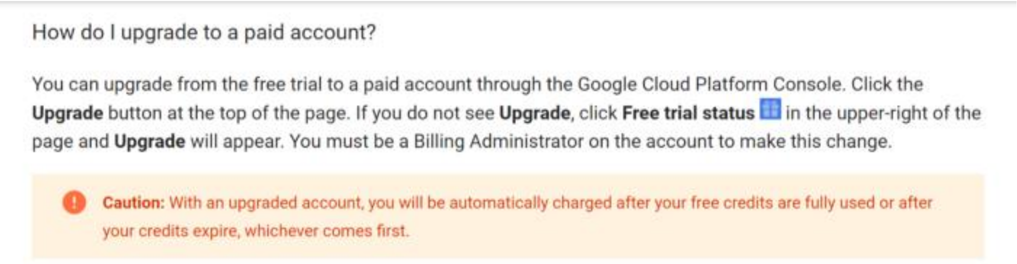
Setup guide for Google Cloud Platform

This guide explains how to set up Google Cloud Platform (GCP) to use PyTorch 1.0.0 and fastai 1.0.2. At the end of this tutorial you will be able to use both in a GPU-enabled Jupyter Notebook environment.

1. Sign up on Google Cloud Platform Free Tier.

https://cloud.google.com/free/

2. Upgrade to a paid account (credit card required).



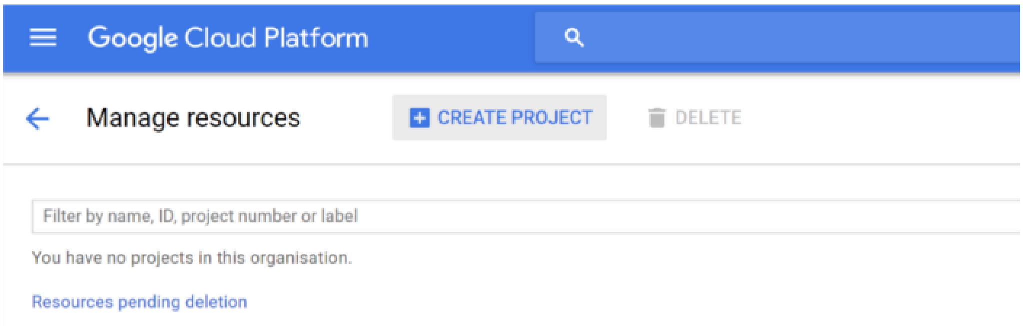
How do I upgrade to a paid account?

You can upgrade from the free trial to a paid account through the Google Cloud Platform Console. Click the **Upgrade** button at the top of the page. If you do not see **Upgrade**, click **Free trial status** in the upper-right of the page and **Upgrade** will appear. You must be a Billing Administrator on the account to make this change.

Caution: With an upgraded account, you will be automatically charged after your free credits are fully used or after your credits expire, whichever comes first.

If you are unable to find an Upgrade button at this point, just continue with the next steps. The Upgrade button should appear at Step 5 below when you request for an increase in quota.

3. Create a new project for the deep learning course course



Filter by name, ID, project number or label

You have no projects in this organisation.

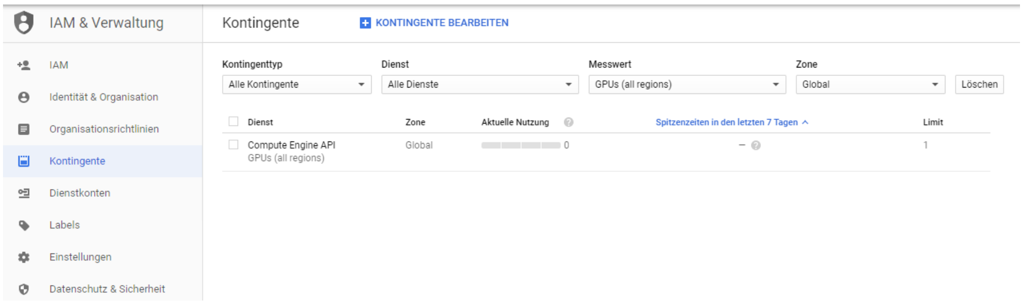
Click on “Create Project”.

4. Request for increase in quota for GPU

Kommentar [DHN1]: If you can’t increase your quota, skip this part first and continue with step 7: create new instance. You won’t be able to add a GPU, but now you can request for an increase in quota for GPU .

IAM & Admin → Quotas

5. In filter type, select metric to be GPUs (all regions) and Location as Global.

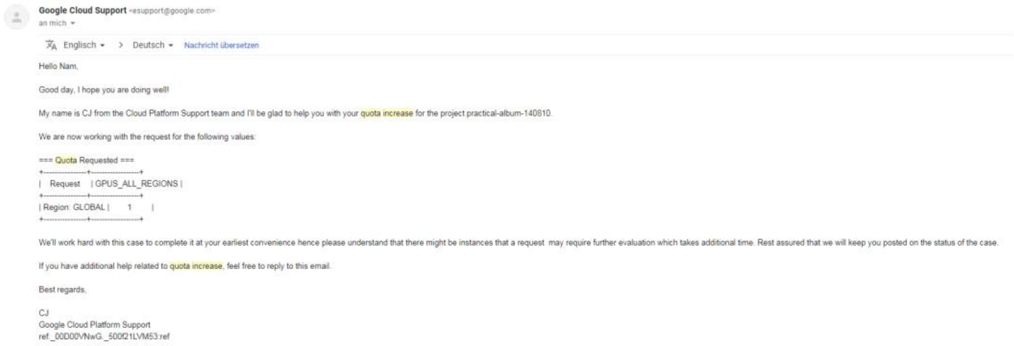


Kontingenttyp: Alle Kontingente
Dienst: Alle Dienste
Messwert: GPUs (all regions)
Zone: Global

