AWS

Billing Setup Guide

Table of Contents

1. Overview

This document details the steps involved in setting up your AWS account to deliver billing reports which will then be fetched by the CloudBilling system to be showcased as purchases on your CloudBilling account.

2. AWS Setup

2.1. Setup S3 bucket

- Go to https://console.aws.amazon.com/s3
- Click on 'Create Bucket'
- Follow the steps to setup a new S3 bucket

2.2. Enable reports

- Go to https://console.aws.amazon.com/billing/home (can be accessed through the dropdown option 'My Billing Dashboard' beside your profile username on the menu).
- Click on Cost & Usage Report on the navigation pane on the left.
- Click 'Create report' and follow the steps outlined. Sample inputs can be found in the images below.

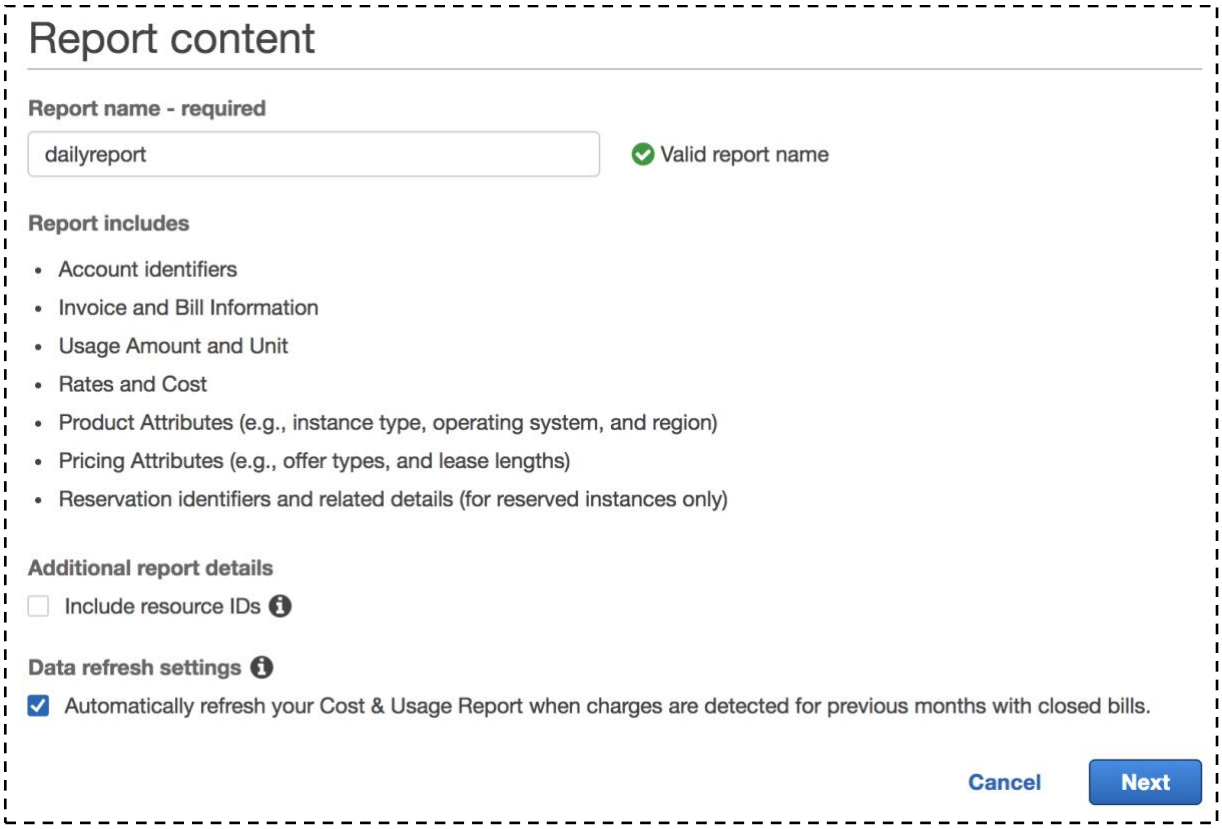

Figure 1: Setup Report - Step 1

