



Eureka Cost Estimator

Eureka Cost Overview

You will be billed quarterly for your usage of Eureka. The bill includes a Support Services fee. The cost depends primarily on the following:

- The CPUs and RAM you deploy with your App VMs.
- The amount of time your App VMs are running.
- The amount of persistent storage you provision (whether or not you use it) with your VMs.
- The amount of storage you use within Google Cloud Storage and Google BigQuery.
- The quantity and size of queries you execute within Google BigQuery.
- A Support Services fee is based on the above factors. For FY2020-2021 the Support Services fee is 15%. The fee is determined by CU Finance and subject to change.

Using This Calculator

The value of cloud computing is allocating exactly the power you need for only the time that you need it. This calculator will help you optimize the resources you allocate in your Eureka instance.

- Enter the CPU and RAM requirements for up to three virtual machines.
- For each VM, enter the disk space and estimated number of hours the machine will run in a month.
 - **Remember:** Running your machines only during daytime working hours (180 hours/month) is 75% cheaper than running them 24/7!
- If you need Cloud Storage or BigQuery, enter estimated storage requirements.

See below for more details and money-saving tips.

Server Requirements

	CPUs / RAM	Disk Space (GB, minimum 30)	Running (Hours per month)
VM 1	<input type="text" value="CPU / RAM"/>	<input type="text" value="Storage"/>	<input type="text" value="Hours"/>
VM 2	<input type="text" value="CPU / RAM"/>	<input type="text" value="Storage"/>	<input type="text" value="Hours"/>
VM 3	<input type="text" value="CPU / RAM"/>	<input type="text" value="Storage"/>	<input type="text" value="Hours"/>
Cloud Storage	<input type="text" value="0"/>		
Big Query	<input type="text" value="0"/>		

Estimated Monthly Cost

Compute Costs	
Jump VM (required)	0.00
VM 1	0.00
VM 2	0.00
VM 3	0.00
Total	\$ 0.00
Storage Costs	
VM Storage Costs	0.00
Cloud Storage Costs	0.00
BigQuery Costs	0.00
Total	\$ 0.00
Subtotal	0.00
Support Services (15%)	0.00
Total	\$ 0.00

Optimizing Compute Costs on Eureka

Limiting Virtual Machine Uptime

The biggest driver of your costs is likely to be the amount of time your virtual machines are running. **You are responsible for shutting down any VMs in your project to ensure you are not charged when you are not using them.** When you connect to your VMs, they will be automatically started. But you must manually stop your VMs when you are not using them. You can scale your CPUs and RAM up and down after deployment, and costs will shift accordingly.

Optimizing Storage Costs on Eureka

You will pay for storage whether your VMs are running or not. It is therefore very important to understand the various types of storage in play and what the costs are.

Persistent Disks for App VMs

This is the storage that serves as the main disk for your App VMs. It contains the operating system, any applications or tools you've installed, and any data files you've uploaded to your VM. The size of the disk is specified when your App VM is created, and you will pay based on the complete size of the disk -- not based on how much data you store within it. Persistent disk sizes can be increased with a request to [support](#), but the process may take 24-48 hours. Decreasing disk sizes requires us to build an entire new App VM for you. Therefore it is best to choose a reasonable disk size upon initial creation of your virtual machine. Approximately 20GB are required for the default operating system and applications, so if you anticipate a maximum of 30GB of additional storage required, you should request 50GB in persistent disk space. Currently, this would cost about \$9.78/month.

Google Cloud Storage

You will transfer files in and out of your App VMs using a staging bucket in Google Cloud Storage (GCS). With GCS, there is no maximum allocated storage space, and you will pay only for the storage space you actually use by placing files in GCS. Costs are similar to persistent storage on a per GB/month basis, but charges are per second that storage is used. So if you are working with large files, you can reduce your cost by mounting the GCS bucket to your App VM instead of downloading the files to the persistent disk attached to your App VM. For example, assuming current storage costs of \$0.026 per GB per month, keeping a 1TB file in Google Cloud Storage for a month may cost \$26. But if your intent is to move the file to a persistent disk, you would need to have a 1+TB persistent disk which may cost \$170 per month.

BigQuery Storage

BigQuery Storage costs are very similar to GCS in that you are charged per-second based on total storage. Costs are current \$0.02 per GB per month; however, the cost of long-term data (tables that haven't been modified for 90 days) drops to \$0.01 per GB per month. If you are doing frequent uploads of large datasets to BigQuery, consider loading them into separate tables rather than appending original tables, so that the older, unmodified tables can take advantage of this rate decrease.

Other Eureka Costs

These costs are generally not significant for most users, but may impact some. Please [contact us](#) with questions.

BigQuery Queries

BigQuery Analysis charges can be complicated to understand. At a high-level, you will be charged \$5 per TB scanned when you execute a query, and BigQuery scans all rows of each column that is part of the query logic. As an example, in practice, this results in very small charges (<\$20/month) for a single user running queries against structured clinical data of hundreds of thousands to millions of rows. But your costs may vary dramatically depending on the need. We strongly recommend consulting the following resources:

- [BigQuery On-Demand Pricing](#)
- [Estimating Query Costs](#)

Data Egress

While GCP charges for the storage of data, it does not charge for the network costs of transferring data to its servers. There are, however, some nominal costs associated with data that flows out of Google's network and back to your local workstation or other places on the Internet. In normal usage, this typically amounts to less than a few dollars per month. However, those costs can become noticeable if you plan to download very large amounts of data -- many terabytes. If you anticipate this to be the case, please contact us to discuss possible cost management strategies.

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Health Data Compass is a joint initiative of the University of Colorado Anschutz Medical Campus, CU Medicine, UCHHealth, and Children's Hospital Colorado. We are part of the Colorado Center for Personalized Medicine, a unit within the University of Colorado Anschutz Medical Campus.