□ Dienst	Zone	Aktuelle Nutzung	Spitzenzeiten in den letzten 7 Tagen	Limit
□ Compute Engine API GPUs (all regions)	Global	0	–	1

Click edit quotas and select the quota to edit (GPUs All Regions). Set the new quota limit to 1 or more. Your request may require confirmation, which Google claims typically takes two business days to get.

6. Receive email approval of quota increase



Google Cloud Support <esupport@google.com>
an mich

Hello Nam,

Good day, I hope you are doing well!

My name is CJ from the Cloud Platform Support team and I'll be glad to help you with your quota increase for the project practical-album-140810.

We are now working with the request for the following values:

```
=== Quota Requested ===
+---------------+-----------------+
|   Request     | GPUS_ALL_REGIONS |
+---------------+-----------------+
| Region: GLOBAL |       1        |
+---------------+-----------------+
```

We'll work hard with this case to complete it at your earliest convenience hence please understand that there might be instances that a request may require further evaluation which takes additional time. Rest assured that we will keep you posted on the status of the case.

If you have additional help related to quota increase, feel free to reply to this email.

Best regards,

CJ
Google Cloud Platform Support
ref:_00D00VNwG._500f21LVM53:ref

7. Navigate to the Compute Engine -> VM-instances

Create new instance

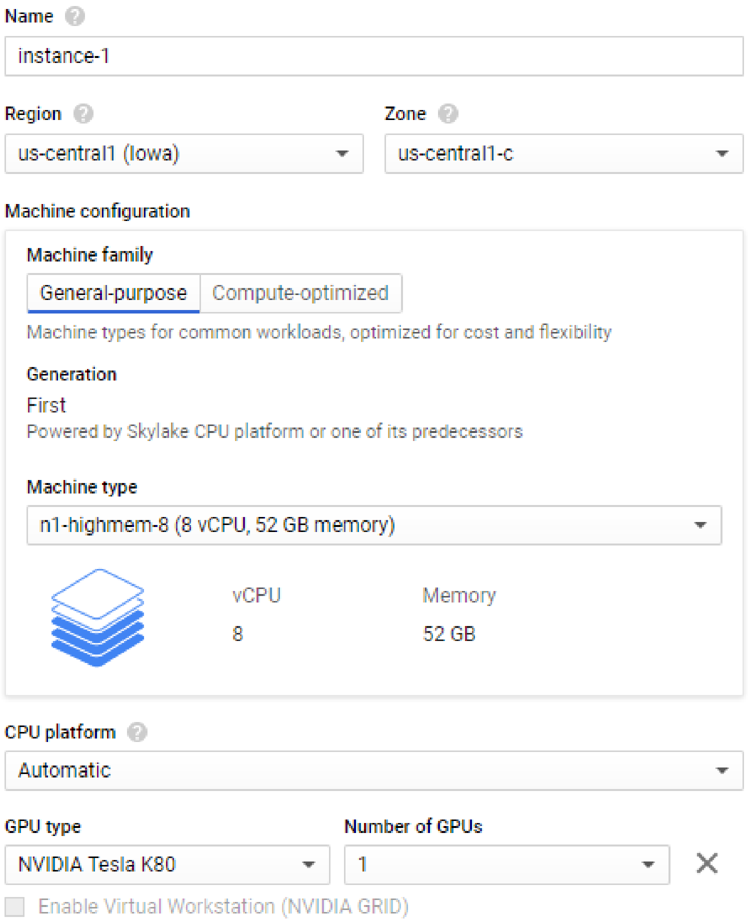
Give a name for your instance

Region: us-central1, Zone: us-central1-c

Machine type: n1-highmem-8

GPU type: NVIDIA Tesla P4

Kommentar [DHN2]: Image should show the Test P4



Name
instance-1

Region
us-central1 (Iowa)

Zone
us-central1-c

Machine configuration

Machine family
General-purpose | Compute-optimized
Machine types for common workloads, optimized for cost and flexibility