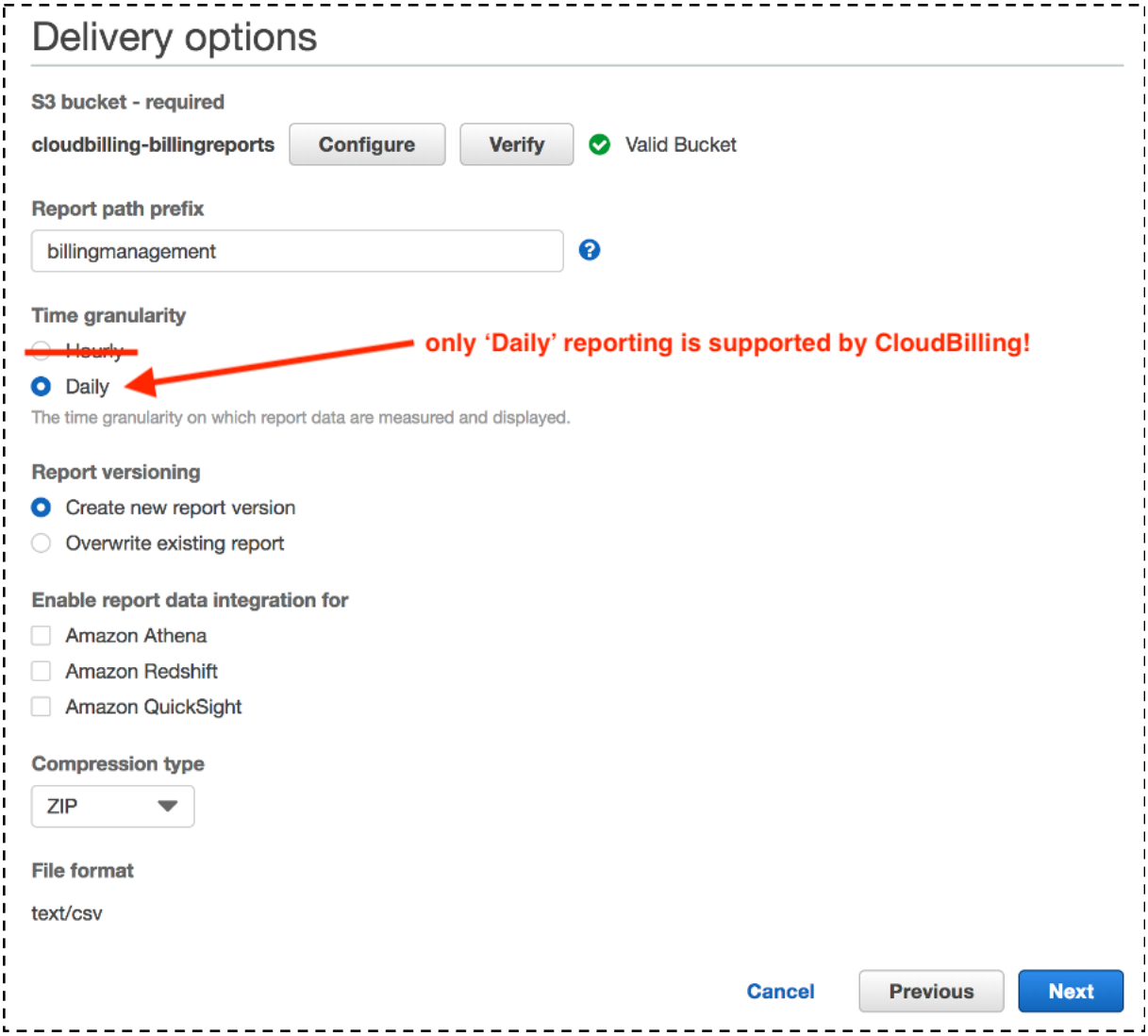

Figure 2: Setup Report - Step 2

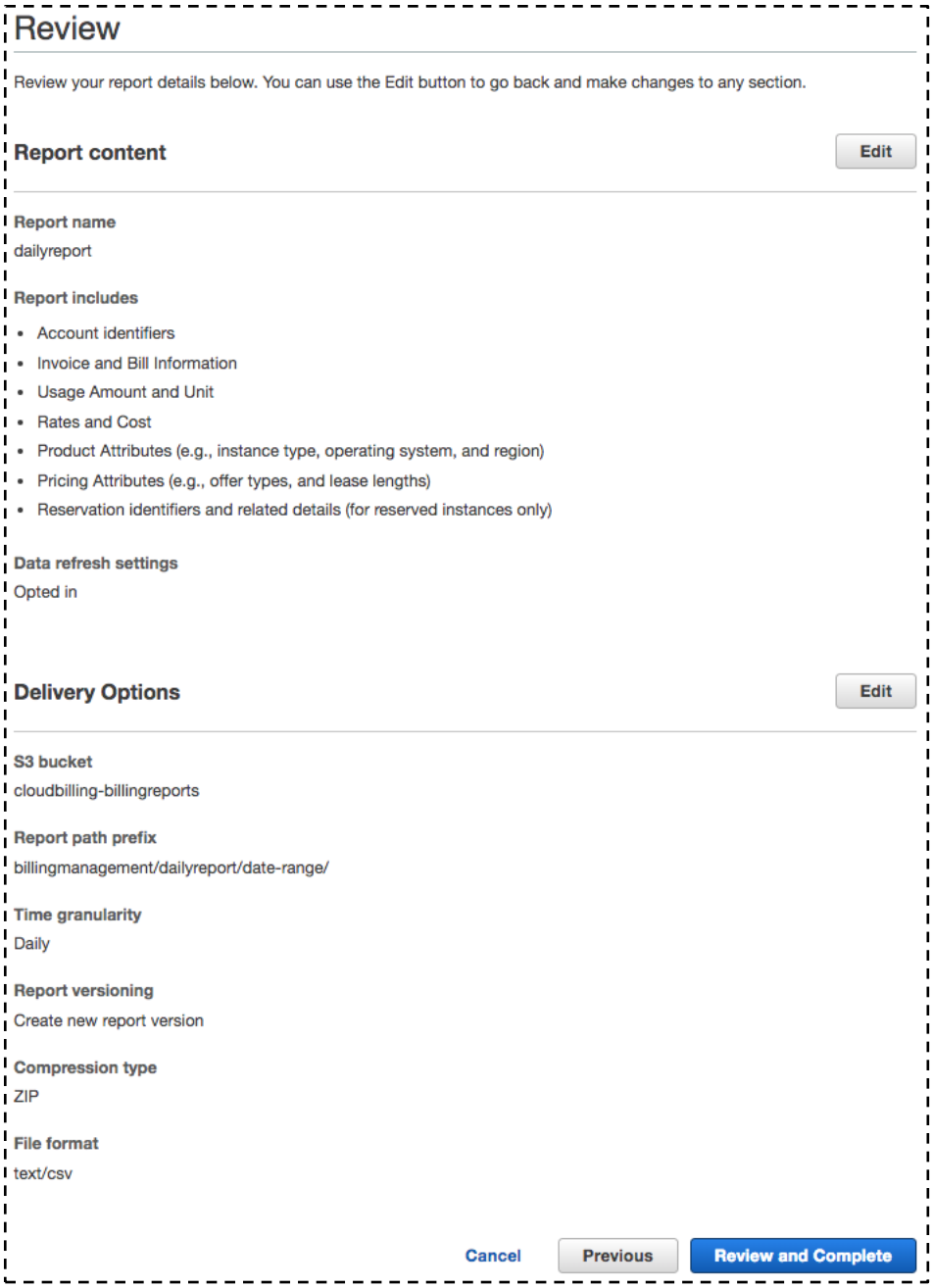

Figure 3: Setup Report - Step 3

- Click on 'Review and Complete' if the settings are in order.

2.3. Create Policy

A CloudBilling user requires certain permissions to be enabled to access the billing reports from your S3 bucket and the AWS pricing lists.

- Go to https://console.aws.amazon.com/iam (can be accessed through the dropdown option 'My Security Credentials' beside your profile username on the menu).
- Click on 'Policies' on the left-hand side navigation pane.
- Click on 'Create policy'

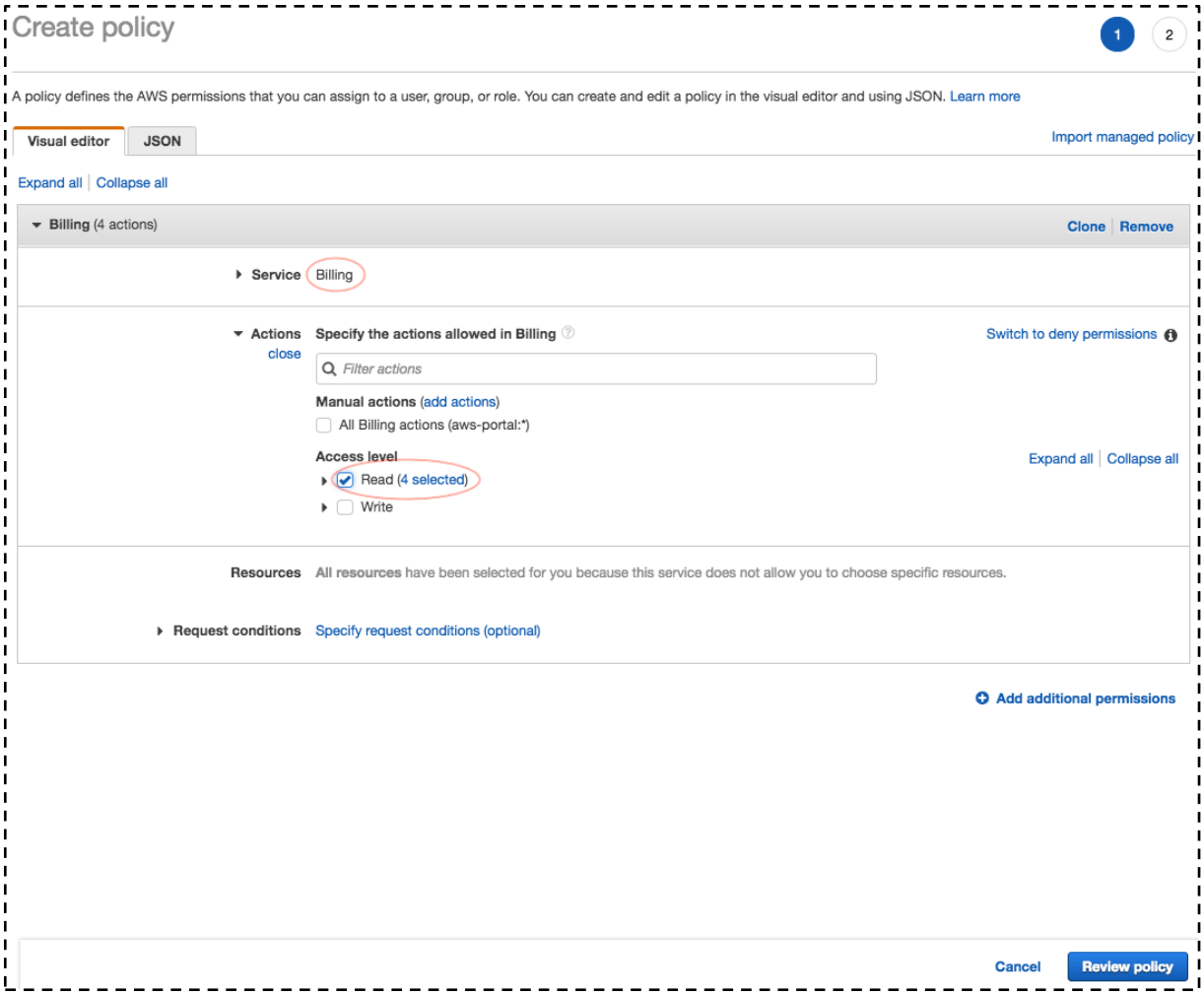

Figure 4: Create Policy – Step 1a

- Select the Service 'Billing' and select the 'Access level' under Actions as 'Read'
- Click 'Add additional permissions'

