, AWS applies credits redeemed by the master account or by any member account to the organization's bill.
• If an individual leaves an organization during the month, AWS begins applying credits to the single account on the first day of the following month.

For example, assume that Susan owns a single account on the first of the month and then joins an organization during the month. Assume also that she redeems her credits on any day after she joins the organization. AWS applies her credits to her account for usage she incurred from the 1st to the day that she joined the organization. However, from the first of the following month on, AWS applies the credits to the organization's bill. If Susan leaves the organization, any credits she redeems are also applied to the organization's bill until the first of the month following her departure. On that day, AWS again applies Susan's credits to her bill.

If you are more comfortable with numbers, assume that Susan owns a single account on January 1 and joins an organization on January 11. If Susan redeems 100 dollars of credits on January 18, AWS applies these to her account for the usage that she incurred from January 1 to January 11. From February on, Susan's credits are applied to the organization's consolidated bill. If Susan has 50 dollars of credits and leaves the organization on April 16, her credits are applied to the organization's consolidated bill for April. From May on, Susan's credits are applied to Susan's account.

You can turn off credit sharing on the Preferences page on the Billing and Cost Management console. The following rules specify how credits are applied to bills for single accounts and for organizations when credit sharing is turned off:

- The billing cycle begins on the first day of each month.
- Credits are applied to only the account that received the credits.
- Bills are calculated using the credit sharing preference that is active on the last day of the month.
- In an organization, only the master account can turn credit sharing off or on. The credit sharing preference applies to all accounts in an organization.

To turn off credit sharing

You can turn off credit sharing through the Billing and Cost Management console.

2. In the navigation pane, choose Preferences.
3. Select Disable credit sharing.
4. Choose Save preferences.

Reserved Instances

For billing purposes, the consolidated billing feature of AWS Organizations treats all the accounts in the organization as one account. This means that all accounts in the organization can receive the hourly cost benefit of Reserved Instances that are purchased by any other account.

You can turn off Reserved Instance sharing on the Preferences page on the Billing and Cost Management console. For more information, see the section called “Turning Off Reserved Instance Sharing” (p. 136).
Billing Examples for Specific Services

There are a few other things to know about how consolidated billing works with specific services in AWS.

Amazon EC2 Reserved Instances

For an Amazon EC2 Reserved Instances example, suppose that Bob and Susan each have an account in an organization. Susan has five Reserved Instances of the same type, and Bob has none. During one particular hour, Susan uses three instances and Bob uses six, for a total of nine instances on the organization's consolidated bill. AWS bills five instances as Reserved Instances, and the remaining four as regular instances.

Bob receives the cost benefit from Susan's Reserved Instances only if he launches his instances in the same Availability Zone where Susan purchased her Reserved Instances. For example, if Susan specifies us-west-2a when she purchases her Reserved Instances, Bob must specify us-west-2a when he launches his instances to get the cost benefit on the organization's consolidated bill. However, the actual locations of Availability Zones are independent from one account to another. For example, the us-west-2a Availability Zone for Bob's account might be in a different location than the location for Susan's account.

Amazon RDS Reserved DB Instances

For an Amazon RDS Reserved DB Instances example, suppose that Bob and Susan each have an account in an organization. Susan has five Reserved DB Instances, and Bob has none. During one particular hour, Susan uses three DB Instances and Bob uses six, for a total of nine DB Instances on the consolidated bill. AWS bills five as Reserved DB Instances, and the remaining four as On-Demand DB Instances (for Amazon RDS Reserved DB Instance charges, see the pricing page). Bob receives the cost benefit from Susan's Reserved DB Instances only if he launches his DB Instances in the same region where Susan purchased her Reserved DB Instances.

Also, all the attributes of Susan's Reserved DB Instances (DB Engine, DB Instance class, Deployment type, and License Model) should match the attributes of the DB Instances launched by Bob. For example, let's say Susan purchased a Reserved DB Instance in us-west-2 with the following attributes:

- DB Engine: MySQL
- DB Instance Class: m1.xlarge
- Deployment Type: Multi-AZ
- License Model: General Public License

This means that Bob must launch his DB Instances in us-west-2 with the exact same attributes to get the cost benefit on the organization's consolidated bill.

Amazon ElastiCache Reserved Node Instances

For an Amazon ElastiCache Reserved Nodes example, suppose Bob and Susan each have an account in an organization. Susan has five Reserved Nodes, and Bob has none. During one particular hour, Susan uses three nodes and Bob uses six. This makes a total of nine nodes used on the consolidated bill.

AWS bills five as Reserved Nodes. AWS bills the remaining four as On-Demand nodes. (For Amazon ElastiCache Reserved Nodes charges, see Amazon ElastiCache Pricing.) Bob receives the cost benefit from Susan's Reserved Nodes only if he launches his On-Demand nodes in the same region where Susan purchased her Reserved Nodes.
Also, to receive the cost benefit of Susan's Reserved Nodes, all attributes of Bob's nodes must match the attributes of the nodes launched by Susan. For example, let's say Susan purchased Reserved Nodes in us-west-2 with the following attributes:

- Cache engine: Redis
- Node type: cache.r3.large

Bob must launch his ElastiCache nodes in us-west-2 with the same attributes to get the cost benefit on the organization's consolidated bill.