Generation
First
Powered by Skylake CPU platform or one of its predecessors

Machine type
n1-highmem-8 (8 vCPU, 52 GB memory)

vCPU
8

Memory
52 GB

CPU platform
Automatic

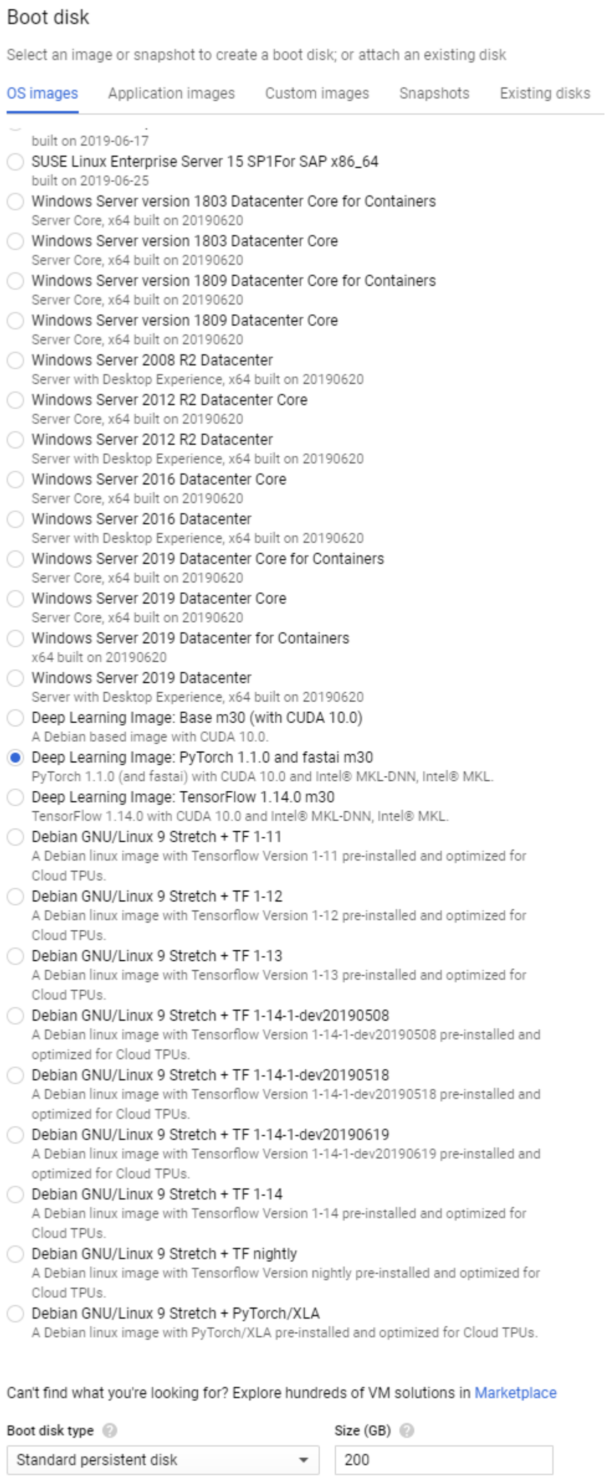
GPU type
NVIDIA Tesla K80

Number of GPUs
1

□ Enable Virtual Workstation (NVIDIA GRID)

Boot disk: Deep Learning Image: PyTorch 1.1.0 and fastai m30

Boot disk type: Standard persisten disk with 200GB



Boot disk

Select an image or snapshot to create a boot disk; or attach an existing disk

built on 2019-06-17

○ SUSE Linux Enterprise Server 15 SP1For SAP x86_64
built on 2019-06-25

○ Windows Server version 1803 Datacenter Core for Containers
Server Core, x64 built on 20190620

○ Windows Server version 1803 Datacenter Core
Server Core, x64 built on 20190620

○ Windows Server version 1809 Datacenter Core for Containers
Server Core, x64 built on 20190620

○ Windows Server version 1809 Datacenter Core
Server Core, x64 built on 20190620

○ Windows Server 2008 R2 Datacenter
Server with Desktop Experience, x64 built on 20190620

○ Windows Server 2012 R2 Datacenter Core
Server Core, x64 built on 20190620

○ Windows Server 2012 R2 Datacenter
Server with Desktop Experience, x64 built on 20190620

○ Windows Server 2016 Datacenter Core
Server Core, x64 built on 20190620

○ Windows Server 2016 Datacenter
Server with Desktop Experience, x64 built on 20190620

○ Windows Server 2019 Datacenter Core for Containers
Server Core, x64 built on 20190620

○ Windows Server 2019 Datacenter Core
Server Core, x64 built on 20190620

○ Windows Server 2019 Datacenter for Containers
x64 built on 20190620

○ Windows Server 2019 Datacenter
Server with Desktop Experience, x64 built on 20190620

○ Deep Learning Image: Base m30 (with CUDA 10.0)
A Debian based image with CUDA 10.0.

● Deep Learning Image: PyTorch 1.1.0 and fastai m30
PyTorch 1.1.0 (and fastai) with CUDA 10.0 and Intel® MKL-DNN, Intel® MKL.

○ Deep Learning Image: TensorFlow 1.14.0 m30
TensorFlow 1.14.0 with CUDA 10.0 and Intel® MKL-DNN, Intel® MKL.

○ Debian GNU/Linux 9 Stretch + TF 1-11
A Debian linux image with Tensorflow Version 1-11 pre-installed and optimized for Cloud TPUs.

○ Debian GNU/Linux 9 Stretch + TF 1-12
A Debian linux image with Tensorflow Version 1-12 pre-installed and optimized for Cloud TPUs.

○ Debian GNU/Linux 9 Stretch + TF 1-13
A Debian linux image with Tensorflow Version 1-13 pre-installed and optimized for Cloud TPUs.

○ Debian GNU/Linux 9 Stretch + TF 1-14-1-dev20190508
A Debian linux image with Tensorflow Version 1-14-1-dev20190508 pre-installed and optimized for Cloud TPUs.

