
AWS Billing and Cost Management

User Guide

Version 2.0



AWS Billing and Cost Management: User Guide

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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. 78).

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. 174).

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. 78) 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. 116).

Payment Currencies

You can view your estimated bills and pay your AWS invoices in your preferred currency by setting a payment currency.

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 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 \(p. 19\)](#).

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 \(p. 182\)](#).

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 create multiple accounts, you can use the Consolidated Billing feature of AWS Organizations to combine all member accounts under a master account, and receive a single bill. For more information, see [Consolidated Billing for Organizations \(p. 195\)](#).

Getting Started

The following steps discuss a few of the most common tasks that 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. 7)
- [Step 4: Set Up Budgets to Monitor Your Account](#) (p. 7)
- [Step 5: Get Answers to Questions About Your Bill](#) (p. 9)
- [Where Do I Go from Here?](#) (p. 9)

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 have 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. 78).

Budgets

Choose [Budgets](#) to manage budgets for your account. For more information about budgets, see [Monitoring Your Usage and Costs](#) (p. 77).

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 [Free Tier Usage Alerts Using AWS Budgets](#) (p. 12).

Bills

Choose [Bills](#) to see details about your current charges.

Orders and Invoices

Choose [Orders and invoices](#) 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 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 used, 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 payer account must own the Amazon S3 bucket. Reports can't be delivered to a bucket owned by a linked account.

To 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 can't 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. Choose **Next**.
6. Choose **Next**.
7. (Optional) If you choose **Grant Amazon Simple Storage Service Log Delivery group write access to this bucket**, 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.
8. Choose **Next**.
9. Choose **Create bucket**.

To 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. From the list of buckets, choose the bucket that you want to receive reports in.
3. Choose **Permissions**.
4. Choose **Bucket Policy**.
5. Paste the following text into the bucket policy editor.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": {
        "Service": "billingreports.amazonaws.com"
      },
      "Action": [
        "s3:GetBucketAcl",
        "s3:GetBucketPolicy"
      ],
      "Resource": "arn:aws:s3:::bucketname"
    },
    {
      "Effect": "Allow",
      "Principal": {
        "Service": "billingreports.amazonaws.com"
      },
```

```
"Action": "s3:PutObject",  
  "Resource": "arn:aws:s3:::bucketname/*"  
}  
]
```

6. Replace **bucketname** with the name of your bucket.
7. Choose **Save**.

To create an AWS Cost and Usage report

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation pane, choose **Cost and Usage Reports**.
3. Choose **Create report**.
4. For **Report name**, enter a name for your report.
5. For **Additional report details**, to include the IDs of each individual resource in the report, select **Include resource IDs**.
6. 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.

Note

Detailed billing reports (DBRs) don't refresh automatically, whether you select **Data refresh settings** or not. To refresh a DBR, open a support case. For more information, see [Contacting Customer Support About Your Bill \(p. 209\)](#).

7. Choose **Next**.
8. For **S3 bucket**, choose **Configure**.
9. In the **Configure S3 Bucket** dialog box, do one of the following:
 - Select an existing bucket from the drop down list and choose **Next**.
 - Enter a bucket name and the Region where you want to create a new bucket and choose **Next**.
10. Select **I have confirmed that this policy is correct** and choose **Save**.
11. For **Report path prefix**, enter the report path prefix that you want prepended to the name of your report.

This step is optional for Amazon Redshift or Amazon QuickSight, but required for Amazon Athena.

If you don't specify a prefix, the default prefix is the name that you specified for the report in step 4 and the date range for the report, in the following format:

/report-name/date-range/

12. For **Time granularity**, 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.
13. For **Report versioning**, choose whether you want each version of the report to overwrite the previous version of the report or to be delivered in addition to the previous versions.
14. For **Enable report data integration for**, select whether you want to upload your AWS Cost and Usage report to Amazon Redshift, Amazon QuickSight, or Amazon Athena. The report is compressed in the following formats:
 - **Amazon Redshift or Amazon QuickSight:** .gz compression
 - **Athena:** parquet compression
15. Choose **Next**.
16. 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

1. Sign into the AWS Management Console and open the Billing and Cost Management at <https://console.aws.amazon.com/billing/>.
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 Budgets to Monitor 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. Billing and Cost Management notifies 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 forecast to exceed a threshold that you set.

By default, IAM users don't have access to billing information, and therefore don't have access to budgets. If you're logged in to AWS as an IAM user, verify that the account owner has granted IAM users access to AWS Budgets. For more information about IAM restrictions, see [Granting Access to Your Billing Information and Tools \(p. 182\)](#).

To create a budget

Use this procedure to create a cost-based budget.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Budgets**.
3. At the top of the page, choose **Create budget**.
4. For **Select budget type**, choose **Cost budget**.
5. Choose **Set up your budget**.
6. For **Name**, enter 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:

_ . : / = + - % @

7. 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.
8. For **Budgeted Amount**, enter the total amount that you want to spend for this budget period.
9. (Optional) For **Budget effective dates**, choose **Recurring Budget** for a budget that resets after the budget period or **Expiring Budget** for a one-time budget that doesn't reset after the budget period.

For **Start Month**, choose the month that you want the budget to start on.

For an **Expiring Budget**, for **End Month**, choose the month that you want the budget to end on.

All budget times are in UTC.

10. (Optional) Under **Budget parameters (optional)**, for **Filtering**, choose one or more of the [available filters \(p. 123\)](#). Your choice of budget type determines the set of filters that is displayed on the console.
11. (Optional) Under **Budget parameters (optional)**, for **Advanced options**, choose one or more of the following filters. If you're signed in from a member account in an organization instead of from a master account, you might not see all of 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](#).

12. Choose **Configure alerts**.
13. Under **Configure alerts**, for **Alert 1**, choose **Actual** to create a notification for actual spend and **Forecast** to create a notification for your forecasted spend.
14. For **Alert threshold**, enter 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), enter 160 for an absolute budget or 80 for a percentage budget.

Next to the amount, choose **Absolute amount** to be notified when the threshold amount is passed and **% of budgeted amount** to be notified when the threshold percentage of the budget is passed.

15. (Optional) For **Email contacts**, enter the email addresses that you want the notifications to be sent to and choose **Add email contact**. Separate multiple email addresses with a comma. A notification can have up to 10 email addresses.

To receive a notification, you must specify an email address. You can also specify an Amazon SNS topic.

16. (Optional) For **SNS topic ARN**, enter the ARN for your Amazon 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](#) 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](#) (p. 127). A notification can be subscribed to only one Amazon SNS topic.

To receive a notification, you must specify an email address. You can also specify an Amazon SNS topic.

17. Choose **Confirm budget**.
18. Review your budget settings and choose **Create**.

Important

When you finish creating a budget with Amazon 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.

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 that 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. 209). For information about closing your account, see [close your account](#) (p. 163).

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 Free Tier Usage](#) (p. 12)
- [Understanding Your Usage with Billing Reports](#) (p. 19)
- [Analyzing Your Costs with Cost Explorer](#) (p. 78)
- [Managing Your Costs with Budgets](#) (p. 116)
- [Consolidated Billing for Organizations](#) (p. 195)

Using the AWS 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're 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're 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 \(p. 11\)](#), [Tracking Your Free Tier Usage \(p. 12\)](#). For tips about avoiding unexpected charges, see [Avoiding Unexpected Charges \(p. 152\)](#). Contact [AWS 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 \(p. 10\)](#)
- [Free Tier Limits \(p. 11\)](#)
- [Tracking Your Free Tier Usage \(p. 12\)](#)

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 doesn't provide Free Tier benefits, or continue to use AWS after you're no longer eligible for the Free Tier, you're 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 see a message in the **Alerts & Notifications** section, as shown in the following screenshot.

Alerts & Notifications

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

You can also choose **Bills** in the navigation pane of the console to see when you created your AWS account. In the **Date** drop-down box, you will find one bill for each month since you opened your account even if you didn't have charges.

If your company creates your AWS account through AWS Organizations, Free Tier eligibility for all member accounts begins on the day that the master account of 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 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're 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](#).

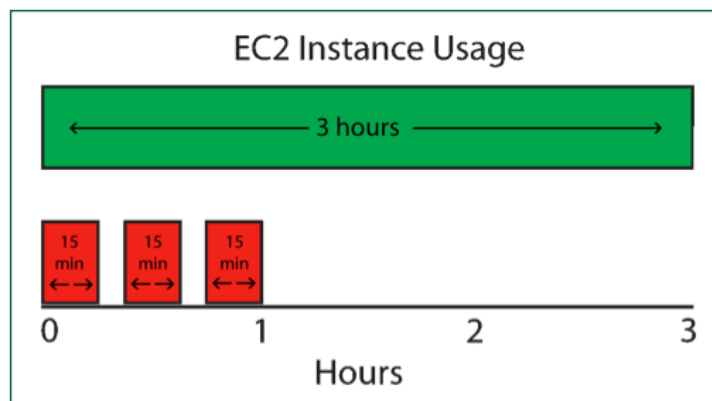
Topics

- [Hourly Usage in the Free Tier](#) (p. 11)
- [Amazon Machine Images](#) (p. 12)

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 use up three hours of your monthly allotment.



Note

Several services measure usage in seconds. See each service page's details to see how your service is measured and billed.

For more information, see [Amazon EC2 Pricing](#).

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 aren't eligible for the Free Tier.

Important

Third-party applications or services from AWS Marketplace aren't 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 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 85% of your Free Tier limits for each service. 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 have used the most and how much you have used them.

Topics

- [Free Tier Usage Alerts Using AWS Budgets \(p. 12\)](#)
- [Top Free Tier Services Table \(p. 13\)](#)
- [Trackable Free Tier Services \(p. 14\)](#)

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 Free Tier usage alerts allow AWS to notify you when you're exceeding 85% of your usage for the month. For additional Free Tier visibility, you can also use AWS Budgets to track 100% of your Free Tier usage for a specific service. AWS Budgets has the additional ability to select usage targets and alert thresholds that you can customize. For example, receive alerts when you're forecasted to exceed 100% of your Free Tier usage for Amazon Elastic Block Store. Any usage over the Free Tier limits is charged at the public On-Demand rate.

When you exceed a service-specific Free Tier limit, 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. Only one alert per service-specific Free Tier usage type is sent in 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 85% of the Free Tier limit.

AWS Free Tier usage alerts cover non-expiring Free Tier offerings, such as the first 25 GB of Amazon DynamoDB storage or the first 10 custom Amazon 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. For the full list of services and usage types covered by the Free Tier usage alerts, see [Trackable Free Tier Services \(p. 14\)](#).

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're an owner of a master account in an organization, or Consolidated Billing family, 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 of 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.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. Under **Preferences** in the navigation pane, choose **Billing 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.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. Under **Preferences** in the navigation pane, choose **Billing preferences**.
3. Under **Cost Management Preferences**, under **Receive Free Tier Usage Alerts** in the **Email Address** dialog box, enter 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 following conditions might limit whether you see the Free Tier table data:

- You use an AWS service that doesn't offer a Free Tier
- Your Free Tier has expired
- You access AWS through an AWS Organizations member account
- You use an AWS service in the AWS GovCloud (US-West) or AWS GovCloud (US-East) regions

The **Top Free Tier Service by Usage** table is grouped by service limit and shows the Free Tier usage limit for your top five most-used Free Tier service measurements, along with your current usage amount. A service might have multiple lines, enabling you to track each Free Tier limit closely. The table shows usage as both a percentage of the Free Tier limit and a ratio of the Free Tier limit.

For example, each month you get 2,000 Amazon S3 `Put` operations and 5 GB of Amazon S3 storage. The Free Tier usage table has two lines, one for `S3 - Puts` and one for `S3 - Storage`. If you use 2,000

of the Free Tier S3 – Puts operations, the table shows 2,000.00/2,000 Requests and 100%, and if you use 0.55 GB of the Free Tier S3 – Storage, the table shows 0.55/5 GB and 11%, as shown in the following screenshot.

Top Free Tier Services by Usage		View all
Service	Free Tier usage limit	Month-to-date usage
AmazonS3	2,000 Put Requests of Amazon S3	100.00% (2,000.00/2,000 Requests)
AmazonS3	5 GB of Amazon S3 standard storage	11.00% (0.55/5 GB-Mo)

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 forecast of your usage for the month and a status icon to alert you if you have exceeded the limits or are predicted to exceed the limits.

All Free Tier services by usage

Service	Free Tier usage limit	Current usage	Forecasted usage	Month-to-date actual usage	Month-end forecasted usage
AmazonS3	2,000 Put Requests of Amazon S3	2,000 Requests	2,067 Requests	100.00%	103.33%
AmazonS3	5 GB of Amazon S3 standard storage	1 GB-Mo	1 GB-Mo	11.00%	11.37%

Trackable Free Tier Services

AWS enables you to track how much you used Free Tier services and what service usage types you used. Usage types are the specific type of usage that AWS tracks. For example, the usage type `Global-BoxUsage:freetier.micro` means that you used an Amazon EC2 micro instance.

The AWS Free Tier usage alerts and the **Top Free Tier Services by Usage** table cover both expiring and non-expiring Free Tier offerings. You can track the following services and usage types.

Service	Usage Type
Amazon API Gateway	Global-APIGatewayRequest
AWS CodeBuild	Global-Build-Min:Linux:g1.small
Amazon GameLift	Global-BoxUsage:c3.large
AWS Storage Gateway	Global-Uploaded-Bytes
Amazon Cloud Directory	Global-Requests-Tier1 Global-Requests-Tier2 Global-TimedStorage-ByteHrs
Amazon CloudFront	Global-DataTransfer-Out-Bytes Global-Requests-Tier1
Amazon Cognito Sync	Global-CognitoSyncOperation Global-TimedStorage-ByteHrs

Service	Usage Type
Amazon Cognito	Global-CognitoUserPoolMAU
Amazon Connect	USE1-end-customer-mins
Amazon CloudWatch	Global-CW:Requests Global-DataProcessing-Bytes Global-TimedStorage-ByteHrs
Amazon DynamoDB	TimedStorage-ByteHrs
AWS Database Migration Service	Global-InstanceUsg:dms.t2.micro
Amazon Elastic Compute Cloud	Global-BoxUsage:freetier.micro Global-BoxUsage:freetier.micro Global-DataProcessing-Bytes Global-EBS:SnapshotUsage Global-EBS:VolumeIOUsage Global-EBS:VolumeUsage Global-LCUUsage Global-LoadBalancerUsage
Amazon Elastic Container Registry	Global-TimedStorage-ByteHrs
Amazon Elastic File System	Global-TimedStorage-ByteHrs
Amazon ElastiCache	Global-NodeUsage:cache.t1.micro
Amazon Elasticsearch Service	Global-ES:freetier-Storage Global-ESInstance:freetier.micro
Amazon Elastic Transcoder	Global-ets-hd-success Global-ets-sd-success Global-ets-audio-success
AWS IoT	AWSIoT-messages
AWS Key Management Service	Global-KMS-Requests
AWS Lambda	Global-Lambda-GB-Second Global-Request
Amazon Lex	Lex-Global-Speech-Requests Lex-Global-Text-Requests
Amazon Mobile Analytics	EventsRecorded

Service	Usage Type
AWS OpsWorks	OpsWorks-Chef-Automate
Amazon Pinpoint	Pinpoint_DeliveryAttempts Pinpoint_MonthlyTargetedAudience
Amazon Polly	Global-SynthesizeSpeech-Chars
Amazon Relational Database Service	Global-InstanceUsage:db.t1.micro Global-RDS:StorageIOUsage
Amazon Rekognition	Global-FaceVectorsStored Global-ImagesProcessed
Amazon Simple Storage Service	Global-Requests-Tier1 Global-Requests-Tier2 Global-TimedStorage-ByteHrs
Amazon Simple Email Service	Global-Message
Amazon Simple Email Service	Global-Recipients-EC2
Amazon Simple Notification Service	DeliveryAttempts-HTTP DeliveryAttempts-SMTP Requests-Tier1
Amazon Simple Queue Service	Global-Requests
Amazon Simple Workflow Service	Global-AggregateInitiatedActions Global-AggregateInitiatedWorkflows Global-AggregateWorkflowDays
AWS X-Ray	Global-XRay-TracesAccessed Global-XRay-TracesStored
AWSDataTransfer	Global-DataTransfer-Out-Bytes
Amazon States	Global-StateTransition
ContactCenterTelecomm	USE1-US-did-inbound-mins USE1-US-outbound-mins USE1-US-tollfree-inbound-mins

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 \(p. 17\)](#)
- [Getting an Invoice Emailed to You \(p. 18\)](#)
- [Understanding Your Usage with Billing Reports \(p. 19\)](#)
- [Managing Your Payments \(p. 167\)](#)

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 \(p. 182\)](#).

To view your monthly charges

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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 \(p. 195\)](#).

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.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. Choose **Billing 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 \(p. 19\)](#)
- [Other Reports \(p. 61\)](#)

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 \(p. 195\)](#).

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. You can also call the [AWS Billing and Cost Management API Reference](#) to create, retrieve, or delete your reports. Each update is cumulative, so each version of the AWS Cost and Usage report includes all of the line items and information from the previous version. 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 download the report from the Amazon S3 console, upload the report into Amazon Redshift or Amazon QuickSight, or query the report in Amazon S3 using Amazon Athena. For more information about uploading to Amazon Redshift, see [Uploading an AWS Cost and Usage Report to Amazon Redshift \(p. 25\)](#). For more information about uploading to Amazon QuickSight, see [Create a Data Set Using Amazon S3 Files](#) in the *Amazon QuickSight User Guide*. For more information about using Athena to query your data, see [Uploading an AWS Cost and Usage Report to Amazon Athena \(p. 27\)](#). If you chose to create Amazon Redshift, Amazon QuickSight, or Athena manifests when you created your report, Billing and Cost Management provides the Amazon S3 data and manifests for you.

Note

AWS supports ten 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 \(p. 20\)](#)
- [Cost and Usage Report Details \(p. 33\)](#)

- [Reserved Instances](#) (p. 56)
- [On-Demand Capacity Reservations](#) (p. 59)

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. 20)
- [Getting Started](#) (p. 20)
- [Viewing Your AWS Cost and Usage Reports](#) (p. 21)
- [Viewing AWS Cost and Usage Report Files in Amazon S3](#) (p. 22)
- [Editing an AWS Cost and Usage Report](#) (p. 24)
- [Uploading an AWS Cost and Usage Report to Amazon Redshift](#) (p. 25)
- [Uploading an AWS Cost and Usage Report to Amazon Athena](#) (p. 27)

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. 20)
- [Creating an AWS Cost and Usage Report](#) (p. 20)

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

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

2. On the navigation pane, choose **Cost and Usage Reports**.
3. Choose **Create report**.
4. For **Report name**, enter a name for your report.
5. For **Additional report details**, to include the IDs of each individual resource in the report, select **Include resource IDs**.
6. 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.

Note

Detailed billing reports (DBRs) don't refresh automatically, whether you select **Data refresh settings** or not. To refresh a DBR, open a support case. For more information, see [Contacting Customer Support About Your Bill \(p. 209\)](#).

7. Choose **Next**.
8. For **S3 bucket**, choose **Configure**.
9. In the **Configure S3 Bucket** dialog box, do one of the following:
 - Select an existing bucket from the drop down list and choose **Next**.
 - Enter a bucket name and the Region where you want to create a new bucket and choose **Next**.
10. Select **I have confirmed that this policy is correct** and choose **Save**.
11. For **Report path prefix**, enter the report path prefix that you want prepended to the name of your report.

This step is optional for Amazon Redshift or Amazon QuickSight, but required for Amazon Athena.

If you don't specify a prefix, the default prefix is the name that you specified for the report in step 4 and the date range for the report, in the following format:

`/report-name/date-range/`

12. For **Time granularity**, 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.
13. For **Report versioning**, choose whether you want each version of the report to overwrite the previous version of the report or to be delivered in addition to the previous versions.
14. For **Enable report data integration for**, select whether you want to upload your AWS Cost and Usage report to Amazon Redshift, Amazon QuickSight, or Amazon Athena. The report is compressed in the following formats:
 - **Amazon Redshift or Amazon QuickSight:** .gz compression
 - **Athena:** parquet compression
15. Choose **Next**.
16. 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

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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 AWS updates the report. The new report includes all of the information included in the previous report and information new to the current report. AWS builds on previous reports until the end of the billing period. After the end of the report 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 specific organization and naming conventions of your AWS Cost and Usage report files depend on what parameters you chose when you created your AWS Cost and Usage report.

- [Keep previous AWS Cost and Usage reports \(p. 22\)](#)
- [Overwrite previous AWS Cost and Usage reports \(p. 23\)](#)

Keeping Previous AWS Cost and Usage Reports

When you choose to keep your previous AWS Cost and Usage report, your AWS Cost and Usage report uses the following Amazon S3 organization and naming conventions.

```
<example-report-prefix>/<example-report-name>/yyyymmdd-yyyymmdd/<assemblyId>/<example-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 the report covers. 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  
<example-report-prefix>/<example-report-name>/20160101-20160131/<example-report-name>-Manifest.json
```

AWS delivers all reports in a report date range to the same `report-prefix/report-name/yyyymmdd-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.

Overwriting Previous AWS Cost and Usage Reports

When you choose to overwrite your previous AWS Cost and Usage report, your AWS Cost and Usage report uses the following Amazon S3 organization and naming conventions.

```
<example-report-prefix>/<example-report-name>/yyyymmdd-yyyyymmdd/<example-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-yyyyymmdd` = The range of dates that the report covers. AWS finalizes reports at the end of the date range.
-
- `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>/yyyymmdd-yyyyymmdd/<example-report-name>-<1>.csv.<zip>  
<example-report-prefix>/<example-report-name>/yyyymmdd-yyyyymmdd/<example-report-name>-<2>.csv.<zip><example-report-prefix>/<example-report-name>/yyyymmdd-yyyyymmdd/<example-report-name>-<3>.csv.<zip>  
<example-report-prefix>/<example-report-name>/yyyymmdd-yyyyymmdd/<example-report-name>-Manifest.json
```

If you chose Athena support when you created your AWS Cost and Usage report, the file naming conventions are the same as when you choose to overwrite your AWS Cost and Usage report except for the format and compression. Athena AWS Cost and Usage report files use `.parquet` instead. For example, your report could be delivered as a collection of the following files.

```
<example-report-prefix>/<example-report-name>/yyyymmdd-yyyyymmdd/<example-report-name>.parquet  
<example-report-prefix>/<example-report-name>/yyyymmdd-yyyyymmdd/  
<cost_and_usage_data_status>  
<example-report-prefix>/<example-report-name>/yyyymmdd-yyyyymmdd/<example-report-name>-Manifest.json  
<example-report-prefix>/<example-report-name>/yyyymmdd-yyyyymmdd/<example-report-name>-create-table.sql  
<example-report-prefix>/<example-report-name>/yyyymmdd-yyyyymmdd/crawler-cfn.yml
```

In addition to the AWS Cost and Usage report files, AWS also delivers an AWS CloudFormation template that you can use to set up an AWS CloudFormation stack that enables you to query Amazon S3 data using Athena. If you don't want to use the AWS CloudFormation template, you can use the provided SQL to create your own Athena tables. For more information, see [Uploading an AWS Cost and Usage Report to Amazon Athena \(p. 27\)](#).

AWS delivers all reports in a report date range to the same folder. If the report is too large for a single file, the report is split into multiple files and delivered to the same folder.

AWS Cost and Usage Report Manifest Files

When AWS updates the AWS Cost and Usage report, AWS also creates and delivers manifest files that you can use for Amazon Redshift, Amazon QuickSight, or Amazon Athena. When you keep the previous AWS Cost and Usage reports, the manifest file is delivered to both the date range folder and the `assemblyId` folder. When you overwrite the previous AWS Cost and Usage report, the manifest file is delivered to the `month=mm` folder along with the report files. The manifest files list 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 use the naming conventions.

```
<example-report-prefix>/<example-report-name>/yyyyymmdd-yyyyymmdd/<example-report-name>-Manifest.json  
<example-report-prefix>/<example-report-name>/yyyyymmdd-yyyyymmdd/<assemblyId>/<example-report-name>-Manifest.json  
<example-report-prefix>/<example-report-name>/<example-report-name>/year=2018/month=12/<example-report-name>-Manifest.json
```

When you keep the previous AWS Cost and Usage reports, 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. When you overwrite the previous AWS Cost and Usage report, the manifest file is overwritten along with the report files.

If you chose the option for Amazon Redshift support in your AWS Cost and Usage report, AWS also creates and delivers 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 SQL file uses the following naming convention.

```
<example-report-prefix>/<example-report-name>/yyyyymmdd-yyyyymmdd/<assemblyId>/<example-report-name>-RedshiftCommands.sql
```

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

Important

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

If you chose the option for Amazon Athena support in your AWS Cost and Usage report, AWS also creates and delivers multiple files to help set up all of the resources that you need. AWS delivers a AWS CloudFormation template, a SQL file with the SQL to create your Athena table manually, and a file with the SQL to check your AWS Cost and Usage report refresh status. These files use the following naming conventions.

```
<example-report-prefix>/<example-report-name>/<example-report-name>/yyyyymmdd-yyyyymmdd/crawler-cfn.yml  
<example-report-prefix>/<example-report-name>/<example-report-name>/yyyyymmdd-yyyyymmdd/<example-report-name>-create-table.sql  
<example-report-prefix>/<example-report-name>/<example-report-name>/yyyyymmdd-yyyyymmdd/<cost_and_usage_data_status>
```

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. If you chose **Overwrite** for **Report versioning**, you can't edit the report name, whether the report includes resource IDs, the time granularity, or the report versioning. If you delete a report set to **Overwrite** and create a new report with the same name, Amazon S3 bucket, and path prefix, your data could become corrupted and inaccurate.

To edit an AWS Cost and Usage report

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/>
2. On the navigation pane, choose **Reports**.
3. Select the report that you want to edit and choose **Edit report**.
4. (Versioned reports only) For **Additional report details**, to include the IDs of each individual resource in the report, select **Include resource IDs**.
5. 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.
6. Choose **Next**.
7. For **S3 bucket**, enter 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*.
8. For **Report path prefix**, enter the report path prefix that you want prepended to the name of your report.
9. (Versioned reports only) For **Time granularity**, 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.
10. (Versioned reports only) For **Report versioning**, choose whether you want each version of the report to overwrite the previous version of the report or to be delivered in addition to the previous versions.
11. For **Enable report data integration for**, select whether you want to upload your AWS Cost and Usage report to Amazon Redshift, Amazon QuickSight, or Amazon Athena. If you select an Amazon Redshift or Amazon QuickSight manifest, your report is stored with .gz compression. If you select an Athena manifest, your report is stored with parquet compression.
12. 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 enables 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

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Reports**.
3. Choose the arrow next to the report that you want to upload to Amazon Redshift.
4. Next to **Helper files**, choose **Redshift file**.
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 Amazon Resource Name (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 enables 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.

Uploading an AWS Cost and Usage Report to Amazon Athena

Amazon Athena is a serverless query service that enables you to analyze the data from your AWS Cost and Usage report in Amazon S3 using standard SQL. This enables you to avoid creating your own data warehouse solutions to query AWS Cost and Usage report data.

- [Getting Started with Amazon Athena \(p. 27\)](#)
- [Running Athena Queries \(p. 32\)](#)

For answers to frequently asked questions, see [AWS Cost and Usage report marketing website](#).

Getting Started with Amazon Athena

You can use an existing Amazon S3 bucket or AWS Cost and Usage report with Athena, but we strongly recommend that you create both a new Amazon S3 bucket and a new AWS Cost and Usage report for use with Athena. The recommended setup process removes any Amazon S3 events that your bucket might already have, which can negatively affect any existing event-based processes that you have for an existing AWS Cost and Usage report. Setting up a new AWS Cost and Usage report can take up to 8 hours, so we recommend that you plan to do the last two setup steps the next day.

AWS Cost and Usage Report supports only the parquet compression format for Athena and automatically overwrites previous AWS Cost and Usage reports stored in your Amazon S3 bucket.

Important

If you plan to use a AWS CloudFormation template, you must create all resources in the same Region. AWS CloudFormation doesn't support cross-Region resources. The Region must support the following services:

- AWS Lambda
- Amazon Simple Storage Service
- AWS Glue
- Amazon Athena

Setting up to use Athena includes the following steps:

- [Create a new bucket \(p. 27\)](#)
- [Create a new AWS Cost and Usage report \(p. 28\)](#)
- [Set up Athena using AWS CloudFormation \(p. 29\)](#)

To create an Amazon S3 bucket for your reports

Use this procedure to create a new Amazon S3 bucket for your report.

Note

If you are part of an AWS Organizations organization, only the master account can create this bucket. AWS Cost and Usage reports can be delivered only to a bucket owned by the master account.

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 can't 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. Choose **Next**.
6. Choose **Next**.
7. (Optional) If you choose **Grant Amazon Simple Storage Service Log Delivery group write access to this bucket**, 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.
8. Choose **Next**.
9. Choose **Create bucket**.
10. From the list of buckets, choose the bucket that you want to receive reports in.
11. Choose **Permissions**.
12. Choose **Bucket Policy**.
13. Paste the following text into the bucket policy editor.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": {
        "Service": "billingreports.amazonaws.com"
      },
      "Action": [
        "s3:GetBucketAcl",
        "s3:GetBucketPolicy"
      ],
      "Resource": "arn:aws:s3:::bucketname"
    },
    {
      "Effect": "Allow",
      "Principal": {
        "Service": "billingreports.amazonaws.com"
      },
      "Action": "s3:PutObject",
      "Resource": "arn:aws:s3:::bucketname/*"
    }
  ]
}
```

14. Replace **bucketname** with the name of your bucket.
15. Choose **Save**.

To create an AWS Cost and Usage report

Use this procedure to create a new AWS Cost and Usage report for use with Athena.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation pane, choose **Cost and Usage Reports**.
3. Choose **Create report**.

4. For **Report name**, enter a name for your report.
5. For **Additional report details**, to include the IDs of each individual resource in the report, select **Include resource IDs**.
6. 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.

Note

Detailed billing reports (DBRs) don't refresh automatically, whether you select **Data refresh settings** or not. To refresh a DBR, open a support case. For more information, see [Contacting Customer Support About Your Bill \(p. 209\)](#).

7. Choose **Next**.
8. For **S3 bucket**, choose **Configure**.
9. In the **Configure S3 Bucket** dialog box, do one of the following:
 - Select an existing bucket from the drop down list and choose **Next**.
 - Enter a bucket name and the Region where you want to create a new bucket and choose **Next**.
10. Select **I have confirmed that this policy is correct** and choose **Save**.
11. For **Report path prefix**, enter the report path prefix that you want prepended to the name of your report. You must provide a report path prefix to use Athena with AWS Cost and Usage report.
12. For **Time granularity**, 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.
13. For **Report versioning**, choose whether you want each version of the report to overwrite the previous version of the report or to be delivered in addition to the previous versions.
14. For **Enable report data integration for**, select whether you want to upload your AWS Cost and Usage report to Amazon Redshift, Amazon QuickSight, or Amazon Athena. The report is compressed in the following formats:
 - **Amazon Redshift or Amazon QuickSight:** .gz compression
 - **Athena:** parquet compression
15. Choose **Next**.
16. After you have reviewed the settings for your report, choose **Review and Complete**.
17. Before moving on to the next procedure, you must wait for the first AWS Cost and Usage report to be delivered to your Amazon S3 bucket. It might take up to 8 hours for AWS to deliver your first AWS Cost and Usage report.