**Amazon Elasticsearch Service Reserved Instances**

For an Amazon Elasticsearch Service Reserved Nodes example, suppose Bob and Susan each have an account in an organization. Susan has five Reserved Instances, and Bob has none. During one particular hour, Susan uses three instances and Bob uses six. This makes a total of nine instances used on the consolidated bill.

AWS bills five as Reserved Instances. AWS bills the remaining four as On-Demand instances. (For Amazon Elasticsearch Service Reserved Instance charges, see Amazon Elasticsearch Service Pricing.) Bob receives the cost benefit from Susan's Reserved Instances only if he launches his On-Demand instances in the same region where Susan purchased her Reserved Instances.

To receive the cost benefit of Susan's Reserved Instances, Bob also must use the same instance type that Susan reserved. For example, let's say Susan purchased m4.large.elasticsearch instances in us-west-2. Bob must launch his Amazon Elasticsearch Service domains in us-west-2 with the same instance type to get the cost benefit on the organization's consolidated bill.

**Turning Off Reserved Instance Sharing**

The master account of an organization can turn off Reserved Instance (RI) sharing for member accounts in that organization. This means that Reserved Instances are not shared between that member account and other member accounts. You can change this preference multiple times. Each estimated bill is computed using the last set of preferences. The final bill for the month is calculated based on the preferences set at 23:59:59 UTC time, on the last day of the month.

**Important**
Turning off Reserved Instance sharing can result in a higher monthly bill.

**To turn off shared Reserved Instances**

You can turn off Reserved Instance (RI) sharing for individual member accounts.

2. In the navigation pane, choose Preferences.
3. Expand RI discount sharing by selecting the arrow symbol.
4. Under RI discount sharing enabled, select the accounts that you want to disable RI sharing for.
5. Choose Add to list to add the accounts to the RI discount sharing disabled accounts.
6. Choose Save preferences.
7. In the Manage RI Discount and Credit Sharing dialog box, choose Save.

**To turn on shared Reserved Instances**

If shared Reserved Instances is turned off for an account and you want to turn it back on, you can use the same console page to turn on sharing.
Understanding Consolidated Bills

If you manage an organization in AWS Organizations, you can use consolidated billing to view aggregated usage costs for accounts in the organization. Consolidated billing can also help you reduce those costs. For example, to ensure that you pay the lowest available prices for AWS products and services, AWS offers pricing tiers that reward higher usage with lower prices and discounted rates for purchasing instances in advance (known as reservations or Reserved Instances). Using consolidated billing, you can combine usage from multiple accounts into a single invoice, allowing you to reach the tiers with lower prices faster. You can also apply unused reservations from one account to another account's instance usage.

Topics
- Calculating Consolidated Bills (p. 137)
- Pricing Tiers (p. 137)
- Reserved Instances (p. 139)
- Blended Rates and Costs (p. 140)

Calculating Consolidated Bills

In an organization, the master account is responsible for paying all charges that the member accounts incur. If you're an administrator of a master account and you have the appropriate permissions, you can view aggregated usage costs for Reserved Instance discounts and volume tiering for all member accounts. You can also view the charges that individual member accounts incur, because AWS creates a separate bill for each member account based on that account's usage. AWS also includes invoice summaries for each account in the master account invoice. During each billing period, AWS calculates your estimated charges several times each day so that you can track your costs as your organization incurs them. Your bill is not finalized until the beginning of the next month.

Note
Like member accounts, a master account can incur usage charges. However, as a best practice you shouldn't use the master account to run AWS services. An exception is for services and resources that are required to manage the organization itself. For example, as part of managing your consolidated billing you might create an S3 bucket in the master account to store AWS Cost and Usage reports.

Pricing Tiers

Some AWS services are priced in tiers, which specify unit costs for defined amounts of AWS usage. As your usage increases, your usage crosses thresholds into new pricing tiers that specify lower unit costs for additional usage in a month. Your AWS usage is measured every month. To measure usage, AWS treats all accounts in an organization as a single account. Member accounts do not reach tier thresholds.

2. In the navigation pane, choose Preferences.
3. Expand RI discount sharing by selecting the arrow symbol.
4. Under RI discount sharing disabled, select the accounts that you want to enable RI sharing for.
5. Choose Remove from list to remove the accounts from the RI discount sharing disabled accounts.
6. Choose Save preferences.
7. In the Manage RI Discount and Credit Sharing dialog box, choose Save.
individually. Instead, all usage in the organization is aggregated for each service, which ensures faster access to lower-priced tiers. As each month begins, your service usage is reset to zero.