○ Debian GNU/Linux 9 Stretch + TF 1-14-1-dev20190518
A Debian linux image with Tensorflow Version 1-14-1-dev20190518 pre-installed and optimized for Cloud TPUs.

○ Debian GNU/Linux 9 Stretch + TF 1-14-1-dev20190619
A Debian linux image with Tensorflow Version 1-14-1-dev20190619 pre-installed and optimized for Cloud TPUs.

○ Debian GNU/Linux 9 Stretch + TF 1-14
A Debian linux image with Tensorflow Version 1-14 pre-installed and optimized for Cloud TPUs.

○ Debian GNU/Linux 9 Stretch + TF nightly
A Debian linux image with Tensorflow Version nightly pre-installed and optimized for Cloud TPUs.

○ Debian GNU/Linux 9 Stretch + PyTorch/XLA
A Debian linux image with PyTorch/XLA pre-installed and optimized for Cloud TPUs.

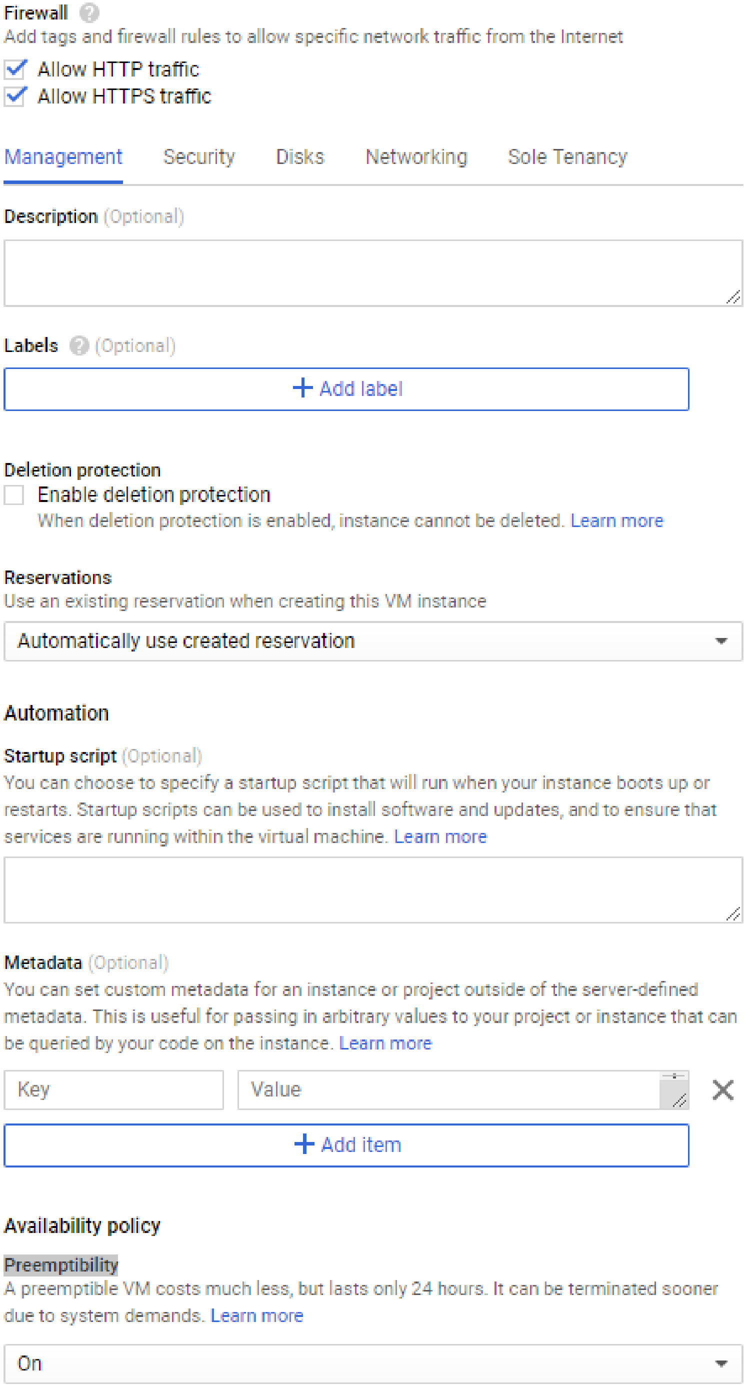
Can't find what you're looking for? Explore hundreds of VM solutions in Marketplace

Boot disk type: Standard persistent disk

Size (GB): 200

Firewall: Allow HTTP and HTTPS traffic

Preemptibility: On



Firewall

Add tags and firewall rules to allow specific network traffic from the Internet

☑ Allow HTTP traffic

☑ Allow HTTPS traffic

Description (Optional)

Labels (Optional)

Deletion protection

□ Enable deletion protection

When deletion protection is enabled, instance cannot be deleted. Learn more

Reservations

Use an existing reservation when creating this VM instance

Automatically use created reservation

Automation

Startup script (Optional)

You can choose to specify a startup script that will run when your instance boots up or restarts. Startup scripts can be used to install software and updates, and to ensure that services are running within the virtual machine. Learn more

Metadata (Optional)

You can set custom metadata for an instance or project outside of the server-defined metadata. This is useful for passing in arbitrary values to your project or instance that can be queried by your code on the instance. Learn more

