

Google Cloud guide

1 Step-by-step guide for setting up (GPU) notebook environments in Google cloud

1.1 Coupon

1. Follow link for student Coupon retrieval found on BlackBoard.
2. Fill out your information and submit.
3. You should retrieve an email for verification shortly, followed by a coupon and a link to how you can redeem it.
4. (Optionally) Create a new Google account to redeem your coupon if you do not have one already.

1.2 Enabling APIs and increasing GPU quota

1. After redeeming the coupon, you may be prompted to create a new Project, follow on-screen commands.
2. The first thing we need to do is to enable some APIs and increase your GPU quota from 0 to 1. The easiest way I have found is to use the upper search bar and search for “Google Colab“.
3. When attempting to launch a Colab instance, you have to accept enabling of said APIs. (Do not worry, you will not be launching anything that may drain your credits yet)
4. After Enabling the APIs you will be presented the following screen, however, our first interest is the warning stating that we are exceeding our GPU quota:

Google Cloud Platform Deep learning

New Colab deployment

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You've gone over GPU global quota by 1 GPU. Please increase your quota in the [quotas page](#). [Learn more](#)

Deployment name *
colab-1

Zone
us-west1-b

GPU availability is limited to certain zones. [Learn more](#)

Machine type

Machine family

GENERAL-PURPOSE COMPUTE-OPTIMISED MEMORY-OPTIMISED GPU

Machine types for common workloads, optimised for cost and flexibility

Series
N1

Powered by Intel Skylake CPU platform or one of its predecessors

Machine type
n1-highmem-2 (2 vCPU, 13 GB memory)

VCPU 2 Memory 13 GB

GPUs

The number of attached GPUs affects the VM's maximum number of memory and CPUs. [Learn more](#)

GPU type
NVIDIA Tesla T4

Number of GPUs
1

☐ Enable Virtual Workstation (NVIDIA GRID)

[CPU PLATFORM AND GPU](#)

Boot Disk

Boot disk type *
SSD Persistent Disk

Boot disk size in GB *
200

Colab overview

Product provided by Google Colab

License for Colab Marketplace VM Usage Fee Does not charge a usage fee.	USD 0.00/mo
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Infrastructure fee

VM instance: 2 vCPUs + 13 GB memory (n1-highmem-2)	USD 66.36/mo
Solid State Disk: 200GB	USD 13.00/mo
NVIDIA Tesla T4 GPU	USD 255.50/mo
Sustained-use discount	- USD 162.56/mo
Estimated monthly total	USD 252.30/mo

Software

Operating system
Container-Optimized OS

Terms of Service

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Google is providing this software or service "as-is" and any support for this software or service will be provided by Google Colab under their terms of service.

5. After clicking the link we are presented with a different view, and hopefully a Quota named "GPUs(all regions)" from the service "Compute Engine API". Check the box and click "EDIT QUOTAS" as shown below:

Google Cloud Platform Deep learning

Search Products, resources, docs (/)

IAM and admin

Quotas for project "Deep learning"

[EDIT QUOTAS](#)

2 Click "EDIT QUOTAS"

Near the limit
0
[View quotas](#)

Low usage
7,501
[View quotas](#)

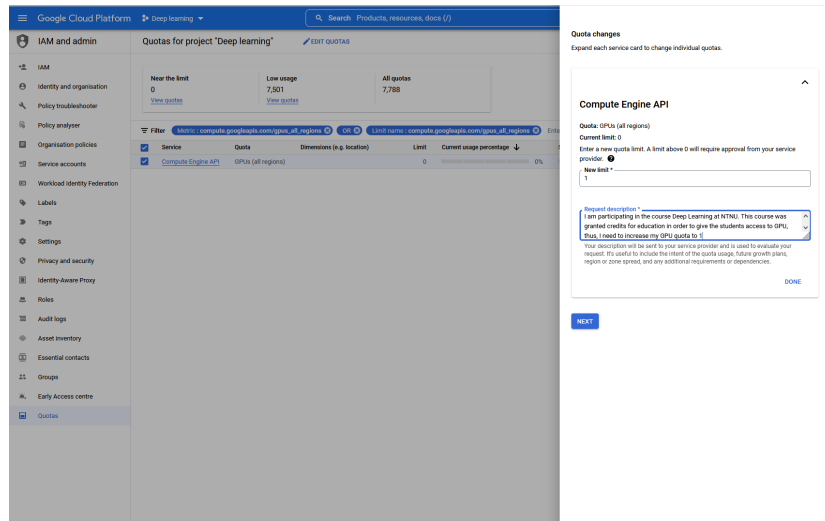
All quotas
7,788

Filter Metric: compute.googleapis.com/gpus_all_regions CPU Limit: compute.googleapis.com/gpus_all_regions Enter property name or value

Service	Quota	Dimensions (e.g. location)	Limit	Current usage percentage	Seven-day peak usage percentage
<input checked="" type="checkbox"/> Compute Engine API	GPUs (all regions)		0	0%	0%

1 Check box

- You will be presented with a new screen where you are asked what you want to set the quota to and to justify why you need the increase. Set the quota to 1 and consider using the text in the screen capture below. (Disclaimer: I do not know who/what process these applications, but I have had two different trial users accepted in 1-2 minutes. However, Google have their own disclaimer which states that the process may take up to 2 business days.)



