

# Tutorial on using the Google Cloud Platform (GCP)

Courtesy to the following helpful resources online:

- <http://cs231n.github.io/gce-tutorial/> (<http://cs231n.github.io/gce-tutorial/>).

## A word of caution: STOP YOUR INSTANCES

- Please do not forget to **stop your instance(s)** when you are done, otherwise you will run out of credits!
  - You can stop by clicking on the **stop** button at the top of the page showing your instances)

# First things first: Try the free stuff first, if you want!

- Google is generous enough to give \$300 worth of google cloud credit to the new google/gmail users:
  - Here is the link to activate your credit  
<https://cloud.google.com/free/docs/frequently-asked-questions#free-trial> (<https://cloud.google.com/free/docs/frequently-asked-questions#free-trial>).
  - Just make sure you are eligible.
  - Remember to select **Individual** as **Account Type**
  - It might ask you for your credit card information, but Google made it very clear that they won't charge you a penny during your free trial (which is a year from the day you are given the credit), and it won't auto-recharge after the trial is over! Neat, isn't it!

# First things first: Try the free stuff first, if you want!

- CAUTION: If you exceed the credit limit (which is \$300) within the trial period, you may notice the charge based on the Google cloud platform's pricing model, which is located at <https://cloud.google.com/compute/pricing> (<https://cloud.google.com/compute/pricing>). Please do understand the consequences of overuse of the credit within the trial period. **I will not be responsible for any of these incurred charges.**
- Make sure you read all the agreements/terms etc. before you signup, and **I will not be responsible for any consequences including Google's way of collecting user data (including user information, email, credit card information, demographics, dataset stored in cloud storage), or in an unlikely event of a massive attack against Google platform revealing its user information.**

# Google cloud platform credit from me

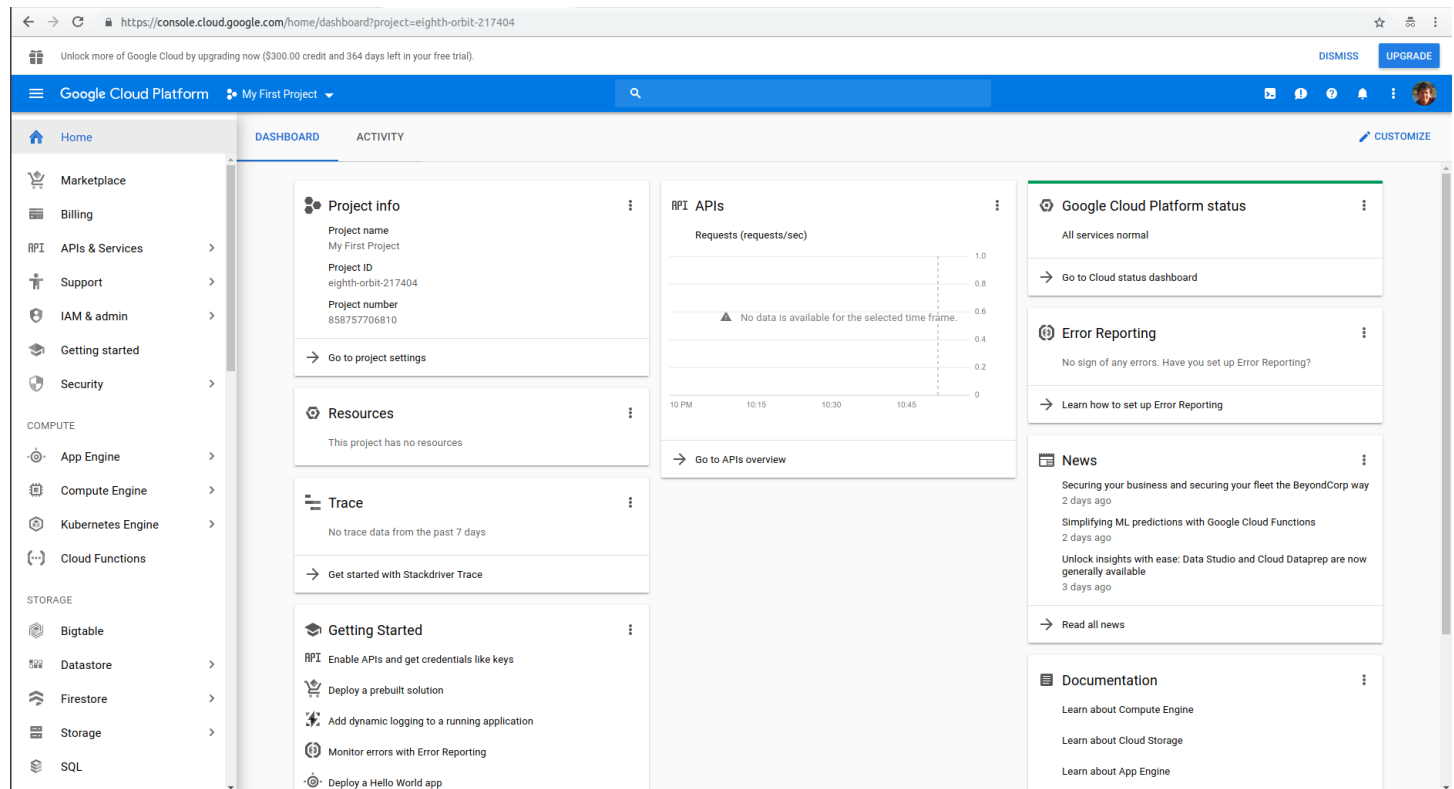
- (1) Not happy with the google free trial? Or, (2) the google trial credit of \$300 is finished? I have something for you!
  - As an enrolled student in my class, I will give you \$50 google cloud credit.
  - Please send me an email requesting the credit and also mentioning which of the two cases (1 or 2) applies to you. I will send you a link to get the credit.
  - **CAUTION:** If you exceed the credit limit (which is \$50), you may notice the charge based on the Google cloud platform's pricing model, which is located at <https://cloud.google.com/compute/pricing> (<https://cloud.google.com/compute/pricing>). Please do understand the consequences of overuse of the credit within the trial period. **I will not be responsible for any of these incurred charges.**
  - **CAUTION** Make sure you read all the agreements/terms etc. before you signup, and **I will not be responsible for any consequences including Google's way of collecting user data (including user information, email, credit card information, demographics, dataset stored in cloud storage), or in an unlikely event of a massive attack against Google platform revealing its user information.**
  - You can request for more if you finish up the \$50. Please let me know by email. Thanks