Availability policy

Preemptibility

A preemptible VM costs much less, but lasts only 24 hours. It can be terminated sooner due to system demands. Learn more

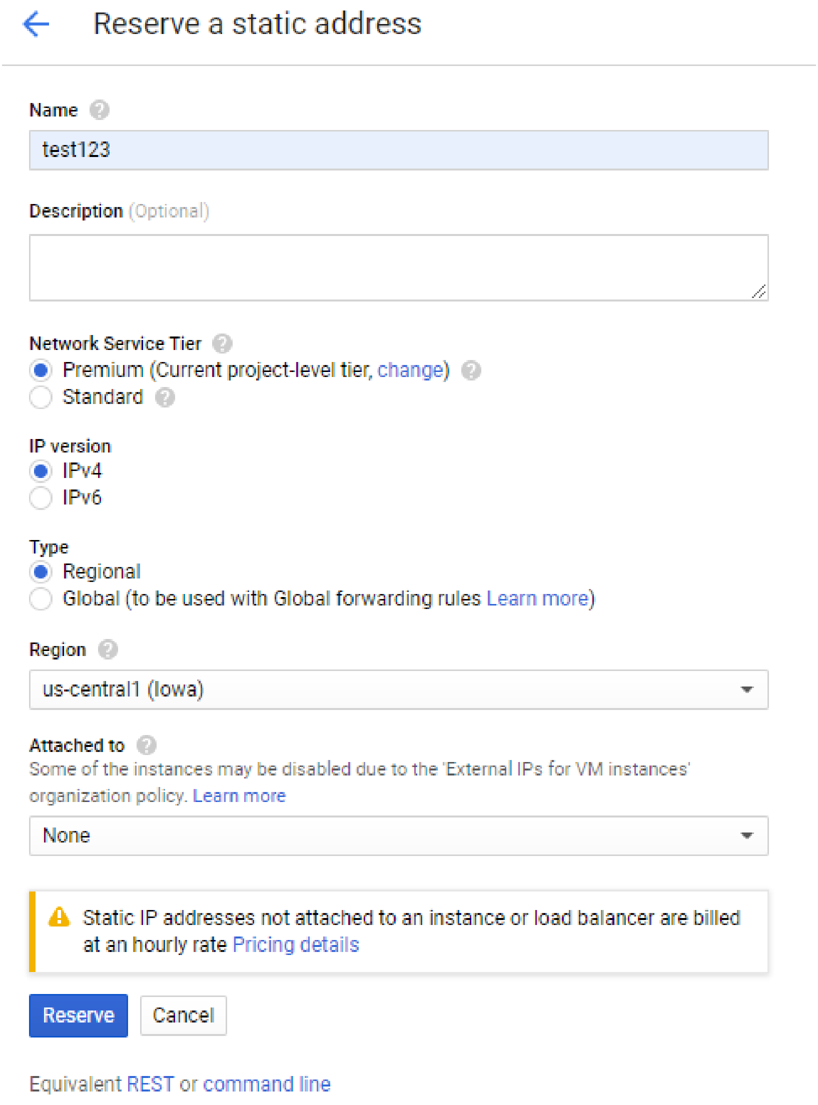
On

Price of your VM instace should be about $0.327 hourly

8. Create a static IP address

Click on the three dots besides your created VM instance and select ‘View network details

Navigate to external IP addresses and select reserve a static address



Reserve a static address

Name

test123

Description (Optional)

Network Service Tier

● Premium (Current project-level tier, change)

○ Standard

IP version

● IPv4

○ IPv6

Type

● Regional

○ Global (to be used with Global forwarding rules Learn more)

Region

us-central1 (Iowa)

Attached to

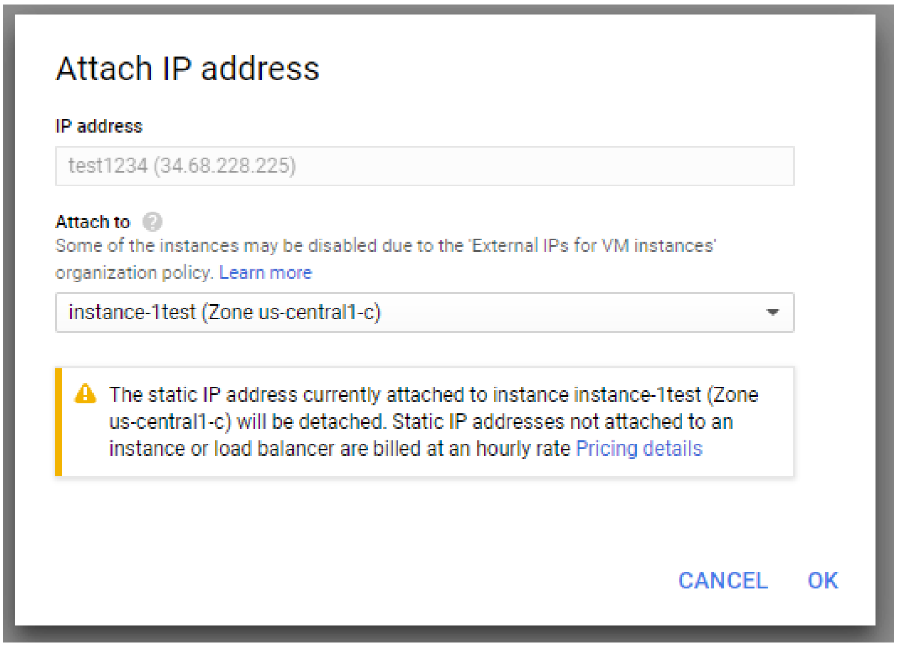
Some of the instances may be disabled due to the 'External IPs for VM instances' organization policy. Learn more