1.2.1 Launching notebooks using Vertex AI

- Use the upper search bar and search for “Vertex AI”.
- You may be prompted to enable another API, if so, accept.
- Within Vertex AI, there are vertical tabs to the left, click “Workbench”
- You can now start to **attempt** to initialize notebooks.
- Look at the image below for the different settings you may care about:

Google Cloud Platform Deep learning Search vertex

Vertex AI Create a user-managed notebook

Notebook name * 1 Set name
63 character limit with lowercase letters, digits or '-' only. Must start with a letter. Cannot end with '-'.

Region * us-west1 (Oregon) Zone * us-west1-b
Requests to your notebook from the Datalab/Jupyter interface may be routed through a different region than selected above depending on service availability.

US\$281.58 monthly estimate
 That's about \$0.386 hourly
 Pay for what you use. No upfront costs and per-second billing.
 Networking cost also applies. [Learn more](#)

Environment
 All environments have the latest NVIDIA GPU libraries, Intel libraries and drivers. Notebooks use JupyterLab 3 by default (you can [specify a previous version](#) instead).
 Operating system * Debian 10
 Environment * PyTorch 1.10 (with Intel® MKL, ONNX/MKL) 2 Select environment
Includes [fast.ai](#) and other key packages for handling data, such as scikit-learn, pandas and NLTK.

Select a script to run after creation **BROWSE**

Custom metadata

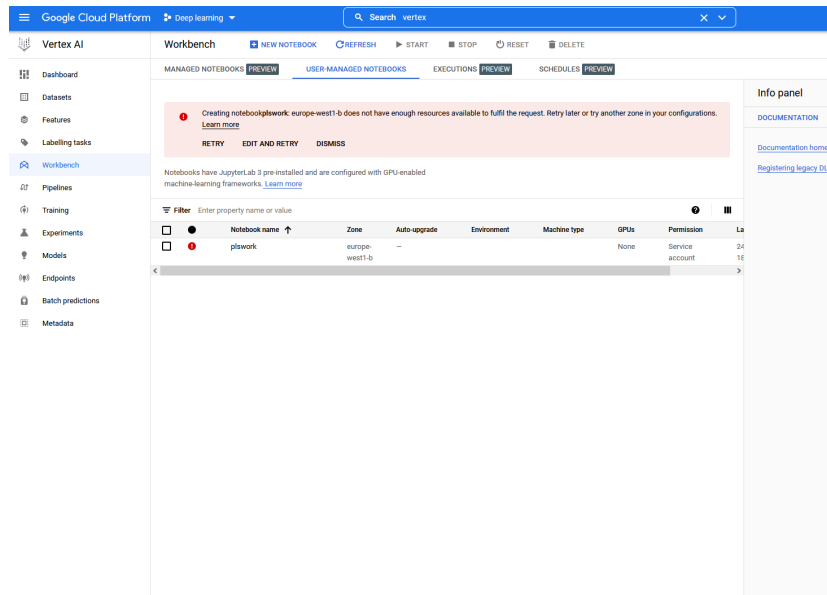
Metadata
[+ ADD ITEM](#)

Machine configuration
 Machine type * n1-standard4 (4 vCPUs, 15 GB RAM)
 GPU type NVIDIA Tesla T4 3 Select GPU (Tesla T4 is the cheapest)
CUDA 11.0 will be pre-installed in your environment.
☒ Install NVIDIA GPU driver automatically for me 4 You will likely want to check this
 Number of GPUs 1

Shielded VM
 Turn on all settings for the most secure configuration. Secure Boot doesn't support instances with GPUs.
☐ Turn on Secure Boot
☒ Turn on vTPM
☒ Turn on Integrity Monitoring

5,6,7... You will likely have to try multiple different Region/Zone combos before having any success.

6. More often than not, you will get the error shown below, and you must attempt again after editing. Note that you often have to revisit the settings you selected when clicking “EDIT AND RETRY“. GPU is usually removed for instance. I have had some success by switching the region and zone. For instance, try the different zones available in Europe-west(Belgia).



7. If you get it to work, you will finally have a notebook environment in which you can upload files and use GPU. I advise you to stop the notebook from the Vertex AI workbench menu between developing sessions. Happy coding!
8. **NB: Remember to keep your changes safe:** Make sure your code is backed up (ideally through version control like git) in case you should be very unlucky and delete your managed notebook by mistake etc.

1.3 Google Colab VM?

As alluded to in the steps for enabling APIs and increasing GPU quota, there is an option for launching Google Colab VMs. This should in theory allow you to use said VM from Google Colab, thus guaranteeing compute. However, I had some problems getting this to work (the automatic hyperlink did not properly set the correct runtime, and manually setting it did not seem to work either). I believe using managed notebooks through Vertex AI to be a simpler option, but feel free to try if you want to.