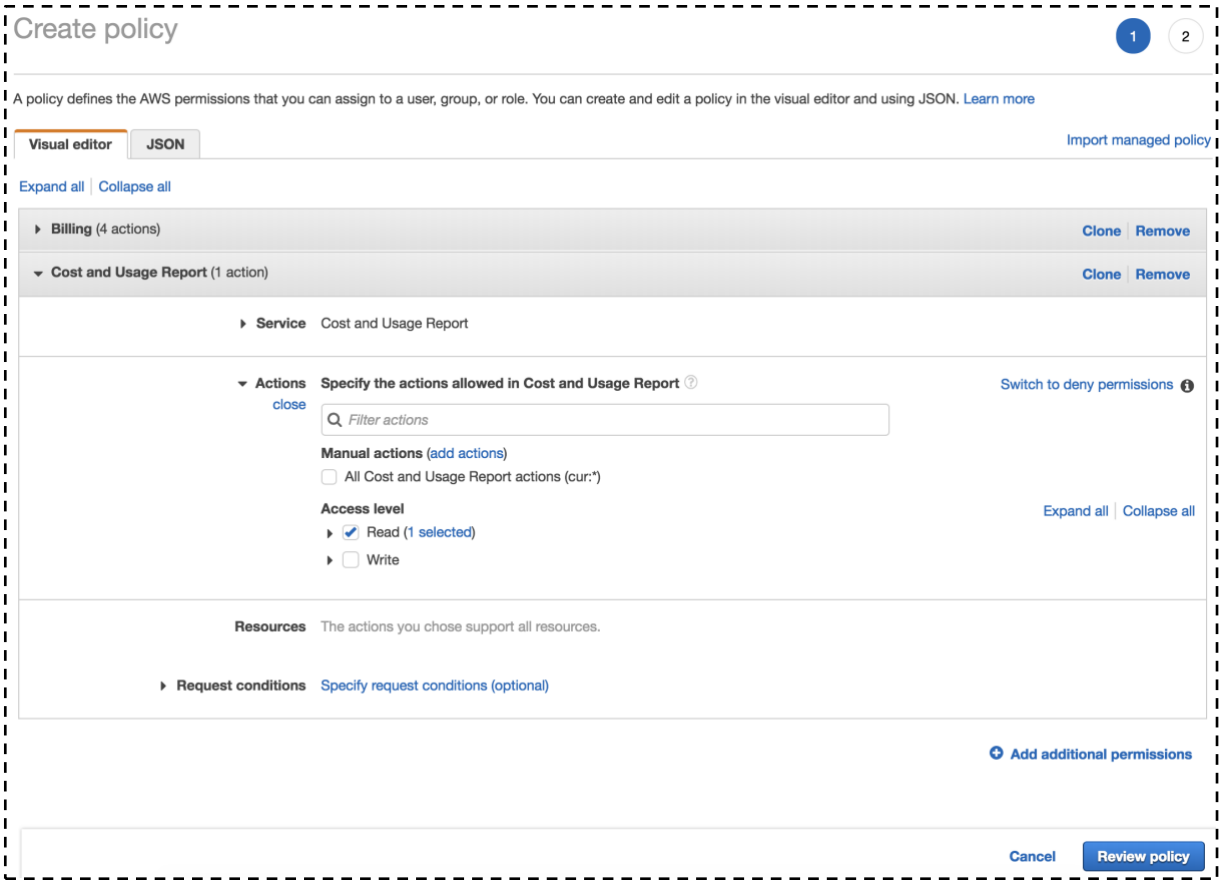

Figure 5: Create Policy – Step 1b

- Select the Service 'Cost and Usage Report' and select the 'Access level' under Actions as 'Read'
- Click 'Add additional permissions'

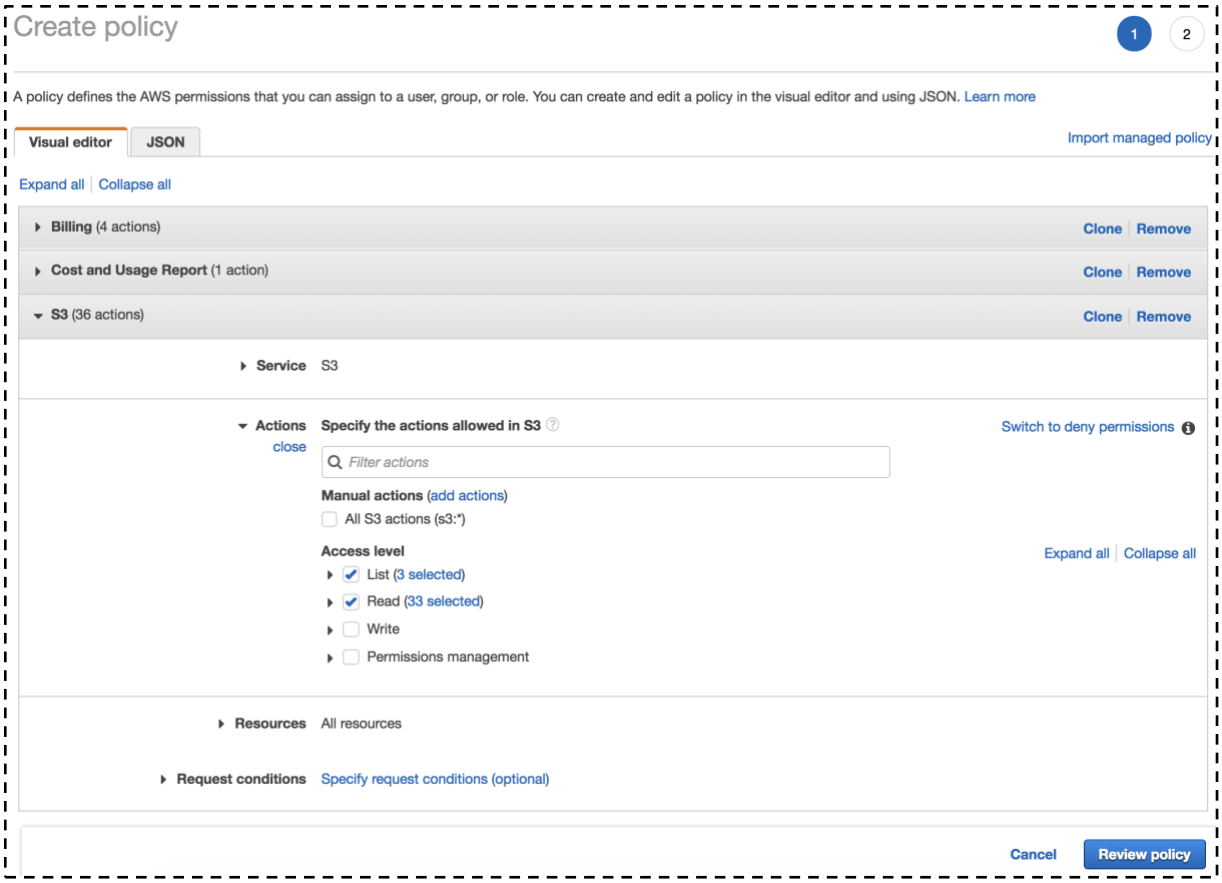

Figure 6: Create Policy – Step 1c

- Select the Service 'S3' and select the 'Access level' under Actions as 'Read' and 'List'
- Under Resources, select 'All resources'
- Click 'Review policy'