# Google cloud platform credit from me

- **CAUTION:** If you exceed the credit limit (which is \$50), you may notice the charge based on the Google cloud platform's pricing model, which is located at <https://cloud.google.com/compute/pricing> (<https://cloud.google.com/compute/pricing>). Please do understand the consequences of overuse of the credit within the trial period. **I will not be responsible for any of these incurred charges.**
- **CAUTION** Make sure you read all the agreements/terms etc. before you signup, and **I will not be responsible for any consequences including Google's way of collecting user data (including user information, email, credit card information, demographics, dataset stored in cloud storage), or in an unlikely event of a massive attack against Google platform revealing its user information.**
- You can request for more if you finish up the \$50. Please let me know by email.  
Thanks

# Getting to know the GCP Console

- Once signed-up, go to <http://console.cloud.google.com> (<http://console.cloud.google.com>).



([figs/console-01.png](#)).

# Click on the "Billing" link

The screenshot displays the Google Cloud Platform Billing console. The left sidebar contains a navigation menu with the following items: Billing, Overview, Budgets & alerts, Transactions, Billing export, Payment settings, Payment method, and Reports. The main content area is titled 'Overview' and shows the 'My Billing Account' section. It includes a 'Billing account overview' tab, the account ID '015A5A-899EB1-B7C357', and a 'Credits' section with two circular progress indicators: '\$300.00 Credits remaining' and '364 Days remaining'. Below this is a table of 'Projects linked to this billing account' with one entry: 'My First Project' (ID: eighth-orbit-217404). The right sidebar, titled 'My Billing Account', shows the 'PERMISSIONS' section with an 'Add members' button and a list of members, including 'Billing Account Administrator (1 member)'.

Google Cloud Platform

Billing

Overview

My Billing Account

RENAME BILLING ACCOUNT

CLOSE BILLING ACCOUNT

HIDE INFO PANEL

Billing account overview

Payment overview

Billing account ID: 015A5A-899EB1-B7C357

Credits

\$300.00

Credits remaining

Out of \$300.00

364

Days remaining

Ends Sep 23, 2019

Projects linked to this billing account

Project name	Project ID
My First Project	eighth-orbit-217404

My Billing Account

PERMISSIONS

Add members

Select a role

Add

Search members

Filter by name or role

Billing Account Administrator (1 member)

Authorized to see and manage all aspects of billing accounts.