Each AWS service publishes its pricing information independently. You can access all individual pricing pages from the AWS Pricing page. The AWS whitepaper How AWS Pricing Works also discusses usage scenarios and pricing options.

Calculating Costs for Amazon S3 Standard Storage

The following table shows an example of pricing tiers (your costs might vary).

Amazon S3 Pricing Tiers

The following table shows Amazon S3 usage for an organization that includes a master account and three member accounts.

Example S3 Usage Blended Cost

<table>
<thead>
<tr>
<th>Account</th>
<th>Tier</th>
<th>Storage Amount (G)</th>
<th>Storage Amount (TB)</th>
<th>Unblended Rate (/GB)</th>
<th>Unblended Rate (/TB)</th>
<th>Unblended Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master</td>
<td>First TB/Month</td>
<td>1000 GB</td>
<td>1 TB</td>
<td>$0.10</td>
<td>100</td>
<td>$100.00</td>
</tr>
<tr>
<td></td>
<td>Next 49 TB/Month</td>
<td>49000 GB</td>
<td>49 TB</td>
<td>$0.08</td>
<td>80</td>
<td>$3,920.00</td>
</tr>
<tr>
<td></td>
<td>Next 450 TB/Month</td>
<td>450000 GB</td>
<td>45 TB</td>
<td>$0.06</td>
<td>60</td>
<td>$2,700.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>95000 GB</td>
<td>95 TB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Member 1</td>
<td>First TB/Month</td>
<td>1000 GB</td>
<td>1 TB</td>
<td>$0.10</td>
<td>100</td>
<td>$100.00</td>
</tr>
<tr>
<td></td>
<td>Next 49 TB/Month</td>
<td>14000 GB</td>
<td>14 TB</td>
<td>$0.08</td>
<td>80</td>
<td>$1,120.00</td>
</tr>
<tr>
<td></td>
<td>Next 450 TB/Month</td>
<td>150000 GB</td>
<td>15 TB</td>
<td>$0.06</td>
<td>60</td>
<td>$900.00</td>
</tr>
<tr>
<td>Member 2</td>
<td>Next 49 TB/Month</td>
<td>200000 GB</td>
<td>20 TB</td>
<td>$0.08</td>
<td>80</td>
<td>$1,600.00</td>
</tr>
<tr>
<td></td>
<td>Next 450 TB/Month</td>
<td>150000 GB</td>
<td>15 TB</td>
<td>$0.06</td>
<td>60</td>
<td>$900.00</td>
</tr>
<tr>
<td>Member 3</td>
<td>Next 49 TB/Month</td>
<td>150000 GB</td>
<td>15 TB</td>
<td>$0.08</td>
<td>80</td>
<td>$1,200.00</td>
</tr>
<tr>
<td></td>
<td>Next 450 TB/Month</td>
<td>150000 GB</td>
<td>15 TB</td>
<td>$0.06</td>
<td>60</td>
<td>$900.00</td>
</tr>
</tbody>
</table>

The costs in the preceding table are calculated as follows:

1. All usage for the organization adds up to 95 TB or 95,000 GB. This is rolled up into the master account for recording purposes. The master account has no usage of its own. Only the member accounts incur usage. Member 1 uses 1 TB of storage. This satisfies the first pricing tier for the organization. The second pricing tier is satisfied by all three member accounts (14 TB for member 1 + 20 TB for member 2 + 15 TB for member 3 = 49 TB). The third pricing tier is applied to any usage over 49 TB. In this example, the third pricing tier is applied to total member account usage of 45 TB.

2. The total cost is calculated by adding the cost of the first TB (1,000 GB * $0.10 = 1 TB * $100.00 = $100.00) to the cost of the next 49 TB (49,000 GB * $0.08 = 49 TB * $80.00 = $3,920.00) and the cost of the remaining 45 TB (45,000 GB * $0.06 = 45 TB * $60.00 = $2,700.00), for a total of $6,720 ($100.00 + $3,920.00 + $2,700.00 = $6,720.00).

The preceding example shows how using consolidated billing in AWS Organizations helps lower the overall monthly cost of storage. If you calculate the cost for each member account separately, the total cost is $6,780 rather than $6,720. By aggregating the usage of the three accounts, you reach the lower-priced tiers sooner. The most expensive storage, the first TB, is charged at the highest price just once, rather than three times. For example, three TB of storage at the most expensive rate of $100/TB would result in a charge of $300. Charging this storage as 1 TB ($100) and two additional TB at $80 ($160) results in a total charge of $260.
Reserved Instances

AWS also offers discounted hourly rates in exchange for an upfront fee and term contract.