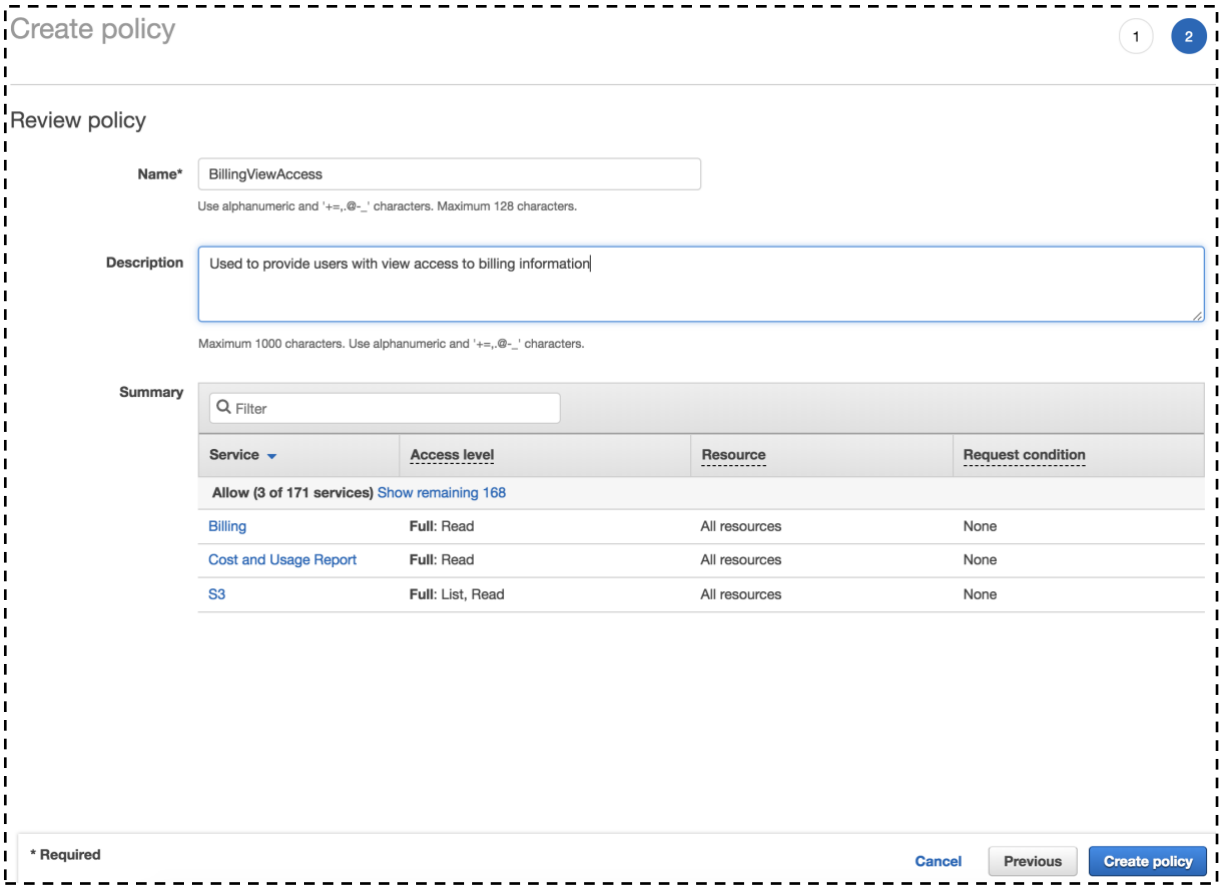

Figure 7: Create Policy – Step 2

- On this screen type in the Name 'BillingViewAccess'. Give it a description.
- Click 'Create policy'

2.4. Create Groups

- Go to https://console.aws.amazon.com/iam (can be accessed through the dropdown option 'My Security Credentials' beside your profile username on the menu).
- Click on 'Groups' on the left-hand side navigation pane.
- Click on 'Create New Group'

Figure 8: Create Group - Step 1

- Give the group a name, say, 'Product'
- Click on 'Next Step'

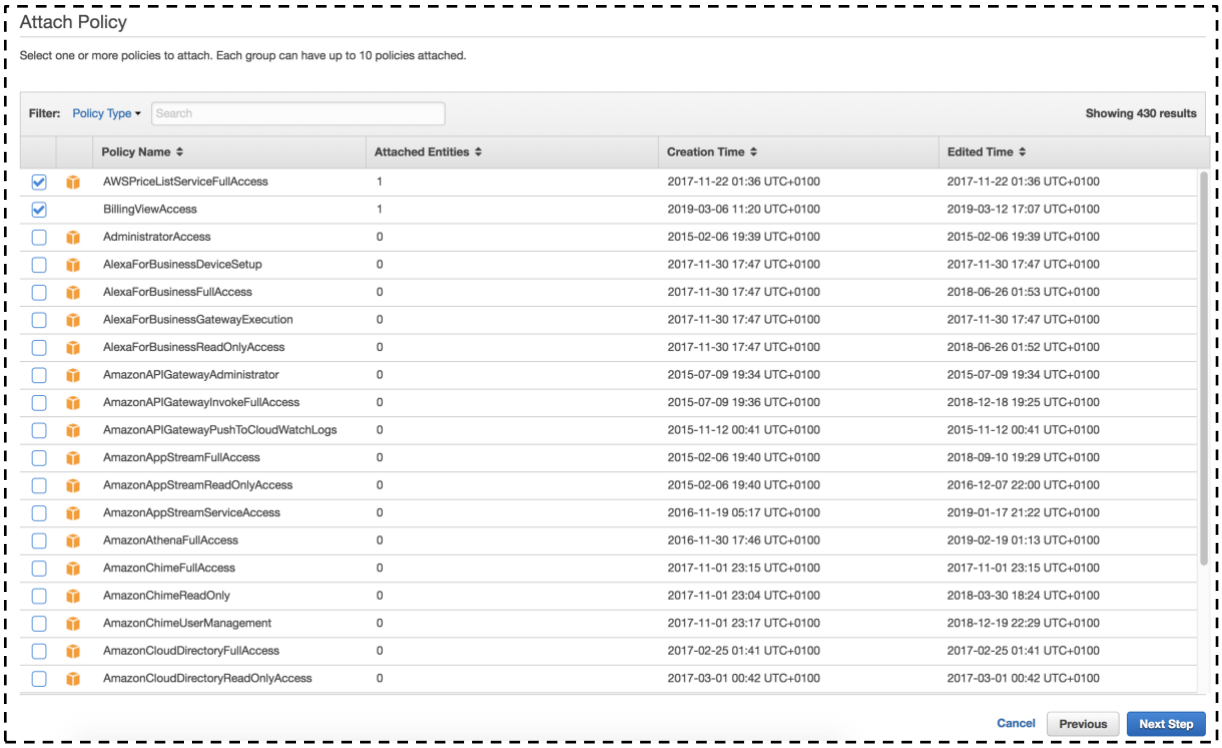

Figure 9: Create Group - Step 2

- Select the following permissions on this screen. Use the Search box to search for them.
    - AWSPriceListServiceFullAccess
    - BillingViewAccess
- Click 'Next Step'

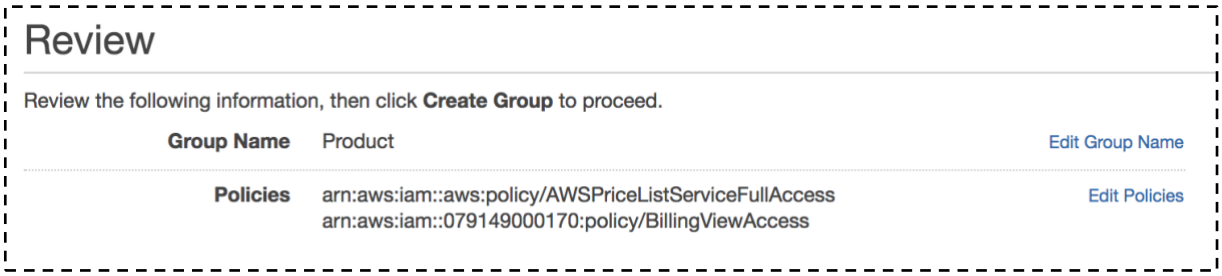

Figure 10: Create Group - Step 3

- Click 'Create Group' if the settings are in order.