(figs/console-02a.png)



# Create the compute engine for the course

1. From the GCP/console dashboard, click "Compute Engine"
2. Click "Images"

# Create the compute engine for the course

1. Click on "c2-deeplearning-tf-1-10-cu92-20180914" image and click "Create an instance" button. Then configure the following entries before you hit the "Create" button at the bottom of the configuration page:
  - Name: cse-cudenver-deep-learning
  - Region: us-west1 (Oregon),
  - Zone: us-west1-b
  - Machine type (Click "Customize" to get more options):
    - Cores: 1 vCPU (1-8 cores)
    - Memory: 3.75 GB
    - CPU Platform: Automatic
    - GPUs
      - Number of GPUs: 1
      - GPU Type: NVIDIA Tesla K80
  - Boot disk: Deep Learning image: (30GB)

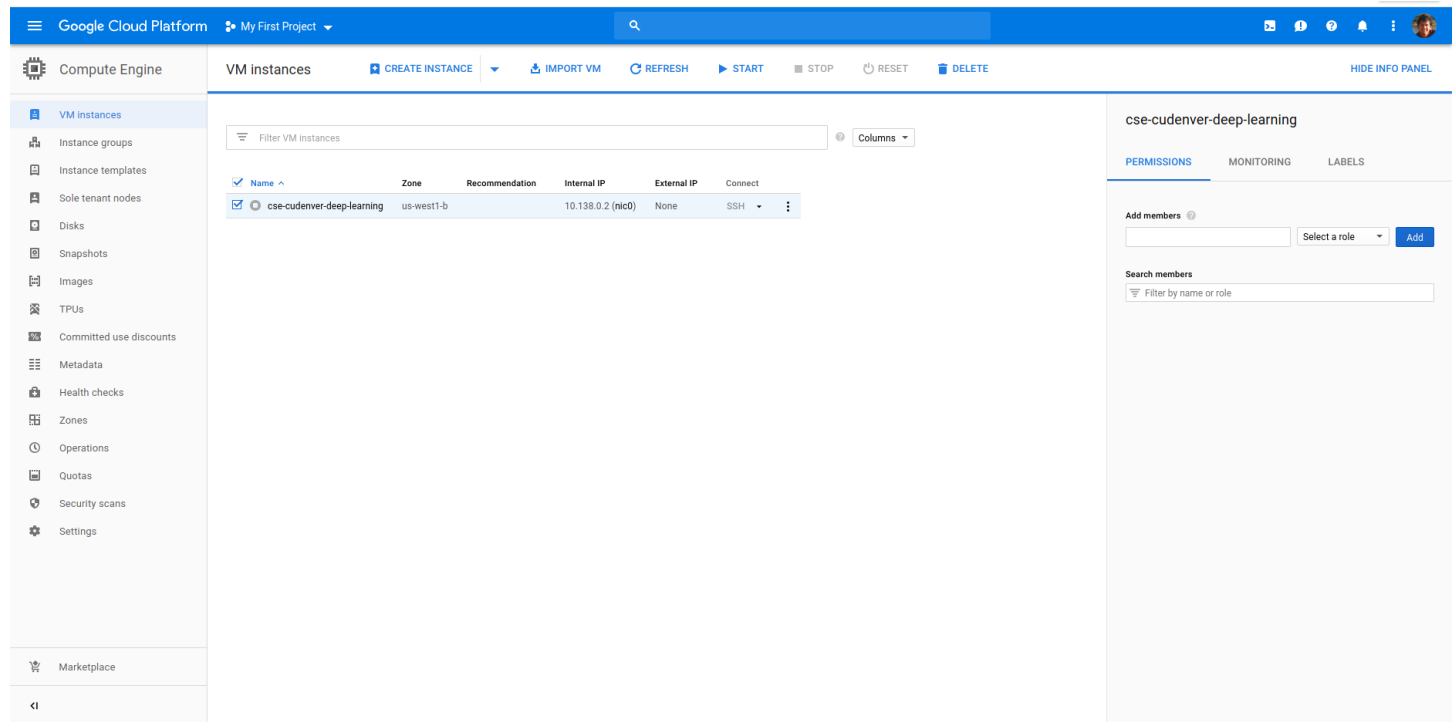
# Create the compute engine for the course

1. Hit the "Create" button at the bottom of the page. It takes few minutes to create your instance. Once done, connect to the instance via SSH. It might prompt you if you would like to install nvidia driver (y/n). Please hit "y" to install it.
2. After the instance is created, it automatically boots up the instance. So BE CAREFUL FROM NOW ON. The INSTANCE IS RUNNING!! Running your instance will cost you. According to the current pricing model (as of 9/23/2018), Google will charge you \$ 0.35 (for the CPU), \$0.45 (for the GPU) per hour of running the instance.