Capacity Reservations

A Reserved Instance is a reservation that provides a discounted hourly rate in exchange for an upfront fee and term contract. Services such as Amazon Elastic Compute Cloud (Amazon EC2) and Amazon Relational Database Service (Amazon RDS) use this approach to sell reserved capacity for hourly use of Reserved Instances. It is not a virtual machine. It is a commitment to pay in advance for specific Amazon EC2 or Amazon RDS instances. In return, you get a discounted rate as compared to On-Demand Instance usage. From a technical perspective, there is no difference between a Reserved Instance and an On-Demand Instance. When you launch an instance, AWS checks for qualifying usage across all accounts in an organization that can be applied to an active reservation. For more information, see Reserved Instances in the Amazon EC2 User Guide for Linux Instances and Working with Reserved DB Instances in the Amazon Relational Database Service Developer Guide.

When you reserve capacity with Reserved Instances, your hourly usage is calculated at a discounted rate for instances of the same usage type in the same Availability Zone.

Regional Reserved Instances

Regional Reserved Instances do not reserve capacity. Instead, they provide Availability Zone flexibility and in certain cases instance size flexibility. Availability Zone flexibility allows you to run one or more instances in any Availability Zone in your reserved AWS Region. The Reserved Instance discount is applied to any usage in any Availability Zone. Instance size flexibility provides the Reserved Instance discount to instance usage regardless of size, within that instance family. Instance size flexibility applies to only regional Reserved Instances on the Linux/Unix platform with default tenancy. For more information about regional Reserved Instances, see Reserved Instances (p. 29) in this documentation and Applying Reserved Instances in the Amazon Elastic Compute Cloud User Guide for Linux Instances.

Calculating Costs for Amazon EC2 with Reserved Instances

AWS calculates blended rates for Amazon EC2 instances by aggregating all the EC2 usage for a specific instance type in a specific AWS Region for an organization. AWS applies all available discounts, calculates the cost tier for the organization, and then divides the organization's costs by the total amount of usage.

Calculation Process

AWS calculates blended rates for Amazon EC2 instances using the following logic:

1. AWS aggregates usage for all accounts in an organization for the month or partial month, and calculates costs based on unblended rates such as rates for On-Demand and Reserved Instances. Line items for these costs are created for the master account. This bill computation model attempts to apply the lowest unblended rates that each line item is eligible for. The allocation logic first applies Reserved Instance hours, then free tier hours, and then On-Demand rates to any remaining usage. In the AWS Cost and Usage report, you can see line items for these aggregated costs.

2. AWS identifies each Amazon EC2 usage type in each AWS Region and allocates cost from the aggregated master account to the corresponding member account line items for identical usage types in the same region. In the AWS Cost and Usage report, the Unblended Rate column shows that rate applied to each line item.

Note
When AWS assigns Reserved Instance hours to member accounts, it always starts with the account that purchased the reservation. If there are hours from the capacity reservation left over, AWS applies them to other accounts that operate identical usage types in the same Availability Zone.
AWS allocates a regional RI by instance size: The RI is applied first to the smallest instance in the instance family, then to the next smallest, and so on. AWS applies an RI or a fraction of an RI based on the normalization factor of the instance. The order in which AWS applies RIs doesn't result in a price difference.

### Blended Rates and Costs

Blended rates are the averaged rates of the Reserved Instances and On-Demand Instances that are used by member accounts in an organization in AWS Organizations. AWS calculates blended costs by multiplying the blended rate for each service with an account's usage of that service. This section includes examples that show how AWS calculates blended rates for the following services:

- Calculating Blended Rates for Amazon S3 Standard Storage
- Calculating Blended Rates for Amazon EC2

### Calculating Blended Rates for Amazon S3 Standard Storage

AWS calculates blended rates for Amazon S3 standard storage by taking the total cost of storage and dividing by the amount of data stored per month. Using the example from Calculating Consolidated Bills (p. 137) where we calculated a cost of $6,720 for a master account and three member accounts, we calculate the blended rates for the accounts using the following logic:

1. The blended rate in GB is calculated by dividing the total cost ($6,720) by the amount of storage (95,000 GB) to produce a blended rate of $0.070737/GB. The blended rate in TB is calculated by dividing the total cost ($6,720) by the amount of storage (95 TB) to produce a blended rate of $70.737/TB.
2. The blended cost for each member account is allocated by multiplying the blended rate (for GB or TB) by the usage, resulting in the amounts listed in the Blended Cost column. For example, Member 1 uses 14,000 GB of storage priced at the blended rate of $0.070737 (or 14 TB priced at $70.737) for a blended cost of $990.318.

### Calculating Blended Rates for Amazon EC2

The following example shows how the consolidated billing logic aggregates Amazon EC2 costs to the master account and then allocates it to the member accounts based on proportional usage. For this example, all usage is of the same usage type, occurs in the same Availability Zone, and is for the same Reserved Instance term. This example covers Full Upfront and Partial Upfront Reserved Instances.

The following table shows line items that represent the calculation of line items for Amazon EC2 usage for a 720-hour (30-day) month. Each instance is of the same usage type (t2.small) running in the same Availability Zone. The organization has purchased three Reserved Instances for a one-year term. Member Account 1 has three Reserved Instances. Member Account 2 has no Reserved Instances, but uses an On-Demand Instance.