2.5. Create User

- Go to https://console.aws.amazon.com/iam (can be accessed through the dropdown option 'My Security Credentials' beside your profile username on the menu).
- Click on 'Users' on the left-hand side navigation pane.
- Click 'Add user'

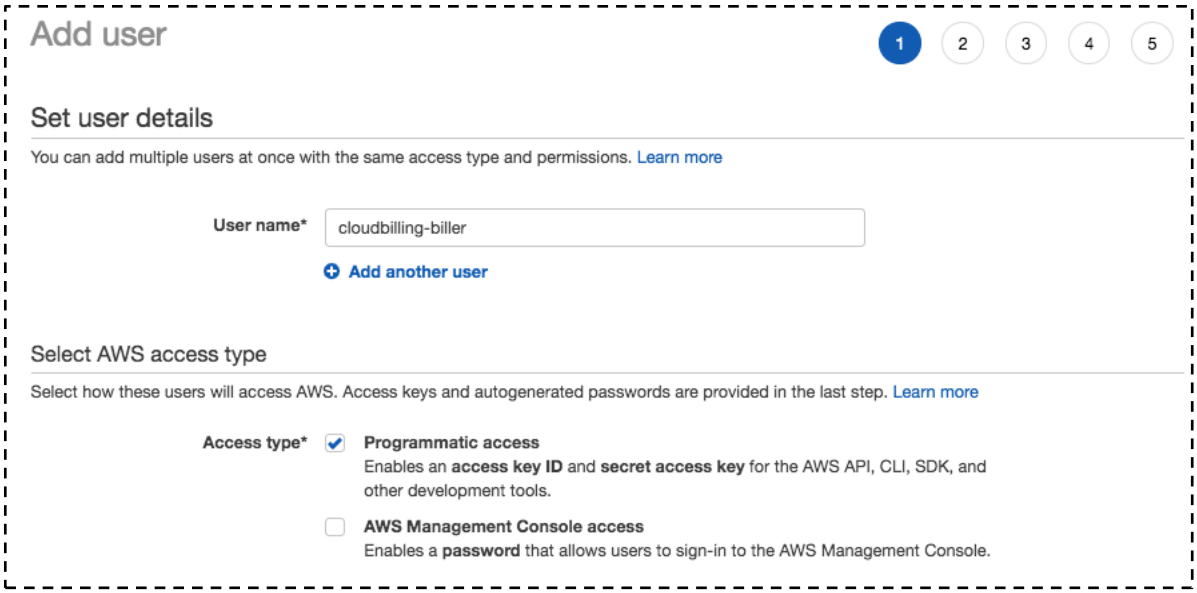

Figure 11: Add User - Step 1

- Give the user a name, say, 'cloudbilling-biller'
- Click 'Next: Permissions'

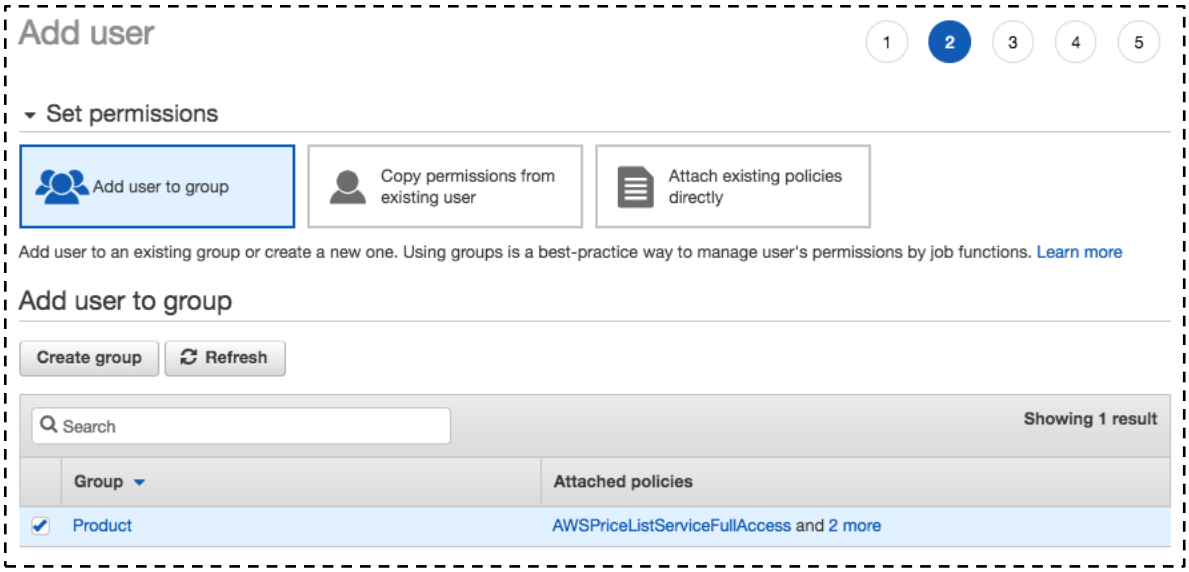

Figure 12: Add User - Step 2

- Select the group that you created for the purpose of CloudBilling, 'Product' in this case.
- Click 'Next Tags'

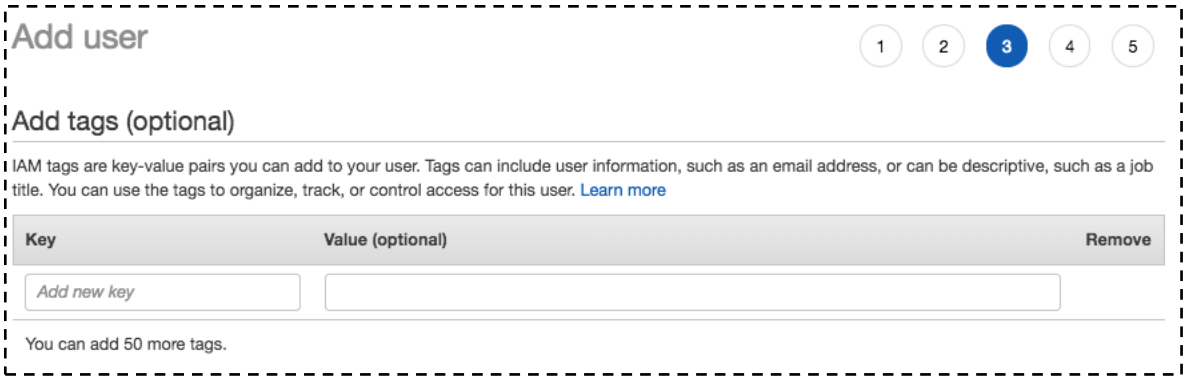

Figure 13: Add User - Step 3

- Set any tags, if required.
- Click 'Next: Review'