- CAUTION AGAIN: STOP RUNNING THE INSTANCE WHEN YOU ARE DONE.
  - Select the instance on the the "Compute Instance" > "VM Instances" Page, and do any of the following:
    - Recommended way of stopping an instance:  
Connect to the instance via SSH, and apply the command: `sudo poweroff`
    - Another way: Hit the "STOP" button.

# Starting up your instance

- Select the instance on the the "Compute Instance" > "VM Instances" Page, and hit the "Start" button.



(figs/instance-01.png).

# The instance is running... now connect via SSH

Unlock more of Google Cloud by upgrading now (\$300.00 credit and 364 days left in your free trial).

DISMISS UPGRADE

Google Cloud Platform My First Project

Compute Engine VM instances CREATE INSTANCE IMPORT VM REFRESH START STOP RESET DELETE HIDE INFO PANEL

VM instances

Filter VM instances Columns

Name	Zone	Recommendation	Internal IP	External IP	Connect
<input checked="" type="checkbox"/> cse-cuderver-deep-learning	us-west1-b		10.138.0.2 (nic0)	35.227.148.50	SSH

Open in browser window  
Open in browser window on custom port  
View gcloud command  
Use another SSH client

cse-cuderver-deep-learning

PERMISSIONS MONITORING LABELS

Add members

Select a role Add

Search members

Filter by name or role

(figs/instance-02.png)

**And here is the SSH prompt**

```
biswas_ashiskumer@cse-cuderver-deep-learning: ~ - Google Chrome
https://ssh.cloud.google.com/projects/eighth-orbit-217404/zones/us-west1-b/instances/cse-cuderver-deep-learning?authuser=0&hl...
Connected, host fingerprint: ssh-rsa 2048 FB:69:E9:5C:D7:29:CD:4D:3B:46:F8:02:36:0F:4B:17:01:9A:08:77:F7:47:A5:67:08:89:46:6C:0A:D9:3D:14
=====
Welcome to the Google Deep Learning VM
=====

Based on: Debian GNU/Linux 9.5 (stretch) (GNU/Linux 4.9.0-8-amd64 x86_64\n)

Resources:
* Google Deep Learning Platform StackOverflow: https://stackoverflow.com/questions/tagged/google-dl-platform
* Google Cloud Documentation: https://cloud.google.com/deep-learning-vm
* Google Group: https://groups.google.com/forum/#!forum/google-dl-platform

TensorFlow comes pre-installed with this image. To install TensorFlow binaries in a virtualenv (or conda env), please use the binaries that are pre-built for this image. You can find the binaries at /opt/deeplearning/binaries/tensorflow/
If you need to install a different version of Tensorflow manually, use the common Deep Learning image with the right version of CUDA

Linux cse-cuderver-deep-learning 4.9.0-8-amd64 #1 SMP Debian 4.9.110-3+deb9u4 (2018-08-21) 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.
biswas_ashiskumer@cse-cuderver-deep-learning:~$
```

([figs/instance-03.png](#)).

**Be sure to stop the instance when done, by typing  
sudo poweroff**



```
biswas_ashiskumer@cse-cuderver-deep-learning: ~ - Google Chrome
https://ssh.cloud.google.com/projects/eighth-orbit-217404/zones/us-west1-b/instances/cse-cuderver-deep-learning?authuser=0&hl...
Connected, host fingerprint: ssh-rsa 2048 FB:69:E9:5C:D7:29:CD:4D:3B:46:F8:02:36:0F:4B:17:01:9A:08:77:F7:47:A5:F7:08:89:46:6C:0A:D9:3D:14
=====
Welcome to the Google Deep Learning VM
=====

Based on: Debian GNU/Linux 9.5 (stretch) (GNU/Linux 4.9.0-8-amd64 x86_64\n)

Resources:
* Google Deep Learning Platform StackOverflow: https://stackoverflow.com/questions/tagged/google-dl-platform
* Google Cloud Documentation: https://cloud.google.com/deep-learning-vm
* Google Group: https://groups.google.com/forum/#!forum/google-dl-platform

TensorFlow comes pre-installed with this image. To install TensorFlow binaries in a virtualenv (or conda env),
please use the binaries that are pre-built for this image. You can find the binaries at
/opt/deeplearning/binaries/tensorflow/
If you need to install a different version of Tensorflow manually, use the common Deep Learning image with the
right version of CUDA

Linux cse-cuderver-deep-learning 4.9.0-8-amd64 #1 SMP Debian 4.9.110-3+deb9u4 (2018-08-21) 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.
biswas_ashiskumer@cse-cuderver-deep-learning:~$ sudo poweroff
```