None

Static IP addresses not attached to an instance or load balancer are billed at an hourly rate Pricing details

Equivalent REST or command line

Reserve and click on change to attach IP address to your instance



Attach IP address

IP address

test1234 (34.68.228.225)

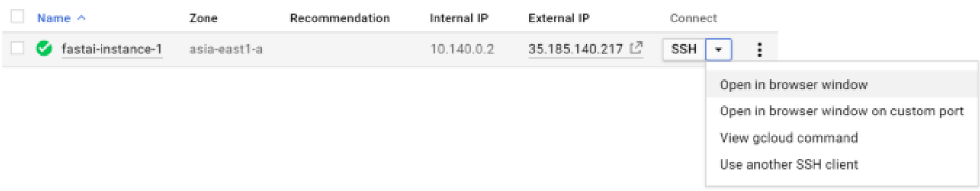
Attach to

Some of the instances may be disabled due to the 'External IPs for VM instances' organization policy. Learn more

instance-1test (Zone us-central1-c)

The static IP address currently attached to instance instance-1test (Zone us-central1-c) will be detached. Static IP addresses not attached to an instance or load balancer are billed at an hourly rate Pricing details

9. Connect to the CM instance through SSH from the browser:



	Name	Zone	Recommendation	Internal IP	External IP	Connect
□	✓ fastai-instance-1	asia-east1-a		10.140.0.2	35.185.140.217	SSH

10. Install Nvidia driver

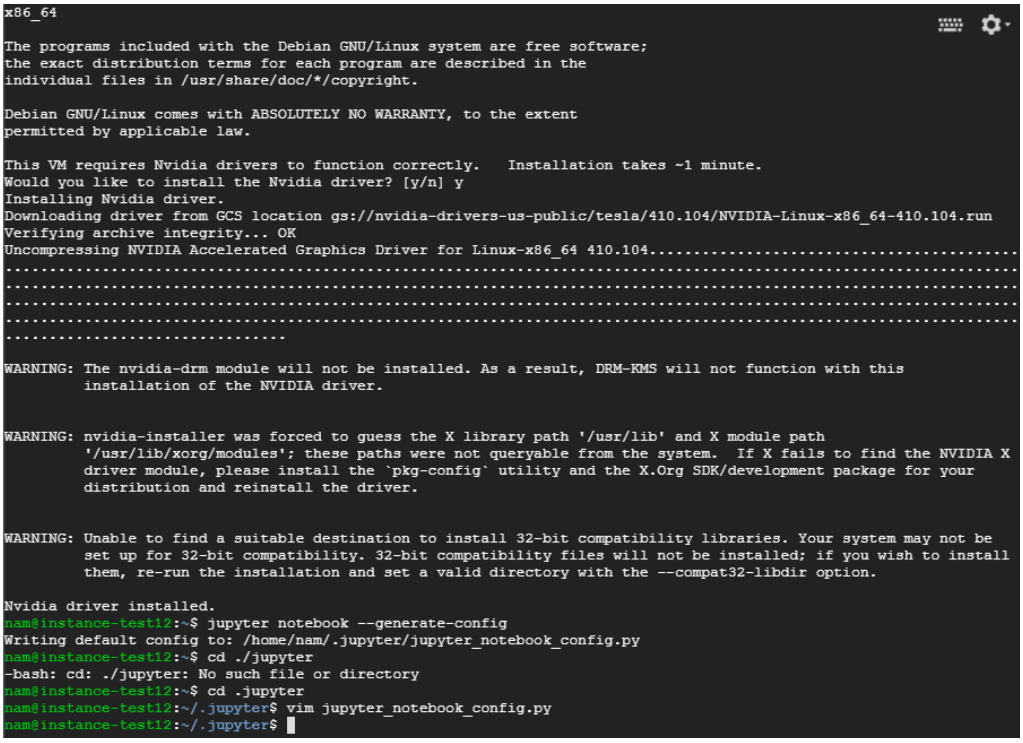
11. Configure Jupyter Notebook Server

Type in terminal:

jupyter notebook --generate-config

cd .jupyter

open your jupyter notebook config with editor of your chose, e.g. vim jupyter_notebook_config.py