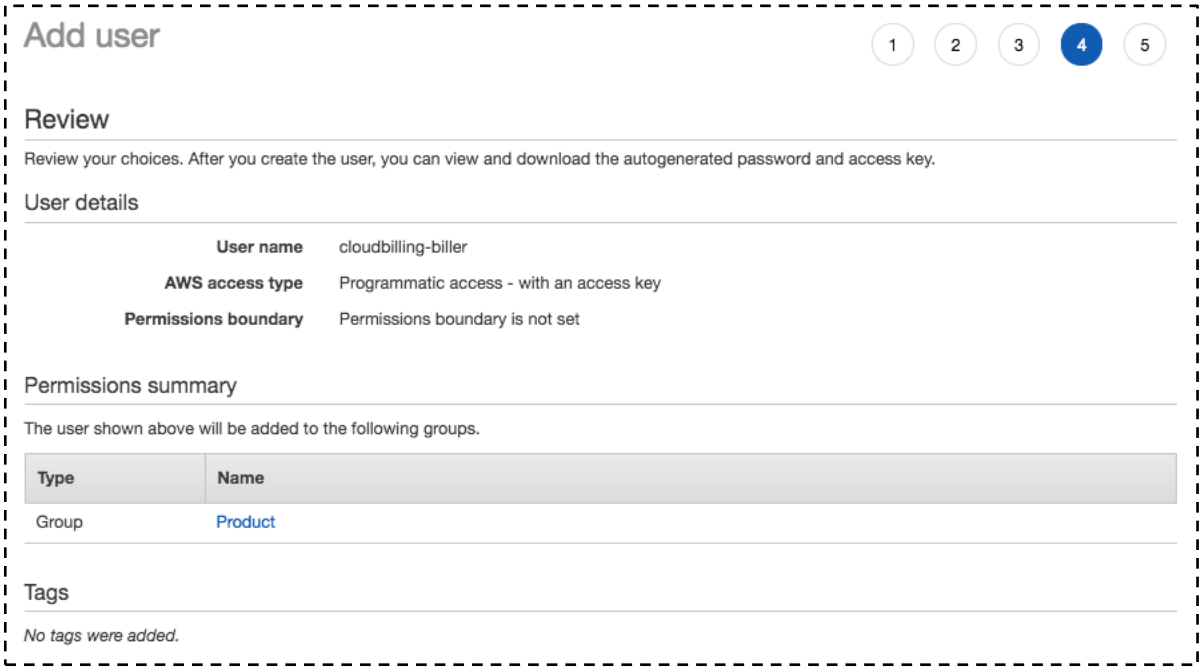

Figure 14: Add User - Step 4

- Click 'Create user' if the settings are in order.

2.6. Create User Security Keys

- Go to https://console.aws.amazon.com/iam (can be accessed through the dropdown option 'My Security Credentials' beside your profile username on the menu).
- Click on 'Users' on the left-hand side navigation pane.
- Under the 'User name' column in the table, click on the user that you just created, 'cloudbilling-biller' in this case.

Figure 15: User - Settings

- The list of permissions assigned to the user show up underneath the Permissions tab.
- Click on the 'Security credentials' tab.
- Click on 'Create access key'

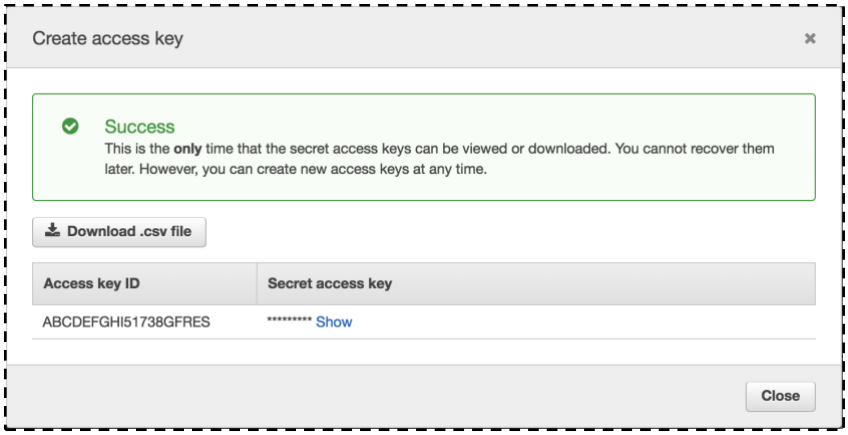

Figure 16: User - Access Key

- A popup shows up that shows the freshly created 'Access Key ID' and 'Secret access key'.
- Please make sure to click on the 'Download .csv file' button to keep a copy of the keys with you. You will need it later on while configuring your AWS account on CloudBilling! The file should download as 'accessKeys.csv'.

2.7. Enabling Tags

AWS offers you the ability to tag individual resources. A tag is a label that you assign to an AWS resource. Each tag consists of a *key* and an optional *value*, both of which you define.

Tags enable you to categorize your AWS resources in different ways, for example, by purpose, owner, or environment. This is useful when you have many resources of the same type—you can quickly identify a specific resource based on the tags you've assigned to it. For example, you could define a set of tags for your account's Amazon EC2 instances that helps you track each instance's owner and stack level.

Once you have assigned the required tags, activate these tags by navigating to the Cost allocation tags section.

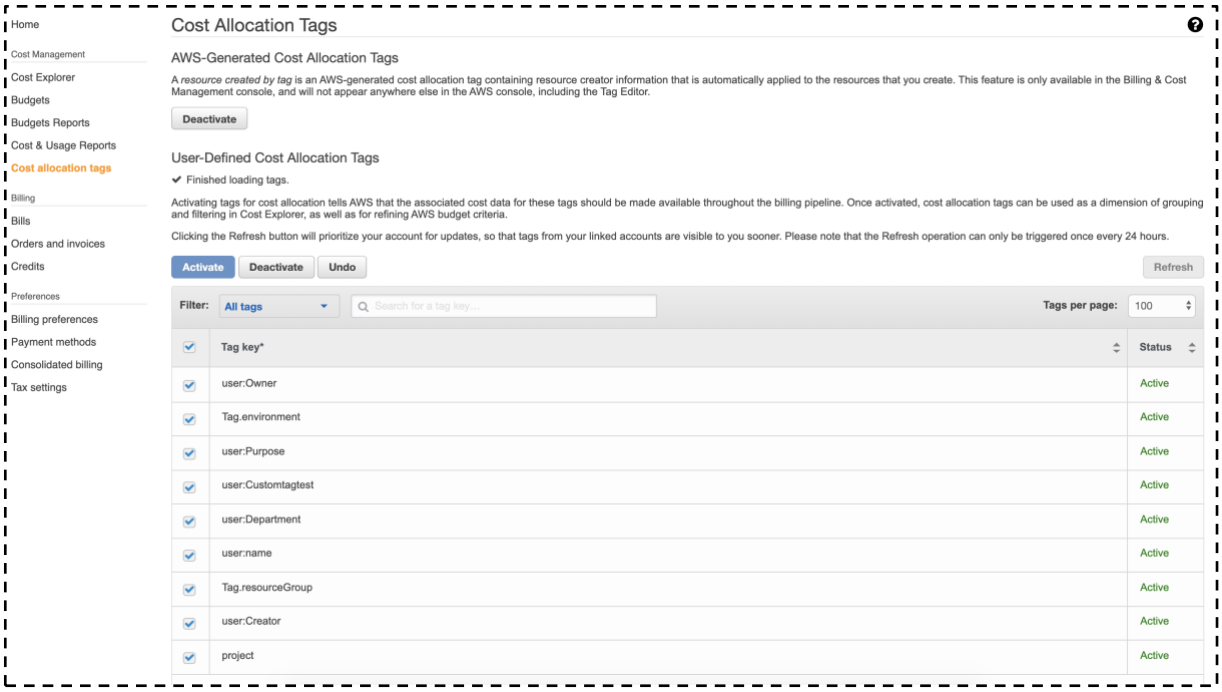

Figure 17: Activating/Deactivating Tags

3. CloudBilling Setup

3.1. AWS Connector

3.1.1. Account Configuration

To setup the CloudBilling AWS connector

- In the menu bar go to Connectors > Amazon Web Services
- Click on ‘Connector Settings’
- Click ‘Add’