<table>
<thead>
<tr>
<th>Line Item Account</th>
<th>Billing Type</th>
<th>Usage Type</th>
<th>Upfront cost</th>
<th>Monthly cost</th>
<th>Usage available</th>
<th>Usage Quantity</th>
<th>Unblended Rate</th>
<th>Unblended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master Account</td>
<td>RI, All upfront</td>
<td>t2.small</td>
<td>$274.00</td>
<td>$0.00</td>
<td>1440</td>
<td>1440</td>
<td>$0.00</td>
<td>$274.00</td>
</tr>
<tr>
<td>Master Account</td>
<td>RI, Partial upfront</td>
<td>t2.small</td>
<td>$70.00</td>
<td>$5.84</td>
<td>720</td>
<td>720</td>
<td>$0.00</td>
<td>$70.00</td>
</tr>
<tr>
<td>Member Account 1</td>
<td>RI applied</td>
<td>t2.small</td>
<td>-</td>
<td>-</td>
<td>1440</td>
<td>1440</td>
<td>$0.00</td>
<td>$1440.00</td>
</tr>
<tr>
<td>Member Account 1</td>
<td>RI applied</td>
<td>t2.small</td>
<td>-</td>
<td>-</td>
<td>720</td>
<td>720</td>
<td>$0.00</td>
<td>$720.00</td>
</tr>
<tr>
<td>Member Account 2</td>
<td>On demand</td>
<td>t2.small</td>
<td>-</td>
<td>-</td>
<td>300</td>
<td>300</td>
<td>$0.023</td>
<td>$66.90</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2160</td>
<td>2460</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data in the preceding table shows the following information:
The organization has purchased 1,440 hours of Reserved Instance capacity at a Full Upfront rate (two EC2 instances).

- The organization has purchased 720 hours of Reserved Instance capacity at a Partial Upfront rate (one EC2 instance).

- Member account 1 completely uses the two Full Upfront Reserved Instances and the one Partial Upfront Reserved Instance for a total usage of 2,160 hours. Member account 2 uses 300 hours of an On-Demand Instance. Total usage for the organization is 2,460 hours (2160 + 300 = 2,460).

- The unblended rate for the three Reserved Instances is $0.00. The unblended cost of an RI is always $0.00 because RI charges are not included in blended rate calculations.

- The unblended rate for the On-Demand Instance is $0.023. Unblended rates are associated with the current price of the product. They can't be verified from information in the preceding table.

- The blended rate is calculated by dividing the total cost ($6.90) by the total amount of Amazon EC2 usage (2460 hours). This produces a rate of $0.002804878 dollars per hour.

You can check that your AWS Cost and Usage report is balanced by ensuring that the sum of the blended costs of each member account line item and the rounding error line item equals the total of all master account line items.

**Note**

You can download the AWS Cost and Usage report into a .csv file, and then use an Excel spreadsheet to find the member account line items to balance against master account line items in the report. To do that, filter on the following columns in the following order:

1. Product Name
2. Usage Type
3. Operation

**AWS Support Charges for Accounts in an Organization**

AWS calculates AWS Support fees independently for each member account. Typically, an AWS Support subscription for a member account does not apply to the entire organization. Each account subscribes independently. Enterprise Support plan customers, however, have the option to include multiple accounts in an aggregated monthly billing. Monthly charges for the Developer, Business, and Enterprise Support plans are based on each month's AWS usage, subject to a monthly minimum, billed in advance. AWS Support fees associated with Reserved Instance purchases apply only to the individual accounts that made the purchase. For more information, see AWS Support Plan Pricing.
Limits

The following table describes the current limits within Billing and Cost Management.

Topics
- Budgets (p. 142)
- Reports (p. 142)

Budgets

<table>
<thead>
<tr>
<th>Number of budgets</th>
<th>20,000</th>
</tr>
</thead>
</table>
| Characters allowed in a budget name | 0–9  
  • A–Z and a–z  
  • Space  
  • The following symbols: _ . : / = + % @ |

Reports

<table>
<thead>
<tr>
<th>Number of AWS Cost and Usage reports</th>
<th>5</th>
</tr>
</thead>
</table>
Contacting Customer Support About Your Bill

The quickest way to find answers to questions about your bill might be to start with the AWS Knowledge Center.

In addition, all AWS account owners have access to account and billing support free of charge. Only personalized technical support requires a support plan. For more information, visit the AWS Support website.

This section guides you through contacting AWS Support and opening a support case for your billing inquiry, which is the fastest and most direct method for communicating with AWS Support. AWS Support does not publish a direct phone number for reaching a support representative.

**Note**
To open an AWS Support case where you specify Regarding: Account and Billing Support, you must be signed into AWS as the root account owner.

**Contacting AWS Support**

1. Sign in and navigate to the AWS Support Center. If prompted, type the email address and password for your account.
2. Choose Open a new case.
3. On the Open a new case page, select Account and Billing Support and fill in the required fields on the form.