To use the Athena AWS CloudFormation template

To use Athena, you must set up an AWS Glue crawler, an AWS Glue database, and an AWS Lambda event. Billing and Cost Management provides an AWS CloudFormation template that does this setup for you. AWS CloudFormation doesn't support resources in multiple Regions for one stack, so the Region that you use must support the following services:

- AWS Lambda
- Amazon Simple Storage Service
- AWS Glue
- Amazon Athena

Important

- The AWS CloudFormation template removes all events associated with your Amazon S3 bucket, so we strongly recommend that you use a new Amazon S3 bucket.

- Be sure to align your AWS CloudFormation Region with your Amazon S3 bucket.
1. Open the Amazon S3 console at <https://console.aws.amazon.com/s3/>.
 2. From the list of buckets, choose the bucket name.
 3. Choose the prefix name.
 4. Choose the report name.
 5. Select the `.yaml` template file.
 6. Select **download**.
 7. Open the AWS CloudFormation console at <https://console.aws.amazon.com/cloudformation>.
 8. If you have never used AWS CloudFormation before, choose **Create New Stack**. Otherwise, choose **Create Stack**.
 9. Under **Prepare template**, choose **Template is ready**.
 10. Under **Template source**, choose **Upload a template file**.
 11. Select **Choose file**, choose the downloaded `.yaml` template, and then choose **Open**.
 12. Choose **Next**.
 13. For **Stack name**, enter a name for your template and choose **Next**.
 14. Choose **Next**.
 15. At the bottom of the page, select **I acknowledge that AWS CloudFormation might create IAM resources**. This template creates the following resources:
 - Three IAM roles
 - An AWS Glue database
 - An AWS Glue crawler
 - Two Lambda functions
 - An Amazon S3 notification
 16. Choose **Create**.

Setting up Amazon Athena Manually

If you don't use the provided AWS CloudFormation template, you must do the following steps manually:

- [Create an Athena table \(p. 30\)](#)
- [Create an AWS Cost and Usage report status table \(p. 31\)](#)
- [Upload report partitions \(p. 32\)](#)

Creating Your Athena Table

If you didn't use the AWS CloudFormation template to set up your Athena table, you must create a table before you can run SQL queries on your AWS Cost and Usage report data. You need to do this step at least once a month, and the table includes data from only the current AWS Cost and Usage report.

Note

We strongly recommend that you use the AWS CloudFormation template to create your table instead of creating it yourself. The provided SQL creates a table that covers only a single month of data, but the AWS CloudFormation template creates a table that can include multiple months and that updates automatically.

As part of the table creation process, AWS transforms the AWS Cost and Usage report column names. For more information about the transformation process, see [Column Names \(p. 32\)](#).

To create your Athena table

AWS includes the SQL that you need to run to create this table in your AWS Cost and Usage report bucket.

1. Sign in to the AWS Management Console and open the Amazon S3 console at <https://console.aws.amazon.com/s3/>.
2. From the list of buckets, choose the bucket where you chose to receive your AWS Cost and Usage report.
3. From there, navigate the path *your-report-prefix-your-report-name-path-to-report*.

The exact path depends on whether your AWS Cost and Usage report is set to overwrite previous versions. For more information, see [Viewing AWS Cost and Usage Report Files in Amazon S3](#) (p. 22).

4. Open the file *my-report-name-create-table.sql*.
5. Copy the SQL from the file, starting with `CREATE` and ending with `LOCATION 's3://your-report-prefix/your-report-name/the-rest-of-the=path'`. Take note of the first line, as you need the database name and table to create the Athena database.
6. Open the Athena console at <https://console.aws.amazon.com/athena/>.
7. In the **New query 1** query pane, paste the following SQL. For *<database name>*.*<table name>*, use the database and table name from the first line of the SQL that you copied.

```
CREATE DATABASE <database name>
```

8. Choose **Run query**.
9. In the dropdown menu, choose the database that you just created.
10. In the **New query 1** query pane, paste the rest of the SQL from the SQL file.
11. Choose **Run query**.

After you create your table, you must load your partitions before you can run a query. For more information, see [Upload report partitions](#) (p. 32).

Create the AWS Cost and Usage Report Status Table

AWS refreshes your AWS Cost and Usage report multiple times a day. There is no way for Athena to know whether AWS is in the process of refreshing your AWS Cost and Usage report, which can lead to query results with a combination of old and new data. To mitigate this, create a table to track whether AWS is refreshing your AWS Cost and Usage report and query that table to see if AWS is refreshing your data. You need to create this table only once. After that, AWS keeps the table up to date.

To create your refresh table

1. Open the Athena console at <https://console.aws.amazon.com/athena/>.
2. In the **New query 1** query pane, paste the following SQL.

```
CREATE EXTERNAL TABLE IF NOT EXISTS cost_and_usage_data_status(  
    status STRING)  
ROW FORMAT SERDE  
    'org.apache.hadoop.hive ql.io.parquet.serde.ParquetHiveSerDe'  
WITH SERDEPROPERTIES (  
    'serialization.format' = '1'  
)  
LOCATION 's3://{S3_Bucket_Name}/{Report_Key}/cost_and_usage_data_status/'
```

3. Choose **Run query**.

To check whether AWS is refreshing your data, use the Athena console to run the following SQL query.

```
select status from cost_and_usage_data_status
```

Upload Your Report Partitions

To query your AWS Cost and Usage report data, you must upload the data into your Athena table. You must do this for each new AWS Cost and Usage report that AWS delivers to you.

To upload your latest partitions

1. Open the Athena console at <https://console.aws.amazon.com/athena/>.
2. Choose the ... next to your table and choose **Load Partitions**.

If you don't upload your partitions, Athena returns either no results or an error message that indicates missing data from new partitions.

Running Athena Queries

To run Athena queries on your data, first use the Athena console to check whether AWS is refreshing your data and then run your query on the Athena console. When you run your SQL, make sure that the correct database is selected from the dropdown list. You can use the following SQL to check the status.

```
select status from cost_and_usage_data_status
```

The two possible results are **READY** and **UPDATING**. If the status is **READY**, then you can query your Athena database. If the status is **UPDATING**, then Athena might return incomplete results.

After you have confirmed that AWS is refreshing your data, you can run your own queries. For example, the following query shows year-to-date costs by service for each month in the example database called `mycostandusage_parquet`.

```
SELECT line_item_product_code,  
sum(line_item_blended_cost) AS cost, month  
FROM mycostandusage_parquet  
WHERE year='2018'  
GROUP BY line_item_product_code, month  
HAVING sum(line_item_blended_cost) > 0  
ORDER BY line_item_product_code;
```

Column Names

Athena column name restrictions are different from the AWS Cost and Usage report column name restrictions. This means that when your AWS Cost and Usage report data is uploaded into an Athena table, the column names change. AWS makes the following changes:

- An underscore is added in front of uppercase letters
- Uppercase letters are replaced with lowercase letters
- Any non-alphanumeric characters are replaced with an underscore
- Duplicate underscores are removed
- Any leading and trailing underscores are removed

- If the column name is longer than the allowed length of column names, underscores are removed from left to right

Important

If AWS encounters resource tag columns that have the same name after AWS applies these rules, AWS keeps the value associated with the first tag that it encountered.

For example, the column name `ExampleColumnName : Example Column Name Continued` becomes `example_column_name_example_column_name_continued`.

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 \(p. 33\)](#)
- [Billing Details \(p. 34\)](#)
- [Line Item Details \(p. 34\)](#)
- [Reservation Details \(p. 38\)](#)
- [Pricing Details \(p. 44\)](#)
- [Product Details \(p. 44\)](#)
- [Resource Tags \(p. 55\)](#)

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 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:

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/BillingPeriodEndDate

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

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/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/InvoiceId

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

bill/PayerAccountId

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

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/AvailabilityZone

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

lineItem/BlendedCost

The `BlendedRate` multiplied by the `UsageAmount`.

Note

For line items that have a **LineItemType** of **Discount**, **BlendedCost** is blank. Discounts are calculated using only the unblended cost of a linked account, aggregated by linked account and SKU, so **BlendedCost** is not available for discounts.

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 RIs 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/CurrencyCode

The currency that this line item is shown in.

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/LineItemType

The type of charge covered by this line item. There are seven possible types:

- **Credit** – 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.
- **DiscountedUsage** – 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.
- **RIFee** – The monthly recurring fee for subscriptions. For example, the recurring fee for **Partial Upfront RIs**, **No Upfront RIs**, and **All Upfronts** 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/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/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

Instance Size	Normalization Factor
nano	0.25
micro	0.5
small	1
medium	2
large	4
xlarge	8
2xlarge	16
4xlarge	32
8xlarge	64
10xlarge	80
16xlarge	128
32xlarge	256

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/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/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.

(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

AWS Service	Resource Identifier
Amazon CloudFront	Distribution ID
Amazon CloudSearch	Search domain

AWS Service	Resource Identifier
Amazon DynamoDB	DynamoDB table
Amazon Elastic Compute Cloud - Amazon EBS	Amazon EBS volume
Amazon Elastic Compute Cloud	Instance ID
Amazon Elastic Compute Cloud - CloudWatch	CloudWatch charges for an instance ID
Amazon EMR	MapReduce cluster
Amazon ElastiCache	Cache cluster
Amazon Elasticsearch Service	Search domain
Amazon S3 Glacier	Vault
Amazon Relational Database Service	Database
Amazon Redshift	Amazon Redshift cluster
Amazon Simple Storage Service	Amazon S3 bucket
Amazon Virtual Private Cloud	VPN ID
AWS Lambda	Lambda function name

lineItem/TaxType

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

lineItem/UnblendedCost

The `UnblendedCost` comes from the `UnblendedRate` multiplied by the `UsageAmount`.

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/UsageAccountId

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

lineItem/UsageAmount

The amount of usage that you incurred during the specified time period. For size-flexible reserved instances, use the **reservation/TotalReservedUnits** column instead.

lineItem/UsageEndDate

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

lineItem/UsageStartDate

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

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.

Reservation Details

The reservation columns provide details about reserved resources.

Downloading a Reservation Column Spreadsheet

The following list is a subset of reservation columns and the corresponding definitions. To download the full list of the columns that can appear in the Cost and Usage Report and the services that the columns apply to, choose [Column_Attribute_Service.zip](#).

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | VWXYZ

A

[reservation/AmortizedUpfrontCostForUsage](#)

- **Description:** 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.
- **Line items applicable:** DiscountedUsage
- **Sample values:** 0.05, 0.17, 0.15
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

[reservation/AmortizedUpfrontFeeForBillingPeriod](#)

- **Description:** Describes how much of the upfront fee for this reservation is costing you for the billing period. 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.
- **Line items applicable:** RIFee
- **Sample values:** 29.15, 200.67, 214.43
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

[reservation/AvailabilityZone](#)

- **Description:** The availability zone of the resource that is associated with this line item.
- **Line items applicable:** Fee, Refund, RIFee
- **Sample values:** us-east-1, us-east-1b, eu-west-1b, ap-southeast-2a
- **Services:**

- Amazon EC2

E

reservation/EffectiveCost

- **Description:** The sum of both the upfront and hourly rate of your RI, averaged into an effective hourly rate. `EffectiveCost` is calculated by taking the `amortizedUpfrontCostForUsage` and adding it to the `recurringFeeForUsage`. For more information, see [Amazon EC2 Reserved Instances Pricing](#).
- **Line items applicable:** `DiscountedUsage`
- **Sample values:** 0.23, 0.68, 0.10
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon ElastiCache
 - Amazon RDS

reservation/EndTime

- **Description:** The end date of the associated RI lease term.
- **Line items applicable:** `RIFee`
- **Sample values:** 2019-05-15T04:23:14.000Z, 2020-02-08T17:32:15.000Z, 2019-07-14T00:00:33.000Z
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

M

reservation/ModificationStatus

- **Description:** Shows whether the RI lease was modified or if it is unaltered.
 - **Original:** The purchased RI was never modified.
 - **System:** The purchased RI was modified using the console or API.
 - **Manual:** The purchased RI was modified using AWS Support assistance.
 - **ManualWithData:** The purchased RI was modified using AWS Support assistance, and AWS calculated estimates for the RI.
- **Line items applicable:** `RIFee`
- **Sample values:** `Original`, `System`, `Manual`, `ManualWithData`
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon Redshift

- Amazon ElastiCache
- Amazon RDS

N

[reservation/NormalizedUnitsPerReservation](#)

- **Description:** The number of normalized units for each instance of a reservation subscription.
- **Line items applicable:** RIFee
- **Sample values:** 1316, 54.5, 319
- **Services:**
 - Amazon RDS

[reservation/NumberOfReservations](#)

- **Description:** The number of reservations that are covered by this subscription. For example, one RI subscription might have four associated RI reservations.
- **Line items applicable:** Fee, RIFee, Refund, Credit
- **Sample values:** 5, 50, 500
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

R

[reservation/RecurringFeeForUsage](#)

- **Description:** The recurring fee amorted for usage time, for Partial Upfront RIs and No Upfront RIs. Because All Upfront RIs don't have recurring fee payments greater than 0, the value for All Upfront RIs is 0.
- **Line items applicable:** DiscountedUsage
- **Sample values:** 0.139, 0.729, 0.018
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon ElastiCache
 - Amazon RDS

[reservation/ReservationARN](#)

- **Description:** The Amazon Resource Name (ARN) of the RI that this line item benefited from. This is also called the "RI Lease ID". This is a unique identifier of this particular AWS Reserved Instance. The value string also contains the AWS service name and the Region where the RI was purchased.

- **Line items applicable:** Fee, RIFee, DiscountedUsage, Refund, Credit
- **Sample values:** arn:aws:ec2:us-east-1:074108124787:reserved-instances/1d3fbc13-f181-4c40-9dd6-12b345678de9, arn:aws:ec2:us-east-1:499958231354:reserved-instances/be41234c3-b5c0-403e-a80c-1cfd12345678
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

S

reservation/StartTime

- **Description:** The start date of the term of the associated Reserved Instance.
- **Line items applicable:** RIFee
- **Sample values:** 2018-07-29T02:56:10.000Z, 2017-08-21T15:58:47.000Z, 2019-02-01T22:01:34.000Z
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

reservation/SubscriptionId

- **Description:** A unique ID associated with your AWS Reserved Instances. We recommend you use the RI ARN as your identifier of an AWS Reserved Instance, but both can be used.
- **Line items applicable:** Fee, RIFee, DiscountedUsage, Refund, Credit
- **Sample values:** 123456789, 111122222, 333344444
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

T

reservation/TotalReservedNormalizedUnits

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

- **Line items applicable:** DiscountedUsage
- **Sample values:** 40320, 3647.99, 17928.77
- **Services:**
 - Amazon EC2
 - Amazon RDS

reservation/TotalReservedUnits

- **Description:** TotalReservedUnits populates for both Fee and RIFee line items with distinct values.
 - Fee line items: The total number of units reserved, for the total quantity of leases purchased in your subscription for the entire term.

This is calculated by multiplying the NumberOfReservations with UnitsPerReservation. For example, 5 RIs x 744 hours per month x 12 months = 44,640.

- RIFee line items (monthly recurring costs): The total number of available units in your subscription, such as the total number of Amazon EC2 hours in a specific RI subscription.

For example, 5 RIs x 744 hours = 3,720.

- **Line items applicable:** Fee, RIFee, Refund, Credit
- **Sample values:** 26208, 98.19, 15796
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

U

reservation/UnitsPerReservation

- **Description:** UnitsPerReservation populates for both Fee and RIFee line items with distinct values.
 - Fee line items: The total number of units reserved for the subscription, such as the total number of RI hours purchased for the term of the subscription.

For example 744 hours per month x 12 months = 8,928 total hours/units.

- RIFee line items (monthly recurring costs): The total number of available units in your subscription, such as the total number of Amazon EC2 hours in a specific RI subscription.

For example, 1 unit x 744 hours = 744.

- **Line items applicable:** Fee, RIFee, Refund, Credit
- **Sample values:** 334.0, 486.72, 18455
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon DynamoDB
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

reservation/UnusedAmortizedUpfrontFeeForBillingPeriod

- **Description:** The amortized-upfront-fee-for-billing-period-column 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.
- **Line items applicable:** RIFee
- **Sample values:** 6.05, 1.97, 0.17
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

reservation/UnusedNormalizedUnitQuantity

- **Description:** The number of unused normalized units for a size-flexible regional RI that you didn't use during this billing period.
- **Line items applicable:** RIFee
- **Sample values:** 25.00, 3.50, 274.33
- **Services:**
 - Amazon RDS

reservation/UnusedQuantity

- **Description:** The number of RI hours that you didn't use during this billing period.
- **Line items applicable:** RIFee line item
- **Sample values:** 209.65110408, 191.00000000, 176.00000000
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

reservation/UnusedRecurringFee

- **Description:** The recurring fees associated with your unused reservation hours for Partial Upfront and No Upfront RIs. Because All Upfront RIs don't have recurring fees greater than 0, the value for All Upfront RIs is 0.
- **Line items applicable:** RIFee
- **Sample values:** 0.02971114, 0.19190000, 1.37280000
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

reservation/UpfrontValue

- **Description:** The upfront price paid for your AWS Reserved Instance. For No Upfront RIs, this value is 0.
- **Line items applicable:** RIFee
- **Sample values:** 150.00, 1000.00, 2000.00
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon Redshift
 - Amazon ElastiCache
 - Amazon RDS

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/RateId

The ID of the rate for a line item. You can use the **RateId** to get up-to-date pricing for a product by using the [Using the AWS Price List API \(p. 142\)](#).

pricing/term

Whether your AWS usage is Reserved or On-Demand.

pricing/unit

The pricing unit that AWS used for calculating your usage cost. For example, the pricing unit for Amazon EC2 instance usage is in hours.

Product Details

The product columns provide metadata about the product that incurred the expense, and the line item. The product columns are dynamic, and their visibility in Cost and Usage Report depends on the usage of product in the billing period.

Downloading a Product Column Spreadsheet

The following is a subset of product columns and the corresponding definitions. To download the full list of the columns that can appear in the Cost and Usage Report and the services that the columns apply to, choose [Column_Attribute_Service.zip](#).

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | WXYZ

A

[product/availability](#)

- **Description:** Describes the availability of your various AWS storage options.
- **Sample values:** 99.99%, 99.5%
- **Services:**
 - Amazon S3 Glacier
 - Amazon S3
 - AWS Elemental MediaStore
 - AWS RoboMaker

C

[product/capacitystatus](#)

- **Description:** Describes the status of your capacity reservations.
- **Sample values:** UnusedCapacityReservation, AllocatedCapacityReservation, Used
- **Services:**
 - Amazon EC2

[product/clockspeed](#)

- **Description:** Describes the operating speed of your AWS instances.
- **Sample values:** 2.4 GHz, 2.6 GHz
- **Services:**
 - Amazon DocumentDB
 - Amazon EC2
 - Amazon MQ
 - Amazon Neptune
 - Amazon RDS
 - AWS Database Migration Service

D

[product/dedicatedEbsThroughput](#)

- **Description:** Describes the dedicated throughput between your instances (e.g., Amazon EC2 instances and Amazon EBS volumes), with options between 500 and 10,000 megabits per second (Mbps) depending on the instance type used. The dedicated throughput minimizes contention between Amazon EBS I/O and other traffic from your EC2 instance, providing the best performance for your Amazon EBS volumes.
- **Sample values:** 200 Mbps, Up to 5000 Mbps
- **Services:**
 - Amazon EC2
 - Amazon Neptune
 - Amazon RDS

product/durability

- **Description:** Describes the durability of objects over a given year.
- **Sample values:** 99.99999999%, N/A, 99.99%
- **Services:**
 - Amazon S3 Glacier
 - Amazon S3
 - AWS Elemental MediaStore

E

product/ebsOptimized

- **Description:** Describes whether your Amazon EC2 instances are Amazon EBS-optimized.
- **Sample values:** Yes, No
- **Services:**
 - Amazon EC2

product/ecu

- **Description:** Describes the EC2 Compute Unit (ECU) that provides the relative measure of the integer processing power of an Amazon EC2 instance.
- **Sample values:** 9, 100, variable
- **Services:**
 - Amazon EC2
 - Amazon ES
 - Amazon GameLift
 - Amazon Redshift

product/enhancedNetworkingSupported

- **Description:** Describes whether your instance supports enhanced networking. Enhanced networking uses single root I/O virtualization (SR-IOV) to provide high-performance networking capabilities on supported instance types.
- **Sample values:** Yes, No
- **Services:**
 - Amazon DocumentDB
 - Amazon EC2
 - Amazon Neptune
 - Amazon RDS
 - AWS Database Migration Service

G

product/gpu

- **Description:** Describes the number of GPUs.
- **Sample values:** 16, 32
- **Services:**

- Amazon SageMaker
- Amazon EC2

[product/gpuMemory](#)

- **Description:** Describes your GPU memory details.
- **Sample values:** 16, 32
- **Services:**
 - Amazon SageMaker
 - Amazon EC2

|

[product/instanceFamily](#)

- **Description:** Describes your Amazon EC2 instance family. Amazon EC2 provides you with a large number of options across 10 different instance types, each with one or more size options, organized into distinct instance families optimized for different types of applications.
- **Sample values:** General Purpose, Memory Optimized, Accelerated Computing
- **Services:**
 - Amazon EC2
 - Amazon RDS
 - Amazon ES
 - Amazon ElastiCache
 - Amazon EMR

and more. For the full service list, download [Column_Attribute_Service.zip](#).

[product/instanceType](#)

- **Description:** Describes the instance type, size, and family, which define the CPU, networking, and storage capacity of your instance.
- **Sample values:** t2.small, m4.xlarge, t2.micro, m4.large, t2.large
- **Services:**
 - Amazon EC2
 - Amazon RDS
 - Amazon ES
 - Amazon ElastiCache
 - Amazon EMR

and more. For the full service list, download [Column_Attribute_Service.zip](#).

[product/instanceTypeFamily](#)

- **Description:** The instance family that is associated with the given usage.
- **Sample values:** t2, m4, m3
- **Services:**
 - Amazon DocumentDB
 - Amazon RDS

[product/intelAvxAvailable](#)

- **Description:** Describes whether your process has the Intel Advanced Vector Extension instruction set.
- **Sample values:** Yes, No.
- **Services:**
 - Amazon EC2

[product/intelAvx2Available](#)

- **Description:** Describes whether your process has the Intel Advanced Vector Extension instruction set two.
- **Sample values:** Yes, No
- **Services:**
 - Amazon EC2

[product/intelTurboAvailable](#)

- **Description:** Describes whether your core is allowed to use Intel Turbo Technology to increase frequency.
- **Sample values:** Yes, No
- **Services:**
 - Amazon EC2

L

[product/licenseModel](#)

- **Description:** Describes the license model for your instance.
- **Sample value:** license-included, bring-your-own-license, general-public-license
- **Services:**
 - Amazon AppStream
 - Amazon EC2
 - Amazon MQ
 - Amazon Neptune
 - Amazon RDS

[product/location](#)

- **Description:** Describes the region that your Amazon S3 bucket resides in.
- **Sample values:** Asia Pacific (Mumbai), Asia Pacific (Seoul), Canada (Central), EU (London), US West (Oregon)
- **Services:**
 - Amazon EC2
 - AWS Certificate Manager
 - Amazon S3
 - Amazon RDS
 - Amazon DynamoDB

and more. For the full service list, download [Column_Attribute_Service.zip](#).

product/locationType

- **Description:** Describes the end point of your task.
 - **Sample values:** AWS Region, AWS Edge Location, Other
 - **Services:**
 - Amazon EC2
 - AWS Certificate Manager
 - Amazon S3
 - Amazon RDS
 - Amazon DynamoDB
- and more. For the full service list, download [Column_Attribute_Service.zip](#).

M

product/maxIopsBurstPerformance

- **Description:** Describes the max IOPS burst performance of your Amazon EBS volume.
- **Sample value:** 3000 IOPS for volumes <= 1TB
- **Services:**
 - Amazon EC2

product/maxIopsVolume

- **Description:** Describes maximum input/output per second of your Amazon EBS volume.
- **Sample value:** 16,000 (maxIops for a General Purpose SSD (gp2))
- **Services:**
 - Amazon EC2

product/maxThroughputVolume

- **Description:** Describes the max network throughput volume of your Amazon EBS volume.
- **Sample values:** 500 MiB/s, 250 MiB/s, 1000 MiB/s, 40 - 90 MB/sec
- **Services:**
 - Amazon EC2
 - Amazon SageMaker

N

product/networkPerformance

- **Description:** Describes the network throughput of your Amazon EC2 instances.
- **Sample values:** moderate, high, up to 10 GB
- **Services:**
 - Amazon EC2
 - Amazon RDS
 - Amazon ElastiCache
 - Amazon SageMaker
 - AWS Database Migration Service

and more. For the full service list, download [Column_Attribute_Service.zip](#).

[product/normalizationSizeFactor](#)

- **Description:** Describes the normalization factor of the instance size.
- **Sample values:** nano - 0.25, micro - 0.5, medium - 2, xlarge - 8, 16xlarge - 128
- **Services:**
 - Amazon DocumentDB
 - Amazon EC2
 - Amazon MQ
 - Amazon Neptune
 - Amazon RDS

O

[product/OfferingClass](#)

- **Description:** Describes the type of Reserved Instances. When you purchase a Reserved Instance, you can choose between a Standard or Convertible offering class.
- **Sample values:** Standard, Convertible
- **Services:**
 - Amazon DynamoDB
 - Amazon EC2
 - Amazon ElastiCache
 - Amazon ES
 - Amazon RDS
 - Amazon Redshift

[product/operatingSystem](#)

- **Description:** Describes the operating system of your Amazon EC2 instance.
- **Sample values:** Amazon Linux, Ubuntu, Windows Server, Oracle Linux, FreeBSD
- **Services:**
 - Amazon AppStream
 - Amazon EC2
 - Amazon GameLift
 - Amazon Lightsail
 - Amazon WorkSpaces
 - AWS CodeBuild

[product/operation](#)

- **Description:** Describes the specific AWS operation that this line item covers.
- **Sample values:** RunInstances (indicates the operation of an Amazon EC2 instance)
- **Services:**
 - Amazon EC2
 - Amazon S3

- Amazon RDS
- Amazon DynamoDB
- Amazon CloudWatch
- Amazon Redshift

and more. For the full service list, download [Column_Attribute_Service.zip](#).

P

[product/physicalCores](#)

- **Description:** Describes the number of physical cores an instance provides.
- **Sample values:** 4, 8
- **Services:**
 - Amazon EC2

[product/physicalProcessor](#)

- **Description:** Describes the processor on your Amazon EC2 instance.
- **Sample values:** High Frequency Intel Xeon E7-8880 v3 (Haswell), Intel Xeon E5-2670, AMD EPYC 7571
- **Services:**
 - Amazon DocumentDB
 - Amazon EC2
 - Amazon Neptune
 - Amazon RDS
 - AWS Database Migration Service

[product/processorArchitecture](#)

- **Description:** Describes your processor architecture.
- **Sample values:** 32-bit, 64-bit
- **Services:**
 - Amazon DocumentDB
 - Amazon EC2
 - Amazon Neptune
 - Amazon RDS
 - AWS Database Migration Service

[product/processorFeatures](#)

- **Description:** Describes the processor features of your instances.
- **Sample values:** Intel AVX, Intel AVX2, Intel AVX512, Intel Turbo
- **Services:**
 - AWS Database Migration Service
 - Amazon DocumentDB
 - Amazon EC2
 - Amazon Neptune

- Amazon RDS

product/ProductFamily

- **Description:** The category for the type of product.
- **Sample values:** Alarm, AWS Budgets, Stopped Instance, Storage Snapshot, Compute
- **Services:**
 - Amazon EC2
 - AWS Certificate Manager
 - Amazon S3
 - Amazon RDS
 - Amazon DynamoDB

and more. For the full service list, download [Column_Attribute_Service.zip](#).

product/ProductName

- **Description:** The full name of the AWS service. Use this column to filter AWS usage by AWS service.
- **Sample values:** AWS Backup, AWS Config, Amazon Registrar, Amazon Elastic File System, Amazon Elastic Compute Cloud
- **Services:**
 -

product/provisioned

- **Description:** Indicates whether Amazon EBS usage was related to provisioned Amazon EBS storage.
- **Sample values:** Yes, No
- **Services:**
 - Amazon EC2
 - Amazon MQ

product/PurchaseOption

- **Description:** Describes the Amazon EC2 purchasing option.
- **Sample values:**
 - On-Demand Instances – Pay by the second for the instances that you launch
 - Reserved Instances – Purchase, at a significant discount, instances that are always available, for a term of one or three years
 - Scheduled Instances – Purchase instances that are always available on the specified recurring schedule, for a one-year term
 - Spot Instances – Request unused EC2 instances, which can lower your Amazon EC2 costs significantly
 - Dedicated Hosts – Pay for a physical host that is fully dedicated to running your instances and bring your existing per-socket, per-core, or per-VM software licenses to reduce costs
 - Dedicated Instances – Pay, by the hour, for instances that run on single-tenant hardware
 - Capacity Reservations – Reserve capacity for your Amazon EC2 instances in a specific Availability Zone for any duration

-
- **Services:**

- Amazon DynamoDB
- Amazon EC2
- Amazon ES
- Amazon ElastiCache
- Amazon RDS
- Amazon Redshift

R

product/region

- **Description:** The geographical area that hosts your AWS services. Use this field to analyze spend across a particular Region.
- **Sample values:** eu-west-3, us-west-1, us-east-1, ap-northeast-2, sa-east-1
- **Services:**
 - Amazon EC2
 - AWS Certificate Manager
 - Amazon S3
 - Amazon RDS
 - Amazon DynamoDB

and more. For the full service list, download [Column_Attribute_Service.zip](#).

S

product/sku

- **Description:** 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 instance and AWS applied a t2.small RI discount to the usage, the line item SKU is created with the t2.micro.
- **Sample values:** FFNT87MQSCR328W6, VBYCEU494XUAHCA7
- **Services:**
 - Amazon EC2
 - AWS Certificate Manager
 - Amazon S3
 - Amazon RDS
 - Amazon DynamoDB

and more. For the full service list, download [Column_Attribute_Service.zip](#).

product/storage

- **Description:** Describes the disk storage attached to your instance.
- **Sample values:** 60GB, True, EBS Only, 1 x 900 NVMe SSD, 1 x 150 NVMe SSD
- **Services:**
 - Amazon EC2
 - Amazon RDS
 - Amazon Redshift

- Amazon ES
- Amazon WorkSpaces

and more. For the full service list, download [Column_Attribute_Service.zip](#).

[product/storageclass](#)

- **Description:** Describes the storage class of your Amazon S3 bucket.
- **Sample values:** Archive, General Purpose, Infrequent Access, Intelligent-Tiering, Non-Critical Data
- **Services:**
 - AWS Elemental MediaStore
 - AWS Storage Gateway
 - Amazon Cloud Directory
 - Amazon EFS
 - Amazon MQ
 - Amazon S3

T

[product/tenancy](#)

- **Description:** The type of tenancy allowed on the Amazon EC2 instance.
- **Sample values:** Dedicated, Reserved, Shared, NA, Host
- **Services:**
 - Amazon EC2
 - Amazon ECS

U

[product/usagetype](#)

- **Description:** Describes the usage details of the line item.
- **Sample values:** EU-BoxUsage:c5d.9xlarge, EU-BoxUsage:m4.16xlarge, SAE1-InstanceUsage:db.t2.medium, USW2-AW-SW-19, SAE1-BoxUsage:c4.large,
- **Services:**
 - Amazon EC2
 - AWS Certificate Manager
 - Amazon S3
 - Amazon RDS
 - Amazon DynamoDB

and more. For the full service list, download [Column_Attribute_Service.zip](#).