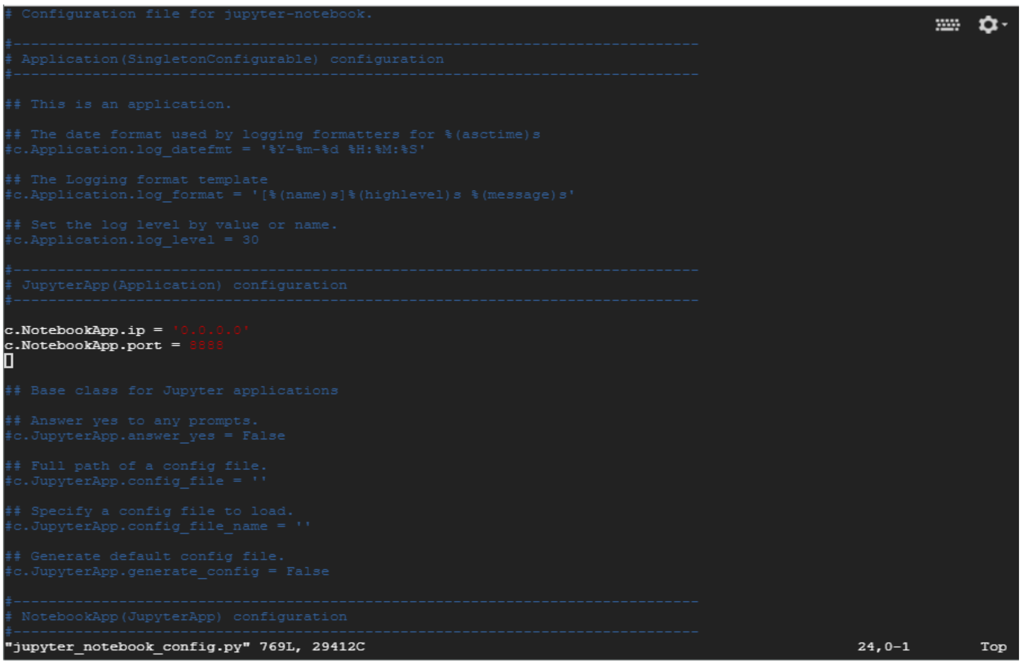


```
x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

This VM requires Nvidia drivers to function correctly.   Installation takes ~1 minute.
Would you like to install the Nvidia driver? [y/n] y
Installing Nvidia driver.
Downloading driver from GCS location gs://nvidia-drivers-us-public/tesla/410.104/NVIDIA-Linux-x86_64-410.104.run
Verifying archive integrity... OK
Uncompressing NVIDIA Accelerated Graphics Driver for Linux-x86_64 410.104............................................
.....................................................................................................................
.....................................................................................................................
.....................................................................................................................
.....................................................................................................................
................................

WARNING: The nvidia-drm module will not be installed. As a result, DRM-KMS will not function with this
         installation of the NVIDIA driver.


WARNING: nvidia-installer was forced to guess the X library path '/usr/lib' and X module path
         '/usr/lib/xorg/modules'; these paths were not queryable from the system.  If X fails to find the NVIDIA X
         driver module, please install the `pkg-config` utility and the X.Org SDK/development package for your
         distribution and reinstall the driver.


WARNING: Unable to find a suitable destination to install 32-bit compatibility libraries. Your system may not be
         set up for 32-bit compatibility. 32-bit compatibility files will not be installed; if you wish to install
         them, re-run the installation and set a valid directory with the --compat32-libdir option.

Nvidia driver installed.
nam@instance-test12:~$ jupyter notebook --generate-config
Writing default config to: /home/nam/.jupyter/jupyter_notebook_config.py
nam@instance-test12:~$ cd ./jupyter
-bash: cd: ./jupyter: No such file or directory
nam@instance-test12:~$ cd .jupyter
nam@instance-test12:~/.jupyter$ vim jupyter_notebook_config.py
nam@instance-test12:~/.jupyter$
```

add somewhere following lines:

c.NotebookApp.ip = '0.0.0.0'