After you complete the form, you can choose Web for an email response, or Phone to request a telephone call from an AWS Support representative. Instant messaging support is not available for billing inquiries.

If you have closed your AWS account, you can still sign in to contact Customer Support and view past bills.
API Reference

This section contains the Billing and Cost Management API Reference documentation. When making the API calls, you need to authenticate your request by providing a signature. Billing and Cost Management supports signature version 4. For more information, see Signature Version 4 Signing Process in the Amazon Web Services General Reference.

If you are using a language for which an AWS SDK exists, use the SDK rather than trying to work your way through the APIs. The SDKs make authentication simpler, integrate easily with your development environment, and provide easy access to Billing and Cost Management commands. For more information about the AWS SDKs, including how to set up your environment, links to the SDK documentation, and sample code, see Tools for Amazon Web Services, Inc.

Topics
- Actions (p. 144)
- Data Types (p. 147)

Actions

The following actions are supported:

- DeleteReportDefinition
- DescribeReportDefinitions
- PutReportDefinition

DeleteReportDefinition

Deletes an AWS Cost and Usage report.

Request Parameters

The request requires the following data in JSON format.

ReportName

The ReportName of the report to be deleted.

Type: String

Length constraints: Maximum length of 256.

Required: Yes

Errors

InternalServerError

An error on the server occurred during the processing of your request. Try again later.

HTTP Status Code: 500
ValidationException

The input fails to satisfy the constraints specified by an AWS service.

HTTP Status Code: 400

Examples

The following example request deletes the AWS Cost and Usage report named Example Report.

Sample Request

```
{
   "Operation": "com.amazonaws.awsorigamiservicegateway#DeleteReportDefinition",
   "Service": "com.amazonaws.awsorigamiservicegateway#AWSOrigamiServiceGatewayService",
   "Input": {
      "ReportName": "Example Report",
   }
}
```

DescribeReportDefinitions

Describes your AWS Cost and Usage reports.

Request Parameters

The request requires the following data in JSON format.

MaxResults

Optional integer. Specifies the maximum number of results to return in response.

Type: Integer

Valid value: 5

Required: No

Response Elements

This operation returns the following parameters.

ReportDefinition

Returns one or more ReportDefinition objects.

Type: ReportDefinition object

Errors

InternalErrorException

An error on the server occurred during the processing of your request. Try again later.

HTTP Status Code: 500
Examples

The following example requests the AWS Cost and Usage reports for the account.

Sample Request

```
{
   "Operation": "com.amazonaws.awsorigamiservicegateway#DescribeReportDefinitions",
   "Service": "com.amazonaws.awsorigamiservicegateway#AWSOrigamiServiceGatewayService",
   "Input": {
      "MaxResults": 5
   }
}
```

Sample Response

The following example requests the AWS Cost and Usage reports for the account.

```
{
   "ReportDefinitions": [
      {
         "AdditionalArtifacts": ["QUICKSIGHT"],
         "AdditionalSchemaElements": ["RESOURCES"],
         "Compression": "GZIP",
         "Format": "textOrcsv",
         "ReportName": "Example Report",
         "S3Bucket": "example-s3-bucket",
         "S3Prefix": "example prefix",
         "S3Region": "us-east-1",
         "TimeUnit": "HOURLY"
      },
      {
         "AdditionalArtifacts": ["QUICKSIGHT"],
         "AdditionalSchemaElements": ["RESOURCES"],
         "Compression": "GZIP",
         "Format": "textOrcsv",
         "ReportName": "Example Report 2",
         "S3Bucket": "example-s3-bucket",
         "S3Prefix": "example prefix",
         "S3Region": "us-east-1",
         "TimeUnit": "HOURLY"
      }
   ]
}
```

PutReportDefinition

Creates an AWS Cost and Usage report.

Request Parameters

The request requires the following data in JSON format.

ReportDefinition

The report definition object that you want to create.

Type: ReportDefinition object

Required: Yes
Errors

InternalErrorException

An error on the server occurred during the processing of your request. Try again later.

HTTP Status Code: 500

ValidationException

The input fails to satisfy the constraints specified by an AWS service.

HTTP Status Code: 400

DuplicateReportNameException

A report with the specified name already exists in the account. Specify a different report name.

HTTP Status Code: 400

ReportLimitReachedException

This account already have five report defined. To define a new report, you must delete an existing report.

HTTP Status Code: 400

Examples

The following example request creates a report named Example Report.