V

product/vcpu

- **Description:** Describes the number of threads concurrently running on a single CPU core. Amazon EC2 instances support multithreading, which enables multiple threads to run concurrently on a single CPU core. Each thread is represented as a virtual CPU (vCPU) on the instance.
- **Sample values:** 8, 16, 36, 72, 128
- **Services:**
 - Amazon EC2
 - Amazon RDS
 - Amazon Redshift
 - Amazon ES
 - Amazon ElastiCache

and more. For the full service list, download [Column_Attribute_Service.zip](#).

product/volumeType

- **Description:** Describes your Amazon EBS volume types.
- **Sample values:** Standard, General Purpose, General Purpose-Aurora, Amazon Glacier, Amazon SimpleDB - Standard,
- **Services:**
 - Amazon EC2
 - Amazon S3
 - Amazon RDS
 - Amazon DynamoDB
 - Amazon S3 Glacier

and more. For the full service list, download [Column_Attribute_Service.zip](#).

Resource Tags

You can use the resource columns to find information about the specific resources covered by a line item. These columns include user-defined cost allocation tags. Examples include the following:

resourceTags/user:creator

You can use a **user:Creator** tag to track which user created a resource.

resourceTags/user:name

You can use a **user:Name** tag to track which resources are associated with a specific user.

resourceTags/user:owner

You can use a **user:Owner** tag to track which user owns a resource.

resourceTags/user:purpose

You can use a **user:Purpose** tag to track why a resource was created.

Reserved Instances

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

Topics

- [Reserved Instance Line Items \(p. 56\)](#)
- [Region Reserved Instance Line Items \(p. 57\)](#)
- [Amortizing Reserved Instances \(p. 58\)](#)

Reserved Instance Line Items

RIs provide you a significant discount compared to On-Demand Instance pricing. RIs aren't physical instances. They're a billing discount applied to the use of On-Demand Instances in your account. These On-Demand Instances must match certain attributes 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).

lineitem/ LineItemType	lineitem/ Product Code	lineitem/ UsageStartDate	lineitem/Description	lineitem/ Unblended Cost	reservation/ ReservationARN
Fee	AmazonE C2	2016-01-01T00:00:00Z	Sign up charge for subscription: 363836886, planId: 1026576	68	arn:aws:ec2:us-east- 1:572481847476:reserved- instances#8c204c1-dd48- 43f1-adb8-f38aa61e0dea

Recurring Monthly RI Fee

The **RI Fee** line item describes the recurring monthly charges that are associated RIs applied that month. The **RI Fee** initially is added to your bill on the day of purchase and on the first day of each billing period thereafter.

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.

lineitem/ LineItemType	lineitem/ ProductCode	lineitem/ UsageStartDate	lineitem/Usage Type	lineitem/Description	lineitem/ Normalization Factor	lineitem/ Unblended Cost	reservation/ AvailabilityZone	reservation/ ReservationARN	reservation/ TotalReserved Units	reservation/ TotalReserved NormalizedUnits
RI fee	AmazonEC2	2016-01-01T00:00:00Z	HeavyUsage: m1.large	USD 0.0309 hourly fee per Linux/UNIX (Amazon VPC), m1.large instance		4	23	arn:aws:ec2:us-east- 1:572481847476:reserved- instances#8c204c1-dd48- 43f1-adb8-f38aa61e0dea	744	2376

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.

lineitem/ LineItemType	lineitem/ ProductCode	lineitem/ UsageStartDate	lineitem/ UsageType	lineitem/ Description	lineitem/ ResourceID	lineitem/ AvailabilityZone	lineitem/ UsageAmount	lineitem/ Normalization Factor	lineitem/ Normalized UsageAmount	lineitem/ Unblended Rate	lineitem/ Unblended Cost	reservation/ ReservationARN
Discounted Usage	AmazonEC2	2016-01-01T00:00:00Z	BoutUsage:m4.large	Linux/UNIX (Amazon VPC), m4.large reserved instance applied	i-bd250bc	us-east-1b		1	4	4	0	arn:aws:ec2:us-east-1: 1572481847476:reserved- instances/f8c204c1-dd48- 43f1-adb8-f38aa61e0dea

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 Amazon Resource Name (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 RIs that apply to a Region provide AZ flexibility and instance size flexibility. RIs that provide AZ flexibility provide a discount on usage in any AZ in the Region. RIs that provide instance size flexibility provide a discount on usage, regardless of instance size in 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 or Unix RIs 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.

lineitem/ LineItemType	lineitem/ ProductCode	lineitem/ UsageStartDate	lineitem/ UsageType	lineitem/ Description	lineitem/ ResourceID	lineitem/ UsageAmount	lineitem/ Normalization Factor	lineitem/ Normalized UsageAmount	lineitem/ Unblended Rate	lineitem/ Unblended Cost	reservation/ ReservationARN	reservation/ TotalReserved Units	reservation/ TotalReserved NormalizedUnits
RIFee	AmazonEC2	2016-01-01T00:00:00Z	HeavyUsage: m4.large	USD 0.0618 hourly fee per Linux/UNIX (Amazon VPC), m4.large instance				8		46	arn:aws:ec2:us-east-1: 1572481847476:reserved- instances/f8c204c1-dd48- 43f1-adb8-f38aa61e0dea	744	5952
Discounted Usage	AmazonEC2	2016-01-01T00:00:00Z	BoutUsage:m4.large	Linux/UNIX (Amazon VPC), m4.large reserved instance applied	i-bd250bc	1	4	4	4	0	arn:aws:ec2:us-east-1: 1572481847476:reserved- instances/f8c204c1-dd48- 43f1-adb8-f38aa61e0dea		
Discounted Usage	AmazonEC2	2016-01-01T00:00:00Z	BoutUsage:m4.large	Linux/UNIX (Amazon VPC), m4.large reserved instance applied	i-bd340ed	1	4	4	4	0	arn:aws:ec2:us-east-1: 1572481847476:reserved- instances/f8c204c1-dd48- 43f1-adb8-f38aa61e0dea		

The two `m4.large` usage line items have different **ResourceIDs**, 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.

lineitem/ LineItemType	lineitem/ ProductCode	lineitem/ UsageStartDate	lineitem/ UsageType	lineitem/ Description	lineitem/ ResourceID	lineitem/ UsageAmount	lineitem/ Normalization Factor	lineitem/ Normalized UsageAmount	lineitem/ Unblended Rate	lineitem/ Unblended Cost	reservation/ ReservationARN	reservation/ TotalReserved Units	reservation/ TotalReserved NormalizedUnits
RIFee	AmazonEC2	2016-01-01T00:00:00Z	HeavyUsage: m4.large	USD 0.0309 hourly fee per Linux/UNIX (Amazon VPC), m4.large instance				4		23	arn:aws:ec2:us-east-1: 1572481847476:reserved- instances/f8c204c1-dd48- 43f1-adb8-f38aa61e0dea	744	2976
RIFee	AmazonEC2	2016-01-01T00:00:00Z	HeavyUsage: m4.large	USD 0.0309 hourly fee per Linux/UNIX (Amazon VPC), m4.large instance				4		23	arn:aws:ec2:us-east-1: 1527398042324:reserved- instances/f8c204c1-dd48- 43f1-adb8-f38aa61e0dea	744	2976
Discounted Usage	AmazonEC2	2016-01-01T00:00:00Z	BoutUsage:m4.large	Linux/UNIX (Amazon VPC), m4.large reserved instance applied	i-bd250bc	0.5	8	4	4	0	arn:aws:ec2:us-east-1: 1572481847476:reserved- instances/f8c204c1-dd48- 43f1-adb8-f38aa61e0dea		
Discounted Usage	AmazonEC2	2016-01-01T00:00:00Z	BoutUsage:m4.large	Linux/UNIX (Amazon VPC), m4.large reserved instance applied	i-bd250bc	0.5	8	4	4	0	arn:aws:ec2:us-east-1: 1527398042324:reserved- instances/f8c204c1-dd48- 43f1-adb8-f38aa61e0dea		

The single hour of `m4.xlarge` usage is split into two lines of 0.5 hours (both usage lines still retain the same **ResourceID**) 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 instance 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 RI 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

Describes how much of the upfront fee for this reservation is costing you for the billing period. 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.

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 don't have recurring fees greater than 0, the value for All Upfront RIs is 0.

reservation/unusedAmortizedUpfrontFeeForBillingPeriod

The amortized-upfront-fee-for-billing-period-column 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

The recurring fee amortized for usage time, for Partial Upfront RIs and No Upfront RIs. Because All Upfront RIs don't have recurring fee payments greater than 0, the value for All Upfront RIs is 0.

reservation/effectiveCost

The sum of both the upfront and hourly rate of your RI, averaged into an effective hourly rate. `EffectiveCost` is calculated by taking the `amortizedUpfrontCostForUsage` and adding it to the `recurringFeeForUsage`. For more information, see [Amazon EC2 Reserved Instances Pricing](#).

On-Demand Capacity Reservations

Capacity Reservations enable you to reserve capacity for your Amazon EC2 instances for any duration in a specific Availability Zone. This enables you to create and manage capacity reservations separately from the billing discounts offered by Regional Reserved Instances (RIs). To benefit from billing discounts, you can use Regional RIs in conjunction with Capacity Reservations.

Capacity Reservation Line Items

You can use some of the columns defined in the AWS Cost and Usage report data dictionary to track your Capacity Reservations. You can use the following columns:

ResourceId

If you included resource IDs when you created your AWS Cost and Usage report, you can use the **ResourceId** column to identify and track your Capacity Reservations.

Capacity Reservations always have an `cr-` in their resource ID, and the resource ID has the following format:


```
arn:aws:ec2:<region>:<account id>:<capacity-reservation>/cr-0be443example1db6f
```

The Capacity Reservation **ResourceId** is captured only for the **UnusedBox**, **UnusedDed**, **Reservation**, and **DedicatedRes UsageTypes**.

For more information about the **ResourceId**, see [ResourceId](#) (p. 36).

UsageAmount

The **UsageAmount** column describes how much of a Capacity Reservation you used. Each Capacity Reservation can have multiple slots for an hour, enabling you to run more than one instance that uses the reservation during an hour. This means that it's possible to use more than one instance-hour in an hour. **UsageAmount** is calculated by multiplying the number of instance slots covered by the line item with the number of hours covered by the line item.

For more information and examples about the **UsageAmount**, see [UsageType](#) (p. 60).

UsageType

The **UsageType** column shows how much of a specific reservation you used. For Amazon EC2, the options are the following:

Reservation

For a **UsageType** of **Reservation**, the **UsageAmount** column describes how many instance-hours of a Capacity Reservation that you reserved.

For example, if a report covers one hour and has a Capacity Reservation line item that can cover ten instances, the **Reservation UsageAmount** covers the number of instance slots that you reserved. In this case, that's 10 (the number of available instance slots) multiplied by 1 hour (the time covered by the report) for a total of 10. For a report that covers 1 day, the **UsageAmount** would be 10 multiplied by 24, for a total of 240.

DedicatedRes

For a **UsageType** of **DedicatedRes**, the **UsageAmount** column describes how many instance-hours of a dedicated Capacity Reservation that you reserved.

UnusedBox

For a **UsageType** of **UnusedBox**, the **UsageAmount** column describes how many instance-hours of a Capacity Reservation that you reserved but didn't use.

For example, suppose a report covers 1 hour and has a Capacity Reservation line item that can cover 10 instances. If you didn't use eight instance-slots during the time period covered by the report, the **UnusedBox UsageAmount** covers the number of instance hours that you reserved but didn't use. In this case, that's eight (the number of unused instance slots) multiplied by 1 hour (the time covered by the report) for a total of eight. For a report that covers 1 day, the **UsageAmount** is eight multiplied by 24, for a total of 192.

UnusedDed

For a **UsageType** of **UnusedDed**, the **UsageAmount** column describes how many instance-hours of a dedicated Capacity Reservation that you reserved but didn't use.

BoxUsage

For a **UsageType** of **BoxUsage**, the **UsageAmount** column describes how many instance-hours of an instance that you used.

For example, suppose a report covers 1 hour and has a Capacity Reservation line item that can cover 10 instances. If you use two instance-slots during the time period covered by the report, the **BoxUsage UsageAmount** covers the number of instance hours that you reserved and

used. In this case, that's two (the number of used instance slots) multiplied by 1 hour (the time covered by the report) for a total of two. For a report that covers 1 day, the **UsageAmount** is two multiplied by 24, for a total of 48.

For more information about the **UsageType**, see [UsageType \(p. 37\)](#).

UnblendedRate

For Capacity Reservations with a **UsageType** of **Reservation** or **DedicatedRes**, the **UnblendedRate** is 0. This is because the costs for the Capacity Reservation are associated with the instance that provides the capacity instead of with the Capacity Reservation itself.

For more information about the **UnblendedRate**, see [UnblendedRate \(p. 37\)](#).

UnblendedCost

For Capacity Reservations with a **UsageType** of **Reservation** or **DedicatedRes**, the **UnblendedCost** is 0. This is because the costs for the Capacity Reservation are associated with the instance that provides the capacity instead of with the Capacity Reservation itself.

For more information about the **UnblendedCost**, see [UnblendedCost \(p. 37\)](#).

BlendedRate

For Capacity Reservations with a **UsageType** of **Reservation** or **DedicatedRes**, the **BlendedRate** is 0. This is because the costs for the Capacity Reservation are associated with the instance that provides the capacity instead of with the Capacity Reservation itself.

For more information about the **BlendedRate**, see [BlendedRate \(p. 35\)](#).

UnblendedCost

For Capacity Reservations with a **UsageType** of **Reservation** or **DedicatedRes**, the **UnblendedCost** is 0. This is because the costs for the Capacity Reservation are associated with the instance that provides the capacity instead of with the Capacity Reservation itself.

For more information about the **UnblendedCost**, see [UnblendedCost \(p. 37\)](#).

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 \(p. 19\)](#) instead.

Detailed Billing Reports

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 report, the line items will not match. When the reports are finalized at the end of the month, the total cost should align.

Important

The Detailed Billing Report will be unavailable at a later date. We strongly recommend that you use the [AWS Cost and Usage Report \(p. 19\)](#) instead.

Topics

- [Migrating Your Detailed Billing Report to AWS Cost and Usage Report \(p. 62\)](#)
- [Changes to the Detailed Billing Reports \(p. 66\)](#)

- [Detailed Billing Report \(p. 74\)](#)
- [Detailed Billing Report with Resources and Tags \(p. 75\)](#)

Migrating Your Detailed Billing Report to AWS Cost and Usage Report

The Detailed Billing Report (DBR) and the AWS Cost and Usage Report (CUR) both provide information about your charges. If you are using DBR, we strongly recommend you transfer your report to the AWS Cost and Usage Report.

Topics

- [Benefits of the AWS Cost and Usage Report \(p. 62\)](#)
- [Key Differences Between the Detailed Billing Report and the AWS Cost and Usage Report \(p. 63\)](#)
- [Reporting on Advanced Charge Types \(p. 65\)](#)

Benefits of the AWS Cost and Usage Report

The Cost and Usage Report provides the most comprehensive source of information. It allows you to understand individual costs in depth, and to analyze them in greater detail, which is especially useful at an enterprise scale. CUR is best suited for customers with complex cost management needs, for example, those with dedicated query or analytic-based systems. CUR is also your best source for Reserved Instance (RI) information, especially if you want to view amortized costs.

For more information on getting started with the AWS Cost and Usage Report, see [AWS Cost and Usage Report](#).

Comprehensive Reservation Information

Reserved Instances (RI), or Reservations, offer a discounted hourly rate compared to on-demand usage, in exchange for committing to a one- or three-year term of service. This can result in significant savings. CUR helps you monitor and manage your reservation portfolio by providing comprehensive information like Reservation Amazon Resource Numbers (ARN), numbers of reservations, and total reserved units. You can track your reservation-related discounts to specific resources, which help you better understand your savings.

DBR provides a subset of this metadata, but work is required to transform the required columns.

CUR provides additional columns not available in DBR, such as information regarding your amortized reservation costs. For more information, see [Amortizing Reserved Instances](#).

On-Demand Pricing Availability

CUR provides information regarding the on-demand rates for each individual line item of usage. This information makes it easy to quantify your savings by subtracting the amount you paid from the on-demand rate, allowing you to quickly and easily compute your savings as compared to on-demand prices. This also gives you the flexibility of choosing to allocate your costs using public on-demand rates.

DBR doesn't contain information for on-demand rates, but only the billed amount. This makes it difficult to calculate your overall savings or to allocate costs using on-demand rates.

Granular Breakdown of Discounts

CUR can access a granular view of the usage-based discounts. If discounts were applied, you can use CUR to view:

- The cost prior to being discounted
- The discounted amount
- The total cost after the discount was applied at the line item level

DBR does not contain a granular breakdown of your discounts. [awsMasterSchedDocs](#)

Automated Data Ingestion at Scale

When you use CUR, you can easily configure an event to trigger an automated data ingestion process, streamlining the process of refreshing the billing data in your in-house systems. CUR data can automatically be refreshed when charges related to previous months are detected.

Additionally, CUR is generated as multiple files, providing the added benefit of segmenting the data into smaller pieces. This makes it easier to ingest the data according to the processes used by multiple workers. It also allows you to retry data downloads in smaller pieces.

CUR is formatted in a way that allows for easy data location and extraction. This report is modeled from a manifest file that contains information for the overall structure of the data, including a list of every column that is contained in the report. This makes the report easily extensible in cases where new information regarding your usage becomes available.

Cross-Product Integration

CUR supports integration with Amazon Redshift, Amazon QuickSight, and Amazon Athena, making it easy to quickly build out an AWS based cost management solution. CUR also provides data in Parquet format, broadening your options when it comes to building out your own cost and usage reporting system. For more information, see [AWS Cost and Usage Report Manifest Files](#).

Key Differences Between the Detailed Billing Report and the AWS Cost and Usage Report

There are a few differences between DBR and CUR that you should be aware of after you migrate to using CUR. You may need to adjust how you ingest the data into your systems accordingly.

File Structure

DBR is delivered as a single file, while CUR is delivered as a consolidated set of files. In the AWS Cost and Usage Report, you can view the following files in your Amazon S3 bucket:

- A set of data files containing all of your usage line items
- (If applicable) A separate data file containing all of your discounts
- A manifest file that lists all of the data files that belong to a single report

Column Structure

DBR has a fixed list of columns, limiting its flexibility. CUR does not have a fixed column structure, and instead allows you to freely add or remove columns as needed. When you begin using a new AWS service, CUR can dynamically start to include new data in the report that may be useful in your case. The manifest file provides a map of all columns present in the report for your ease of use.

Equivalent Column Names for DBR and CUR

DBR Column Name	CUR Column Name
InvoiceId	bill/InvoiceId

DBR Column Name	CUR Column Name
PayerAccountId	bill/PayerAccountId
LinkedAccountId	lineItem/UsageAccountId
ProductName	product/ProductName
SubscriptionId	reservation/subscriptionid
UsageType	lineItem/UsageType
Operation	lineItem/Operation
AvailabilityZone	lineItem/AvailabilityZone
ReservedInstance	Not Supported
ItemDescription	lineItem/LineItemDescription
UsageStartDate	lineItem/UsageStartDate
UsageEndDate	lineItem/UsageEndDate
UsageQuantity	lineItem/UsageAmount
BlendedRate	lineItem/BlendedRate
BlendedCost	lineItem/BlendedCost
UnBlendedRate	lineItem/UnblendedRate
UnBlendedCost	lineItem/UnblendedCost
ResourceId	lineItem/ResourceId
RecordType	Not Supported
Pricingplanid	Not Supported
RateID	pricing/RateId

Note

There is no equivalent for RecordId in CUR, but you can gather this information by combining identity/LineItemId, identity/TimeInterval, and bill/BillType.

Retrieving DBR RecordType Values Through CUR

RecordType values in DBR	Syntax to Retrieve RecordType Through CUR	Use Case
LineItem	SELECT SUM(line_item_unblended_cost) FROM [CUR] WHERE line_item_line_item_type = 'Usage'	Usage line item partitions out usage costs from one-time charges. For example: upfront RI payment
InvoiceTotal	SELECT (bill_invoice_id), sum(line_item_unblended_cost)	Invoice total helps you reconcile your costs between Invoices and the Cost and Usage Report.

RecordType values in DBR	Syntax to Retrieve RecordType Through CUR	Use Case
	FROM [CUR] GROUP BY bill_invoice_id	
AccountTotal	SELECT line_item_usage_account_id, sum(line_item_unblended_cost) FROM [CUR] GROUP BY line_item_usage_account_id	Account total helps you isolate costs related to your linked accounts for charge back purposes.
StatementTotal	SELECT SUM(line_item_unblended_cost) FROM [CUR]	Statement total helps you understand your costs for the billing period.
Discount	SELECT SUM(line_item_unblended_cost) FROM [CUR] WHERE line_item_line_item_type = 'Discount'	Discount line items helps you identify all of your discount-related line items.
Rounding	Not yet supported	Not yet supported

Reporting on Advanced Charge Types

Refunds

CUR: Refunds are identified by filtering for the `lineitem/lineitemtype = 'Refund'` string.

DBR: Credits can be identified by parsing the `ItemDescription` column for the `'Credit'` substring.

Credits

CUR: Refunds are identified by filtering for the `lineitem/lineitemtype = 'Credit'` string.

DBR: Refunds are identified through parsing the `ItemDescription` column for the `'Refund'` substring.

Taxes

CUR: Taxes are identified by filtering the `lineitem/lineitemtype = 'Tax'` string.

DBR: Taxes are identified by parsing the `ItemDescription` column for the `'Tax'` substring.

Identifying Reservation-Related Upfront Costs

CUR: Reservation-related upfront fees can be identified by filtering `"lineitem/lineitemtype" = 'Fee'`.

DBR: Reservation-related upfront costs can be identified by examining the `UsageType` column for the `'HeavyUsage'` substring, and whether the `'SubscriptionId'` is null.

Identifying Reservation-Related Monthly Fee

CUR: Reservation-related monthly fees can be identified by filtering `"lineitem/lineitemtype" = 'RIfee'`.

DBR: Reservation-related monthly fees can be identified by examining the `UsageType` column for the `'HeavyUsage'` substring.

Identifying Instances That Received Reserved Instance Benefits

CUR: Reservation-related upfront fees can be identified by filtering `"lineitem/lineitemtype" = 'DiscountedUsage'`.

DBR: Reservation-related upfront fees can be identified by filtering `'ReservedInstance' = 'Y'`.

Changes to the Detailed Billing Reports

On June 17, 2019, AWS changed the way unused Reserved Instance ("RI") costs are presented in Detailed Billing Report (DBR) and Detailed Billing Report with Resources and Tags (DBR-RT). If you are utilizing the DBR and DBR-RT to understand the used and unused portions of your Reserved Instance (RI) costs, then please continue reading. If not, this change does not impact you.

Prior to June 17, 2019, in DBR/DBR-RT, the cost of the recurring monthly RI fees (RI Fee line items) are allocated to applicable instance usage line items, and RI-related fields are transformed to present unused usage and associated costs. Starting on June 17, 2019, this functionality was discontinued in the DBR and DBR-RT.

The Cost and Usage Report provides the most comprehensive set of data regarding your AWS cost and usage, including additional metadata about AWS services, pricing, and reservations. This allows you to understand individual costs in depth and analyze them in greater detail. When allocating RI costs, the CUR provides the following benefits in comparison to DBR and DBR-RT reports:

- **Easier RI cost allocation** — Simplifies RI cost allocation by distributing one-time reservation costs across the term of the lease.
- **Simplified data ingestion** — Eliminates unnecessary data transforms during data ingestion for tracking the cost and usage associated with the monthly unused portion of RIs.

Additionally, with the Cost and Usage Report, customers can gain additional reservation-related insights beyond unused RI costs, such as the Amazon Resource Name (ARN) for a reservation, the number of reservations, calculated savings, the allocation of RI discounts, and more.

Please note that the DBR and DBR-RT reports will continue to provide accurate information regarding up-front and recurring RI costs, as well as the costs associated with on-demand usage covered by RIs.

The remainder of this document will provide more detail regarding the change by providing 1) a brief glossary of terms, 2) a summary of changes in in the DBR and DBR-RT, and 3) a detailed walk through of four most common RI-usage use cases which illustrate how same information is presented in Cost and Usage Report.

Glossary

The following concepts will aid in understanding the changes to the DBR, and how the enhanced functionality of the Cost and Usage Report can be leveraged for understanding unused RI costs.

- **Line Item Types** — Indicates the type of charge covered by a line item in the DBR/DBR-RT or CUR.
 - **Fee** — Any upfront annual fee that you paid for reserved instance subscriptions. For example, the upfront fee that you paid for an All Upfront RI or a Partial Upfront RI.
 - **RI Fee** — The monthly recurring fee for reserved instance subscriptions. For example, the recurring fee for Partial Upfront RIs, No Upfront RIs, and All Upfront RIs that you pay every month.
 - **Discounted Usage** — The rate for any instances which you received a Reserved Instance (RI) discount.
- **Track unused RI costs** — Unused RI hours and cost in the DBR and DBR-RT are captured in the fields `UsageQuantity` and `UnblendedCost` for the RI Fee line item.

Before and After: Changes to the presentation of unused RI costs (DBR/DBR-RT)

Discounted Usage line items are transformed and replaced with the information from the RI Fee line items to provide visibility into unused RI cost and usage. Additionally, the UnblendedRate and UnblendedCost fields are updated to reflect the portion of the RI Fee allocated based on the discount received by the Discounted Usage line item.

Table 1 below shows how a DBR or DBR-RT, prior to June 17, 2019, presents data for a partially utilized RI (i.e. when the RI Fee line item had unused usage and associated costs) and the cells in grey show the fields transformed by monthly recurring RI fee allocation. After June 17, 2019, the DBR/DBR-RT transformations that allocate the cost of RI Fee line items to applicable instance usage line items has been discontinued in favor of existing functionality in the CUR. Table 12 below shows how a DBR or DBR-RT will present data for a partially utilized RI (i.e. when RI Fee line item had unused cost and usage) once the transformations are discontinued. The highlighted text denotes the changes.

Table 1 – DBR and DBR-RT Prior to June 17, 2019

ProductName	UsageType	Operation	Availability Zone	Reserved Instance	ItemDescription	Usage Quantity	Unblended Rate	Unblended Cost
Amazon Elastic Compute Cloud	HeavyUsage	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge (744 hours purchased, 644 hours used)	100	0.1	10
Amazon Elastic Compute Cloud	HeavyUsage	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge	644	0.1	64.4

Table 2 - DBR and DBR-RT after June 17, 2019

ProductName	UsageType	Operation	Availability Zone	Reserved Instance	ItemDescription	Usage Quantity	Unblended Rate	Unblended Cost
Amazon Elastic Compute Cloud	HeavyUsage	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per Linux/	744	0.1	74.4

Product Name	Usage Type	Operation	Availability Zone	Reserved Instance	Item Description	Usage Quantity	Unblended Rate	Unblended Cost
					UNIX (Amazon VPC), c3:8xlarge			
Amazon Elastic Compute Cloud	USE1-BoxUsage:c3.8xlarge	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge	644	0	0

Understanding unused RI costs via the CUR

To illustrate how the CUR can be leveraged to better understand unused RI costs, let's review the following four scenarios.

Scenario 1: RI is completely utilized

RI Fee line item has \$0 unused cost and 0 usage hours.

Utilizing the DBR/DBR-RT, you can understand your unused RI usage and costs by referring to the fields UsageQuantity and UnblendedCosts for RI Fee line items. RI Fee line items can be identified by the existence of 'purchased hours' information in the ItemDescription field. Table 3 below illustrates the columns and information utilized to manage unused RI costs in the DBR and DBR-RT report.

Table 3 – Unused RI costs for a 100% utilized RI in DBR and DBR-RT prior to June 17, 2019

Product Name	Usage Type	Operation	Availability Zone	Reserved Instance	Item Description	Usage Quantity	Unblended Rate	Unblended Cost
Amazon Elastic Compute Cloud	HeavyUsage:RunInstances	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge (744 hours purchased, 744 hours used)	0	0.1	0
Amazon Elastic Compute Cloud	HeavyUsage:RunInstances	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per	744	0.1	74.4

ProductName	UsageType	Operation	Availability Zone	Reserved Instance	ItemDescription	Usage Quantity	Unblended Rate	Unblended Cost
					Linux/ UNIX (Amazon VPC), c3:8xlarge			

Utilizing the CUR, you can understand your unused RI usage and costs by referring to the fields 'reservation/ UnusedQuantity' and 'reservation/ UnusedRecurringFee' for RI Fee line items. Table 4 below illustrates the current columns and information utilized to manage unused RI costs in the CUR.

Table 4 – Unused RI costs for a 100% utilized RI in Cost and Usage Reports

lineitem Product	Usage	lineitem LineItem	lineitem LineItem	lineitem Usage	lineitem Normal	lineitem Unblended	lineitem Unblended	reserv Unuse	reserv Unuse	reserv Unuse	reserv Recurr	reserv Amort	reservation/ EffectiveCost	reservation/ UnusedCost
Amazon EC2	Heavy Usage	Usage: Fee	Usage: c3:8xlarge	0.10 hourly fee per Linux/ UNIX (Amazon VPC), c3:8xlarge	47,616	0.1	74.4	0	0	0				
Amazon EC2	USW2- BoxUsage	Discounted Usage	Discounted Usage	0.10 hourly fee per Linux/ UNIX (Amazon VPC), c3:8xlarge	47,616	0	0				74.4	5	79.4	

In addition to matching the current functionality supported by DBR/DBR-RT, CUR has the following advantages:

- Using the CUR, you are able to access information regarding the EffectiveCost for the DiscountedUsage line item, which includes both the recurring and upfront fees. The DBR only accounts for recurring fees.
- In the CUR, the UsageType field is not transformed for the DiscountedUsage line items whereas DBR replaces the information with RI Fee line item information. This is because the user can group line items in the CUR by ReservationARN in order to understand what usage was discounted by which RI.
- In CUR, the LineItemDescription field is not transformed for the RI Fee line item; whereas, DBR appends the hours purchased and hours used

Scenario 2: RI is partially utilized

RI Fee line item has unused cost and usage.

Utilizing the DBR/DBR-RT, you can understand your unused RI usage and costs by referring to fields UsageQuantity and UnblendedCosts for RI Fee line items. Table 5 below illustrates the columns and information utilized to manage unused RI costs in the DBR and DBR-RT report.

Table 5 – Unused RI costs for a partially utilized RI in DBR and DBR-RT prior to June 17, 2019

Product Name	Usage Type	Operation	Availability Zone	Reserved Instance	Item Description	Usage Quantity	Unblended Rate	Unblended Cost
Amazon Elastic Compute Cloud	HeavyUsage	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge (744 hours purchased, 644 hours used)	100	0.1	10
Amazon Elastic Compute Cloud	HeavyUsage	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge	644	0.1	64.4

Utilizing the CUR, you can understand your unused RI usage and costs by referring to fields 'reservation/ UnusedQuantity' and 'reservation/ UnusedRecurringFee' for RI Fee line items. Table 6 below illustrates the current columns and information utilized to manage unused RI costs in the CUR.