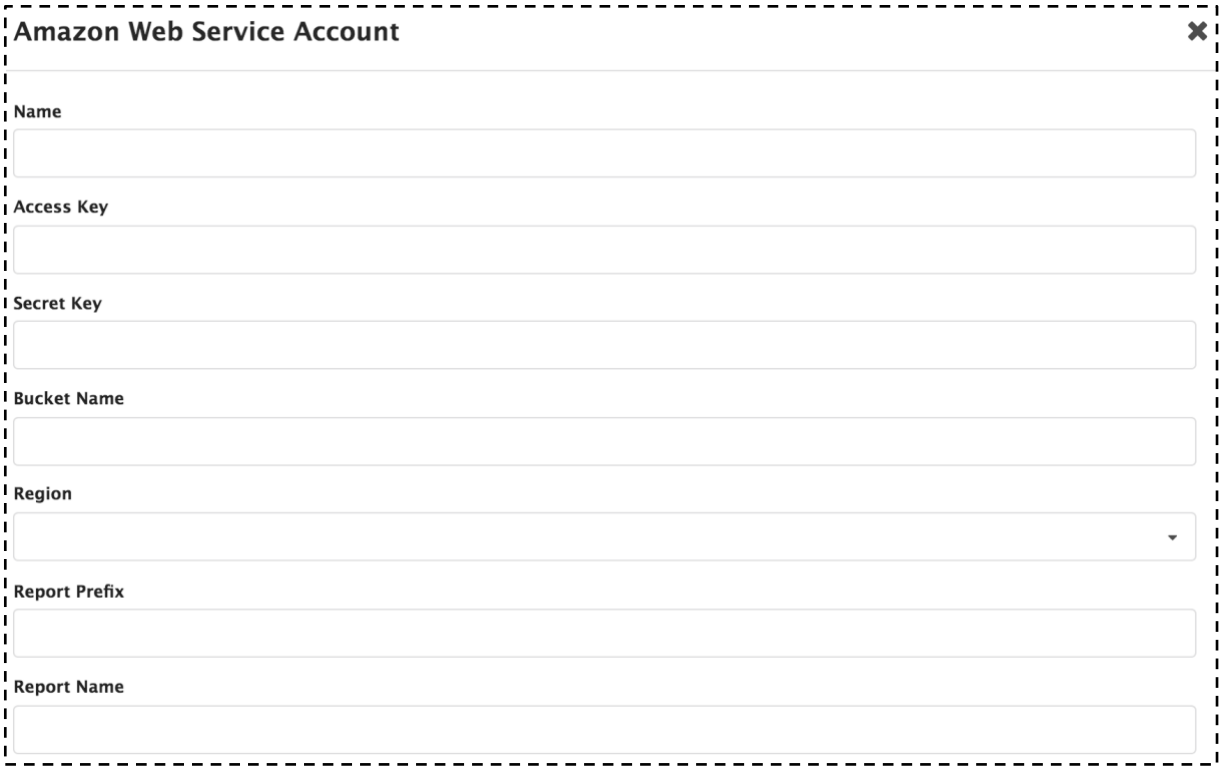

Figure 18: AWS Connector - Configuration

In the popup, fill in the user account details that you configured on your AWS account. Region information - https://docs.aws.amazon.com/general/latest/gr/rande.html

Field	Sample Value
Name	cloudbilling-biller
Access key	ABCDEFGHI51738GFRES
Secret key	<As listed in the accessKeys.csv>
Region	<Select your account region>
Report Prefix	billingmanagement
Report Name	dailyreport

3.1.2. LineItemType Mapping

AWS billing reports are in CSV format and each line in a CSV corresponds to a purchase on CloudBilling. There are 11 different LineItemTypes that tell you what type of usage record it is. Each record falls into either one of these LineItemTypes.

- **Usage** – Any usage that is charged at On-Demand Instance rates.
- **DiscountedUsage** – The rate for any instances for which you had Reserved Instance (RI) benefits.
  CloudBilling processes DiscountedUsage lineitemtypes based on the ReservationARN, i.e. the account that made the RI purchase. If the account corresponding to the DiscountedUsage is the one who purchased the RI as well, it gets charged the LineItemUnblendedRate otherwise, the PublicOnDemandRate is used.
- **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.
- **Tax** – Any taxes that AWS applied to your bill: for example, VAT or US sales tax.

- **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.
- **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**.
- **RIFee** – The monthly recurring fee for subscriptions. For example, the recurring fee for **Partial Upfront RI**s and **No Upfront RI**s that you pay every month.
- **SavingsPlanUpfrontFee** – Any upfront fee you paid for your Savings Plans. For example, the upfront fee that you paid for an **All Upfront Savings Plan** or a **Partial Upfront Savings Plan**.
  CloudBilling assigns the fee to whatever account it is reported on, so the using account.
- **SavingsPlanRecurringFee** – The monthly recurring fee for your Savings Plans related subscriptions. For example, the recurring monthly fee for a **Partial Upfront Savings Plan** or **No Upfront Savings Plan**.
  CloudBilling assigns the fee to whatever account it is reported on, so the using account.
- **SavingsPlanCoveredUsage** – The instances that received benefits from a Savings Plan subscription.
  CloudBilling assigns the usage to whatever account it is reported on, so the using account.
- **SavingsPlanNegation** – The Savings Plans discount applied. The line item contains negative costs (discounts). This enables you to find the net cost after Savings Plans discounts, using the total sum of the **Unblended Cost**.
  CloudBilling assigns the negation to the using account if and only if that account is also the account that purchased the SavingsPlan, otherwise it is assigned to the master account. This is determined using the SavingsPlanARN.

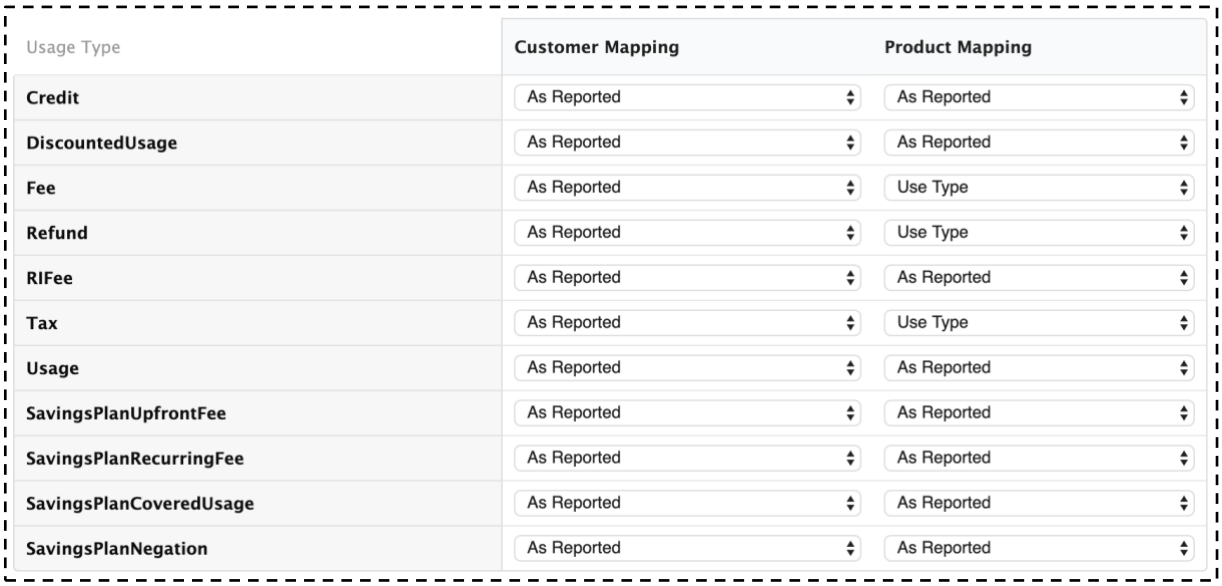

Figure 19: AWS Connector - LineItemType Mapping

It is possible to map these LineItemTypes to a purchase entity on CloudBilling in the following ways.