([figs/instance-04.png](#)).

**Want to run jupyter notebook on the GCP instance?**

**Step 1: Allow HTTP/HTTPS traffic by editing the instance**

- Stop the instance, and hit the "Edit" button below

The screenshot shows the Google Cloud Platform console interface. The top navigation bar includes the Google Cloud Platform logo, 'My First Project', and a search bar. The left sidebar contains a menu with 'Compute Engine' selected, showing sub-items like 'VM instances', 'Instance groups', 'Instance templates', 'Sole tenant nodes', 'Disks', 'Snapshots', 'Images', 'TPUs', 'Committed use discounts', 'Metadata', 'Health checks', 'Zones', 'Operations', 'Quotas', 'Security scans', and 'Settings'. The main content area is titled 'VM instance details' and includes buttons for 'EDIT', 'RESET', 'CREATE SIMILAR', 'START', and 'DELETE'. The instance name is 'cse-cuderver-deep-learning'. The 'Remote access' section shows 'SSH' as the selected method with a 'Connect to serial console' button. The 'Logs' section includes links for 'Stackdriver Logging' and 'Serial port 1 (console)'. The 'Machine type' is 'n1-standard-1 (1 vCPU, 3.75 GB memory)'. The 'CPU platform' is 'Unknown CPU Platform'. The 'GPUs' section shows '1 x NVIDIA Tesla K80'. The 'Zone' is 'us-west1-b'. The 'Labels' section shows 'None'. The 'Creation time' is 'Sep 24, 2018, 12:30:20 AM'. The 'Network interfaces' section contains a table with one interface named 'nic0'. The 'Public DNS PTR Record' is 'None'. The 'Firewalls' section shows 'Allow HTTP traffic' and 'Allow HTTPS traffic' as unchecked options. The 'Network tags' section shows 'None'.

**Google Cloud Platform** My First Project

**Compute Engine** VM instance details [EDIT](#) [RESET](#) [CREATE SIMILAR](#) [START](#) [DELETE](#)

**VM instances**

**Details** Monitoring

**cse-cuderver-deep-learning**

**Remote access**

SSH [Connect to serial console](#)

☐ Enable connecting to serial ports

**Logs**

[Stackdriver Logging](#)

[Serial port 1 \(console\)](#)

[More](#)

**Machine type**

n1-standard-1 (1 vCPU, 3.75 GB memory)

**CPU platform**

Unknown CPU Platform

**GPUs**

1 x NVIDIA Tesla K80

**Zone**

us-west1-b

**Labels**

None

**Creation time**

Sep 24, 2018, 12:30:20 AM

**Network interfaces**

Name	Network	Subnetwork	Primary internal IP	Alias IP ranges	External IP	Network Tier	IP forwarding	Network details
nic0	default	default	10.138.0.2	—	Ephemeral	Premium	Off	<a href="#">View details</a>

**Public DNS PTR Record**

None

**Firewalls**

☐ Allow HTTP traffic

☐ Allow HTTPS traffic

**Network tags**

None

([figs/allow-HTTP-HTTPS.png](#)).