Table 6 – Unused RI costs for a partially utilized RI in Cost and Usage Reports

lineitem Product	Usage	lineitem LineItem	lineitem LineItem	lineitem Usage	lineitem Normal	lineitem Unblended	lineitem Unblended	reservation Unused	reservation Unused	reservation Unused	reservation Recurring	reservation Amort	reservation/ Effective	reservation/ Effective
Amazon EC2	HeavyUsage	Usage Fee	USD 0.10 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge	47,610	60.1	74.4	100	0	10					

lineitem Product	Usage	lineitem LineItem	lineitem LineItem	lineitem Usage	lineitem Normal	lineitem Unblended	lineitem Unblended	reserv Unuse	reserv Unuse	reserv Unuse	reserv Recurr	reserv Amort	reservation/ Effective	reservation/ Effective
Amazon EC2	USW2- BoxUsage	Discount	UsedUsage	UsedUsage	47,2160	0					64.4	5	69.4	

In addition to matching the current functionality supported by DBR/DBR-RT, CUR has the following advantages:

- CUR has a separate column representing UnusedQuantity for the RI Fee line item vs. DBR / DBR-RT which overloads the UsageQuantity column with the unused hours

Scenario 3: Capacity Reservation

DBR/DBR-RT filters out Capacity Reservation related UnusedBox and UnusedDed usage type line items when covered by an RI because the RI Fee line item already covers the unused amount in the UsageQuantity and UnblendedCost fields. Table 7 below illustrates the columns and information utilized to manage unused RI costs in the DBR and DBR-RT report.

Table 7 – Unused RI costs for capacity reservation scenario in DBR and DBR-RT prior to June 17 2019

ProductNa	UsageType	Operation	Availabilit Zone	Reserved Instance	ItemDescr	Usage Quantity	Unblender Rate	Unblended Cost
Amazon Elastic Compute Cloud	HeavyUsage	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per Linux/ UNIX (Amazon VPC), c3:8xlarge (744 hours purchased, 734 hours used)	10	0.1	1
Amazon Elastic Compute Cloud	HeavyUsage	RunInstances	us-east-1a	Y	USD 0.10 hourly fee per Linux/ UNIX (Amazon	734	0.1	73.4

Product Name	Usage Type	Operation	Availability Zone	Reserved Instance	Item Description	Usage Quantity	Unblended Rate	Unblended Cost
					VPC), c3:8xlarge			

The CUR shows these line items as DiscountedUsage. Table 8 below illustrates the current columns and information utilized to manage unused RI costs in the CUR.

Table 8 – Unused RI costs for a capacity reservation scenario in Cost and Usage Reports

lineitem Product	Usage Type	lineitem Lineltern	lineitem Lineltern	lineitem UsageAr	lineitem Normali	lineitem Unblend	lineitem Unblend	reservat Recurrin	reservat Amortiz	reservation/ Effective Cost	Cost For Usage
Amazon EC2	HeavyUsage	Usage Fee	USD 0.10 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge	744	47,616	0.1	74.4				
Amazon EC2	USW2-Reservation	Usage	USD 0.03 per Reservation Linux/UNIX (Amazon VPC), c3:8xlarge Instance Hour	744		0	0				
Amazon EC2	USW2-BoxUsage	DiscountedUsage	USD 0.03 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge	644	47,216	0	0	64.4	5	69.4	
Amazon EC2	USW2-UnusedBox	DiscountedUsage	USD 0.03 unused Reservation Linux/UNIX (Amazon VPC), c3:8xlarge	100	6,500	0	0	10	1	11	

lineitem Product	UsageType	lineitem LineItem	lineitem LineItem	lineitem UsageAr	lineitem Normali	lineitem Unblend	lineitem Unblend	reservat Recurrin	reservat Amortiz	reservation/ EffectiveCost	CostForUsa
			Instance Hour								

Scenario 4: Size Flexible Reservations

Utilizing the DBR/DBR-RT, you can understand your unused RI usage and costs by referring to fields UsageQuantity and UnblendedCosts for RI Fee line items. RI Fee line items can be identified by the existence of 'purchased hours' information in the ItemDescription field. Table 9 below illustrates the columns and information utilized to manage unused RI costs in the DBR and DBR-RT report.

Table 9 – Unused RI costs for a size flex RI scenario in DBR and DBR-RT prior to June 17, 2019

ProductNa	UsageType	Operation	Availabilit Zone	Reserved Instance	ItemDescr	Usage Quantity	Unblender Rate	Unblended Cost
Amazon Elastic Compute Cloud	HeavyUsage	Run Instance	us-east-1a	Y	USD 0.10 hourly fee per Linux/ UNIX (Amazon VPC), c3:8xlarge (744 hours purchased, 644 hours used)	100	0.1	10
Amazon Elastic Compute Cloud	HeavyUsage	Run Instance	us-east-1a	Y	USD 0.10 hourly fee per Linux/ UNIX (Amazon VPC), c3:8xlarge; UsageType: BoxUsage:c3.large	644	0.1	64.4

Utilizing CUR, you can understand your unused RI usage and costs by referring to fields 'reservation/ UnusedQuantity' and 'reservation/ UnusedRecurringFee' for RI Fee line items. Table 10 below illustrates the current columns and information utilized to manage unused RI costs in the CUR.

Table 10 – Unused RI costs for a size flex RI scenario in Cost and Usage Reports

lineitem Product	Usage	lineitem LineItem	lineitem LineItem	lineitem Usage	lineitem Normal	lineitem Unble	lineitem Unble	reserv Unuse	reserv Unuse	reserv Unuse	reserv Recurr	reserv Amort	reservation/ Effective	reservation/ Effective
Amazon EC2	Heavy Usage	Usage: Fee	USD 0.10 hourly fee per Linux/ UNIX (Amazon VPC), c3:8xlarge	Usage	47,616	0.1	74.4	100	70.37	5.5				
Amazon EC2	USW2- BoxUsage	Discounted Usage:c3.0xlarge	Usage: hourly fee per Linux/ UNIX (Amazon VPC), c3:8xlarge	Usage	2,576	0	0				4.03	0.5	4.53	

In addition to matching the current functionality supported by DBR/DBR-RT, CUR has the following advantages:

- CUR has the NormalizedUsageAmount and quantity. The DBR / DBR-RT do not have columns representing this.
- CUR UsageType and Operation are not transformed for the DiscountedUsage lineitem. The DBR / DBR-RT replaces these values with the RI Fee line item.
- CUR LineItemDescription is not transformed for the DiscountedUsage line item. In DBR / DBR-RT, which replaces with the RI Fee line item description and appends the DiscountedUsage line item Usage Type to the end of the string i.e. "USD 0.10 hourly fee per Linux/UNIX (Amazon VPC), c3:8xlarge; UsageType: BoxUsage:c3.large"

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 \(p. 19\)](#) 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 \(p. 19\)](#) 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 \(p. 132\)](#). 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 \(p. 19\)](#) 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 \(p. 195\)](#).

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 \(p. 19\)](#) 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 \(p. 132\)](#).

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 \(p. 19\)](#) 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 \(p. 19\)](#) 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 \(p. 77\)](#)
- [Analyzing Your Costs with Cost Explorer \(p. 78\)](#)
- [Managing Your Costs with Budgets \(p. 116\)](#)
- [Reporting Your Budget Metrics with Budget Reports \(p. 130\)](#)
- [Using Cost Allocation Tags \(p. 132\)](#)
- [Using the AWS Price List API \(p. 142\)](#)
- [Logging Billing and Cost Management API Calls with AWS CloudTrail \(p. 150\)](#)
- [Avoiding Unexpected Charges \(p. 152\)](#)

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 doesn't 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 incurred for the month to date. The **Month-to-Date Top Services by Spend** graph doesn't 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#/.](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 enables you to view and analyze your costs and usage. You can explore your usage and costs using the main graph, the Cost Explorer cost and usage reports, or the Cost Explorer RI reports. You can view data for up to the last 13 months, forecast how much you're likely to spend for the next three months, and get recommendations for what Reserved Instances to purchase. You can use Cost Explorer to identify areas that need further inquiry and see trends that you can use to understand your costs.

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. You can't disable Cost Explorer after you enable it.

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. The first time that you use Cost Explorer, Cost Explorer walks you through the main parts of the console with an explanation for each section. You can trigger this walkthrough at a later time as well. For more information, see [To trigger the Cost Explorer walkthrough \(p. 81\)](#).

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 \(p. 79\)](#)
- [Getting Started With Cost Explorer \(p. 81\)](#)
- [Exploring Your Data Using Cost Explorer \(p. 82\)](#)
- [Using Cost Explorer Reports \(p. 96\)](#)
- [Understanding Your Reservations With Cost Explorer \(p. 104\)](#)
- [Optimizing Your Cost with Rightsizing Recommendations \(p. 110\)](#)
- [Using the AWS Cost Explorer API \(p. 114\)](#)

Enabling Cost Explorer

You can enable Cost Explorer for your account using this procedure on the Billing and Cost Management console. You can't enable Cost Explorer using the API. 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. 195).

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 doesn't automatically enable Cost Explorer. You must still enable it by performing the following procedure.

To sign up for Cost Explorer

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation pane, choose **Cost Explorer**.
3. On the **Welcome to Cost Explorer** page, choose **Enable Cost Explorer**.

For more information about controlling access to Cost Explorer, see [Controlling Access for Cost Explorer](#) (p. 79).

Controlling Access for Cost Explorer

You can manage access to your Cost Explorer in the following ways:

- The payer (master) account can enable Cost Explorer at a root level, automatically enabling all linked (member) accounts.
- After member accounts are enabled, the master account can use the Cost Explorer settings to control the level of information you want to expose in Cost Explorer. Levels of information can include cost, refunds, credits, and Reserved Instance (RI) recommendations.
- After you enable Cost Explorer at the payer level, you can control the IAM policies of your IAM users to restrict access to Cost Explorer at the account level. Users either get all access or no access with this option.

This topic provides details about how to control access in Cost Explorer.

For information about managing access to Billing and Cost Management pages, see [Controlling Access \(p. 182\)](#). For more information about consolidated billing, see [Consolidated Billing for Organizations \(p. 195\)](#).

Topics

- [Granting Cost Explorer Access \(p. 80\)](#)
- [Controlling Access Using Cost Explorer Settings \(p. 80\)](#)
- [Cost Explorer and IAM Users \(p. 81\)](#)

Granting Cost Explorer Access

You can enable Cost Explorer access if you are signed into the master account with your root credentials through the Billing and Cost Management console. Enabling Cost Explorer at the master account level enables Cost Explorer for all of your organization accounts. All accounts in the organization are granted access, and you can't grant or deny access individually.

Controlling Access Using Cost Explorer Settings

A master account can grant access to Cost Explorer for all or none of the member accounts. Access isn't customizable for each individual member account.

The master account in AWS Organizations has full access to all Billing and Cost Management information for costs incurred by both the master account and member accounts. Member accounts only have access to their own cost and usage data in Cost Explorer.

The owner of a master account can:

- View all costs in Cost Explorer.
- Grant all member accounts the permission to see the costs for their own member account, refunds, credits, and RI recommendations.

Member account owners can't see costs, refunds, and RI recommendations for other accounts in the Organizations. For more information about consolidated billing, see [Consolidated Billing for Organizations \(p. 195\)](#).

If you're an AWS account owner and not using consolidated billing, you have full access to all Billing and Cost Management information including Cost Explorer.

Organizations Account Status Use Cases

An account's status with an organization affects what cost and usage data is visible in the following ways:

- If a standalone account joins an organization, the account loses access to cost and usage data from 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 when the account was a member of their previous organization. The account only has access 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 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.

Controlling Member Accounts' Access Using Cost Explorer Settings

You can grant or restrict the access to all member accounts in your Organizations. When you enable your account at the master level, all member accounts are granted access to their cost and usage data by default.

To control member account access to Cost Explorer data

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. In the navigation pane, choose **Cost Explorer**.
3. On the Cost Explorer page, choose **Launch Cost Explorer**.
4. On the upper-right side of the Cost Explorer dashboard, choose **Settings**.
5. On the **Account Settings** page, select or clear the **Linked Account Access** check box.
6. Choose **Save**.

Cost Explorer and IAM Users

After you enable Cost Explorer at the master account level, you can use IAM to manage access to your billing data for individual IAM users. This enables you to grant or revoke access on an individual level for each account, rather than granting access to all member accounts.

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 that the IAM user belongs to. For the policy that grants the necessary permissions to an IAM user, see [Controlling Access](#) (p. 182).

Getting Started With Cost Explorer

After you enable Cost Explorer, you can launch it from the Billing and Cost Management console.

Starting Cost Explorer

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

To open Cost Explorer

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/>.
2. In the navigation pane, choose **Cost Explorer**.
3. On the Cost Explorer page, choose **Launch Cost Explorer**.

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

To trigger the Cost Explorer walkthrough

The first time that you use Cost Explorer, Cost Explorer walks you through the main sections of the console. You can trigger this walkthrough again at any time with the following procedure.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/>.
2. In the navigation pane, choose **Cost Explorer**.
3. On the **Cost Explorer** page, choose **Launch Cost Explorer**.

4. On the service bar, choose ? and choose **View Cost Explorer tutorial**.

Exploring Your Data Using Cost Explorer

On the Cost Explorer dashboard, Cost Explorer shows your estimated costs for the month to date, your forecasted costs for the month, a graph of your daily costs, your five top cost trends, and a list of reports that you recently viewed.

All costs reflect your usage up to the previous day. For example, if today is December 2, the data includes your usage through December 1.

- [Your Cost Explorer Costs \(p. 82\)](#)
- [Your Cost Explorer Trends \(p. 82\)](#)
- [Your Daily Unblended Costs \(p. 82\)](#)
- [Your Monthly Unblended Costs \(p. 83\)](#)
- [Your Net Unblended Costs \(p. 83\)](#)
- [Your Recent Cost Explorer Reports \(p. 83\)](#)
- [Your Amortized Costs \(p. 84\)](#)

Navigating Cost Explorer

You can use the icons in the left pane to do the following:

- Go to the main Cost Explorer dashboard
- See a list of the default Cost Explorer reports
- See a list of your saved reports
- See information about your reservations
- See your reservation recommendations

Your Cost Explorer Costs

At the top of the **Cost Explorer** page are the **Month-to-date costs** and **Forecasted month end costs**. The **Month-to-date costs** shows how much you're estimated to have incurred in charges so far this month and compares it to this time last month. The **Forecasted month end costs** shows how much Cost Explorer estimates that you will owe at the end of the month and compares your estimates costs to your actual costs of the previous month. The **Month-to-date costs** and the **Forecasted month end costs** don't include refunds.

Your Cost Explorer Trends

In the **this month trends** section, Cost Explorer shows your top cost trends. For example, your costs related to a specific service have gone up, or your costs from a specific type of RI have gone up. To see all of your costs trends, choose **View all trends** in the upper-right corner of the trend section.

To understand a trend in more depth, choose it. You're taken to a Cost Explorer chart that shows the costs that went into calculating that trend.

Your Daily Unblended Costs

In the center of the Cost Explorer dashboard, Cost Explorer shows a graph of your current unblended daily costs. You can access the filters and parameters used to create the graph by choosing **Explore costs**

in the upper-right corner. That takes you to the Cost Explorer report page, enabling you to access the default Cost Explorer reports and modify the parameters used to create the chart. The Cost Explorer reports offer additional functionality such as downloading your data as a CSV file and saving your specific parameters as a report. For more information, see [Using Cost Explorer Reports \(p. 96\)](#). Your daily unblended costs don't include refunds.

Your Monthly Unblended Costs

Monthly Granularity

You can view your unblended costs at the monthly granularity and see the discounts applied to your monthly bill. You can see this by opening the Cost Explorer page and choosing **Cost Explorer** from the navigation pane. Discounts appear as the **RI Volume Discount** in the chart. The discount amount aligns with the discount amount shown in your Billing and Cost Management console.

To see the details in your Billing and Cost Management console

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. In the navigation pane, choose **Bills**.
3. To display the discount, select the arrow next to **Total Discounts**, under **Credits, Total Discounts and Tax Invoices**.

Monthly Gross Charges

You can view your gross monthly charges by excluding the **RI Volume Discount**.

To exclude RI volume discounts in your monthly view

1. Open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/>.
2. In the navigation pane, choose **Cost Explorer**.
3. Select **Launch Cost Explorer**.
4. In the left pane, choose **Cost Explorer**.
5. Choose **Cost & Usage**.
6. On the **Filters** pane, choose **Charge Type**.
7. Select **RI Volume Discount**.
8. To open a dropdown, select **Include only** and choose **Exclude only**.
9. Select **Apply filters**.

Your Net Unblended Costs

This enables you to see your net costs after all applicable discounts are calculated. You should still exclude any manual adjustment such as refunds and credits as a best practice. **RI Volume Discounts** are no longer visible because these are post-discount amounts.

Your Recent Cost Explorer Reports

At the bottom of the Cost Explorer dashboard is a list of reports that you have accessed recently, when you accessed them, and a link back to the report. This enables you to switch between reports or remember the reports that you find most useful.

For more information about Cost Explorer reports, see [Using Cost Explorer Reports \(p. 96\)](#).

Your Amortized Costs

This enables you to see the cost of the RI purchases spread across the usage of the reservation. AWS estimates your amortized costs by combining the unblended upfront and recurring reservation fees and calculating the effective rate of applicable instances. In the daily view, Cost Explorer shows the unused portion of your reservation fees at the first of the month or the date of purchase.

Using the Cost Explorer Chart

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 and forecast how much you are likely to spend for the next three months. You can also specify time ranges for the data and view time data by day or by month.

Cost Explorer automatically uses the **Group By** filter for the **Daily unblended costs** graph. When using the **Group By** filter, the Cost Explorer chart displays data for up to six values in 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 breaks out the data for individual services that are aggregated in the chart.

Topics

- [Modifying Your Chart \(p. 84\)](#)
- [Reading the Cost Explorer Data Table \(p. 95\)](#)
- [Forecasting with Cost Explorer \(p. 95\)](#)

Modifying Your Chart

You can modify the parameters that Cost Explorer uses to create your chart, enabling you to explore different sets of data.

- [Selecting a Style for Your Chart \(p. 84\)](#)
- [Choosing Time Ranges for the Data That You Want to View \(p. 84\)](#)
- [Grouping Data by Filter Type \(p. 86\)](#)
- [Filtering the Data That You Want to View \(p. 86\)](#)
- [Choosing Advanced Options \(p. 94\)](#)

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 dropdown.

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 appears 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 includes 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.

Note

If you choose any Forecasted dates, your current date's cost and usage data shows as Forecast. The current date's cost and usage will not include historical data.

- 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.

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 doesn't use grouping. Forecasting isn't 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 below the chart also groups your cost figures by the option you selected.

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**
- **Charge Types**
- **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. However, you can use your browser's bookmark feature to [save configuration settings \(p. 101\)](#) for repeated use. Forecasts aren't saved, and Cost Explorer displays the most recent forecast 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 that you have 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

- AWS Cost and Usage report in Cost Explorer is limited to 1024 filters.
- 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
 - Amazon ES

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 AZs. They provide inexpensive, low-latency network connectivity to other AZs 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**

The 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**

The member accounts in an organization. For more information, see [Consolidated Billing for Organizations \(p. 195\)](#).

- **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**

The 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 \(p. 137\)](#).

- **Tenancy**

Specifies if the Amazon EC2 instance is hosted on shared or single-tenant hardware. Some tenancy values include **Shared (Default)**, **Dedicated**, **Host**.

- **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 isn't 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 AZs.

- **EC2: Data Transfer - Internet (In)**

Filters by costs associated with how many GB are transferred to your Amazon EC2 instances from outside 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 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.

- **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.

This **Usage Type Group** contains only the following **Usage Types**:

- AlwaysOnUsage
- BoxUsage
- DedicatedUsage

- HighUsage
- HostBoxUsage
- HostUsage
- ReservedHostUsage
- SchedUsage
- SpotUsage
- UnusedBox

- **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.

This **Usage Type Group** contains only the following **Usage Types**:

- AlwaysOnUsage
- BoxUsage
- DedicatedUsage
- HighUsage
- InstanceUsage
- MirrorUsage
- Multi-AZUsage
- SpotUsage

- **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 AZs.

- **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 AZs.

- **S3: Data Transfer - Internet (In)**

Filters by costs associated with how many GB are transferred to an Amazon S3 bucket from outside 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 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.

- **Charge Type**

Charge types are different types of charges or fees.

Credit

Any AWS credits that are applied to your account.

Other out-of-cycle charges

Any subscription charges that aren't upfront reservation charges or support charges.

Recurring reservation fee

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 fees can result in spikes on the first day of every month, when AWS charges your account.

Refund

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.

Reservation applied usage

Usage that AWS applied reservation discounts to.

Support fee

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 fees can result in spikes on the first day of every month, when AWS charges your account.

Tax

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.

Upfront reservation fee

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.

Usage

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.

To exclude data from your chart

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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 **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 enables 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 \(p. 132\)](#).

Show blended costs

This cost metric reflects the average cost of usage across the consolidated billing family. If you use the consolidated billing feature in AWS Organizations, you can view costs using *blended rates*. For more information, see [Blended Rates \(p. 205\)](#).

Show unblended costs

This cost metric reflects the cost of the usage. When grouped by charge type, *unblended costs* separate discounts into their own line items. This enables you to view the amount of each discount received.

Show net unblended costs

This cost metric reflects the cost after discounts.

Show amortized costs

This cost metric reflects the effective cost of the upfront and monthly reservation fees spread across the billing period. 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 aren't available for billing periods before 2018. If you want to see how much of your reservation was unused, group by purchase option.

Show net amortized costs

This cost metric amortizes the upfront and monthly reservation fees while including discounts such as RI volume discounts.

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

To show specific cost types in your chart

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

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, the table displays the aggregate amounts for the filter types that you choose for your chart. If your chart isn't using a grouping, the table displays the aggregate amounts for your past and forecasted cost data. You can [download \(p. 102\)](#) 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 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 that they're associated with, such as Amazon EC2 or Amazon S3. They aren't 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.

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 \(p. 84\)](#). The following section discusses 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 services over the forecast time period that 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're 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 prediction intervals. The higher the prediction interval, the more likely the forecast will have a wider

range. For example, suppose that you have a budget set to 100 dollars for a given month. An 80% prediction interval might forecast your spend between 90 and 100, with a mean of 95. The range in the prediction band is dependent on your historical spend volatility, or fluctuations. The more consistent and predictable the historical spend, the narrower the prediction range in forecast spend.

Cost Explorer forecasts have a prediction interval of 80%. If AWS doesn't have enough data to forecast in an 80% prediction interval, Cost Explorer doesn't provide a forecast. This is common for accounts that have less than one full billing cycle.

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 charts and bar charts.

The 80% prediction interval appears differently on each type of chart:

- Line charts represent the prediction interval as a set of lines on either side of your costs line
- Bar charts represent the prediction interval as two lines on either side of the top of your bar

If you receive discounts, we encourage you to use **Show net unblended costs** when forecasting your monthly costs to include discounts. Unblended costs don't include discounts, but instead separates discounts into their own line item. For more information about different costs, see [Cost Explorer Advanced Options \(p. 94\)](#).

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 \(p. 195\)](#).

Using Cost Explorer Reports

Cost Explorer provides default reports, but also enables you to change the filters and constraints used to create the reports. Cost Explorer also provides you ways to save the reports that you made. You can save them as a bookmark, download the CSV file, or save them as a report.

Topics

- [Using the Default Cost Explorer Reports \(p. 96\)](#)
- [Saving Reports and Results \(p. 101\)](#)

Using the Default Cost Explorer Reports

Cost Explorer provides you with a couple of default reports. You can't modify these reports, but you can use them to create your own custom reports.

- [Cost and Usage Reports \(p. 96\)](#)
- [Reserved Instance Reports \(p. 97\)](#)

Cost and Usage Reports

Cost Explorer provides you with the following reports for understanding your costs.

- [AWS Marketplace \(p. 97\)](#)
- [Daily costs \(p. 97\)](#)

- [Monthly costs by linked account \(p. 97\)](#)
- [Monthly costs by service \(p. 97\)](#)
- [Monthly EC2 running hours costs and usage \(p. 97\)](#)

AWS Marketplace

The **AWS Marketplace** report shows how much you have spent through AWS Marketplace.

Daily costs

The **Daily costs** report shows how much you've spent in the last six months, along with how much you're forecasted to spend over the next month.

Monthly costs by linked account

The **Monthly costs by linked account** report shows your costs for the last six months, grouped by linked account. The top five linked accounts are shown by themselves, and the rest are grouped into one bar.

Monthly costs by service

The **Monthly costs by service** report shows your costs for the last six months, grouped by service. The top five services are shown by themselves, and the rest are grouped into one bar.

Monthly EC2 running hours costs and usage

The **Monthly EC2 running hours costs and usage** report shows how much you have spent on active Reserved Instances (RIs).

Reserved Instance Reports

Cost Explorer provides you with the following reports for understanding your reservations.

The reservation reports show your Amazon EC2 coverage and utilization in either hours or normalized units. Normalized units enable you to see your Amazon EC2 usage for multiple sizes of instances in a uniform way. For example, suppose you run an `xlarge` instance and a `2xlarge` instance. If you run both instances for the same amount of time, the `2xlarge` instance uses twice as much of your reservation as the `xlarge` instance, even though both instances show only one instance-hour. Using normalized units instead of instance-hours, the `xlarge` instance used 8 normalized units, and the `2xlarge` instance used 16 normalized units. For more information, see [Instance Size Flexibility for EC2 Reserved Instances](#).

- [RI Utilization Reports \(p. 97\)](#)
- [RI Coverage Reports \(p. 100\)](#)

RI Utilization Reports

The RI Utilization reports show how much of your Amazon EC2, Amazon Redshift, Amazon RDS, Amazon Elasticsearch Service, 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 charts display the number of 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 Example

Account	RI Utilization	RI Hours Purchased	RI Hours Used	RI Hours Unused	On-Demand Cost of RI Hours Used	Effective RI Cost	Net Savings	Total Potential Savings
Martha	0.50	100	50	50	\$200	\$150	\$50	\$250
Liu Jie	0.75	100	75	25	\$300	\$150	\$150	\$250
Saanvi	1.00	50	50	0	\$200	\$75	\$125	\$125

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](#) 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 below 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 aren't 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 \(p. 116\)](#).

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 RI Coverage reports. They aren't 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**, 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) – Filter your Amazon EC2 usage to show RIs that are purchased for use in specific Availability Zones or regions.
- **Tenancy** (Amazon EC2) – 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 below 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 below 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.
- **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 weren't 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.
- **On-Demand Cost Equivalent** – 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 Charges** – The monthly cost of this reservation, amortized over the RI period.
- **Effective RI Cost** – The combined amortized upfront and amortized recurring costs of the RI hours that you purchased.
- **Net Savings** – The amount that Cost Explorer estimates that you saved by purchasing reservations.
- **Potential Savings** – The total potential savings that you might see if you use your entire RI.
- **Average 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.

If there isn't any usage for the given time period, the average On-Demand rate shows **N/A**.

- **Total Asset Value** – The effective cost of your reservation term. The total asset value takes both your start date and either your end date or your cancellation date into consideration.
- **Effective Hourly Rate** – The effective hourly rate of your total RI costs. The hourly rate takes both your upfront fees and your recurring fees into consideration.
- **Upfront Fee** – The one-time upfront cost of the RI hours that you purchased.
- **Hourly Recurring Fee** – The effective hourly rate of your monthly RI costs. The hourly recurring fee takes only your recurring fees into consideration.
- **RI Cost For Unused Hours** – The amount that you spent on RI hours that you didn't use.

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, Amazon Elasticsearch Service, 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 enables 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 enables 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 below 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 aren't 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. 116).

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 RI Coverage reports, and aren't 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) – Filter your Amazon EC2 usage to show RIs that are purchased for use in specific Availability Zones or regions.

- **Tenancy** (Amazon EC2) – Filter your Amazon EC2 usage by tenancy, such as **Dedicated** or **Default**. A **Dedicated** RI is reserved for a single tenant, and 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 below 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 below 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) – 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) – 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 a reservation covers.
- **RI Covered Hours** – The number of usage hours that a reservation covers.
- **On-Demand Hours** – The number of usage hours that aren't 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 Reports and Results

You can save your Cost Explorer filters and data multiple ways. You can save the exact configuration as a bookmark, you can download the CSV file of the data that Cost Explorer used to create your graphs, or you can save the Cost Explorer configuration as a saved report. Cost Explorer keeps your saved reports and lists them on your report page along with the default Cost Explorer reports.

Topics

- [Saving Your Cost Explorer Configuration with Bookmarks or Favorites \(p. 101\)](#)
- [Downloading the CSV File \(p. 102\)](#)
- [Managing Your Saved Cost Explorer Reports \(p. 102\)](#)

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 enables you 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.

Downloading the CSV File

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 \(p. 95\)](#).

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 file.
3. Choose **Download CSV**.

Managing Your Saved Cost Explorer Reports

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

Topics

- [Creating a Cost Explorer Report \(p. 102\)](#)
- [Viewing a Cost Explorer Report \(p. 103\)](#)
- [Editing a Cost Explorer Report \(p. 103\)](#)
- [Deleting a Cost Explorer Report \(p. 103\)](#)

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 don't use them for auditing purposes.

To save a Cost Explorer report

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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. 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.
6. Customize your Cost Explorer settings.
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

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

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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 dropdown menu, choose the report that you want to edit.

Note

You can't 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

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

Understanding Your Reservations With Cost Explorer

A significant part of using AWS involves balancing your Reserved Instance (RI) usage and your On-Demand Instance usage. To help with that, Cost Explorer provides a couple of tools to help you understand where your greatest RI costs are and how you can potentially lower your costs. Cost Explorer does this by providing you with an overview of your current reservations, showing your RI utilization and coverage, and calculating recommended RIs that could save you money if you purchase them.

Using Your RI Reports

You can use the **RI reports** page in the Cost Explorer console to see how many reservations you have, how much your reservations are saving you compared to similar usage of On-Demand Instances, and how many of your reservations are expiring this month.

Cost Explorer breaks down your reservations and savings by service and lists your potential savings: that is, the costs of On-Demand usage compared to what that usage could cost you with an RI.

To take advantage of your potential savings, see [Accessing Reserved Instance Recommendations](#) (p. 104).

Accessing Reserved Instance Recommendations

If you enable Cost Explorer, you automatically get Amazon EC2, Amazon RDS, ElastiCache, Amazon ES, and Amazon Redshift 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 Instance usage for a service 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 Amazon EC2 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. Amazon EC2, ElastiCache, Amazon ES, and Amazon Redshift recommendations are for RIs scoped to Region, not Availability Zones, and your estimated savings reflects the application of those RIs to your usage. Amazon 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 doesn't forecast your 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.

Linked accounts can see recommendations only if they have the relevant permissions. Linked accounts need permissions to view Cost Explorer and permissions to view recommendations. For more information, see [Viewing the Cost Explorer Reservation Recommendations \(p. 105\)](#).

Topics

- [RI Recommendations for Size-Flexible RIs \(p. 105\)](#)
- [Viewing the Cost Explorer Reservation Recommendations \(p. 105\)](#)
- [Reading the Cost Explorer RI Recommendations \(p. 106\)](#)
- [Modifying Your RI Recommendations \(p. 106\)](#)
- [Saving Your RI Recommendations \(p. 107\)](#)
- [Using Your RI Recommendations \(p. 109\)](#)

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're running, you are 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 Reservation Recommendations

Linked accounts need the following permissions to view recommendations:

- `ViewBilling`
- `ViewAccount`

For more information, see [Billing and Cost Management Permissions Reference \(p. 183\)](#).