Sample Request

```json
{
   "Operation": "com.amazonaws.awsorigamiservicegateway#PutReportDefinition",
   "Service": "com.amazonaws.awsorigamiservicegateway#AWSOrigamiServiceGatewayService",
   "Input": {
      "ReportDefinition": {
         "ReportName": "Example Report",
         "TimeUnit": "DAILY",
         "Format": "textORcsv",
         "Compression": "ZIP",
         "AdditionalSchemaElements": [
            "RESOURCES"
         ],
         "S3Bucket": "example-s3-bucket",
         "S3Prefix": "example prefix",
         "S3Region": "us-east-1",
         "AdditionalArtifacts": [
            "REDSHIFT",
            "QUICKSIGHT"
         ]
      }
   }
}
```

Data Types

The following data types are supported:
• **ReportDefinition**

**ReportDefinition**

Represents the output of the `PutReportDefinition` operation. The content consists of the detailed metadata and data file information.

**Contents**

**ReportName**

The `ReportName` of the report to be created.

Type: String

Length constraints: Maximum length of 256.

Required: Yes

**TimeUnit**

The length of time covered by this report.

Type: String

Valid values: HOURLY | DAILY

Required: Yes

**Format**

The format that the report is saved in.

Type: String

Valid value: textORcsv

Required: Yes

**Compression**

The compression type that is applied to the report.

Type: String

Valid values: ZIP | GZIP

Required: Yes

**AdditionalSchemaElements**

A list of strings that indicate additional content that is included in the report, such as individual resource IDs.

Type: List of Strings

Valid value: RESOURCES

Required: Yes

**S3Bucket**

The S3 bucket where the report is delivered.
ReportDefinition

Type: String
Required: Yes

S3Prefix

The prefix that AWS adds to the report name when the report is delivered.
Type: String
Required: Yes

S3Region

The region of the S3 bucket.
Type: String
Required: Yes

AdditionalArtifacts

A list of manifests that you want to be created for this report.
Type: List of Strings
Valid values: REDSHIFT | QUICKSIGHT
Required: No
# Document History

The following table describes the documentation for this release of the *AWS Billing and Cost Management* guide.