c.NotebookApp.port = 8888



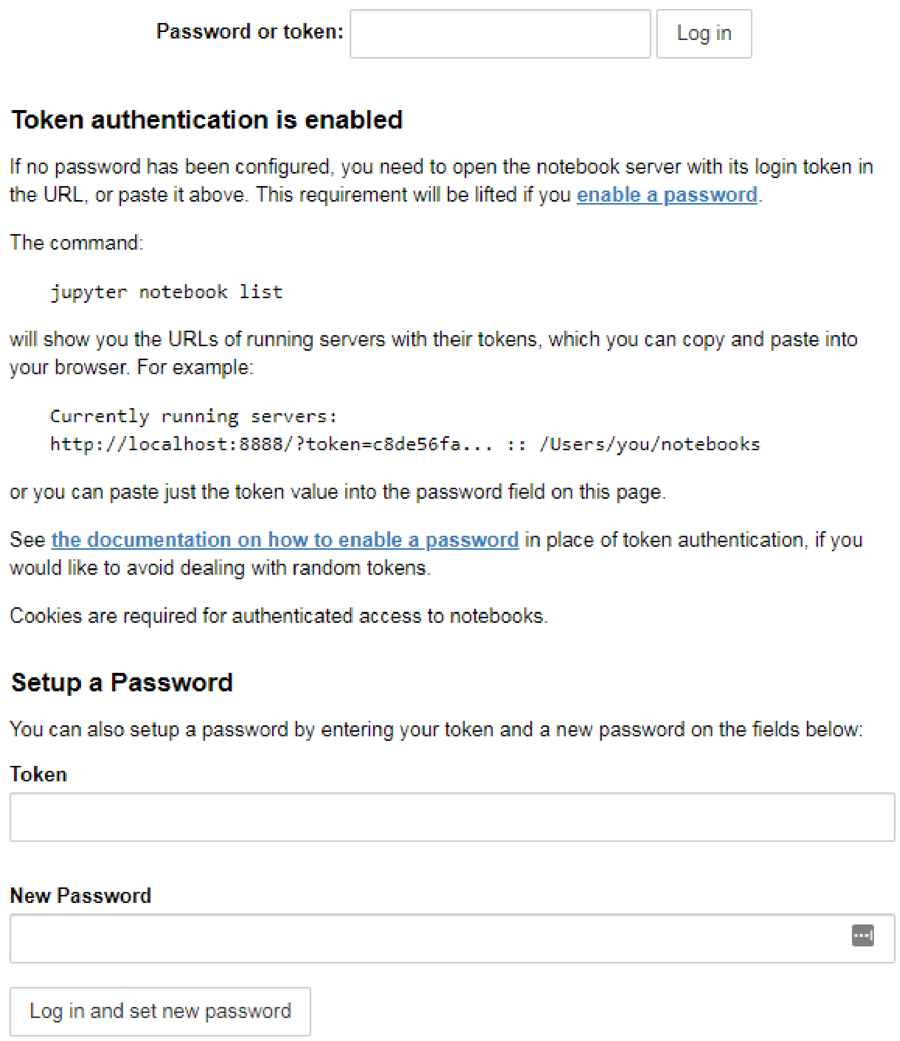
```
# Configuration file for jupyter-notebook.

#------------------------------------------------------------------------------
# Application(SingletonConfigurable) configuration
#------------------------------------------------------------------------------

## This is an application.

## The date format used by logging formatters for %(asctime)s
#c.Application.log_datefmt = '%Y-%m-%d %H:%M:%S'

## The Logging format template
#c.Application.log_format = '[%(name)s]%(highlevel)s %(message)s'

## Set the log level by value or name.
#c.Application.log_level = 30

#------------------------------------------------------------------------------
# JupyterApp(Application) configuration
#------------------------------------------------------------------------------

c.NotebookApp.ip = '0.0.0.0'
c.NotebookApp.port = 8888


## Base class for Jupyter applications

## Answer yes to any prompts.
#c.JupyterApp.answer_yes = False

## Full path of a config file.
#c.JupyterApp.config_file = ''

## Specify a config file to load.
#c.JupyterApp.config_file_name = ''

## Generate default config file.
#c.JupyterApp.generate_config = False

#------------------------------------------------------------------------------
# NotebookApp(JupyterApp) configuration
#------------------------------------------------------------------------------
"jupyter_notebook_config.py" 769L, 29412C                                                    24,0-1        Top
```

12. Start Jupyter Notebook

Type in terminal jupyter notebook and copy your token

Type in your browser address bar “external-ip-of-your_instance:8888”

Paste your Token and create new Password



Token authentication is enabled

If no password has been configured, you need to open the notebook server with its login token in the URL, or paste it above. This requirement will be lifted if you enable a password.

The command:

```
jupyter notebook list
```

will show you the URLs of running servers with their tokens, which you can copy and paste into your browser. For example:

```
Currently running servers:
http://localhost:8888/?token=c8de56fa... :: /Users/you/notebooks
```

or you can paste just the token value into the password field on this page.

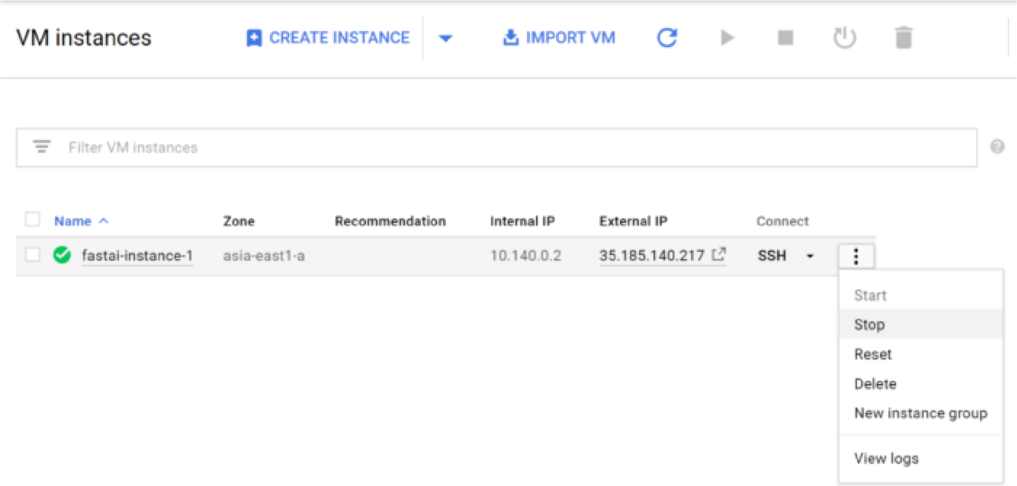
See the documentation on how to enable a password in place of token authentication, if you would like to avoid dealing with random tokens.

Cookies are required for authenticated access to notebooks.

Setup a Password

You can also setup a password by entering your token and a new password on the fields below:

13. Important: Remember to stop your VM instance when you are done with your notebooks or you will continue to incur charges.



□	Name ^	Zone	Recommendation	Internal IP	External IP	Connect
□	fastai-instance-1	asia-east1-a		10.140.0.2	35.185.140.217	SSH