To view your RI recommendations

1. 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.

2. In the navigation pane, choose **Cost Explorer**.

3. On the **Cost Explorer** page, choose **Launch Cost Explorer**.
4. On the navigation bar, choose the menu. Under **Select a service**, 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 30 days of usage).

Reading the Cost Explorer RI Recommendations

The RI recommendation page shows you your estimated potential savings, your RI purchase recommendations, and the parameters that Cost Explorer used to create your recommendations. You can change the parameters to get recommendations that might match your use case more closely.

The top of the RI recommendations page show you three numbers:

- **Estimated Annual Savings** – Your **Estimated Annual Savings** is how much Cost Explorer calculates that you could save by purchasing all the recommended RIs.
- **Savings vs. On-Demand** – Your **Savings vs. On-Demand** is your estimated savings as a percentage of your current costs.
- **Purchase Recommendations** – Your **Purchase Recommendations** is how many different RI purchase options that Cost Explorer found for you.

These numbers enable you to see a rough estimate of how much you could potentially save by buying more RIs. You can recalculate these numbers for a different use case by using the parameters in the pane on the right. The pane allows you to change the following parameters:

- **RI term** – The length of the RI reservation that you want recommendations for.
- **Offering class** – Whether you want recommendations for a standard RI or a convertible RI.
- **Payment option** – Whether you want to pay for recommended RIs upfront.
- **Based on the past** – How many days of your previous instance usage that you want your recommendations to take into account.

At the bottom of the page are tabs with some of your savings estimates. The **All accounts** tab enables you to see the recommendations based on the combined usage across your entire organization, and the **Individual accounts** tab enables you to see recommendations that Cost Explorer generated on a per-linked-account basis. The table on each tab 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 associated usage** 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.

Note

Recommendations that Cost Explorer bases on an individual linked account consider all usage by that linked account, including any RIs used by that linked account. This includes RIs shared by another linked account. The recommendations don't assume that an RI will be shared with the linked account in the future.

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

1. 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.

2. In the navigation pane, choose **Cost Explorer**.
3. On the **Cost Explorer** page, choose **Launch Cost Explorer**.
4. On the navigation bar, choose the menu, choose **RI Recommendations** and then under **Select a service** 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 **Recommendation type**, select the logic that you want your recommendations based on.
 - e. For **Based on the past**, select how many days of usage that you want your RI recommendations to be based on.
6. Choose either **All accounts** or **Individual accounts** to see recommendations based either on your organization-wide usage or on all of your linked accounts based on their individual account usage.

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 RI parameter pane, change any 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

Column Name	Service	Column Explanation
Average hourly normalized unit usage in Historical Period	EC2, RDS	The average number of normalized units used per hour over the period chosen for generating recommendations.
Average hourly usage in Historical Period	EC2, RDS, RS, ELC, ES	The average number of instance hours used per hour over the period chosen for generating recommendations.
Break Even Months	EC2, RDS, RS, ELC, ES	The estimated length of time before you recoup your upfront costs for this set of recommended reservations.

Column Name	Service	Column Explanation
Cache Engine	ELC	The kind of engine that the recommended ElastiCache reserved node runs, such as Redis or Memcached.
Database Edition	RDS	The edition of the database engine that the recommended RDS reserved instance runs.
Database Engine	RDS	The kind of engine that the recommended RDS RI runs, such as Aurora MySQL or MariaDB.
Deployment Option	RDS	Whether your RI is for an RDS instance in a single Availability Zone or an RDS instance with a backup in another Availability Zone.
Instance Type	EC2, RDS, ES	The type of instance that the recommendation is generated for (for example, <code>m4.large</code> or <code>t2.nano</code>). For size-flexible recommendations, Cost Explorer aggregates all usage in a organization (for example, the <code>m4</code> family) and shows a recommendation for the smallest instance type RI that is available for purchase (for example, <code>m4.large</code>).
Location	EC2, RDS, RS, ELC, ES	The region of the instances used to generate a recommendation. You must purchase the recommended RIs in the recommended region to see potential savings.
Max hourly normalized unit usage in Historical Period	EC2, RDS	The maximum number of normalized units used in an hour over the period chosen for generating recommendations.
Max hourly usage in Historical Period	EC2, RDS, RS, ELC, ES	The maximum number of instance hours used in an hour over the period chosen for generating recommendations.
Min hourly normalized unit usage in Historical Period	EC2, RDS	The minimum number of normalized units used in an hour over the period chosen for generating recommendations.
Min hourly usage in Historical Period	EC2, RDS, RS, ELC, ES	The minimum number of instance hours used in an hour over the period chosen for generating recommendations.

Column Name	Service	Column Explanation
Node Type	ELC, RS	The type of node that the recommendation is generated for, such as <code>ds2.xlarge</code> .
OS	EC2	The operating system and license model for the recommended RI instance type.
Owner Account	EC2, RDS, RS, ELC, ES	The account associated with your recommendation.
Payment Option	EC2, RDS, RS, ELC, ES	The recommended payment option for the recommendation.
Projected RI Utilization	EC2, RDS, RS, ELC, ES	How much of the recommended RI Cost Explorer estimates you will use.
Recommendation Date	EC2, RDS, RS, ELC, ES	The date that Cost Explorer generated your recommendation.
Recommended Instance Quantity Purchase	EC2, RDS	How many reservations Cost Explorer recommends that you buy.
Recommended Normalized Unit Quantity Purchase	EC2, RDS, RS, ELC, ES	How many normalized units that Cost Explorer recommends that you buy.
Recurring Monthly Cost	EC2, RDS, RS, ELC, ES	The recurring monthly cost of the recommended reservations.
Size Flexible Recommendation	EC2, RDS	Whether a recommended RI is size-flexible.
Tenancy	EC2	The tenancy for the recommended RI purchase. Valid values are shared or dedicated .
Term	EC2, RDS, RS, ELC, ES	The recommended term length for the recommendation.

Using Your RI Recommendations

To purchase the recommended reservations, go to the purchase page on a service console. You can also save a CSV file of your recommendations and purchase the reservations at a later date.

To use Amazon Elastic Compute Cloud recommendations

1. On the **Reserved Instance Recommendations** page, choose [Amazon 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 Relational Database Service recommendations

1. On the **Reserved Instances** page in the Amazon 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*.

To use Amazon Redshift recommendations

1. On the **Reserved Node** page in the Amazon Redshift console, choose **Purchase Reserved Nodes**.
2. Purchase your reservations by following the instructions at [Purchasing a Reserved Node Offering with the Amazon Redshift Console](#) in the *Amazon Redshift Cluster Management Guide*.

To use Amazon Elasticsearch Service recommendations

1. On the **Reserved Instances** page in the Amazon ES console, choose **Purchase Reserved Instance**.
2. Purchase your reservations by following the instructions at [Amazon Elasticsearch Service Reserved Instances](#) in the *Amazon Elasticsearch Service Developer Guide*.

To use Amazon ElastiCache recommendations

1. On the **Reserved Cache Nodes** page in the ElastiCache console, choose **Purchase Reserved Cache Node**.
2. Purchase your reservations by following the instructions at [Purchasing a Reserved Node](#) in the *Amazon ElastiCache User Guide*.

Managing Your Reservation Expiration Alerts

You can track your reservations and their expiration in Cost Explorer. Reservation expiration alerts enable you to receive email alerts 7, 30, or 60 days in advance before your reservation expiration date. These notifications also alert you on the date of expiration and can be sent to up to 10 email recipients. Reservation expiration alerts are supported for Amazon EC2, Amazon RDS, Amazon Redshift, Amazon ElastiCache, and Amazon Elasticsearch Service reservations.

To turn on reservation expiration alerts

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. Navigate to the **Reservation summary** page.
3. In the **Reservation expiring** section, choose **Manage alerts** in the upper right corner.
4. Select the check boxes for when you want to receive your alerts.
5. Enter email addresses for who you want to notify. You can add up to 10 emails.
6. Choose **Save**.

AWS begins monitoring your reservation portfolio and automatically sends alerts at your preference.

Optimizing Your Cost with Rightsizing Recommendations

Rightsizing recommendations helps you identify cost saving opportunities in Cost Explorer, downsizing or terminating instances in your Amazon Elastic Compute Cloud (Amazon EC2). Rightsizing recommendations analyzes your Amazon EC2 resources and usage and terminates idle instances to lower your spending. You can see all of your underutilized Amazon EC2 instances in every Region and linked account in a single view to immediately identify how much you can save. After you've identified your recommendations, you can take action on the Amazon EC2 console.

Note

GPU instances aren't supported in this feature, and rightsizing recommendations aren't provided for those instances.

Topics

- [Getting Started with Rightsizing Recommendations \(p. 111\)](#)
- [Using Your Rightsizing Recommendations \(p. 111\)](#)
- [CSV Details \(p. 113\)](#)
- [Understanding Your Rightsizing Recommendations Calculations \(p. 113\)](#)

Getting Started with Rightsizing Recommendations

You can access your reservation recommendations and resource-based recommendations on the Cost Explorer console. After you enable rightsizing recommendations, it can take up to 24 hours for it to generate.

To access rightsizing recommendations

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Cost Explorer**.
3. On the Cost Explorer page, choose **Launch Cost Explorer**.
4. In the navigation pane, choose **Recommendations**.

To enable rightsizing recommendations

1. Choose **Launch Cost Explorer**.
2. In the navigation pane, choose **Recommendations**.
3. In the **Resource optimization recommendations** section, choose **Enable rightsizing recommendations**.

Note

Only regular or payer accounts can enable rightsizing recommendations. After you enable rightsizing recommendations, both linked and payer accounts can access rightsizing recommendations unless the payer account specifically prohibits linked account access on the **settings** page.

To improve the recommendation quality, AWS might use your published utilization metrics, such as disk or memory utilization, to improve our recommendation models and algorithms. All metrics are anonymized and aggregated before AWS use them for model training. If you want to opt out of this experience and request that your metrics not be stored and used for model improvement, contact AWS Support. For more information, see [AWS Service Terms](#).

Using Your Rightsizing Recommendations

You can see the following top-level key performance indicators (KPIs) in your rightsizing recommendations:

- **Optimization opportunities** – The number of recommendations available based on your resources and usage
- **Estimated monthly savings** – The sum of the projected monthly savings associated with each of the recommendations provided

- **Estimated savings (%)** – The available savings relative to the direct instance costs (On-Demand) associated with the instances in the recommendation list

To filter your rightsizing recommendations

1. Choose **Launch Cost Explorer**.
2. In the left navigation pane, choose **Recommendations**.
3. In the **Resource optimization recommendations** section, choose **Enable rightsizing recommendations**.
4. In the menu on the right side, filter your recommendations by selecting any or all of the following check boxes:
 - Over provisioned instances (modification recommendations)
 - Idle instances (termination recommendations)
 - Underutilized instances
 - Account ID (option available from the payer account)
 - Region
 - Cost allocation tag

To view your rightsizing recommendations details

1. Choose **Launch Cost Explorer**.
2. In the left navigation pane, choose **Recommendations**.
3. Choose **View**.

The view button on the right of each recommendation opens a window. This provides details on the instances and recommended actions.

To download your recommendations in CSV format

1. Choose **Launch Cost Explorer**.
2. In the left navigation pane, choose **Recommendations**.
3. Select **Download CSV**.

For definitions for the CSV file fields, see [CSV Details \(p. 113\)](#).

Enhancing your recommendations using CloudWatch metrics

We can examine your memory utilization if you've enabled your CloudWatch agent.

To enable memory utilization, see [Installing the CloudWatch Agent](#).

Important

When you're creating a CloudWatch configuration file, use the default namespace and default names for the collected metrics.

For **InstanceId**, choose `append_Dimension`. Do not add additional dimensions for individual memory or disk metrics. Disk utilization is currently not examined.

For Linux instances, choose `mem_used_percent` as your metric for your CloudWatch agent to collect. For Windows instances, choose `"% Committed Bytes In Use"`.

For more information about the CloudWatch agent, see [Collecting Metrics and Logs from Amazon EC2 Instances and On-Premises Servers with the CloudWatch Agent](#) in the *Amazon CloudWatch User Guide*.

CSV Details

The following is a list of fields in the downloadable CSV form from the **Rightsizing Recommendations** page. The fields are repeated if there are multiple rightsizing options available. The file also contains all of your relevant cost allocation tags.

- **Account ID** – The AWS account ID that owns the instance that the recommendation is based off of.
- **Account Name** – The name of the account that owns the instance that the recommendation is based off of.
- **Instance ID** – The unique instance identifier.
- **Instance Type** – The instance family and size of the original instance.
- **OS** – The operating system or platform of the current instance.
- **Region** – The AWS Region that the instance is running in.
- **Running Hours** – The total number of running hours of the instance over the last 14 days.
- **RI Hours** – The subset of the total running hours that are covered by an AWS reservation over the look-back period.
- **OD Hours** – The subset of the total running hours that are On-Demand over the look-back period.
- **CPU Utilization** – The maximum CPU utilization of the instance over the look-back period.
- **Memory Utilization** – The maximum memory utilization of the instance over the look-back period (if available from the Amazon CloudWatch agent).
- **Disk Utilization** – The maximum disk utilization of the instance over the look-back period (if available from the CloudWatch agent - currently not supported).
- **Network Capacity** – The maximum network input/output operations per second capacity of the current instance. This isn't a measure of actual instance use or performance, only capacity. It's not considered in the recommendation.
- **Recommended Action** – The recommended action, either modify or terminate the instance.
- **Recommended Instance Type 1** – The instance family and size of the recommended instance type. For termination recommendations, this field is empty.
- **Recommended Instance Type 1 Estimated Saving** – The projected savings based on the recommended action, instance type, associated rates, as well as your current Reserved Instance (RI) portfolio.
- **Recommended Instance Type 1 Projected CPU** – The projected value of the CPU utilization based on utilization of current instance disk and recommended instance specifications.
- **Recommended Instance Type 1 Projected Memory** – The projected value of the disk utilization based on utilization of current instance memory and recommended instance specifications.
- **Recommended Instance Type 1 Projected Disk** – The projected value of the disk utilization based on utilization of current instance disk and recommended instance specifications.
- **Recommended Instance Type 1 Network Capacity** – The maximum network input/output operations per second capacity of the recommended instance. This isn't a measure of actual instance use or performance, only capacity. It's not considered in the recommendation.

Understanding Your Rightsizing Recommendations Calculations

This document provides an overview of the savings calculations used in your rightsizing recommendations algorithms.

Consolidated Billing Family

To identify all instances for all accounts in the consolidated billing family, rightsizing recommendations looks at the usage for the last 14 days for each account. If the instance wasn't run in the last 3 days, we consider it terminated and remove it from consideration. For all remaining instances, we call

CloudWatch to get maximum CPU utilization data for the last 14 days. This is to produce conservative recommendations, not to recommend instance modifications that could be detrimental to application performance or that could unexpectedly impact your performance.

Determining If an Instance Is Idle, Underutilized, or Neither

We look at the maximum CPU utilization of the instance for the last 14 days to make one of the following assessments:

- **Idle** – If the maximum CPU utilization is at or below 1%. A termination recommendation is generated, and savings are calculated. For more information, see [Savings Calculation](#) (p. 114).
- **Underutilized** – If the maximum CPU utilization is between 1% and 40%. A modification recommendation is generated. For more information, see [Generating Modification Recommendations](#) (p. 114).

If the instance isn't idle or underutilized, we don't generate any recommendations.

Generating Modification Recommendations

To determine replacement instances, we identify smaller instance sizes in the instance family and calculate a projected maximum CPU utilization. We include this as a recommendation if the projected value is below 80%. For each recommendation, we calculate the estimated savings and remove any recommendations with a savings below \$0.

Savings Calculation

We first examine the instance running in the last 14 days to identify if it was partially or fully covered by an RI or running On-Demand. Another factor is whether the RI is size-flexible. The cost to run the instance is calculated based on the On-Demand hours and the rate of the instance type.

For each recommendation, we calculate the cost to operate a new instance. We assume that a size-flexible RI will cover the new instance in the same way as the previous instance. Savings are calculated based on the number of On-Demand running hours and the difference in On-Demand rates. If the RI isn't size-flexible, the savings calculation is based on if the instance hours during the last 14 days are operated as On-Demand. We provide only recommendations with estimated savings greater than or equal to \$0.

Note

Rightsizing recommendations doesn't capture second-order effects of rightsizing, such as the resulting RI hour's availability and how they will apply to other instances. Potential savings based on reallocation of the RI hours aren't included in the calculation.

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 that AWS provides an SDK for, 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 AWS Cost Explorer 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](#). For more information about the AWS Cost Explorer API, see the [AWS Billing and Cost Management API Reference](#).

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 \(p. 194\)](#).

Best Practices for the AWS Cost Explorer API

Note the following best practices when working with the Cost Explorer API.

Topics

- [Best Practices for Configuring Access to the Cost Explorer API \(p. 115\)](#)
- [Best Practices for Querying the Cost Explorer API \(p. 115\)](#)
- [Best Practices for Optimizing Your Cost Explorer API Costs \(p. 115\)](#)

Best Practices for Configuring Access to the Cost Explorer API

An IAM user must be granted explicit permission to query the Cost Explorer API. Granting an IAM user access to the Cost Explorer API gives that user query access to any cost and usage data available to that account. For the policy that grants the necessary permissions to an IAM user, see [Example 12: View costs and usage \(p. 194\)](#).

When configuring access to the Cost Explorer API, we recommend creating a unique IAM user for allowing programmatic access. If you want to give multiple IAM users query access to the Cost Explorer API, we recommend creating a programmatic access IAM role for each of them.

Best Practices for Querying the Cost Explorer API

When querying the Cost Explorer API, we recommend using filtering conditions to refine your queries so that you receive only the data that you need. You can do this by restricting the time range to a smaller interval or by using filters to limit the result set that your request returns. This enables your queries to return data more quickly than if you're accessing a larger set of data.

Adding one or more grouping dimensions to your query can increase the size of your result and can impact query performance. Depending on your use case, it can make sense to filter your data instead.

The Cost Explorer API can access up to 12 months of historical data and data for the current month. It can also provide 3 months of cost forecast data at the daily level of granularity and 12 months of cost forecast data at the monthly level of granularity.

Best Practices for Optimizing Your Cost Explorer API Costs

Because you're charged for the Cost Explorer API per paginated request, we recommend identifying the exact dataset to access before submitting queries.

AWS billing information is updated up to three times daily. Typical workloads and use cases for the Cost Explorer API anticipate a call pattern cadence ranging from daily to several times per day. To receive the most up-to-date data available, query for the time period that you're interested in.

If you're creating an application using the Cost Explorer API, we recommend architecting the application so that it has a caching layer. This enables you to regularly update the underlying data for your end users, but doesn't trigger queries every time that an individual in your organization accesses it.

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 have used of your Reserved Instances (RIs)
- Your current estimated charges from AWS and how much your predicted usage will incur 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 62 budget days are free of charge each month. Each additional budget day costs \$0.02. For regular accounts, this is equal to your first two budgets being free. For accounts in a consolidated billing family, the 62 budget days can be spread across multiple accounts. For example, for 62 accounts with 1 budget in each account, the first day of the month is free for each budget. The remaining days of the month will be charged at \$.02 per budget, 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 \(p. 127\)](#). AWS Free Tier usage alerts through AWS Budgets are provided for you and don't count toward your budget limits. AWS provides budgets for informational purposes only. You can't use budgets to stop or control other services.

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 \(p. 182\)](#). For more information about AWS Organizations, see the [AWS Organizations User Guide](#).

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 AWS Budgets can notify you.

Topics

- [Best Practices for AWS Budgets \(p. 117\)](#)
- [Creating a Budget \(p. 118\)](#)
- [Viewing Your Budgets \(p. 125\)](#)
- [Editing a Budget \(p. 126\)](#)

- [Downloading a Budget \(p. 126\)](#)
- [Copying a Budget \(p. 126\)](#)
- [Deleting a Budget \(p. 127\)](#)
- [Creating an Amazon SNS Topic for Budget Notifications \(p. 127\)](#)
- [Receiving Budget Alerts in Amazon Chime and Slack \(p. 129\)](#)

Best Practices for AWS Budgets

Note the following best practices when you're working with budgets.

Topics

- [Best Practices for Controlling Access to AWS Budgets \(p. 117\)](#)
- [Best Practices for Setting Budgets \(p. 117\)](#)
- [Best Practices for Using the Advanced Options When Setting Cost Budgets \(p. 117\)](#)
- [Understanding the AWS Budgets Update Frequency \(p. 118\)](#)
- [Best Practices for Setting Budget Alerts \(p. 118\)](#)
- [Best Practices for Setting Budgets Alerts Using Amazon SNS Topics \(p. 118\)](#)

Best Practices for Controlling Access to AWS Budgets

To allow IAM users to create budgets in the AWS Billing and Cost Management console, you must also allow IAM users to do the following:

- View your billing information
- Create Amazon CloudWatch alarms
- Create Amazon Simple Notification Service (Amazon SNS) notifications

To learn more about giving users the ability to create budgets on the AWS Budgets console, see [Example 7: Allow IAM users to create budgets \(p. 191\)](#).

You can also create budgets programmatically using the Budgets API. When configuring access to the Budgets API, we recommend creating a unique IAM user for allowing programmatic access. This helps you define more precise access controls between who in your organization has access to the Budgets console and the API. To give multiple IAM users query access to the Budgets API, we recommend creating a programmatic access IAM role for each of them.

Best Practices for Setting Budgets

Budgets enables you to set custom budgets based on your costs, usage, reservation utilization, and reservation coverage.

With Budgets, you can set budgets on a recurring basis or for a specific time frame. However, we recommend setting your budget on a recurring basis so that you don't unexpectedly stop receiving budget alerts.

Best Practices for Using the Advanced Options When Setting Cost Budgets

Cost budgets can be aggregated by unblended costs, amortized costs, or blended costs. Cost budgets can also either include or exclude refunds, credits, upfront reservation fees, recurring reservation charges, non-reservation subscription costs, taxes, and support charges.

Understanding the AWS Budgets Update Frequency

AWS billing data, which Budgets uses to monitor resources, is updated at least once per day. Keep in mind that budget information and associated alerts are updated and sent according to this data refresh cadence.

Best Practices for Setting Budget Alerts

Budget alerts can be sent to up to 10 email addresses and one Amazon SNS topic per alert. You can set budgets to alert against either actual values or forecasted values.

Actual alerts are only sent out once per budget, per budget period, when a budget first reached the actual alert threshold.

Forecast-based budget alerts are sent out on a per-budget, per-budget period basis. They might alert more than once in a budgeted period if the forecasted values exceed, dip below, and then exceed the alert threshold again during the budgeted period.

AWS requires approximately 5 weeks of usage data to generate budget forecasts. If you set a budget to alert based on a forecasted amount, this budget alert isn't triggered until you have enough historical usage information.

Best Practices for Setting Budgets Alerts Using Amazon SNS Topics

When you create a budget that sends notifications to an Amazon SNS topic, you must either have a preexisting Amazon SNS topic or create an Amazon SNS topic. Amazon SNS topics enable you to send notifications over SMS in addition to email.

For budget notifications to be sent successfully, your budget must have permissions to send a notification to your topic, and you must accept the subscription to the Amazon SNS notification topic. For more information, see [Creating an Amazon SNS Topic for Budget Notifications \(p. 127\)](#).

Creating a Budget

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

- [To create a cost budget \(p. 118\)](#)
- [To create a usage budget \(p. 121\)](#)
- [To create a reservation budget \(p. 122\)](#)

When you create a budget, AWS Budgets provides a Cost Explorer graph to help you see your incurred costs and usage. If you haven't used Cost Explorer, then this graph is blank and AWS Budgets enables Cost Explorer when you start to create your first budget. You can create your budget without enabling Cost Explorer. It can take up to 24 hours for this graph to appear after you or AWS Budgets enable Cost Explorer.

To create a cost budget

Use this procedure to create a cost-based budget.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)

2. In the navigation pane, choose **Budgets**.
3. At the top of the page, choose **Create budget**.
4. For **Select budget type**, choose **Cost budget**.
5. Choose **Set up your budget**.
6. For **Name**, enter 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:

_ . : / = + - % @

7. 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. You can also set custom future budgeted amounts for **Monthly** and **Quarterly** by using the Budget Planning feature.
8. For a fixed **Budgeted Amount**, enter the total amount that you want to spend for this budget period. For **Monthly** and **Quarterly** Planning budgets, enter the amount you want to spend for each planned period.

Note

After all of the **Budgeted Amounts** values in Planned Budget are used, the budget continues to use the last limit as the **Budgeted Amount**. At that point, the planned budget provides the same experience as a fixed budget.

9. (Optional) For **Budget effective dates**, choose **Recurring Budget** for a budget that resets after the budget period or **Expiring Budget** for a one-time budget that doesn't reset after the budget period.

For **Start Month**, choose the month that you want the budget to start on.

For an **Expiring Budget**, for **End Month**, choose the month that you want the budget to end on.

All budget times are in UTC.

10. (Optional) Under **Budget parameters (optional)**, for **Filtering**, choose one or more of the [available filters \(p. 123\)](#). Your choice of budget type determines the set of filters that is displayed on the console.
11. (Optional) Under **Budget parameters (optional)**, 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 of 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.

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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](#).

12. Choose **Configure alerts**.
13. Under **Configure alerts**, for **Alert 1**, choose **Actual** to create a notification for actual spend and **Forecast** to create a notification for your forecasted spend.
14. For **Alert threshold**, enter 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), enter 160 for an absolute budget or 80 for a percentage budget.

Next to the amount, choose **Absolute amount** to be notified when the threshold amount is passed and **% of budgeted amount** to be notified when the threshold percentage of the budget is passed.

15. (Optional) For **Email contacts**, enter the email addresses that you want the notifications to be sent to and choose **Add email contact**. Separate multiple email addresses with a comma. A notification can have up to 10 email addresses.

To receive a notification, you must specify an email address. You can also specify an Amazon SNS topic.

16. (Optional) For **SNS topic ARN**, enter the ARN for your Amazon 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](#) 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 \(p. 127\)](#). A notification can be subscribed to only one Amazon SNS topic.

To receive a notification, you must specify an email address. You can also specify an Amazon SNS topic.

17. Choose **Confirm budget**.
18. Review your budget settings, and choose **Create**.

Important

When you finish creating a budget with Amazon 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.

To create a usage budget

Use this procedure to create a usage-based budget.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Budgets**.
3. At the top of the page, choose **Create budget**.
4. For **Select budget type**, choose **Usage budget**.
5. Choose **Set up your budget**.
6. For **Name**, enter 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:

_ . : / = + - % @

7. For **Period**, choose how often you want the budget to reset the actual and forecasted usage. Choose **Monthly** for every month, **Quarterly** for every three months, or **Annually** for every year. You can also set custom future budgeted amounts for **Monthly** and **Quarterly** by using the Budget Planning feature.
8. Under **Usage unit(s)**, choose either **Usage Type Group** or **Usage Type**. A usage type group is a collection of usage types that have the same unit of measure, such as resources that measure usage by the hour.
 - a. For **Usage Type Group**, choose the unit of measurement that you want the budget to use.
 - b. For **Usage Type**, choose the service that you want to include in the budget and then choose the unit of measurement that you want the budget to use.
9. For a fixed **Budgeted Amount**, enter the total amount of units that you want to use for this budget period. For **Monthly** and **Quarterly** Planning budgets, enter the amount you want to spend for each planned period.

Note

After all of the **Budgeted Amounts** values in Planned Budget are used, the budget continues to use the last limit as the **Budgeted Amount**. At that point, the planned budget provides the same experience as a fixed budget.

10. (Optional) For **Budget effective dates**, choose **Recurring Budget** for a budget that resets after the budget period or **Expiring Budget** for a one-time budget that doesn't reset after the budget period.

For **Start Month**, choose the month that you want the budget to start on.

For an **Expiring Budget**, for **End Month**, choose the month that you want the budget to end on.

All budget times are in UTC.

11. (Optional) Under **Budget parameters (optional)**, for **Filtering**, choose one or more of the [available filters \(p. 123\)](#). Your choice of budget type determines the set of filters that is displayed on the console.

Note

You must choose **Usage Type**, **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.

12. Choose **Configure alerts**.
13. Under **Configure alerts**, for **Alert 1**, choose **Actual** to create a notification for actual spend and **Forecast** to create a notification for your forecasted spend.
14. For **Alert threshold**, enter 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), enter "160" for an absolute budget or "80" for a percentage budget.

Next to the amount, choose **Absolute amount** to be notified when the threshold amount is passed and **% of budgeted amount** to be notified when the threshold percentage of the budget is passed.

15. (Optional) For **Email contacts**, enter the email addresses that you want the notifications to be sent to and choose **Add email contact**. Separate multiple email addresses with a comma. A notification can have up to 10 email addresses.

To receive a notification, you must specify an email address. You can also specify an Amazon SNS topic.

16. (Optional) For **SNS topic ARN**, enter the ARN for your Amazon 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](#) 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 \(p. 127\)](#). A notification can be subscribed to only one Amazon SNS topic.

To receive a notification, you must specify an email address. You can also specify an Amazon SNS topic.

17. Choose **Confirm budget**.
18. Review your budget settings, and choose **Create**.

Important

When you finish creating a budget with Amazon 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.

To create a reservation budget

Use this procedure to create a budget for RI utilization or RI coverage.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Budgets**.
3. At the top of the page, choose **Create budget**.
4. For **Select budget type**, choose **Reservation budget**.
5. Choose **Set up your budget**.
6. For **Name**, enter 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:

_ . : / = + - % @

7. For **Period**, choose how often you want the budget to reset the actual and forecasted spend. Choose **Daily** for every day, **Monthly** for every month, **Quarterly** for every three months, or **Annually** for every year.

All budget times are in UTC.

8. For **Reservation budget type**, choose whether you want the budget to track **RI Utilization** or **RI Coverage**.

RI utilization is how much of your reservation you've used, and RI coverage is how much of your instance usage a reservation covers.

9. For **Service**, choose the service whose instances you want the budget to track.
10. For **Utilization threshold**, enter the utilization or coverage percentage that you want AWS to notify you at. For example, for a utilization budget where you want to stay above 80% RI utilization, enter 80, and the budget notifies you when you go below 80% utilization. For a coverage budget where you want to make sure that you stay above 80%, enter 80, and the budget notifies you when your instance coverage goes below 80%.
11. (Optional) Under **Budget parameters (optional)**, for **Filtering**, choose one or more of the [available filters \(p. 123\)](#). Your choice of budget type determines the set of filters that is displayed on the console.
12. Choose **Configure alert**. You can configure only one alert for a reservation budget.
13. (Optional) Under **Configure alerts**, for **Email contacts**, enter the email addresses that you want the notifications to be sent to and then choose **Add email contact**. Separate multiple email addresses with a comma. A notification can have up to 10 email addresses.

To receive a notification, you must specify an email address. You can also specify an Amazon SNS topic.

14. (Optional) Under **Configure alerts**, for **SNS topic ARN**, select **Notify via Amazon Simple Notification Service (SNS) topic** and enter or paste the ARN for your Amazon 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](#) 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 \(p. 127\)](#). A notification can be subscribed to only one Amazon SNS topic.

