AWS General & Pricing Information

Note: you only pay for what you use and there is no minimum fee. There is a monthly calculator available here: https://calculator.s3.amazonaws.com/index.html *that we can utilize once we have a better idea of the data size.*

AWS S3

General
An object storage service; analogous to a folder on your laptop. Storage structure is exactly like how the file structure functions on a computer. Top folders are called "Buckets", which can then have subfolders. There is no limit to how much a bucket can hold.

Pricing
As part of the AWS Free Usage Tier, you can get started with Amazon S3 for free. Upon sign-up, new AWS customers receive 5GB of Amazon S3 storage in the S3 Standard storage class; 20,000 GET Requests; 2,000 PUT, COPY, POST, or LIST Requests; and 15GB of Data Transfer Out each month for one year.

Pricing is based on the S3 bucket location. AWS resources are hosted in multiple locations worldwide. These locations are composed of AWS Regions and Availability Zones. Assuming there is no preference for region, we can just opt for the cheapest one. We can look into if there is a discernable difference in processing time between availability zones.

S3 Standard Storage

First 50 TB / Month	$0.023 per GB
Next 450 TB / Month	$0.022 per GB
Over 500 TB / Month	$0.021 per GB

S3 Standard-Infrequent Access (S3 Standard-IA) Storage

All storage / Month	$0.0125 per GB

S3 One Zone-Infrequent Access (S3 One Zone-IA) Storage

All storage / Month	$0.01 per GB

S3 Glacier Storage

All storage / Month	$0.004 per GB

- If we plan on accessing the data frequently, we should opt for the **S3 standard storage**.
- **S3 Standard-IA** is for data that is accessed less frequently, but requires rapid access when needed. ideal for long-term storage, backups, and as a data store for disaster recovery files
- **S3 One Zone-IA** is ideal for customers who want a lower-cost option for infrequently accessed data but do not require the availability and resilience of S3 Standard or S3 Standard-IA.
- **Amazon Glacier** is an online file storage web service that provides storage for data archiving and backup
  - If we end up wanting to archive data for later data analysis, this would be a great low-cost solution

Elastic Compute Cloud (EC2)

General
Allows users to essentially rent virtual computers. It provides resizable compute capacity in the cloud. It is designed to make web-scale computing easier for developers. You can spin up a virtual server of pretty much anything you can fathom. At this time, we're not sure if we'll need to end up utilizing these (opting for exclusively using Lambdas instead).

Pricing
Pricing varies greatly due to the variety of EC2 instances that can be created. They are billed by the second and can be turned on/off at will. If we do end up using it, we would most likely utilizing Linux servers. We don't have an estimate on what size instance we would need to utilize due to not knowing the full process of data transferring to the DHCB database will be/how intensive the processing is. But just to get an idea of the kind of pricing we're looking at:

	vCPU	ECU	Memory (GiB)	Instance Storage (GB)	Linux/UNIX Usage
General Purpose - Current Generation					
a1.medium	1	N/A	2 GiB	EBS Only	$0.0255 per Hour
a1.large	2	N/A	4 GiB	EBS Only	$0.051 per Hour
a1.xlarge	4	N/A	8 GiB	EBS Only	$0.102 per Hour
a1.2xlarge	8	N/A	16 GiB	EBS Only	$0.204 per Hour
a1.4xlarge	16	N/A	32 GiB	EBS Only	$0.408 per Hour
a1.metal	16	N/A	32 GiB	EBS Only	$0.408 per Hour
t3.nano	2	Variable	0.5 GiB	EBS Only	$0.0052 per Hour
t3.micro	2	Variable	1 GiB	EBS Only	$0.0104 per Hour

Lambda

General

Lambda is an event-driven, serverless computing platform provided by Amazon as a part of the Amazon Web Services. It is a computing service that runs code in response to events and automatically manages the computing resources required by that code. Essentially, you insert a code snippet into a Lambda function that you can set to be triggered when an event happens (such as inserting a file into an S3 bucket).

Pricing

Lambda counts a request each time it starts executing in response to an event notification or invoke call, including test invokes from the console. You are charged $0.0000002 per request for the total number of requests across all your functions.

Duration is calculated from the time your code begins executing until it returns or otherwise terminates, rounded up to the nearest 100ms. The price depends on the amount of memory you allocate to your function. In the AWS Lambda resource model, you choose the amount of memory you want for your function, and are allocated proportional CPU power and other resources. An increase in memory size triggers an equivalent increase in CPU available to your function.

The Lambda free tier includes 1M free requests per month and 400,000 GB-seconds of compute time per month. The memory size you choose for your Lambda functions determines how long they can run in the free tier. The Lambda free tier does not automatically expire at the end of your 12 month AWS Free Tier term, but is available to both existing and new AWS customers indefinitely.

The table below shows the free tier seconds and the approximate price per 100ms associated for different memory sizes.

Memory (MB)	Free tier seconds per month	Price per 100ms ($)
128	3,200,000	0.000000208
192	2,133,333	0.000000313
256	1,600,000	0.000000417
320	1,280,000	0.000000521
384	1,066,667	0.000000625
448	914,286	0.000000729
512	800,000	0.000000834
576	711,111	0.000000938
640	640,000	0.000001042
704	581,818	0.000001146