Estimated Cloud Computing Costs

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Last edited: 09.13.2021

# 1 Considerations and Assumptions

Cost estimates assume:

* 10 concurrent users
* 24 hours of use per day
* 30 days per month

Cost estimate DOES NOT include:

* Billable personnel hours for setup and maintenance
* Static Kubernetes overhead costs

# 2 Summary of Estimated Cloud Computing Costs

| **Item** | **Hardware Configuration 1** | **Hardware Configuration 2** |
| --- | --- | --- |
| JupyterHub | $986.35 | $1393.00 |
| NFS Shared Data (100 GB shared) | $58.32 | $58.32 |
|  |  |  |
|  |  |  |
| Estimated Monthly Cost | **$1044.67** | **$1451.32** |
| Estimated Yearly Cost | **$12536.04** | **$17415.84** |
|  |  |  |
| Estimated Yearly Cost - 50% Usage | **$6268.02** | **$8707.92** |
| Estimated Yearly Cost - 25% Usage | **$3134.01** | **4353.96** |

# 3 Cost Per Service

This section outlines the cost for each service in the table above.

## 3.1 JupyterHub

The cost estimate assumes that users will be accessing the system 24 hours a day, 7 days a week. The actual use of the system will likely be much lower than this.

### 3.1.1 Hardware Configuration 1

| Users per Node | 2 |
| --- | --- |
| Number of Nodes | 0 - 5 |
| Guaranteed CPU | 4 |
| Guaranteed RAM | 16 |
| Total Users Supported | 10 |
| Machine Type | E2-standard-8 |
| Image Type | Container Optimized OS |
| Cost Estimate per Node (1 month) | $195.67 |
| Cost Estimate per Node (1 hour) | $0.268 |

### 3.1.2 Hardware Configuration 2

| Users per Node | 2 |
| --- | --- |
| Number of Nodes | 0 - 5 |
| Guaranteed CPU | 4 |
| Guaranteed RAM | 32 |
| Total Users Supported | 10 |
| Machine Type | e2-custom-8-65536 |
| Image Type | Container Optimized OS |
| Cost Estimate per Node (1 month) | $277.00 |
| Cost Estimate per Node (1 hour) | $0.379 |

### 3.1.3 User Storage Estimate

* Standard persistent storage ($0.04 per GiB) is where users will store their files when working in JupyterHub. The cost per user, per month is computed as:

### 3.1.3 Total Costs

Hardware Configuration 1 per month

| **Item** | **Cost per Unit** | **Num Units** | **Item Cost** |
| --- | --- | --- | --- |
| Node | $195.67 | 5 | $ 978.35 |
| 20 GiB Disk (user) | $0.80 | 10 | $ 8.00 |
| Totals |  |  | **$ 986.35** |

Hardware Configuration 2 per month

| **Item** | **Cost per Unit** | **Num Units** | **Item Cost** |
| --- | --- | --- | --- |
| Node | $277.00 | 5 | $1385.00 |
| 20 GiB Disk (user) | $0.80 | 10 | $ 8.00 |
| Totals |  |  | **$1393.00** |

## 4.2 Shared Storage (NFS)

### 4.2.1 Hardware Configuration

| Machine Type | e2-standard-2 (2 vCPUs, 8 GB memory) |
| --- | --- |
| Image Type | Container Optimized OS |
| Cost Estimate per Node (1 month) | **$48.92** |
|  |  |

### 4.2.2 Storage Estimate

The NFS server will have standard persistent storage ($0.04 per GiB) where common datasets will be stored and be made accessible when working in JupyterHub.

* Boot Disk =
* Data Disk =

### 4.2.3 Total Cost

Cost per month

| **Item** | **Cost per Unit** | **Num Units** | **Item Cost** |
| --- | --- | --- | --- |
| NFS Machine | $48.92 | 1 | $48.92 |
| 50 GiB Boot Disk | $3.13 | 1 | $3.13 |
| 100 GiB Data Disk | $6.27 | 1 | $6.27 |
| Total per month |  |  | **$58.32** |