- **Version:** 2.0
- **Last documentation update:** March 22th, 2018

<table>
<thead>
<tr>
<th>Change</th>
<th>Description</th>
<th>Release Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Offer Files</td>
<td>The AWS Price List API now offers regional offer files for each service. For more information, see Using the AWS Price List API (p. 87).</td>
<td>April 20, 2017</td>
</tr>
<tr>
<td>Added Cost Explorer Advanced Options</td>
<td>You can now filter Cost Explorer reports by additional advanced options, such as refunds, credits, RI upfront fees, RI recurring charges, and support charges. For more information, see Choosing Advanced Options (p. 47).</td>
<td>March 22, 2017</td>
</tr>
<tr>
<td>Added a Cost Explorer Report</td>
<td>You can now track your Reserved Instance (RI) coverage in Cost Explorer. For more information, see RI Coverage Reports (p. 53).</td>
<td>March 20, 2017</td>
</tr>
<tr>
<td>Added Cost Explorer Filters</td>
<td>You can now filter Cost Explorer reports by tenancy, platform, and the Amazon EC2 Spot and Scheduled Reserved Instance purchase options. For more information, see Filter and Group Options (p. 42).</td>
<td>March 20, 2017</td>
</tr>
<tr>
<td>Cost Explorer and Budgets for AISPL</td>
<td>AISPL users can now use Cost Explorer and budgets. For more information, see Analyzing Your Costs with Cost Explorer (p. 37) and Managing Your Costs with Budgets (p. 67).</td>
<td>March 6, 2017</td>
</tr>
<tr>
<td>Added Grouping for Cost Explorer Usage Types</td>
<td>Cost Explorer supports grouping for both cost and usage data, enabling customers to identify their cost drivers by cross-referencing their cost and usage charts. For more information, see Grouping Data by Filter Type (p. 47).</td>
<td>February 24, 2017</td>
</tr>
<tr>
<td>Added a Cost Explorer Report</td>
<td>You can now track your monthly Amazon EC2 Reserved Instance (RI) utilization in Cost Explorer. For more information, see RI Utilization and Savings Reports (p. 50).</td>
<td>December 16, 2016</td>
</tr>
<tr>
<td>Added a Cost Explorer Report</td>
<td>You can now track your daily Amazon EC2 Reserved Instance (RI) utilization in Cost Explorer. For more information, see RI Utilization and Savings Reports (p. 50).</td>
<td>December 15, 2016</td>
</tr>
<tr>
<td>Added AWS-generated cost allocation tags</td>
<td>You can now activate the AWS-generated tag <code>createdBy</code> to track who created an AWS resource. For more information, see Using Cost Allocation Tags (p. 74).</td>
<td>December 12, 2016</td>
</tr>
<tr>
<td>Added Cost Explorer Advanced Options</td>
<td>You can now exclude tagged resources from your Cost Explorer reports. For more information, see Show only untagged resources (p. 49).</td>
<td>November 18, 2016</td>
</tr>
<tr>
<td>Change</td>
<td>Description</td>
<td>Release Date</td>
</tr>
<tr>
<td>--------</td>
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</tr>
<tr>
<td>Amazon QuickSight integration for AWS Cost and Usage Reports</td>
<td>AWS Cost and Usage Reports now provide customized queries for uploading your data into Amazon QuickSight. For more information, see <a href="#">AWS Cost and Usage Report</a> (p. 16).</td>
<td>November 15, 2016</td>
</tr>
<tr>
<td>Expanded Budget Functionality</td>
<td>You can now use budgets to track usage data. For more information, see <a href="#">Managing Your Costs with Budgets</a> (p. 67).</td>
<td>October 20, 2016</td>
</tr>
<tr>
<td>Expanded Cost Explorer Functionality</td>
<td>You can now use Cost Explorer to visualize your costs by Usage type groups. For more information, see <a href="#">Analyzing Your Costs with Cost Explorer</a> (p. 37).</td>
<td>September 15, 2016</td>
</tr>
<tr>
<td>Improved Amazon Redshift integration for AWS Cost and Usage Reports</td>
<td>AWS Cost and Usage Reports now provide customized queries for uploading your data into Amazon Redshift. For more information, see <a href="#">Uploading an AWS Cost and Usage Report to Amazon Redshift</a> (p. 20).</td>
<td>August 18th, 2016</td>
</tr>
<tr>
<td>Expanded Cost Explorer Functionality</td>
<td>You can now use Cost Explorer to visualize your costs by Amazon EC2 instance type or region. For more information, see <a href="#">Analyzing Your Costs with Cost Explorer</a> (p. 37).</td>
<td>January 5th, 2016</td>
</tr>
<tr>
<td>AWS Cost and Usage reports</td>
<td>You can now create and download AWS Cost and Usage reports. For more information, see <a href="#">Understanding Your Usage with Billing Reports</a> (p. 16).</td>
<td>December 16th, 2015</td>
</tr>
<tr>
<td>AWS price list API</td>
<td>You can now download offer files that list the products, prices, and restrictions for a single AWS service. For more information, see <a href="#">Using the AWS Price List API</a> (p. 87).</td>
<td>December 9th, 2015</td>
</tr>
<tr>
<td>Cost Explorer Report Manager</td>
<td>You can now save Cost Explorer queries. For more information, see <a href="#">Managing Your Cost Explorer Reports</a> (p. 55).</td>
<td>November 12th, 2015</td>
</tr>
<tr>
<td>Free Tier Tracking</td>
<td>You can now track how much of your free tier limit you’ve used. For more information, see <a href="#">Tracking Your AWS Free Tier Usage</a> (p. 11).</td>
<td>August 12th, 2015</td>
</tr>
<tr>
<td>Budgets and Forecasting</td>
<td>You can now manage your AWS usage and costs using budgets and cost forecasts. For more information, see <a href="#">Monitoring Your Usage and Costs</a> (p. 36).</td>
<td>June 29th, 2015</td>
</tr>
<tr>
<td>Amazon Internet Services Pvt. Ltd</td>
<td>You can now manage your account settings and payment methods for an Amazon Internet Services Pvt. Ltd (AISPL) account. For more information, see <a href="#">Managing an Account in India</a> (p. 102).</td>
<td>June 1st, 2015</td>
</tr>
<tr>
<td>Expanded Cost Explorer Functionality</td>
<td>You can now use Cost Explorer to visualize your costs by Availability Zone, API operation, purchase option, or by multiple cost allocation tags. For more information, see <a href="#">Analyzing Your Costs with Cost Explorer</a> (p. 37).</td>
<td>February 19, 2015</td>
</tr>
<tr>
<td>Change</td>
<td>Description</td>
<td>Release Date</td>
</tr>
<tr>
<td>--------------------------------------</td>
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</tr>
<tr>
<td>Preferred Payment Currencies</td>
<td>You can now change the currency associated with your credit card. To learn more, see Features in Billing and Cost Management (p. 1).</td>
<td>February 16, 2015</td>
</tr>
<tr>
<td>Avoiding Unexpected Charges</td>
<td>Revised and expanded Avoiding Unexpected Charges (p. 97) and Using the Free Tier (p. 9).</td>
<td>August 19, 2014</td>
</tr>
<tr>
<td>IAM User Permissions</td>
<td>You can now enable AWS Identity and Access Management (IAM) users and federated users to access and manage your account settings, view your bills, and perform cost management. For example, you can grant people in your finance department full access to the financial setup and control of your AWS account, without having to give them access to your production AWS environment. For more information about managing access to account settings, billing, and cost management, see Controlling Access (p. 118). If you're not using IAM to secure your account yet, we encourage you to learn more about IAM and the benefits it provides.</td>
<td>July 07, 2014</td>
</tr>
<tr>
<td>Cost Explorer launched.</td>
<td>Cost Explorer provides a visualization of your AWS costs that enables you to analyze your costs in multiple ways. For more information, see Analyzing Your Costs with Cost Explorer (p. 37).</td>
<td>April 8, 2014</td>
</tr>
</tbody>
</table>
AWS Glossary

For the latest AWS terminology, see the AWS Glossary in the AWS General Reference.