To receive a notification, you must specify an email address. You can also specify an Amazon SNS topic.

15. Choose **Confirm budget**.
16. Review your budget settings, and choose **Create**.

Important

When you finish creating a budget with Amazon 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.

Available Budget Filters

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 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. 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 doesn't 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 Elastic Compute Cloud - Compute
- Amazon Redshift
- Amazon Relational Database Service
- Amazon ElastiCache
- Amazon Elasticsearch Service

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 that you're creating the budget for.

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 Tags \(p. 136\)](#) and [Activating User-Defined Cost Allocation Tags \(p. 138\)](#).

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.

Instance Family

Choose the family of instances to track using 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**.

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:

- Your current costs and usage incurred for a budget during the budget period
- Your budgeted costs or usage for the budget period
- Your forecasted usage or costs for the budget period
- A percentage that shows your costs or usage compared to your budgeted amount
- A percentage that shows your forecasted costs or usage compared to your budgeted amount

To view your budgets

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. On the navigation pane, choose **Budgets**.
3. To see the filters and cost variances for your budgets, choose the budget's name in your list of budgets.

Reading Your Budgets

After you choose your budget name, you see your budget details page. This page includes the following information:

- **Current vs budgeted** – Your current incurred costs compared to your budgeted costs.
- **Forecasted vs budgeted** – Your forecasted costs compared to your budgeted costs.
- **Alerts** – Any alerts or notifications about the state of your budgets.
- **Budget History** – A table showing the history of your budgets. **QUARTERLY** budgets show the last four quarters of history, and **MONTHLY** budgets show the last 12 months. Budget history isn't available for **ANNUAL** budgets.

If you change the budgeted amount for a budget period, the budgeted amount in the table is the last budgeted amount. For example, if you have a monthly budget set for 100 in January and change the budget to 200 in February, the February line in the table shows only the 200.

- **Budget details** – The period, type, and filters that you used when you created this budget.
- **Budgeted amount** – The budgeted amount for the current and future planned periods for Monthly or Quarterly Planning budgets.

You can use this information to see how well your budget has matched your costs and usage in the past. You can also download all of the data that Budgets used to create the table using the following procedure.

To download a budget CSV

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation pane, choose **Budgets**.
3. To see the filters and cost variances for your budgets, choose the budget's name in your list of budgets.
4. In **Budget History**, choose **Download as CSV**.
5. Follow the instructions onscreen.

Editing a Budget

You can't edit the budget name.

To edit a budget

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation pane, choose **Budgets**.
3. On the **Budgets** page, choose the budget that you want to edit from your list of budgets.
4. Choose **Edit budget**.
5. Change the parameters that you want to edit. You can't change the budget name.
6. Choose **Configure alerts**.
7. Choose **Confirm budget**.
8. 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

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

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 \(p. 86\)](#).

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation pane, choose **Budgets**.
3. From the list of budgets, choose the budget's name that you want to copy in your list of budgets.
4. At the top of the page, choose ... and choose **Copy**.
5. Change the parameters that you want to update. You must change the budget name.
6. Choose **Configure alerts**.
7. Choose **Confirm budget**.
8. Choose **Create**.

Deleting a Budget

You can delete your budgets and the associated email and Amazon SNS notifications at any time. You can't recover a budget after you delete it. Deleting a budget also deletes all notifications and notification subscribers.

To delete a budget

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation pane, choose **Budgets**.
3. On the **Budgets** page, choose the budget's name in your list of budgets.
4. On the **budget page** box, under ..., 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 preexisting Amazon SNS topic or create one. Amazon SNS topics allow you to send notifications over SNS 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/v3/home>.
2. On the navigation pane, choose **Topics**.
3. Choose **Create topic**.
4. For **Name**, enter the name for your notification topic.
5. (Optional) For **Display name**, enter the name that you want displayed when you receive a notification.
6. In **Access policy**, choose **Advanced**.
7. In the policy text field, after "**Statement**": [, add the following text:

```
{
  "Sid": "E.g., AWSBudgetsSNSPublishingPermissions",
  "Effect": "Allow",
```

```
"Principal": {  
  "Service": "budgets.amazonaws.com"  
},  
"Action": "SNS:Publish",  
"Resource": "your topic ARN"  
},
```

8. Replace **E.g., AWSBudgetsSNSPublishingPermissions** with a string. The `Sid` must be unique within the policy.
9. Replace *your topic ARN* with the Amazon SNS topic ARN from step 7.
10. Choose **Create topic**.

Your topic now appears in the list of topics on the **Topics** page.

Checking or Resending Notification Confirmation Emails

When you create a budget with notifications, you also create Amazon SNS notifications. For notifications to be sent, you must accept the subscription to the Amazon SNS notification topic.

To confirm that your notification subscriptions have been accepted or to resend a subscription confirmation email, use the Amazon SNS console.

To check your notification status or to resend a notification confirmation email

1. Sign in to the AWS Management Console and open the Amazon SNS console at <https://console.aws.amazon.com/sns/v3/home>.
2. On the navigation pane, choose **Subscriptions**.
3. On the **Subscriptions** page, for **Filter**, enter `budget`. A list of your budget notifications appears.
4. Check the status of your notification. Under **Status**, `PendingConfirmation` appears if a subscription hasn't been accepted and confirmed.
5. (Optional) To resend a confirmation request, select the subscription with a pending confirmation and choose **Request confirmation**. Amazon SNS sends a confirmation request to the endpoints that are subscribed to the notification.

When each owner of an endpoint receives the email, they must choose the **Confirm subscription** link to activate the notification.

Protecting Your Amazon SNS Budget Alerts Data with SSE and AWS KMS

You can use server-side encryption (SSE) to transfer sensitive data in encrypted topics. SSE protects Amazon SNS messages by using keys managed in AWS Key Management Service (AWS KMS).

To manage SSE using AWS Management Console or the AWS Service Development Kit (SDK), see [Enabling Server-Side Encryption \(SSE\) for an Amazon SNS Topic](#) in the *Amazon Simple Notification Service Getting Started Guide*.

To create encrypted topics using AWS CloudFormation, see the [AWS CloudFormation User Guide](#).

SSE encrypts messages as soon as Amazon SNS receives them. The messages are stored encrypted and are decrypted using Amazon SNS only when they're sent.

Configuring AWS KMS Permissions

You must configure your AWS KMS key policies before you can use SSE. The configuration enables you to encrypt topics, as well as encrypt and decrypt messages. For details about AWS KMS permissions,

see [AWS KMS API Permissions: Actions and Resources Reference](#) in the *AWS Key Management Service Developer Guide*.

You can also use IAM policies to manage AWS KMS key permissions. For more information, see [Using IAM Policies with AWS KMS](#).

Note

Although you can configure global permissions to send and receive message from Amazon SNS, AWS KMS requires you to name the full ARN of customer master keys (CMK) in the specific Regions. You can find this in the **Resource** section of an IAM policy. You must ensure that the key policies of the CMK allow the necessary permissions. To do this, name the principals that produce and consume encrypted messages in Amazon SNS as users in the CMK policy.

To enable compatibility between AWS Budgets and encrypted Amazon SNS topics

1. [Create a CMK](#).
2. Add the following text to the CMK policy.

```
{
  "Version": "2012-10-17",
  "Statement": [{
    "Effect": "Allow",
    "Principal": {
      "Service": "budgets.amazonaws.com"
    },
    "Action": [
      "kms:GenerateDataKey*",
      "kms:Decrypt"
    ],
    "Resource": "*"
  }]
}
```

3. [Enable SSE for your SNS topic](#).

Note

Be sure that you're using the same CMK that grants AWS Budgets the permissions to publish to encrypted Amazon SNS topics.

4. Choose **Save Changes**.

Receiving Budget Alerts in Amazon Chime and Slack

You can receive your AWS Budgets alerts in Amazon Chime and Slack by using AWS Chatbot.

AWS Chatbot enables you to receive AWS Budgets alerts directly into your designated Slack channel or Amazon Chime chat room.

To begin receiving your budget alerts in Slack and Amazon Chime

1. Follow [Creating a Budget \(p. 118\)](#) or [Editing a Budget \(p. 126\)](#) and select **Configure alerts**.
2. Add an Amazon SNS topic as an alert recipient to a specific alert or alerts. To ensure that AWS Budgets has permissions to publish to your Amazon SNS topics, see [Creating an Amazon SNS Topic for Budget Notifications \(p. 127\)](#).
3. Select **Confirm Budget**.
4. Select **Done**.
5. Open the [AWS Chatbot console](#).

6. Select your chat client.

7. Choose **Configure**.

There are specific authorization processes for each endpoint: for example, Slack channel, Amazon Chime rooms, AWS Chatbot IAM permissions, and SNS topics receiving the budget alerts.

8. Choose **Slack workspace**.

9. Choose a **channel type**.

- **Public:** Everyone in your workspace can see or join the channel
- **Private:** The channel is viewable only by invitation

10. Either select an existing IAM role for AWS Chatbot to assign or create a new IAM role.

11. Choose a **role name**.

12. Select the Amazon SNS Region.

13. Select the **SNS topic**.

Note

You can send AWS Budgets alerts to multiple Amazon SNS topics and Regions. At least one of the Amazon SNS topics must match the Amazon SNS topic or topics of your budget or budgets.

14. Select **Configure**.

Reporting Your Budget Metrics with Budget Reports

AWS Budgets enables you to configure a report to monitor the performance of your existing budgets on a daily, weekly, or monthly cadence and deliver that report to up to 50 email addresses.

You can create up to 50 reports per standalone account or AWS Organizations master account. Each budget report costs \$.01 USD per report delivered, regardless of the number of recipients receiving the report. For example, a daily budget report costs \$.01 per day, a weekly budget report costs \$.01 per week, and a monthly budget report costs \$.01 per month.

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. 182). For more information about AWS Organizations, see the [AWS Organizations User Guide](#).

Topics

- [Creating an AWS Budgets Report](#) (p. 130)
- [Editing an AWS Budgets Report](#) (p. 131)
- [Copying an AWS Budgets Report](#) (p. 132)
- [Deleting an AWS Budgets Report](#) (p. 132)

Creating an AWS Budgets Report

Use the following procedure to create an AWS Budgets report.

To create an AWS Budgets report

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Budget Reports**.
3. On the top right of the page, choose **Create Budget report**.
4. For **Report name**, enter the name of the report. This name will be the subject line of your budget report email.

You can change your report name at any time.

5. Select the number of budgets to include in your report.

You can filter by **Budget name** at the top of the table to simplify your selection. Selecting **Budget name** sends you to the budget details page. The table also shows **Budget type**, **Filters**, **Budgeted amount**, and **Budget progress**.

Note

You can select up to 50 budgets. If you select more, you can't proceed to the next step until you've changed your selection to 50 or less.

6. Choose **Configure delivery settings**.
7. Choose a **Report frequency**.
 - **Daily**
 - **Weekly**: Specify the day of the week.
 - **Monthly**: Specify the day of the month. If you select the twenty-ninth through the thirty-first and the next month doesn't have that day, your report is delivered on the final day of the month.

Note

Reports are delivered at approximately 0:00 UTC on the specified day.

8. Enter **Email recipient(s)**.

Add multiple email addresses separated by commas. You can have up to 50 email recipients for each budget report.

9. Select **Confirm budget Report**.
10. Choose **Create**.

Your report appears on the AWS Budgets Reports dashboard. You can filter your reports by **Report name** at the top of the table. The dashboard also shows **Frequency**, number of **Budget(s) monitored**, and the **Recipients** of each report.

Editing an AWS Budgets Report

You can use this procedure to edit an AWS Budgets report.

To edit an AWS Budgets report

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Budget Reports**.
3. Select either the **Report name** or ... on the right of each row.
4. Choose **Edit**.

5. Change any parameter that you want to edit.
6. Choose **Configure delivery settings**.
7. Choose **Confirm budget report**.

Copying an AWS Budgets Report

Use the following procedure to copy an AWS Budgets report.

To copy an AWS Budgets report

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Budget Reports**.
3. Select either the **Report name** or ... on the right of each row.
4. Choose **Copy**.
5. Change the report name.
6. (Optional) Change any parameter that you want to edit.
7. Choose **Configure delivery settings**.
8. Choose **Confirm budget report**.

Deleting an AWS Budgets Report

Use the following procedure to delete an AWS Budgets report.

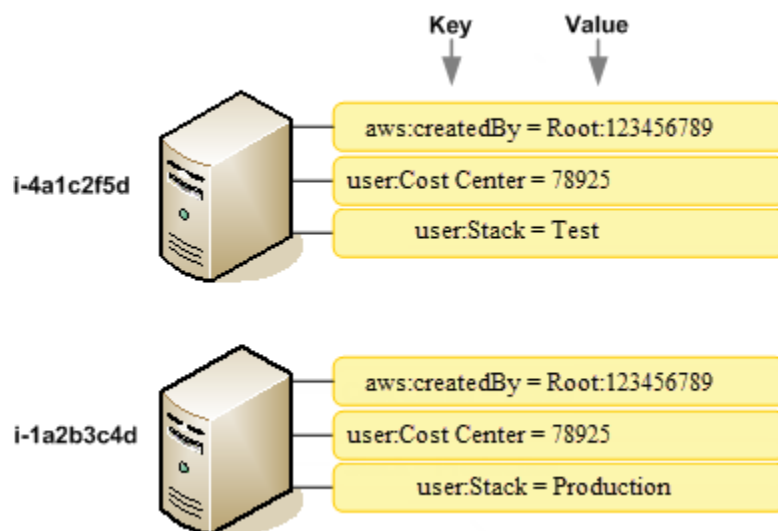
To delete an AWS Budgets report

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Budget Reports**.
3. Select either the **Report name** or ... located on the right of each row.
4. Choose **Delete**.

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 tags* and *user-defined tags*. AWS defines, creates, and applies the AWS generated tags 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 tags, `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.

Total Cost ▾	user:Owner ▾	user:Stack ▾	user:Cost Center ▾	user:Application ▾
0.95	DbAdmin	Test	80432	Widget2
0.01	DbAdmin	Test	80432	Widget2
3.84	DbAdmin	Prod	80432	Widget2
6.00	DbAdmin	Test	78925	Widget1
234.63	SysEng	Prod	78925	Widget1
0.73	DbAdmin	Test	78925	Widget1
0.00	DbAdmin	Prod	80432	Portal
2.47	DbAdmin	Prod	78925	Portal

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. 78).

For more information about activating the AWS generated tags, see [Activating the AWS-Generated Cost Allocation Tags](#) (p. 136). For more information about applying and activating user-defined tags, see [User-Defined Cost Allocation Tags](#) (p. 137). All tags can take up to 24 hours to appear in the Billing and Cost Management console.

Note

- As a best practice, do not include sensitive information in tags.

- You can't delete or merge tags. Instead, deactivate tags so that they aren't used in your billing reports.
- 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.

Topics

- [AWS-Generated Cost Allocation Tags \(p. 134\)](#)
- [User-Defined Cost Allocation Tags \(p. 137\)](#)
- [Monthly Cost Allocation Report \(p. 139\)](#)

AWS-Generated Cost Allocation Tags

The AWS generated tags `createdBy` is a tag that AWS defines and applies to supported AWS resources for cost allocation purposes. To use the AWS generated tags, 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 tags was activated. The AWS generated tags 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:

```
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 doesn't always have a user name.

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

If the tag has an account ID, 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:

```
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.

AWS Product	API or Console Event	Resource Type
AWS CloudFormation (AWS CloudFormation)	CreateStack	Stack
AWS Data Pipeline (AWS Data Pipeline)	CreatePipeline	Pipeline
Amazon Elastic Compute Cloud (Amazon EC2)	CreateCustomerGateway	Customer gateway
	CreateDhcpOptions	DHCP options
	CreateImage	Image
	CreateInternetGateway	Internet gateway
	CreateNetworkAcl	Network ACL
	CreateNetworkInterface	Network interface
	CreateRouteTable	Route table
	CreateSecurityGroup	Security group
	CreateSnapshot	Snapshot
	CreateSubnet	Subnet
	CreateVolume	Volume
	CreateVpc	VPC
	CreateVpcPeeringConnection	VPC peering connection
	CreateVpnConnection	VPN connection
	CreateVpnGateway	VPN gateway
	PurchaseReservedInstancesOptions	Reserved-instance
	RequestSpotInstances	Spot-instance-request
	RunInstances	Instance
Amazon ElastiCache (ElastiCache)	CreateSnapshot	Snapshot
	CreateCacheCluster	Cluster
AWS Elastic Beanstalk (Elastic Beanstalk)	CreateEnvironment	Environment
	CreateApplication	Application
Elastic Load Balancing (Elastic Load Balancing)	CreateLoadBalancer	Loadbalancer
Amazon S3 Glacier (Glacier)	CreateVault	Vault
Amazon Kinesis (Kinesis)	CreateStream	Stream

AWS Product	API or Console Event	Resource Type
Amazon Relational Database Service (Amazon RDS)	CreateDBInstanceReadReplica	Database
	CreateDBParameterGroup	ParameterGroup
	CreateDBSnapshot	Snapshot
	CreateDBSubnetGroup	SubnetGroup
	CreateEventSubscription	EventSubscription
	CreateOptionGroup	OptionGroup
	PurchaseReservedDBInstances	ReservedDBInstance
	CreateDBInstance	Database
Amazon Redshift (Amazon Redshift)	CreateClusterParameterGroup	ParameterGroup
	CreateClusterSnapshot	Snapshot
	CreateClusterSubnetGroup	SubnetGroup
	CreateCluster	Cluster
Amazon Route 53 (Route 53)	CreateHealthCheck	HealthCheck
	CreatedHostedZone	HostedZone
Amazon Simple Storage Service (Amazon S3)	CreateBucket	Bucket
AWS Storage Gateway (AWS Storage Gateway)	ActivateGateway	Gateway

Note

The `CreateDBSnapshot` tag isn't applied to the snapshot backup storage.

Activating the AWS-Generated Cost Allocation Tags

Master account owners can activate the AWS generated tags in the Billing and Cost Management console. When a master account owner activates the tag, it's 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 tags

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

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Cost Allocation Tags**.
3. Under **AWS-Generated Cost Allocation Tags**, choose **Activate**.

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

Deactivating the AWS-Generated Cost Allocation Tags

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

To deactivate the AWS generated tags

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Cost Allocation Tags**.
3. Under **AWS-Generated Cost Allocation Tags**, choose **Deactivate**.

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

Restrictions on AWS-Generated Cost Allocation Tags

The following restrictions apply to the AWS generated tags:

- Only master accounts can activate AWS generated tags.
- You can't update, edit, or delete AWS generated tags.
- AWS-generated cost allocation tags aren't applied to resources that were created before the tag was activated.
- The maximum active tag keys for Billing and Cost Management reports is 500.
- AWS generated tags are created using CloudTrail logs. CloudTrail logs over a certain size cause AWS generated tag creation to fail.
- The reserved prefix is `aws :`.

AWS generated tag names and values are automatically assigned the `aws :` prefix, which you can't assign. AWS generated tag names don't count towards the user-defined resource 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

- As a best practice, do not include sensitive information in tags.
- Only master accounts in an organization and single accounts that aren't members of an organization have access to the **Cost Allocation Tags** manager in the Billing and Cost Management 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 the [AWS Resource Groups User Guide](#).

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. For a full list of services that support tags, see [Supported Resources for Tag-based Groups](#) and [Resource Groups Tagging API Reference](#).

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 \(p. 138\)](#)

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

For tags to appear on your billing reports, you must activate your applied tags in the Billing and Cost Management console.

To activate your tags

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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 \(p. 141\)](#).

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 \(p. 137\)](#).

To refresh your cost allocation tags

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

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Cost Allocation Tags**.

3. Under **Cost allocation tags**, choose **Refresh**.

After AWS refreshes your tags, you can use the new tag in your AWS Cost and Usage report or cost allocation report. AWS doesn't apply tags to resources, spend, or usage that happened before AWS applied the tag. For more information, see [AWS Cost and Usage Report \(p. 19\)](#).

User-Defined Tag Restrictions

For basic tag restrictions, see [Tag Restrictions](#) in the Amazon EC2 User Guide.

The following restrictions apply to user-defined tags for Cost Allocation:

- The maximum active tag keys for Billing and Cost Management reports is 500.
- The reserved prefix is `aws:`.

AWS generated tag names and values are automatically assigned the `aws:` prefix, which you can't 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.
- In some services, you can tag a resource when you create it. For more information, see the documentation for the service where you want to tag resources.
- You can't backdate the application of a tag. This means that tags only start appearing on your cost allocation report after you apply them and don't appear on earlier reports.
- If you need characters outside of those listed in [Tag Restrictions](#), 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 linked account user. The report contains the same line items as the detailed billing report (see [Understanding Your Usage with Billing Reports \(p. 19\)](#)) and additional columns for your tag keys. For more information, see the following topics.

Topics

- [Setting Up a Monthly Cost Allocation Report \(p. 139\)](#)
- [Getting an Hourly Cost Allocation Report \(p. 141\)](#)
- [Viewing a Cost Allocation Report \(p. 141\)](#)

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 \(p. 141\)](#).

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

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. Under **Preferences** in the navigation pane, choose **Billing Preferences**
3. For **Detailed Billing Reports [Legacy]**, select the check box **Turn on the legacy Detailed Billing Reports feature to receive ongoing reports of your AWS charges.**
4. For **Save to S3 Bucket**, enter a valid Amazon S3 bucket name and choose **Verify**.
5. In the **Report** list, select the check box for **Cost allocation report**.
6. Choose **Manage report tags**, as shown in the following screenshot.

The page displays a list of tags that 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, and the check boxes for excluded tag keys are cleared.

7. For **Filter**, choose **Inactive tags** in the dropdown list and select the tags that you want to activate for your report.

User-Defined Cost Allocation Tags

✓ Finished loading tags.

Activating tags for cost allocation tells AWS that the associated cost data for these tags should be made available throughout the billing pipeline. Once activated, tags can be used as a dimension of grouping and filtering in Cost Explorer, as well as for refining AWS budget criteria.

ActivateDeactivateUndo

Filter: **Inactive tags** ▼

Tags per page

<input type="checkbox"/>	Tag key
<input type="checkbox"/>	aws:cloudformation:stack-id
<input type="checkbox"/>	aws:cloudformation:logical-id
<input type="checkbox"/>	aws:cloudformation:stack-name
<input type="checkbox"/>	Directory Service Alias
<input type="checkbox"/>	Name
<input type="checkbox"/>	elasticbeanstalk:environment-id

«< Viewing 1 to 14 of 14 tags >»

8. 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".

Total Cost	user:Owner	user:Stack	user:Cost Center	user:Application
0.95	DbAdmin	Test	80432	Widget2
0.01	DbAdmin	Test	80432	Widget2
3.84	DbAdmin	Prod	80432	Widget2
6.00	DbAdmin	Test	78925	Widget1
234.63	SysEng	Prod	78925	Widget1
0.73	DbAdmin	Test	78925	Widget1
0.00	DbAdmin	Prod	80432	Portal
2.47	DbAdmin	Prod	78925	Portal

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.

COST CENTER	Usage	Before Tax
78925	62369611	\$1,008.23
Widget1	2256	\$240.63
AmazonEC2	300	\$6.00
\$0.02 per Micro Instance (t1.micro) instance-hour (or partial hour)	300	\$6.00
AWSDataTransfer	1956	\$234.63
\$0.000 per GB - first 1 GB of data transferred out per month	1956	\$234.63
Widget2	36337396	\$690.97
AmazonEC2	72160	\$10.87
\$0.020 per Micro Instance (t1.micro) instance-hour (or partial hour)	543	\$10.86
\$0.10 per 1 million I/O requests	71617	\$0.01
\$0.10 per GB-month of provisioned storage	0	\$0.01
AmazonRDS	36146062	\$679.97
\$0.10 per 1 million I/O requests	36140859	\$3.61
\$0.20 per GB-month of provisioned storage for Multi-AZ deployments	1673	\$334.68

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

Note

If you add or change the tags on a resource partway through a billing period, costs are split into two separate lines in your cost allocation report. The first line shows costs before the update, and the second line shows 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 don't support tagging.
- Subscription-based charges, such as Premium Support and AWS Marketplace monthly fees, can't be allocated.
- One-time fees, such as Amazon EC2 Reserved Instance upfront charges, can't 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 \(p. 152\)](#).

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 \(p. 142\)](#)
- [Using the Bulk API \(p. 143\)](#)
- [Setting Up Notifications \(p. 150\)](#)

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 that AWS provides an SDK for, we recommend that you use the SDK. All of 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 \(p. 193\)](#).

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 \(p. 144\)](#).

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 \(p. 144\)](#).

Offer files don't 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 \(p. 144\)](#)
- [Downloading an Offer File \(p. 144\)](#)
- [Finding Prices in an Offer File \(p. 144\)](#)
- [Reading an Offer File \(p. 145\)](#)
- [Reading the Offer Index File \(p. 149\)](#)

To receive SNS notifications when prices change, see [Setting Up Notifications \(p. 150\)](#).

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 \(p. 149\)](#).

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
```

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 don't 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 \(p. 144\)](#) and [Reading an Offer File \(p. 145\)](#).

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.
3. Select all cells in the Excel spreadsheet.
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 \(p. 145\)](#)
- [JSON File \(p. 145\)](#)
- [Offer File Definitions \(p. 146\)](#)

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:

```
{
  "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": {
            "offerTermCode": "The 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",
            },
            "priceDimensions": {
              "rateCode": {
                "rateCode": "The rate code of the price",
                "description": "The description of the term",
                "unit": "The usage measurement unit for the price",
                "startingRange": "The start range for the term",
                "endingRange": "The end range for the term",
                "pricePerUnit": {
                  "currencyCode": "currencyRate",
                }
              }
            }
          }
        }
      }
    }
  }
}
```

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`.

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 `HCNSHWWAJSGVAHMH` is available only for a price that also lists `HCNSHWWAJSGVAHMH` 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 `HCNSHWWAJSGVAHMH` is available only for a price that also lists `HCNSHWWAJSGVAHMH` as a `SKU`.

Pricing Details:Term Type:SKU:Offer Term Code

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

Pricing Details:Term Type:SKU:Effective Date

The date that an offer file goes into effect. For example, if a term has an `EffectiveDate` 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 \(p. 149\)](#)
- [Offer Index Definitions \(p. 149\)](#)

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:

```
{
  "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/v3/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 Amazon 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. CloudTrail captures all of API calls for Billing and Cost Management as events, including calls from the Billing and Cost Management console and from code calls to the Billing and Cost Management APIs. If you create a trail, you can enable continuous delivery of CloudTrail events to an Amazon S3 bucket, including events for Billing and Cost Management. If you don't configure a trail, you can still view the most recent events in the CloudTrail console in **Event history**. 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](#).

Billing and Cost Management Information in CloudTrail

CloudTrail is enabled on your AWS account when you create the account. When supported event activity occurs in Billing and Cost Management, that activity is recorded in a CloudTrail event along with other AWS service events in **Event history**. You can view, search, and download recent events in your AWS account. For more information, see [Viewing Events with CloudTrail Event History](#).

For an ongoing record of events in your AWS account, including events for Billing and Cost Management, create a trail. A trail enables CloudTrail to deliver log files to an Amazon S3 bucket. By default, when you create a trail in the console, the trail applies to all regions. The trail logs events from all regions in the AWS partition and delivers the log files to the Amazon S3 bucket that you specify. Additionally, you can configure other AWS services to further analyze and act upon the event data collected in CloudTrail logs. For more information, see:

- [Overview for Creating a Trail](#)
- [CloudTrail Supported Services and Integrations](#)
- [Configuring Amazon SNS Notifications for CloudTrail](#)
- [Receiving CloudTrail Log Files from Multiple Regions](#) and [Receiving CloudTrail Log Files from Multiple Accounts](#)

Every event or log entry contains information about who generated the request. The identity information helps you determine the following:

- Whether the request was made with root or IAM user credentials.
- Whether the request was made with temporary security credentials for a role or federated user.
- Whether the request was made by another AWS service.

For more information, see the [CloudTrail `userIdentity` Element](#).

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 are not 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.

```
{
  "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",
  "secondaryPhone": "206-555-0101"
},
"responseElements": null,
"eventID": "5923c499-063e-44ac-80fb-b40example9f",
"readOnly": false,
"eventType": "AwsConsoleAction",
"recipientAccountId": "111122223333"
}
```

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 \(p. 152\)](#)
- [AWS Free Tier Expired \(p. 153\)](#)
- [Bill Received After Account Closure \(p. 153\)](#)
- [Disabled Regions \(p. 153\)](#)
- [Elastic Beanstalk Environments \(p. 153\)](#)
- [Elastic Load Balancing \(ELB\) \(p. 153\)](#)
- [Services Started in AWS OpsWorks \(p. 153\)](#)
- [Amazon EC2 Instances \(p. 153\)](#)
- [Amazon Elastic Block Store Volumes and Snapshots \(p. 154\)](#)
- [Elastic IP Addresses \(p. 155\)](#)
- [Services Launched by Other Services \(p. 155\)](#)
- [Storage Services \(p. 155\)](#)

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 aren't available for individual member accounts in an organization.

For more information about tracking your free tier usage, see [Tracking Your Free Tier Usage \(p. 12\)](#).

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.

Disabled Regions

If you disable a Region and you still have resources in that Region, you continue to incur charges for those resources. (There is no charge for enabling a Region, only charges for the resources that you create in a Region.) For more information, see [Enabling and Disabling Regions \(p. 158\)](#).

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.

lineItem/ResourceId	lineItem/UsageAmount	lineItem/UnblendedCost	product/usagetype	resourceTags/user:usage
arn:aws:ec2:us-east-1:123:snapshot/snap-A	10	0.50	EBS:SnapshotUsage	dev
arn:aws:ec2:us-east-1:123:snapshot/snap-B	4	0.20	EBS:SnapshotUsage	dev

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.

lineItem/ResourceId	lineItem/UsageAmount	lineItem/UnblendedCost	product/usagetype	resourceTags/user:usage
arn:aws:ec2:us-east-1:123:snapshot/snap-B	10	0.50	EBS:SnapshotUsage	dev

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 \(p. 156\)](#)
- [Managing an Account in India \(p. 159\)](#)
- [Closing an Account \(p. 163\)](#)

Managing an AWS Account

You can use the Billing and Cost Management console to change account settings, including your contact and alternate contact information, the currency that you pay your bills in, the Regions that you can create resources in, and your tax registration numbers.

Note

Some sections can only be edited by the AWS account root user. If you do not see the **Edit** option, switch to the root user.

Topics

- [Editing Your User Name, Password, and Email Address \(p. 156\)](#)
- [Editing Contact Information \(p. 157\)](#)
- [Changing Which Currency You Use to Pay Your Bill \(p. 157\)](#)
- [Adding, Changing, or Removing Alternate Contacts \(p. 157\)](#)
- [Enabling and Disabling Regions \(p. 158\)](#)
- [Updating and Deleting Tax Registration Numbers \(p. 159\)](#)

Editing Your User Name, Password, and Email Address

To edit your user name, password, or email address, perform the following procedure.

To edit your user name, password, or email address

You can change the name, password, and email address associated with your account.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
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 to update, choose **Edit**.

5. After you have entered your changes, choose **Save changes**.
6. After you have made all of your changes, choose **Done**.

Editing Contact Information

You can change the contact information associated with your account, including your mailing address, telephone number, and website address. To edit your contact information, perform the following procedure.