	Product	Customer
LineItemType	As Reported	As Reported
LineItemType	As Reported	Use Type

LineItemType	Map to Master	As Reported
LineItemType	Map to Master	Use Type

- As Reported – The purchase would map to the product/customer as reported in the billing report. DiscountedUsage and Usage use this mapping for both product and customer.
- Use Type – These are used for LineItemTypes that do not have a corresponding SKU in the billing report. Tax, Refund and Fee fall in this category.
- Map to Master – Instead of mapping to the actual customer reported in the report, you can also map the LineItemType to the master account. Commonly used in the case of Tax and/or Credit, where the purchase normally shouldn't show up on a customer's invoice.

3.1.3. Enable

- Don't forget to select the 'Enabled' checkbox!
- Click Save to complete the configuration.

3.1.4. Customer Mapping

Within 24 hours CloudBilling will start retrieving the customers corresponding to your AWS account configuration. Once that happens, you need to map your AWS customers to CloudBilling customers.

- In the menu bar go to Connectors > Amazon Web Services
- Click on 'Customer Mapping'
- Make sure you have CloudBilling customer entities created
- Map the AWS account IDs to CloudBilling customers and click on Approve one by one.

Within 24 hours of successfully completing this step, you should see AWS usage information flow into your CloudBilling account in the form of purchases.

3.2. Pricing Rules

The connector creates 3 pricing rules per product, 1 PRICE rule, 1 ADJUSTPERCENTAGE rule and 1 SUM rule.

- Although a PRICE rule is created, the actual price is fetched from the purchases it is applied to, thereby negating the need to constantly update the PRICE rule with the latest available prices from the AWS Price List Service API.
- The ADJUSTPERCENTAGE rule setups up the option to add a margin to the base price. This rule gives you the option to:
    - Set a global margin for (AWS) All Products across All Customers.
    - Set a customer specific margin for (AWS) All Products.
    - Set a product specific margin for All Customers.
- The SUM rule brings the total of the individual price + margin results together.

3.3. Purchases

CloudBilling processes each line item on a billing report as a standard purchase with the column values translating to either mandatory fields on a CB purchase entity or as metadata on the purchase. Not all columns on the billing reports are available at all times. It depends largely on the **lineItem/LineItemType** and other primary fields.

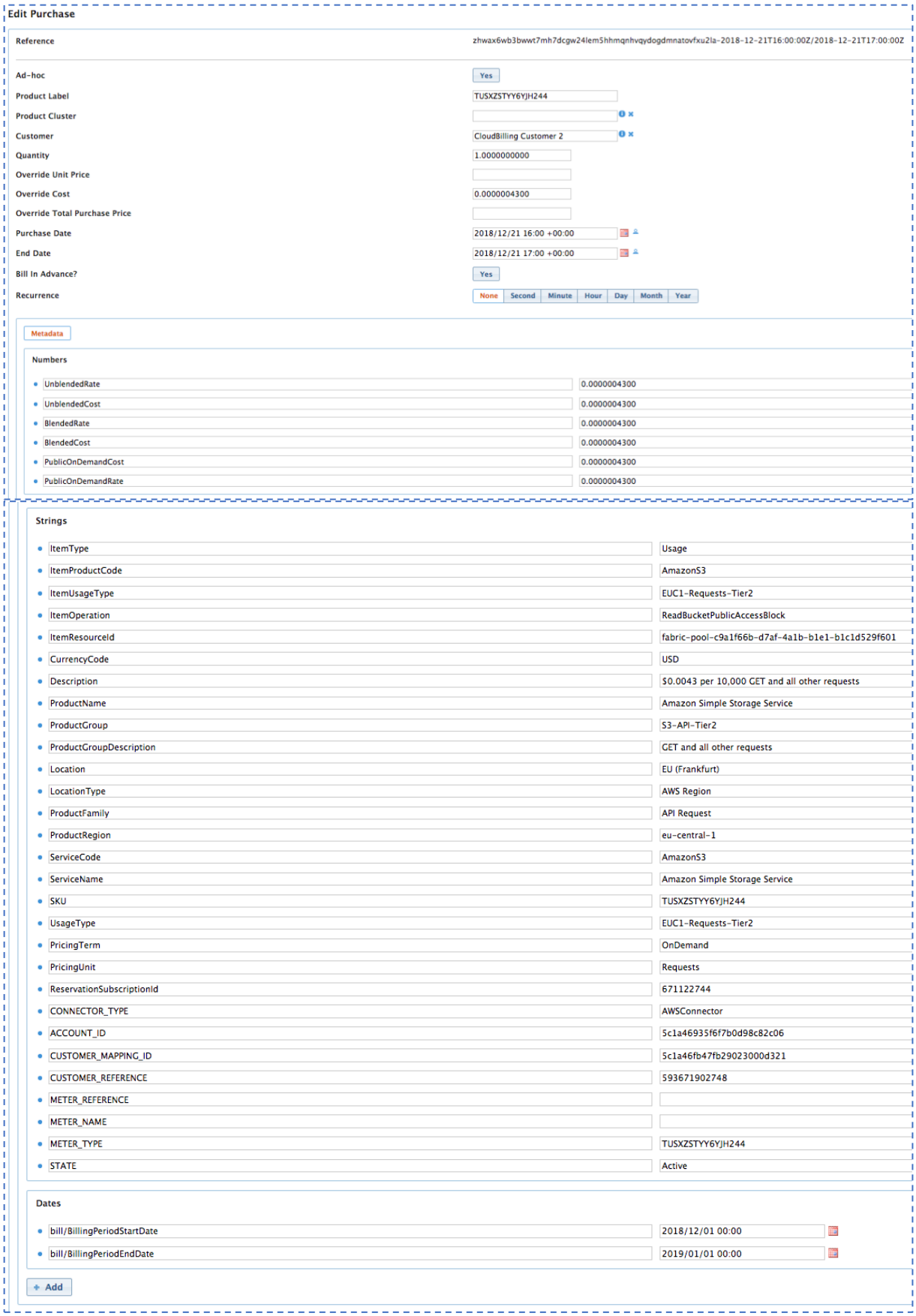

Figure 20: Sample AWS Resource Purchase

3.3.1. Processing Based on LineItemType

Product Label
Case 1: If Product Mapping is "As Reported", then
ProductLabel = <SKU> – <ProductFamily> – <ServiceContext>
ServiceContext = *product/serviceCode* (if available), otherwise *lineitem/productcode*

Case 2: If Product Mapping is "Use Type", then the *ProductLabel = LineItemType*.

LineItemType	Quantity	Unit Cost
Credit	1	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty
DiscountedUsage	LineItemUsageAmount	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty *OR* PublicOnDemandRate *OR* PublicOnDemandCost/Qty
Fee	1	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty
Refund	1	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty
RIFee	1	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty
Tax	1	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty
Usage	LineItemUsageAmount	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty
SavingsPlanUpfrontFee	LineItemUsageAmount	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty
SavingsPlanRecurringFee	LineItemUsageAmount	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty
SavingsPlanCoveredUsage	LineItemUsageAmount	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty
SavingsPlanNegation	LineItemUsageAmount	LineItemUnblendedRate *OR* LineItemUnblendedCost/Qty

Table 1: LineItemType Processing

4. Additional

4.1. References

- Getting Started
- Reports
- Reports 2
- Pricing
- Usage Report
- Account Identifiers
- Users
- Best practices
- Bulk API
- Query API

4.2. Report Format

<*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