To edit your contact information

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation bar, choose your account name, and then choose **My Account**.
3. Under **Contact Information**, choose **Edit**.
4. For the fields to change, enter your updated information and then choose **Update**.

Note

You can 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 message that your monthly bill is ready.

Changing Which Currency You Use to Pay Your Bill

To change the currency that you use to pay your bill, for example, from Danish kroner to South African rand, perform the following procedure.

To change the local currency associated with your account

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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 to pay your bill in and then choose **Update**.

Adding, Changing, or Removing Alternate Contacts

Alternate contacts enable AWS to contact another person about issues with your account, even if you're unavailable. To add, change, or delete alternate contacts for your account, perform the following procedure.

To add, update, or remove alternate contacts

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation bar, choose your account name, and then choose **My Account**.
3. Scroll down to the **Alternate Contacts** section and choose **Edit**.
4. For the fields to change, enter your updated information and choose **Update**.

Enabling and Disabling Regions

AWS originally enabled all new Regions by default, which enabled your users to create resources in any Region. Now when AWS adds a Region, the new Region is disabled by default. If you want your users to be able to create resources in a new Region, you enable the Region.

Note the following about enabling and disabling Regions:

You can use IAM permissions to control access to Regions

IAM added three new permissions, which let you control which users can enable, disable, and list Regions. For more information, see [Billing Actions \(p. 184\)](#).

Enabling a Region is free

There is no charge to enable a Region. You're only charged for resources that you create in the new Region.

Disabling a Region disables access to resources in the Region

If you disable a Region that still includes AWS resources, such as Amazon EC2 instances, you can't access the resources in that Region. For example, you can't use the AWS Management Console or any programmatic method to view or change the configuration of any EC2 instances in that Region.

Charges continue if you disable a Region

If you disable a Region that still includes AWS resources, charges for those resources (if any) continue to accrue at the standard rate. For example, if you disable a Region that contains Amazon EC2 instances, you still have to pay the charges for those instances even though the instances are inaccessible.

Disabling a Region isn't always immediately visible

If you disable a Region, the change takes time to become visible in all possible endpoints. Disabling a Region can take between a few seconds to minutes to take effect.

Existing Regions are enabled by default

The original Regions (the Regions that existed before we added the ability to enable and disable Regions) are all enabled by default and can't be disabled.

Enabling a Region takes a few minutes for most accounts

Enabling a Region generally takes effect in a few minutes, although it can take longer for some accounts. If enabling a Region takes longer than nine hours, sign in to the AWS Support Center and open a case with AWS Support.

Perform the applicable procedure:

- [Enable a Region \(p. 158\)](#)
- [Disable a region \(p. 159\)](#)

To enable a Region

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. On the navigation bar, choose your account name, and then choose **My Account**.
3. Under **AWS Regions**, next to the Region to enable, choose **Enable**.

Older Regions are enabled by default.

4. In the dialog box, choose **Enable region**.

For more information about enabling a Region, including the permissions required, see [Managing AWS Regions](#).

To disable a Region

You can disable some Regions on your **My Account** page.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. On the navigation bar, choose your account name, and then choose **My Account**.
3. Under **AWS Regions**, next to the Region to disable, choose **Disable**.

Not all Regions can be disabled.

4. In the dialog box, for **To confirm disabling in this region**, enter **disable** and choose **Disable region**.

Updating and Deleting Tax Registration Numbers

To update or delete one or more tax registration numbers, perform the applicable procedure:

- [Update tax registration numbers \(p. 159\)](#)
- [Delete tax registration numbers \(p. 159\)](#)

To update tax registration numbers

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. In the navigation pane, choose **Tax Settings**.
3. Under **Manage Tax Registration Numbers**, select the numbers to edit.
4. For **Manage Tax Registration**, choose **Edit**.
5. Update the fields to change and choose **Update**.

To delete tax registration numbers

You can remove one or more tax registration numbers.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. In the navigation pane, choose **Tax Settings**.
3. Under **Manage Tax Registration Numbers**, select the tax registration numbers 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 \(p. 160\)](#). 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 \(p. 156\)](#).

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 \(p. 160\)](#)
- [Signing Up for AISPL \(p. 160\)](#)
- [Managing Your AISPL Account \(p. 161\)](#)

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

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

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

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

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
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.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
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.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
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.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
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.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. On the navigation pane, choose **Bills**.
3. Under **Other Details**, for **Tax Invoices**, choose **View Invoices**.

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.

Topics

- [Before You Close Your AWS Account \(p. 163\)](#)
- [Closing Your AWS Account \(p. 163\)](#)
- [Accessing Your AWS Account after Closure \(p. 164\)](#)
- [After the Post-Closure Period \(p. 164\)](#)
- [Your Payment Method \(p. 164\)](#)
- [Your Agreement with AWS \(p. 164\)](#)
- [AWS Account Closure FAQ \(p. 164\)](#)

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

We recommend that member accounts that you create with AWS Organizations leave the organization before you close them. Otherwise, the closed account counts toward the limit on the number of accounts that the organization can have. By default, member accounts that you create with AWS Organizations don't have a password associated with the account's root user. To close a member account, the member account must leave the organization and request a password change. For more information, see [Closing an AWS Account](#) in the *AWS Organizations User Guide*.

2. Open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
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, AWS may retain any content that you didn't delete and any AWS services that you didn't terminate before you closed your AWS account. 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 account name or 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 incurred 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? \(p. 165\)](#)

- [Q: What happens when I close my AWS account? \(p. 165\)](#)
- [Q: What could I be charged if I reopen my AWS account? \(p. 165\)](#)
- [Q: Does closing a member account remove it from my organization? \(p. 165\)](#)
- [Q: Are you retaining my content after I close my account? \(p. 166\)](#)
- [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? \(p. 166\)](#)

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 payment method on file. Use the procedures in this chapter to add, update, or remove payment methods and to make payments.

Topics

- [Managing Your AWS Payments](#) (p. 167)
- [Managing Your Payments in India](#) (p. 172)
- [Managing Your Payments in the EU](#) (p. 176)

Managing Your AWS Payments

You can use the [Payment Methods](#) page of the Billing and Cost Management console to manage your AWS payments and payment methods.

Topics

- [Managing Your AWS Payment Methods](#) (p. 167)
- [Managing Your Credit Card Payment Methods](#) (p. 168)
- [Managing Your ACH Direct Debit Payment Methods](#) (p. 171)

Managing Your AWS Payment Methods

You can use the [Payment Methods](#) page of the Billing and Cost Management console to perform the following tasks for all payment types:

- [View payment methods associated with your account](#)
- [Designate a default payment method](#)
- [Make a payment](#)
- [Remove a payment method from your AWS account](#)

In addition, you can use the [Payment Methods](#) page of the Billing and Cost Management console to manage your credit cards and direct debit accounts. For more information, see [Managing Your Credit Card Payment Methods](#) (p. 168) and [Managing Your ACH Direct Debit Payment Methods](#) (p. 171).

To view payment methods associated with your AWS account

You can use the console to view the payment methods associated with your account.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose [Payment Methods](#).

To designate a default payment method

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose [Payment Methods](#).

3. Next to the payment method that you want to use as your default payment method, choose **Make Default**.

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 payment method and make a payment.

Note

If you pay by ACH direct debit, AWS provides you with your invoice and initiates the charge to your payment method within 10 days of the start of the month. It can take 3–5 days for your payment to succeed. For more information, see [Managing Your ACH Direct Debit Payment Methods](#) (p. 171).

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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. If you are using a credit card, confirm that your card hasn't expired.
5. Choose **Make a Payment**. You're redirected to the **Orders and invoices** page.
6. If your account isn't past due, the **Orders and invoices** page shows only your previous invoices in the **Order and invoice history** section. 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 **Verify and pay** for the invoice that is overdue in the **Payments Due** section.

If you pay by ACH direct debit and you receive an email from AWS saying that AWS is unable to charge your bank account and will attempt to charge your account again, work with your bank to understand what went wrong. If you receive an email saying that AWS failed the last attempt to charge your bank account, use the **Verify and pay** button on the console to pay your invoice. If you have questions about issues with charging your bank account or paying an overdue balance, create a case in the [Support Center](#).

If you pay by electronic funds transfer and your account payment is overdue, create a case in the [Support Center](#).

To remove a payment method from your AWS account

You can use the console to remove a payment method from your account.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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** or **Delete your bank account** dialog box, choose **Delete**.

Managing Your Credit Card Payment Methods

You can use the [Payment Methods](#) page of the Billing and Cost Management console to perform the following credit card tasks:

- [Add A Credit Card](#) (p. 169)

- [Update Your Credit Card](#) (p. 169)
- [Confirm Credit Card Information](#) (p. 169)
- [Use a Chinese Yuan Credit Card](#) (p. 169)

Add A Credit Card

You can use the console to add a credit card to your account.

To add a credit card to your AWS account

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose [Payment Methods](#).
3. Choose **Add a card**.
4. For the credit card fields, enter the information and then choose **Continue**.
5. For the credit card information fields, enter your card billing address.
6. Choose **Continue**.

Update Your Credit Card

You can update the name, address, or phone number associated with your credit card.

To update your credit card

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

Confirm Credit Card Information

You must have a valid, unexpired credit card on file to make a payment.

To confirm that your credit card is up to date

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

Use a Chinese Yuan Credit Card

If you have an account with AWS Inc., are charged in USD, and are based in China, you can use the following sections to add a Chinese yuan credit card to your account.

You can use the **Payment Methods** page of the Billing and Cost Management console to perform the following tasks:

- the section called “Set Up a Chinese Yuan Credit Card” (p. 170)
- the section called “Switch from a Chinese Yuan Credit Card to an International Credit Card” (p. 170)
- the section called “Add a New Chinese Yuan Credit Card” (p. 171)

Set Up a Chinese Yuan Credit Card

To change your preferred currency to CNY and add a credit card, you must have the following information:

- National ID number
- Business license number (if applicable)
- Business license image (if applicable)

After you have the required information, you can use the following procedure to change your preferred currency and add your first Chinese credit card.

To add your first Chinese credit card

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#>.
2. In the navigation pane, choose **Payment Methods**.
3. Choose **Pay with Chinese yuan**.
4. In the **Setting up Chinese yuan payment** dialog box, read the **Terms and Conditions for Chinese yuan payments**, select **I've already read and agree to the above terms and conditions**, and choose **Next**.
5. For **Verify customer identity**, provide the following information:
 - **National ID name**
 - **Contact number**
 - (Business only) **Company Name**
 - **National ID number**
 - (Business only) **Business License number**
 - (Business only) **Business License image**

After you have provided the required information, choose **Next**.

6. For **Add a China Union Pay credit card**, for the credit card fields, enter the information about the card and bank.
7. Choose **Get Code**, enter the provided code and choose **Next**.
8. Review your information, select **I have confirmed that the provided information is accurate and valid** and choose **Submit**.

It can take up to one business day to verify your customer information. AWS emails you after your information is fully verified.

Switch from a Chinese Yuan Credit Card to an International Credit Card

To switch from a Chinese Yuan credit card to an international credit card, you must change your preferred currency. You can use the following procedure to change your default payment method and preferred currency at the same time.

To change your default payment methods and currency

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#>.
2. In the navigation pane, choose **Payment Methods**.
3. Next to the international credit card that you want to use as your default payment method, choose **Make Default**.
4. In the dialog box, for **Select payment currency**, choose the currency that you want to use and choose **Yes, I want to proceed**.

Add a New Chinese Yuan Credit Card

Use the following procedure to add additional Chinese Yuan credit cards.

To add additional Chinese credit cards

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#>.
2. In the navigation pane, choose **Payment Methods**.
3. Choose **Add a Chinese yuan credit card**.
4. For the credit card fields, enter the information about the card and bank.
5. Choose **Get Code**, enter the provided code, and choose **Continue**.

Managing Your ACH Direct Debit Payment Methods

If you meet the eligibility requirements, you can add a US bank account as an ACH direct debit payment method to your payment methods. To meet these requirements, your account must:

- Be an Amazon Web Services, Inc. customer
- Be at least 60 days old
- Have paid at least one invoice in full in the previous 12 months
- Have paid at least \$100 cumulative over the previous 12 months
- Use USD as the preferred currency

If you pay by ACH direct debit, AWS provides you with your invoice and initiates the charge to your payment method within 10 days of the start of the month.. It can take up to 20 days for the payment to complete successfully, even if the payment shows as **Succeeded** in the Billing and Cost Management console.

You can use the [Payment Methods](#) page of the Billing and Cost Management console to perform the following ACH direct debit tasks:

- [Add a direct debit account to your AWS payment methods](#)
- [Update your linked debit account](#)

To add a direct debit account to your AWS payment methods

You can use the Billing and Cost Management console to add a direct debit account to your AWS payment methods. You can use any personal or business bank account, provided that the account is located at a branch in the US.

To add an ACH direct debit account, you must have the following information ready:

- US bank account number
- US bank account routing number
- The address that the bank associates with the account
- (For a personal bank account) US driver's license number or state-issued ID number
- (For a business bank account) Federal tax ID number

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. In the navigation pane, choose [Payment Methods](#).
3. Choose **Add a bank account**.
4. For **Account Holder Name**, enter the name of the principal account holder.
5. For **Bank Routing Number**, enter the nine-digit routing number.

Routing numbers are always nine digits long. Some banks list the routing number first on a check, and other banks list the account number first.

6. For **Bank Account Number**, enter the account number. Account numbers might have up to 17 digits. The account must be an ACH-enabled checking account at a bank located in the US.
7. For **Bank Account Type**, select **Personal** or **Business**.
8. (Personal) For **Driver's License Number**, enter the primary account holder's valid US driver's license or state-issued ID number.

For **State**, enter the name of the state where the ID was issued.

9. (Business) For **Federal tax ID**, enter the Federal tax ID for the business.
10. For **Make Default**, select whether you want this direct debit account to be your default payment method.
11. For **Billing Address Information**, enter the billing address of the primary account holder.
12. Choose **Create** to agree to the **Terms and Conditions** and add your direct debit account.

To update your direct debit account

You can update the name, address, or phone number associated with your direct debit account.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. In the navigation pane, choose **Payment Methods**.
3. Next to the direct debit account that you want to edit, choose **Edit**.
4. Update the fields that you want to change.
5. At the bottom of the dialog box, choose **Update**.

If you have questions about payment methods, see [Contacting Customer Support About Your Bill](#) (p. 209).

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. 160).

Note

If you have questions about payment methods, see [Contacting Customer Support About Your Bill](#) (p. 209).

- [Supported Payment Methods](#) (p. 173)
- [View Your Credit Cards](#) (p. 173)
- [Add a Credit Card](#) (p. 173)
- [Add a Net Banking Account](#) (p. 174)
- [Make a Payment Using a Credit Card](#) (p. 174)
- [Make a Payment Using Net Banking](#) (p. 174)
- [Enable Recurring Payments](#) (p. 175)
- [Remove a Payment Method](#) (p. 175)
- [Disable Recurring Payments](#) (p. 175)
- [Activate Your Subscription](#) (p. 176)

Supported Payment Methods

AWS supports Visa, Mastercard, and AMEX credit cards for AISPL accounts.

For bank details supporting recurring payments, see [Enable Recurring Payments](#) (p. 175).

View Your Credit Cards

You can use the console to view the credit cards associated with your account.

To view credit cards associated with your AISPL account

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. In the navigation pane, choose **Payment Methods**.

Add a Credit Card

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.

If you use Visa or Mastercard, you might be redirected to your bank to authorize the verification charge.

To add a credit card to your AISPL account

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
2. In the navigation pane, choose **Payment Methods**.
3. Choose **Add a card**.
4. For the credit card fields, enter the information, including the card verification value (CVV), and then choose **Continue**.
5. For the credit card information fields, enter your card billing address.

6. (Optional) Select **Make Default**.
7. Choose **Continue**.
8. (If you chose **Make Default**) In the dialog box, choose **Ok**.

Add a Net Banking Account

You can use the console to add internet banking (Net Banking) accounts as your payment method. This payment option is available to AISPL customers who have successfully paid invoices worth over 100 USD in the past year.

To add a Net Banking account to your AISPL account

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Payment Methods**.
3. Choose **Add an account**.
4. Under **Net Banking information**, select your bank name,
5. In the **Billing Address Information** section, enter your name, billing address, and phone number.
6. Choose **Create**.

Make a Payment Using a Credit Card

You can use the console to pay your AISPL bills.

Note

If your bill is less than 10,000 rupees and you have recurring payments set up, AISPL charges your account two days after you're billed.

To pay your AISPL bill

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Orders and invoices**.
3. Next to the invoice that you want to pay, choose **Verify and pay**. You're 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, enter the three-digit or four-digit security code of your payment method and then choose **Make Payment**.
6. In the dialog box, choose **Ok**.
7. For Visa and Mastercard payment methods, you're redirected to your bank to verify your payment. For American Express payment methods, your bank processes your payment with no action required from you. After your payment is verified, you're redirected to your account page. Your invoice shows the **Verify and pay** link until your bank processes your payment.

Make a Payment Using Net Banking

You can use the console to pay your AISPL bills using Net Banking.

Note

Due to the current AISPL regulations, you're redirected to your bank to authorize the charge with each AWS payment. You can't use Net Banking for automatic payments.

To pay your AISPL bill

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Orders and invoices**.
3. Next to the invoice that you want to pay, choose **Verify and pay**. You're redirected to your payment methods.
4. On the **Payment Methods** page, select your Net Banking account.
5. Choose **Make Payment**.
6. You're redirected to your bank's website to verify your payment. Log in and follow the prompts to approve the payment.
7. After your payment is verified, you're redirected to your account page, which shows a success message at the top.

Enable Recurring Payments

You can use the console to enable recurring payments for your account.

HDFC, SBI, and Axis Bank don't support recurring payments or auto-charge on their debit cards. However, customers can still use these debit cards to make manual payments.

To enable recurring payments for your AISPL account

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Payment Methods**.
3. Above your credit cards, select the **Recurring payments for default payments enabled** check box.

Remove a Payment Method

You can use the console to remove a credit card from your account.

To remove a credit card from your AISPL account

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

Disable Recurring Payments

To disable recurring payments for your AISPL account

You can use the console to disable recurring payments for your account.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Payment Methods**.
3. Above your credit cards, clear the **Recurring payments for default payments enabled** check box.
4. In the **Are you sure?** dialog box, choose **Yes**.

Activate Your Subscription

To activate your subscription

You can use the console to activate your subscription.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Orders and invoices**.
3. Next to the invoice for your subscription, choose **Verify and pay**. You're 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, enter 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're redirected to your bank to verify your payment. For American Express payment methods, your bank processes your payment with no action required from you. Once your payment is verified, your subscription is activated, and you're redirected to your account page. Your invoice shows the **Verify and pay** link until your bank has processed your payment.

Managing Your Payments in the EU

If your account is with AWS Europe, follow the procedures in this section to manage your payment methods and payments.

Topics

- [Managing Your AWS Europe Payment Methods \(p. 176\)](#)
- [Managing Your AWS Europe Credit Card Payment Methods \(p. 178\)](#)
- [Managing Your AWS Europe Credit Card Payment Verifications \(p. 178\)](#)
- [Managing Your SEPA Direct Debit Payment Methods \(p. 180\)](#)

Managing Your AWS Europe Payment Methods

You can use the [Payment Methods](#) page of the Billing and Cost Management console to perform the following tasks for all payment types:

- [View payment methods associated with your account](#)
- [Designate a default payment method](#)
- [Make a payment](#)
- [Remove a payment method from your AWS Europe account](#)

In addition, you can use the [Payment Methods](#) page of the Billing and Cost Management console to manage your credit cards and direct debit accounts. For more information, see [Managing Your Credit Card Payment Methods \(p. 168\)](#) and [Managing Your SEPA Direct Debit Payment Methods \(p. 180\)](#).

To view payment methods associated with your AWS account

You can use the console to view the payment methods associated with your account.

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

2. In the navigation pane, choose [Payment Methods](#).

To designate a default payment method

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose [Payment Methods](#).
3. Next to the payment method that you want to use as your default payment method, choose **Make Default**.

To make a payment

AWS Europe 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 payment method and make a payment.

Note

If you pay by SEPA direct debit, AWS provides you with your invoice and initiates the charge to your payment method either the following day or the invoice due date, whichever is latest. It can take up to 5 business days for your payment to succeed. For more information, see [Managing Your SEPA Direct Debit Payment Methods \(p. 180\)](#).

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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. If you're using a credit card, confirm that your card hasn't expired.
5. Choose **Make a Payment**. You're redirected to the **Orders and invoices** page.
6. If your account isn't past due, the **Orders and invoices** page shows only your previous invoices in the **Orders and invoice history** section. 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 **Verify and pay** for the invoice that is overdue in the **Payments Due** section.

If you pay by SEPA direct debit and you receive an email from AWS Europe saying that AWS Europe can't charge your bank account and will attempt to charge your account again, work with your bank to understand what went wrong. If you receive an email saying that AWS Europe failed the last attempt to charge your bank account, use the **Verify and pay** button on the console to pay your invoice. If you have questions about issues with charging your bank account or paying an overdue balance, create a case in the [Support Center](#).

If you pay by electronic funds transfer and your account payment is overdue, create a case in the [Support Center](#).

To remove a payment method from your AWS Europe account

You can use the console to remove a payment method from your account.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
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** or **Delete your bank account** dialog box, choose **Delete**.

Managing Your AWS Europe Credit Card Payment Methods

You can use the [Payment Methods](#) page of the Billing and Cost Management console to perform the following credit card tasks:

- [Add a credit card to your AWS Europe account](#)
- [Update your credit card](#)
- [Confirm that your credit card is up to date](#)

To add a credit card to your AWS Europe account

You can use the console to add a credit card to your account.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose [Payment Methods](#).
3. Choose **Add a card**.
4. For the credit card fields, enter the information and then choose **Continue**.
5. For the credit card information fields, enter your card billing address.
6. Choose **Continue**.

To update your credit card

You can update the name, address, or phone number associated with your credit card.

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

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

Managing Your AWS Europe Credit Card Payment Verifications

To comply with the recent EU regulation, your bank might ask you for verification whenever you use a credit card to pay AWS online, add or update a credit card, or register a new AWS account. Banks typically verify by sending unique security codes to credit card holders before online purchases are completed. If

your bank needs to verify your payment, you will receive an email from AWS. After verification, you're redirected to the AWS website.

If you prefer not to verify payments, register a bank account as your payment method. For more information about direct debit payment eligibility, see [the section called "Managing Your SEPA Direct Debit Payment Methods"](#).

To learn more about the EU regulation, see the [European Commission's website](#).

- [the section called "Best Practices for Verification"](#)
- [the section called "Payment Verification"](#)
- [the section called "Troubleshooting Payment Verification"](#)
- [the section called "AWS Organizations"](#)
- [the section called "Subscription Purchases"](#)

Best Practices for Verification

- Confirm that your credit card information is up to date. Banks send verification codes only to the registered card owner.
- Enter the newest code. If you close the authentication portal or request a new code, you might experience a delay in receiving your newest code.
- Enter the code as prompted. Don't enter the phone number that the code is sent from.

Payment Verification

You can use the Billing and Cost Management console to confirm that your payment requires verification or to reattempt any failed payments.

To verify your payment

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Orders and invoices**.
3. Under **Payments due**, locate the invoice that you want to pay and choose **Verify and pay**.
4. On the choose [Payment Methods](#) page, select the preferred payment method.
5. Choose **Complete payment**.
6. If your payment requires verification, you're redirected to your bank's website. To complete verification, follow the provided prompts.

After your bank has processed our payment, you're redirected to the **Orders and invoices** page.

Note

Your invoice appears with the status of **Payment processing** until your bank completes the payment process.

Troubleshooting Payment Verification

If you can't successfully complete your verification, we recommend that you take any of the following actions:

- Contact your bank to confirm that your contact information is up to date
- Contact your bank for details about why your verification has failed

- Clear your cache and cookies or use a different browser
- Navigate to the [Payment Methods](#) page of the Billing and Cost Management console and update your billing contact information

AWS Organizations

If you're a member account in AWS Organizations, your purchased services that require upfront payments might not activate until the master account user verifies the payment. If verification is required, AWS notifies the billing contact of the master account by email.

Establish a communication process between your master and member accounts. To change your payment method, see [the section called "Managing Your AWS Europe Credit Card Payment Methods"](#).

Subscription Purchases

If you purchase multiple subscriptions at a time (or in bulk) and your bank requests verification, the bank might ask you to verify each individual purchase.

Subscriptions can include immediate purchases such as Reserved Instances, Business support plan, and Route 53 domains. Subscriptions don't include AWS Marketplace charges.

Be sure to complete validation for all purchases or register a bank account as your payment method. For more information about eligibility for direct debit payment, see [the section called "Managing Your SEPA Direct Debit Payment Methods"](#).

Managing Your SEPA Direct Debit Payment Methods

If you meet the eligibility requirements, you can add an EU bank account as a SEPA direct debit payment method to your payment methods. To meet these requirements, your account must:

- Be an AWS Europe customer
- Have accepted SEPA terms and conditions
- Have paid at least one invoice in full in the previous 12 months
- Have paid at least \$100 cumulative over the previous 12 months
- Use euro as the preferred currency

If you pay by SEPA direct debit, AWS provides you with your invoice and initiates the charge to your payment method either the following day or the invoice due date, whichever is latest. It can take up to 5 business days for the payment to complete successfully, even if the payment shows as **Succeeded** in the Billing and Cost Management console.

You can use the [Payment Methods](#) page of the Billing and Cost Management console to perform the following SEPA direct debit tasks:

- [Add a direct debit account to your AWS Europe payment methods](#)
- [Update your linked debit account](#)

To add a direct debit account to your AWS Europe payment methods

You can use the Billing and Cost Management console to add a direct debit account to your AWS Europe payment methods. You can use any personal or business bank account, provided that the account is located at a branch in a SEPA-supported country.

To add a SEPA direct debit account, you must have the following information ready:

- Bank Identifier Code (BIC)
 - International Bank Account Number (IBAN)
 - The address that the bank associates with the account
1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
 2. In the navigation pane, choose [Payment Methods](#).
 3. Choose **Add a bank account**.
 4. For **Account Holder Name**, enter the name of the principal account holder.
 5. For **BIC (Swift Code)**, enter the 8- or 11-digit number.

Routing numbers are always either 8 or 11 digits long.

6. For **Confirm BIC (Swift Code)**, reenter the BIC. Don't copy and paste.
7. For **IBAN**, enter the digits for the IBAN.
8. For **Confirm IBAN**, reenter the IBAN. Don't copy and paste.
9. For **Make Default**, select whether you want this direct debit account to be your default payment method.
10. For **Billing Address Information**, enter the billing address of the primary account holder.
11. Choose **Create** to agree to the **Terms and Conditions** and add your direct debit account.

To update your direct debit account

You can update the name, address, or phone number associated with your direct debit account.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at <https://console.aws.amazon.com/billing/home#/>.
2. In the navigation pane, choose **Payment Methods**.
3. Next to the direct debit account that you want to edit, choose **Edit**.
4. Update the fields that you want to change.
5. At the bottom of the dialog box, choose **Update**.

If you have questions about payment methods, see [Contacting Customer Support About Your Bill](#) (p. 209).

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 \(p. 182\)](#)
- [Billing and Cost Management Permissions Reference \(p. 183\)](#)

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 \(p. 79\)](#)

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 and Role Access to Billing Information**, choose **Edit**.
4. Select the **Activate IAM Access** check box to activate access to the Billing and Cost Management pages.
5. Choose **Update**.

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. 183).

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. 190).

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. 183)
- [Billing Actions](#) (p. 184)
- [Billing Region Actions](#) (p. 187)
- [Billing and Cost Management Policy Examples](#) (p. 188)

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.

User Type	Description	Billing Permissions
Account owner	The person or entity in whose name your account is set up.	<ul style="list-style-type: none">• Has full control of all Billing and Cost Management resources.• Receives a monthly invoice of AWS charges.

User Type	Description	Billing Permissions
IAM user	A person or application defined as a user in an account by an account owner or administrative user. Accounts can contain multiple IAM users.	<ul style="list-style-type: none"> 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. 182). Can't close 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.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Doesn't have permission to review any usage reports or account activity except for its own. Doesn't have access to usage reports or account activity for other member accounts in the organization or for the master account. Doesn't have permission to view billing reports. Has permission to update account information only for its own account. Can't access other member accounts or the master account.

Note

For more information about organization master and member accounts, see the [AWS Organizations User Guide](#).

Billing Actions

This table summarizes the permissions that 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 \(p. 188\)](#).

Important

Starting August 19, 2019, the permissions `cur:DescribeReportDefinitions`, `cur:PutReportDefinition`, and `cur>DeleteReportDefinition` applies to all reports created using both the [AWS Cost and Usage Report API](#) and the Billing and Cost Management console. If you create reports using the Billing and Cost Management console, we recommend

that you update the permissions for IAM users. Not updating the permissions will result in users losing access to viewing, editing, and removing reports on the console reports page.

Permission Name	Description
<code>aws-portal:ViewBilling</code>	Allow or deny IAM users permission to view the Billing and Cost Management console pages.
<code>aws-portal:ModifyBilling</code>	<p>Allow or deny IAM users permission to modify the following Billing and Cost Management console pages:</p> <ul style="list-style-type: none"> • Budgets • Consolidated Billing • Preferences • Credits <p>To allow IAM users to modify these console pages, you must allow both <code>ModifyBilling</code> and <code>ViewBilling</code>. For an example policy, see Example 6: Allow IAM users to modify billing information (p. 191).</p>
<code>aws-portal:ViewAccount</code>	<p>Allow or deny IAM users permission to view the following Billing and Cost Management console pages:</p> <ul style="list-style-type: none"> • Billing Dashboard • Account Settings
<code>aws-portal:ModifyAccount</code>	<p>Allow or deny IAM users permission to modify Account Settings.</p> <p>To allow IAM users to modify account settings, you must allow both <code>ModifyAccount</code> and <code>ViewAccount</code>.</p> <p>For an example of a policy that explicitly denies an IAM user access to the Account Settings console page, see Example 8: Deny access to Account Settings, but allow full access to all other billing and usage information (p. 192).</p>
<code>budgets:ViewBudget</code>	<p>Allow or deny IAM users permission to view Budgets.</p> <p>To allow IAM users to view budgets, you must also allow <code>ViewBilling</code>.</p>
<code>budgets:ModifyBudget</code>	<p>Allow or deny IAM users permission to modify Budgets.</p> <p>To allow IAM users to view and modify budgets, you must also allow <code>ViewBilling</code>.</p>
<code>aws-portal:ViewPaymentMethods</code>	Allow or deny IAM users permission to view Payment Methods .

Permission Name	Description
<code>aws-portal:ModifyPaymentMethods</code>	<p>Allow or deny IAM users permission to modify Payment Methods.</p> <p>To allow users to modify payment methods, you must allow both <code>ModifyPaymentMethods</code> and <code>ViewPaymentMethods</code>.</p>
<code>cur:DescribeReportDefinitions</code>	<p>Allow or deny IAM users permission to view a AWS Cost and Usage Report using the API.</p> <p>Starting August 19, 2019, this permission applies to both API and Billing and Cost Management console.</p> <p>For an example policy, see Example 10: Create, view, edit, or delete an AWS Cost and Usage report.</p>
<code>cur:PutReportDefinition</code>	<p>Allow or deny IAM users permission to create a AWS Cost and Usage Report.</p> <p>Starting August 19, 2019, this permission applies to both API and Billing and Cost Management console.</p> <p>For an example policy, see Example 10: Create, view, edit, or delete an AWS Cost and Usage report.</p>
<code>cur>DeleteReportDefinition</code>	<p>Allow or deny IAM users permission to delete AWS Cost and Usage Report using the API.</p> <p>Starting August 19, 2019, this permission applies to both API and Billing and Cost Management console.</p> <p>For an example policy, see Example 10: Create, view, edit, or delete an AWS Cost and Usage report.</p>
<code>cur:ModifyReportDefinition</code>	<p>Allow or deny IAM users permission to modify AWS Cost and Usage Report using the API.</p> <p>This permission applies to both API and Billing and Cost Management console.</p> <p>For an example policy, see Example 10: Create, view, edit, or delete an AWS Cost and Usage report.</p>

Permission Name	Description
<code>aws-portal:ViewUsage</code>	<p>Allow or deny IAM users permission to view AWS usage Reports.</p> <p>To allow IAM users to view usage reports, you must allow both <code>ViewUsage</code> and <code>ViewBilling</code>.</p> <p>For an example policy, see Example 2: Allow IAM users to access the Reports console page.</p>
<code>pricing:DescribeServices</code>	<p>Allow or deny IAM users permission to view AWS service products and pricing via the AWS Price List Service API.</p> <p>To allow IAM users to use AWS Price List Service API, you must allow <code>DescribeServices</code>, <code>GetAttributeValues</code>, and <code>GetProducts</code>.</p> <p>For an example policy, see Example 11: Find products and prices.</p>
<code>pricing:GetAttributeValues</code>	<p>Allow or deny IAM users permission to view AWS service products and pricing via the AWS Price List Service API.</p> <p>To allow IAM users to use AWS Price List Service API, you must allow <code>DescribeServices</code>, <code>GetAttributeValues</code>, and <code>GetProducts</code>.</p> <p>For an example policy, see Example 11: Find products and prices.</p>
<code>pricing:GetProducts</code>	<p>Allow or deny IAM users permission to view AWS service products and pricing via the AWS Price List Service API.</p> <p>To allow IAM users to use AWS Price List Service API, you must allow <code>DescribeServices</code>, <code>GetAttributeValues</code>, and <code>GetProducts</code>.</p> <p>For an example policy, see Example 11: Find products and prices.</p>

Billing Region Actions

The following table summarizes the permissions that allow or deny IAM users the ability to enable or disable AWS Regions or to display a list of Regions and their current status. For examples of policies that use these permissions, see [Managing an AWS Account \(p. 156\)](#).

Permission Name	Description
<code>account:EnableRegion</code>	Allow or deny users permissions to enable an Region.
<code>account:DisableRegion</code>	Allow or deny users permissions to disable an Region.

Permission Name	Description
<code>account:ListRegions</code>	Allow users to list all Regions and the current enabled or disabled status.

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 for Billing and Cost Management:

- Version is always 2012-10-17.
- Effect is always Allow or Deny.
- Action is the name of the action or a wildcard (*).

For consoles, the action prefix in China is `awsbillingconsole`. Everywhere else, it's `aws-portal`.

The action prefix is `budgets` for AWS Budgets, `cur` for AWS Cost and Usage reports, `aws-portal` for AWS Billing, or `ce` for Cost Explorer.

- Resource is always `*` for AWS Billing.

For actions performed on a budget resource, specify the budget Amazon Resource Name (ARN).

- It's possible to have multiple statements in one policy.

Note

These policies require that you activate IAM user access to the Billing and Cost Management console on the [Account Settings](#) console page. For more information, see [Activating Access to the Billing and Cost Management Console](#) (p. 182).

Example Topics

- [Example 1: Allow IAM users to view your billing information](#) (p. 189)
- [Example 2: Allow IAM users to access the Reports console page](#) (p. 189)
- [Example 3: Deny IAM users access to the Billing and Cost Management console](#) (p. 190)
- [Example 4: Allow full access to AWS services but deny IAM users access to the Billing and Cost Management console](#) (p. 190)
- [Example 5: Allow IAM users to view the Billing and Cost Management console except for Account Settings](#) (p. 190)
- [Example 6: Allow IAM users to modify billing information](#) (p. 191)
- [Example 7: Allow IAM users to create budgets](#) (p. 191)
- [Example 8: Deny access to Account Settings, but allow full access to all other billing and usage information](#) (p. 192)
- [Example 9: Deposit reports into an Amazon S3 bucket](#) (p. 192)
- [Example 10: Create, view, edit, or delete an AWS Cost and Usage report](#) (p. 193)
- [Example 11: Find products and prices](#) (p. 193)
- [Example 12: View costs and usage](#) (p. 194)
- [Example 13: Enable and Disable Regions](#) (p. 194)

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**
- **Orders and invoices**
- **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.

For definitions of each action, see [Billing Actions](#).

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "aws-portal:ViewUsage",
        "aws-portal:ViewBilling",
        "cur:DescribeReportDefinitions",
        "cur:PutReportDefinition",
        "cur>DeleteReportDefinition",
        "cur:ModifyReportDefinition"
      ],
      "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.

```
{
  "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 deny IAM users 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.

Important

This policy doesn't allow any actions. Use this policy in combination with other policies that allow specific actions.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Deny",
      "Action": [
        "aws-portal:*",
        "iam:*"
      ],
      "Resource": "*"
    }
  ]
}
```

Example 5: Allow IAM users to view the Billing and Cost Management console except for Account Settings

This policy allows read-only access to all of the Billing and Cost Management console, including the **Payments Method** and **Reports** console pages, but denies access to the **Account Settings** page, thus protecting the account password, contact information, and security questions.

```
{
  "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**
- **Orders and invoices**
- **Advance Payment**

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "aws-portal:*Billing",
      "Resource": "*"
    }
  ]
}
```

Example 7: Allow IAM users to create budgets

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.

```
{
  "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.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "aws-portal:*Billing",
        "aws-portal:*Usage",
        "aws-portal:*PaymentMethods"
      ],
      "Resource": "*"
    },
    {
      "Effect": "Deny",
      "Action": "aws-portal:*Account",
      "Resource": "*"
    }
  ]
}
```

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's a resource-based policy, not a user-based policy. You should deny IAM user access to the bucket for IAM users who don't need access to your bills.

Replace *bucketname* with the name of your bucket.

For more information, see [Using Bucket Policies and User Policies](#).

```
{
  "Version": "2012-10-17",
```

```
"Statement": [
{
  "Effect": "Allow",
  "Principal": {
    "Service": "billingreports.amazonaws.com"
  },
  "Action": [
    "s3:GetBucketAcl",
    "s3:GetBucketPolicy"
  ],
  "Resource": "arn:aws:s3:::bucketname"
},
{
  "Effect": "Allow",
  "Principal": {
    "Service": "billingreports.amazonaws.com"
  },
  "Action": "s3:PutObject",
  "Resource": "arn:aws:s3:::bucketname/*"
}
]
```

Example 10: Create, view, edit, or delete an AWS Cost and Usage report

This policy allows an IAM user to create, view, edit, or delete `sample-report` using the API.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "ManageSampleReport",
      "Action": [
        "cur:PutReportDefinition",
        "cur:DeleteReportDefinition",
        "cur:ModifyReportDefinition"
      ],
      "Resource": "arn:aws:cur:*:123456789012:definition/sample-report"
    },
    {
      "Sid": "DescribeReportDefs",
      "Effect": "Allow",
      "Action": "cur:DescribeReportDefinitions",
      "Resource": "*"
    }
  ]
}
```

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": [
        "*"
      ]
    }
  ]
}
```

Example 13: Enable and Disable Regions

For an example IAM policy that allows users to enable and disable Regions, see [AWS: Allows Enabling and Disabling AWS Regions](#) in the *IAM User Guide*.

Consolidated Billing for Organizations

You can use the consolidated billing feature in AWS Organizations to consolidate billing and payment for multiple AWS accounts or multiple Amazon Internet Services Pvt. Ltd (AISPL) accounts. Every organization in AWS Organizations has a *master account* that pays the charges of all the *member accounts*. For more information about organizations, see the [AWS Organizations User Guide](#). For the rest of this guide, the master account is called a payer account, and the member account is called a linked account, even when we talk about organizations.

Consolidated billing has the following benefits:

- **One bill** – You get one bill for multiple accounts.
- **Easy tracking** – You can track the charges across multiple accounts and download the combined cost and usage data.
- **Combined usage** – You can combine the usage across all accounts in the organization to share the volume pricing discounts and Reserved Instance discounts. This can result in a lower charge for your project, department, or company than with individual standalone accounts. For more information, see [Volume Discounts \(p. 198\)](#).
- **No extra fee** – Consolidated billing is offered at no additional cost.

Note

The linked account bills are for informational purpose only. The payer account might reallocate the additional volume discounts and Reserved Instance discounts that your account receives.

If you have access to the payer account, you can see a combined view of the AWS charges that the linked accounts incur. You also can get a cost report for each linked account.

AWS and AISPL accounts can't be consolidated together. If your contact address is in India, you can use AWS Organizations to consolidate AISPL accounts within your organization.

Important

When a linked account leaves an organization, the linked account can no longer access Cost Explorer data that was generated when the account was in the organization. The data isn't deleted, and the payer account in the organization can still access the data. If the linked account rejoins the organization, the linked account can access the data again.

Topics

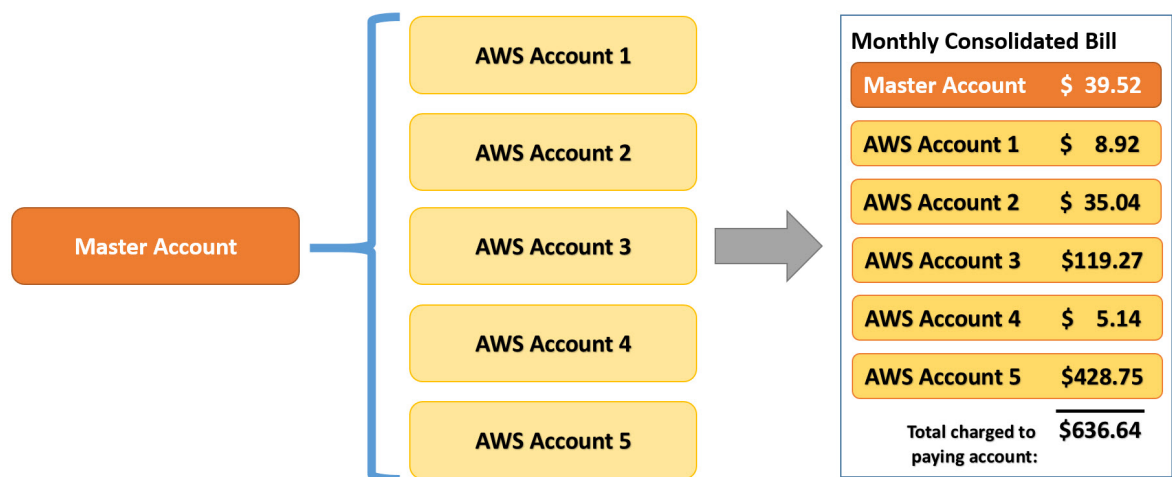
- [Consolidated Billing Process \(p. 196\)](#)
- [Consolidated Billing in India \(p. 197\)](#)
- [Effective Billing Date \(p. 197\)](#)
- [Billing and Account Activity \(p. 197\)](#)
- [Volume Discounts \(p. 198\)](#)
- [AWS Credits \(p. 199\)](#)
- [Reserved Instances \(p. 200\)](#)

- [Understanding Consolidated Bills \(p. 203\)](#)
- [AWS Support Charges for Accounts in an Organization \(p. 207\)](#)

Consolidated Billing Process

AWS Organizations provides consolidated billing so that you can track the combined costs of all the linked 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 payer account of your new organization. For details, see [Creating an Organization](#). The payer account is responsible for paying the charges of all the linked accounts.
4. (Optional) Create accounts that are automatically linked to 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 payer account for all the linked accounts in a consolidated bill. The following illustration shows an example of a consolidated bill.



The payer account is billed for all charges of the linked accounts. However, unless the organization is changed to support all features in the organization (not consolidated billing features only) and linked accounts are explicitly restricted by policies, each linked account is otherwise independent from the other linked accounts. For example, the owner of a linked account can sign up for AWS services, access resources, and use AWS Premium Support unless the payer 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 Payer Account

The owner of the payer 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.

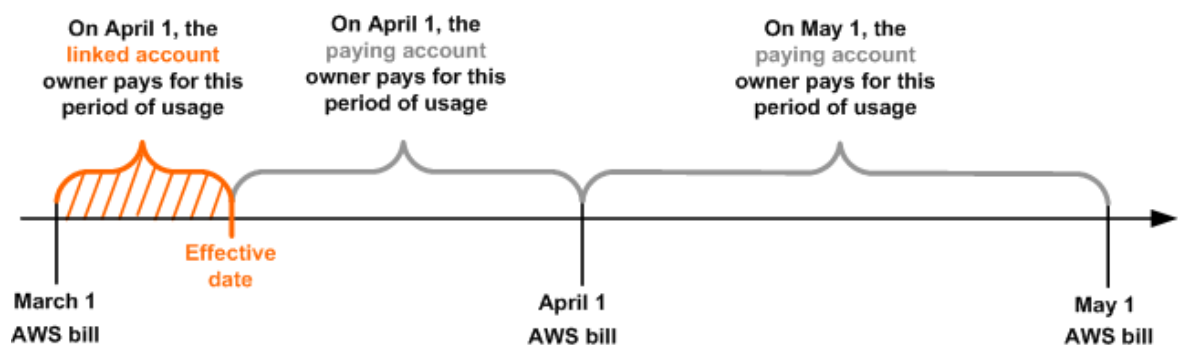
If you have an existing account with an India address, your account is either with AWS or AISPL, depending on when you opened the account. To learn whether your account is with AWS or AISPL, see the procedure [Determining Which Company Your Account Is With](#). If you're an existing AWS customer, you can continue to use your AWS account. You can also 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 payer account can edit the PAN numbers of all linked accounts.

If you create an organization from a payer account that is with AISPL, you can invite only other AISPL accounts to join your organization. You can't invite AWS accounts.

If you create an organization from a payer account that is with AWS, you can invite only other AWS accounts to join your organization. You can't invite AISPL accounts.

Effective Billing Date

When the linked account owner accepts your request to join the organization, you immediately become responsible for the linked account's charges. If the linked account joins in the middle of the month, the payer account is billed only for the latter part of the month. The linked 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 payer account owner, and not the owners of the linked accounts. To see the total usage and charges across all the accounts in an organization, see the **Bills** page of the payer account. AWS updates the page multiple times each day. Additionally, AWS makes a downloadable cost report available each day.

Although the owners of the linked 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 payer account or any other linked accounts on the bill.

Volume Discounts

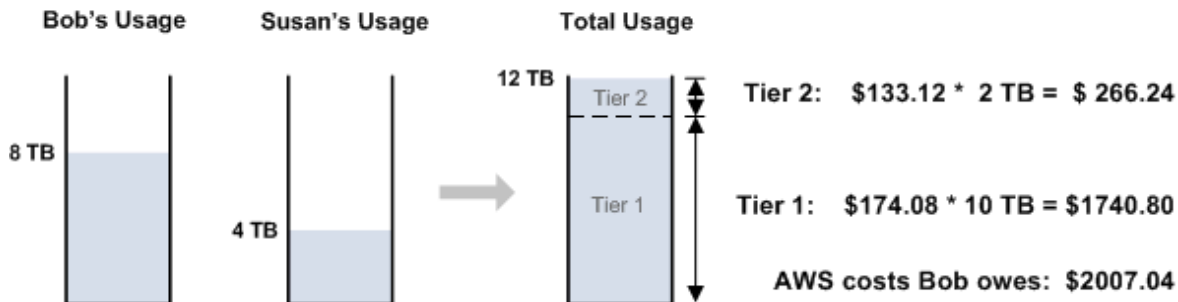
For billing purposes, AWS treats all the accounts in the organization as if they were one account. Some services, such as Amazon EC2 and Amazon S3, have volume pricing tiers across certain usage dimensions that give you lower prices the more you use the service. With consolidated billing, AWS combines 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 linked account a portion of the overall volume discount based on the account's usage.

The **Bills** page for each linked 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 payer 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 ($= .17 \times 1024$) for the first 10 TB, and \$133.12 per TB ($= .13 \times 1024$) for the next 40 TB. Remember that 1 TB = 1024 GB.

For the 12 TB that Bob and Susan used, Bob's payer account is charged $(\$174.08 \times 10 \text{ TB}) + (\$133.12 \times 2 \text{ TB}) = \$1740.80 + \$266.24 = \$2,007.04$.



The average cost-per-unit of data transfer out for the month is therefore $\$2,007.04 / 12 \text{ 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 linked 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 doesn't apply the free tier to each account individually.

AWS provides budgets that track whether you exceed the free tier limits or are forecasted to go over the free tier limits. Free tier budgets are not enabled for organizations by default. Payer 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 linked 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 [Free Tier Usage Alerts Using AWS Budgets \(p. 12\)](#).

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 they expire.

- [Applying AWS Credits \(p. 199\)](#)
- [Applying AWS Credits Across Single and Multiple Accounts \(p. 199\)](#)
- [Sharing AWS Credits \(p. 200\)](#)

Applying AWS Credits

AWS applies credits in the following order:

1. Soonest expiring
2. Least number of applicable products
3. Oldest credit

AWS applies the credit to the largest available charge across all eligible sellers of record. This means that AWS tries to apply your credits before they expire even if they use a more generic credit for a specific service.

For example, Jorge has two credits available to him. Credit one is for 10 dollars, expires January 2019, and can be used for either Amazon S3 or Amazon EC2. Credit two is for 5 dollars, expires December 2019, and can be used only for Amazon EC2. Jorge has two AWS charges: 100 dollars for Amazon EC2 and 50 dollars for Amazon S3. AWS applies credit one, which expires in January, to the Amazon EC2 charge, which leaves him with a 90-dollar Amazon EC2 charge and a 50-dollar Amazon S3 charge. AWS applies credit two to the remaining 90 dollars of Amazon EC2 usage, and Jorge has to pay 85 dollars for Amazon EC2 and 50 dollars for Amazon S3. All his credits are now exhausted.

Applying AWS Credits Across Single and Multiple Accounts

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 payer account or by any linked 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. Also assume 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 first of the month to the day that she joined the organization. However, from the first of the following month onward, AWS applies the credits to the organization's bill. If Susan leaves the organization, any credits that she redeems are also applied to the organization's bill until the first of the month after her departure. On that day, AWS again applies Susan's credits to her bill.

If you're 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 them to her account for the usage that she incurred from January 1 to January 11. From February onward, 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 onward, Susan's credits are applied to her account.

Sharing AWS Credits

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 payer 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.

1. Sign in to the AWS Management Console and open the Billing and Cost Management console at [https://console.aws.amazon.com/billing/home#/.](https://console.aws.amazon.com/billing/home#/)
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" \(p. 202\)](#).

Topics

- [Billing Examples for Specific Services \(p. 200\)](#)
- [Turning Off Reserved Instance Sharing \(p. 202\)](#)

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 instances 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 of the relevant attributes of Susan's Reserved DB Instances should match the attributes of the DB Instances launched by Bob as described in [Reserved DB Instances](#). For example, let's say Susan purchased a Reserved DB Instance in `us-west-2` with the following attributes:

- DB Engine: Oracle
- DB Instance Class: `m1.xlarge`
- Deployment Type: Multi-AZ

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 payer account of an organization can turn off Reserved Instance (RI) sharing for any accounts in that organization, including the payer account. This means that Reserved Instances aren't shared between any accounts that have sharing turned off. To share an RI with an account, both accounts must have sharing turned on. This preference isn't permanent, and you can change it at any time. 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 RI sharing can result in a higher monthly bill.

To turn off shared Reserved Instances

You can turn off RI sharing for individual linked accounts.

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

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

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 \(p. 203\)](#)
- [Pricing Tiers \(p. 203\)](#)
- [Reserved Instances \(p. 204\)](#)
- [Blended Rates and Costs \(p. 205\)](#)

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 don't reach tier thresholds 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.

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

Account	Tier	Storage Amount (G)	Storage Amount (TB)	Unblended Rate (/GB)	Unblended Rate (/TB)	Unblended Cost
Master	First TB/Month	1000 GB	1 TB	\$0.10	100	\$100.00
	Next 49 TB/Month	49000 GB	49 TB	\$0.08	80	\$3,920.00
	Next 450 TB/Month	45000 GB	45 TB	\$0.06	60	\$2,700.00
Total		95000 GB	95 TB			
Member 1	First TB/Month	1000 GB	1 TB	\$0.10	100	\$100.00
	Next 49 TB/Month	14000 GB	14 TB	\$0.08	80	\$1,120.00
	Next 450 TB/Month	15000 GB	15 TB	\$0.06	60	\$900.00
Member 2	Next 49 TB/Month	20000 GB	20 TB	\$0.08	80	\$1,600.00
	Next 450 TB/Month	15000 GB	15 TB	\$0.06	60	\$900.00
Member 3	Next 49 TB/Month	15000 GB	15 TB	\$0.08	80	\$1,200.00
	Next 450 TB/Month	15000 GB	15 TB	\$0.06	60	\$900.00

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 don't 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 \(p. 56\)](#) 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.

Note

AWS shows each linked account their charges as unblended costs. AWS continues to apply all of the consolidated billing benefits such as reservations and tiered prices across all linked accounts in an AWS Organizations organization.

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. 203) 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.

Line Item Account	Billing Type	Usage Type	Upfront cost	Monthly cost	Usage available	Usage Quantity	Unblended Rate	U
Master Account	RI, All upfront	t2.small	\$274.00	\$0.00	-	1440	-	-
Master Account	RI, Partial upfront	t2.small	\$70.00	\$5.84	-	720	-	-
Member Account 1	RI applied	t2.small	-	-	1440	1440	\$0.00	-
Member Account 1	RI applied	t2.small	-	-	720	720	\$0.00	-
Member Account 2	On demand	t2.small	-	-	-	300	\$0.023	-
Totals					2160	2460		

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.

AWS Support Charges for Accounts in an Organization

AWS calculates AWS Support fees independently for each linked account. Typically, an AWS Support subscription for a linked 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 \(p. 208\)](#)
- [Reports \(p. 208\)](#)

Budgets

Number of free budgets per account	2
Total number of budgets per master account	20,000
Characters allowed in a budget name	<ul style="list-style-type: none">• 0–9• A–Z and a–z• Space• The following symbols: _ . : / = + - % @

Reports

Number of Free Tier AWS Cost and Usage reports	10
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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 web site](#).

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 either be signed into AWS as the root account owner, or have IAM permissions to open a support case. For more information, see [Accessing AWS Support](#) in the AWS Support User Guide.

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.

Document History

The following table describes the documentation for this release of the *AWS Billing and Cost Management User Guide*.

update-history-change	update-history-description	update-history-date
New Reporting Method Using AWS Budgets	Added a new reporting functionality using AWS Budgets reports.	June 27, 2019
Added normalized units to Cost Explorer	Cost Explorer reports now include normalized units.	February 5, 2019
Credit application changes	AWS changed how they apply credits.	January 17, 2019
New payment behavior	AISPL customers can now enable the auto-charge ability for their payments.	December 20, 2018
New AWS Price List Service endpoint	Added a new endpoint for AWS Price List Service.	December 17, 2018
Updated the Cost Explorer UI	Updated the Cost Explorer UI.	November 15, 2018
Integrated Amazon Athena into AWS Cost and Usage Report	Added the ability to upload the data from an AWS Cost and Usage report into Athena.	November 15, 2018
Added budget history	Added the ability to see the history of a budget.	November 13, 2018
Expanded budget services	Expanded RI budgets to Amazon Elasticsearch Service.	November 8, 2018
Added a new payment method	Added the SEPA Direct Debit payment method.	October 25, 2018
Added On-Demand capacity reservations	Added documentation about AWS Cost and Usage report line items that apply to capacity reservations.	October 25, 2018
Redesigned budget experience	Updated the budget UI and workflow.	October 23, 2018
New Reserved Instance recommendation columns	Added new columns to the Cost Explorer RI recommendations.	October 18, 2018
New AWS CloudTrail actions	More actions added to CloudTrail logging..	October 18, 2018
Added a new Reserved Instance report	Expanded RI reports to Amazon Elasticsearch Service.	October 10, 2018
New AWS Cost and Usage Report columns	New columns added to the AWS Cost and Usage report.	September 27, 2018

Cost Explorer walkthrough	Cost Explorer now provides a walkthrough for the most common functionality.	September 24, 2018
Added CloudTrail events	Added additional CloudTrail events.	August 13, 2018
Added a new payment method	Added the ACH Direct Debit payment method.	July 24, 2018
Updated the AWS Free Tier Widget	Updated the AWS Free Tier Widget.	July 19, 2018
Added RI purchase recommendations for additional services	Added RI purchase recommendations for additional services in Cost Explorer.	July 11, 2018
Added RI purchase recommendations for linked accounts	Added RI purchase recommendations for linked accounts in Cost Explorer.	June 27, 2018
Added support for AWS Cost and Usage Report data refreshes	AWS Cost and Usage Report can now update after finalization if AWS applies refunds, credits, or support fees to an account.	June 20, 2018
Added CloudTrail support	Added support for CloudTrail event logging.	June 7, 2018
Added AWS CloudFormation for Budgets	Added Budgets templates for AWS CloudFormation.	May 22, 2018
Updated RI allocation behavior for linked accounts	Updated the RI allocation behavior size-flexible RI for linked accounts.	May 9, 2018
RI coverage alerts	Added RI coverage alerts.	May 8, 2018
Unblend linked account bills (p. 210)	Linked account bills no longer show the blended rate for the organization.	May 7, 2018
Updated AWS tax settings	Added the ability to bulk edit tax settings.	April 25, 2018
Added Amazon RDS Recommendations to Cost Explorer	Added Amazon RDS Recommendations to Cost Explorer.	April 19, 2018
Added a new Cost Explorer dimension and AWS Cost and Usage Report line item	Added a new Cost Explorer dimension and AWS Cost and Usage Report line item.	March 27, 2018
Added purchase recommendations to the Cost Explorer API	Added access to the Amazon EC2 Reserved Instance (RI) purchase recommendations via the Cost Explorer API.	March 20, 2018
Added RI coverage for Amazon RDS, Amazon Redshift, and ElastiCache	Reserved Instance (RI) coverage for Amazon RDS, Amazon Redshift, and ElastiCache .	March 13, 2018

Added RI coverage to the Cost Explorer API	Added <code>GetReservationCoverage</code> to the Cost Explorer API.	February 22, 2018
Added AWS Free Tier Alerts	Added AWS Free Tier alerts that enable you stay under the free tier limits.	December 13, 2017
RI recommendations	Added RI recommendations based on previous usage.	November 20, 2017
Cost Explorer API	Enabled programmatic access to Cost Explorer via API.	November 20, 2017
RI utilization alerts for additional services	Added notifications for additional services.	November 10, 2017
Added RI reports	Expanded RI reports to Amazon RDS, Redshift, and ElastiCache.	November 10, 2017
Discount sharing preferences	Updated preferences so that AWS credits and RI discount sharing can be turned off.	November 6, 2017
New Amazon S3 console (p. 210)	Updated for the new Amazon S3 console.	September 15, 2017
RI utilization alerts	Added notifications for when RI utilization drops below a preset percentage-based threshold.	August 21, 2017
Updated Cost Explorer UI	Released a new Cost Explorer UI.	August 16, 2017
AWS Marketplace Data Integration (p. 210)	Added AWS Marketplace so that customers can see their data reflected in all billing artifacts, including the Bills page, Cost Explorer, and more.	August 10, 2017
Consolidated billing with organizations	Updated the consolidated billing with organizations behavior.	June 20, 2017
Linked account access and usage type groups in budgets	Added support for creating cost and usage budgets based on specific usage types and usage type groups, and extended budget creation capabilities to all account types.	June 19, 2017
Regional offer files	The AWS Price List API now offers regional offer files for each service.	April 20, 2017
Added Cost Explorer advanced options	You can now filter Cost Explorer reports by additional advanced options, such as refunds, credits, RI upfront fees, RI recurring charges, and support charges.	March 22, 2017

Added a Cost Explorer report	You can now track your Reserved Instance (RI) coverage in Cost Explorer.	March 20, 2017
Added Cost Explorer filters	You can now filter Cost Explorer reports by tenancy, platform, and the Amazon EC2 Spot and Scheduled Reserved Instance purchase options.	March 20, 2017
Cost Explorer and Budgets for AISPL	AISPL users can now use Cost Explorer and budgets.	March 6, 2017
Added grouping for Cost Explorer usage types	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.	February 24, 2017
Added a Cost Explorer report	You can now track your monthly Amazon EC2 Reserved Instance (RI) utilization in Cost Explorer.	December 16, 2016
Added a Cost Explorer report	You can now track your daily Amazon EC2 Reserved Instance (RI) utilization in Cost Explorer.	December 15, 2016
Added AWS-generated cost allocation tags	You can now activate the AWS-generated tag <code>createdBy</code> to track who created an AWS resource.	December 12, 2016
Added Cost Explorer advanced options	You can now exclude tagged resources from your Cost Explorer reports.	November 18, 2016
Amazon QuickSight integration for AWS Cost and Usage reports	AWS Cost and Usage reports now provide customized queries for uploading your data into Amazon QuickSight.	November 15, 2016
Expanded budget functionality	You can now use budgets to track usage data.	October 20, 2016
Expanded Cost Explorer functionality	You can now use Cost Explorer to visualize your costs by usage type groups.	September 15, 2016
Improved Amazon Redshift integration for AWS Cost and Usage reports	AWS Cost and Usage reports now provide customized queries for uploading your data into Amazon Redshift.	August 18, 2016
AWS Cost and Usage reports	You can now create and download AWS Cost and Usage reports.	December 16, 2015

AWS Price List API	You can now download offer files that list the products, prices, and restrictions for a single AWS service.	December 9, 2015
Cost Explorer report manager	You can now save Cost Explorer queries.	November 12, 2015
AWS Free Tier tracking	You can now track how much of your free tier limit you've used.	August 12, 2015
Budgets and forecasting	You can now manage your AWS usage and costs using budgets and cost forecasts.	June 29, 2015
Amazon Internet Services Pvt. Ltd	You can now manage your account settings and payment methods for an Amazon Internet Services Pvt. Ltd (AISPL) account.	June 1, 2015
Expanded Cost Explorer functionality	You can now use Cost Explorer to visualize your costs by Availability Zone, API operation, purchase option, or multiple cost allocation tags.	February 19, 2015
Preferred payment currencies	You can now change the currency associated with your credit card.	February 16, 2015
Expanded Cost Explorer functionality	You can now use Cost Explorer to visualize your costs by Amazon EC2 instance type or region.	January 5, 2015
Avoiding unexpected charges	Revised and expanded Avoiding Unexpected Charges and Using the Free Tier.	August 19, 2014
IAM user permissions	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.	July 7, 2014
Cost Explorer launched	Cost Explorer provides a visualization of your AWS costs that enables you to analyze your costs in multiple ways.	April 8, 2014

[Version 2.0 published \(p. 210\)](#)

The *AWS Billing and Cost Management User Guide* has been reorganized and rewritten to use the new Billing and Cost Management console.

October 25, 2013

AWS Glossary

For the latest AWS terminology, see the [AWS Glossary](#) in the *AWS General Reference*.