# Want to run jupyter notebook on the GCP instance?

## Step 1: Allow HTTP/HTTPS traffic by editing the instance

The screenshot displays the 'VM instance details' page in the Google Cloud Platform console. The left sidebar shows the 'Compute Engine' menu with 'VM instances' selected. The main content area shows the details for a VM instance named 'cse-cudenvr-deep-learning'. The 'Creation time' is 'Sep 24, 2018, 12:30:20 AM'. The 'Network interfaces' section shows 'nic0: default default'. The 'Firewalls' section has checkboxes for 'Allow HTTP traffic' and 'Allow HTTPS traffic', both of which are unchecked. The 'Network tags' section shows 'http-server' and 'https-server'. The 'Deletion protection' section has a checkbox for 'Enable deletion protection' which is unchecked. The 'Boot disk and local disks' section shows a table with one disk: 'cse-cudenvr-deep-learning' (30 GB, Standard persistent disk, Google managed, Boot, read/write). The 'Additional disks' section has a '+ Add item' button. The 'Shielded VM' section has checkboxes for 'Turn on Secure Boot', 'Turn on vTPM', and 'Turn on Integrity Monitoring', all of which are unchecked. The 'Availability policies' section shows 'Preemptibility' set to 'Off (recommended)'. The 'Automatic restart' section has a dropdown menu set to 'On (recommended)'. The 'On host maintenance' section has a dropdown menu set to 'Terminate VM instance'.

Compute Engine

VM instance details

← EDIT RESET CREATE SIMILAR ▶ START DELETE

+ Add label

Creation time  
Sep 24, 2018, 12:30:20 AM

Network interfaces ⓘ

nic0: default default

+ Add item

Firewalls

☐ Allow HTTP traffic

☐ Allow HTTPS traffic

Network tags

http-server https-server

Deletion protection

☐ Enable deletion protection  
When deletion protection is enabled, instance cannot be deleted. [Learn more](#)

Boot disk and local disks

Name	Size (GB)	Type	Encryption	Mode
cse-cudenvr-deep-learning	30	Standard persistent disk	Google managed	Boot, read/write

☒ Delete boot disk when instance is deleted

Additional disks ⓘ (Optional)

+ Add item

Shielded VM ⓘ

Select a shielded image to use shielded VM features.  
Turn on all settings for the most secure configuration.

☐ Turn on Secure Boot ⓘ

☐ Turn on vTPM ⓘ

☐ Turn on Integrity Monitoring ⓘ

Availability policies

Preemptibility

Off (recommended)

Automatic restart

On (recommended)

On host maintenance

Terminate VM instance

**Want to run jupyter notebook on the GCP instance?**

**Step 1: Allow HTTP/HTTPS traffic by editing the instance**

- Then select the the two options at the "Firewalls" section of the form:

The screenshot shows the Google Cloud Platform interface for a VM instance named 'cse-cuderver-deep-learning'. The left sidebar contains a navigation menu with options like VM instances, Instance groups, Instance templates, Sole tenant nodes, Disks, Snapshots, Images, TPUs, Committed use discounts, Metadata, Health checks, Zones, Operations, Quotas, Security scans, and Settings. The main content area displays the instance details, including remote access (SSH), logs (Stackdriver Logging, Serial port 1), machine type (n1-standard-1), CPU platform (Unknown CPU Platform), GPUs (1 x NVIDIA Tesla K80), zone (us-west1-b), labels (None), creation time (Sep 24, 2018, 12:30:20 AM), network interfaces (nic0), public DNS PTR record (None), firewalls (Allow HTTP traffic, Allow HTTPS traffic), network tags (http-server, https-server), and deletion protection.

**Google Cloud Platform** My First Project

**Compute Engine** VM instance details EDIT RESET CREATE SIMILAR START DELETE

**VM instances**

Instance groups  
Instance templates  
Sole tenant nodes  
Disks  
Snapshots  
Images  
TPUs  
Committed use discounts  
Metadata  
Health checks  
Zones  
Operations  
Quotas  
Security scans  
Settings

**Details** Monitoring

**cse-cuderver-deep-learning**

**Remote access**  
SSH Connect to serial console  
Enable connecting to serial ports

**Logs**  
Stackdriver Logging  
Serial port 1 (console)  
More

**Machine type**  
n1-standard-1 (1 vCPU, 3.75 GB memory)

**CPU platform**  
Unknown CPU Platform

**GPUs**  
1 x NVIDIA Tesla K80

**Zone**  
us-west1-b

**Labels**  
None

**Creation time**  
Sep 24, 2018, 12:30:20 AM

**Network interfaces**

Name	Network	Subnetwork	Primary internal IP	Alias IP ranges	External IP	Network Tier	IP forwarding	Network details
nic0	default	default	10.138.0.2	—	Ephemeral	Premium	Off	<a href="#">View details</a>

**Public DNS PTR Record**  
None

**Firewalls**  
Allow HTTP traffic  
Allow HTTPS traffic

**Network tags**  
http-server, https-server

**Deletion protection**

Marketplace

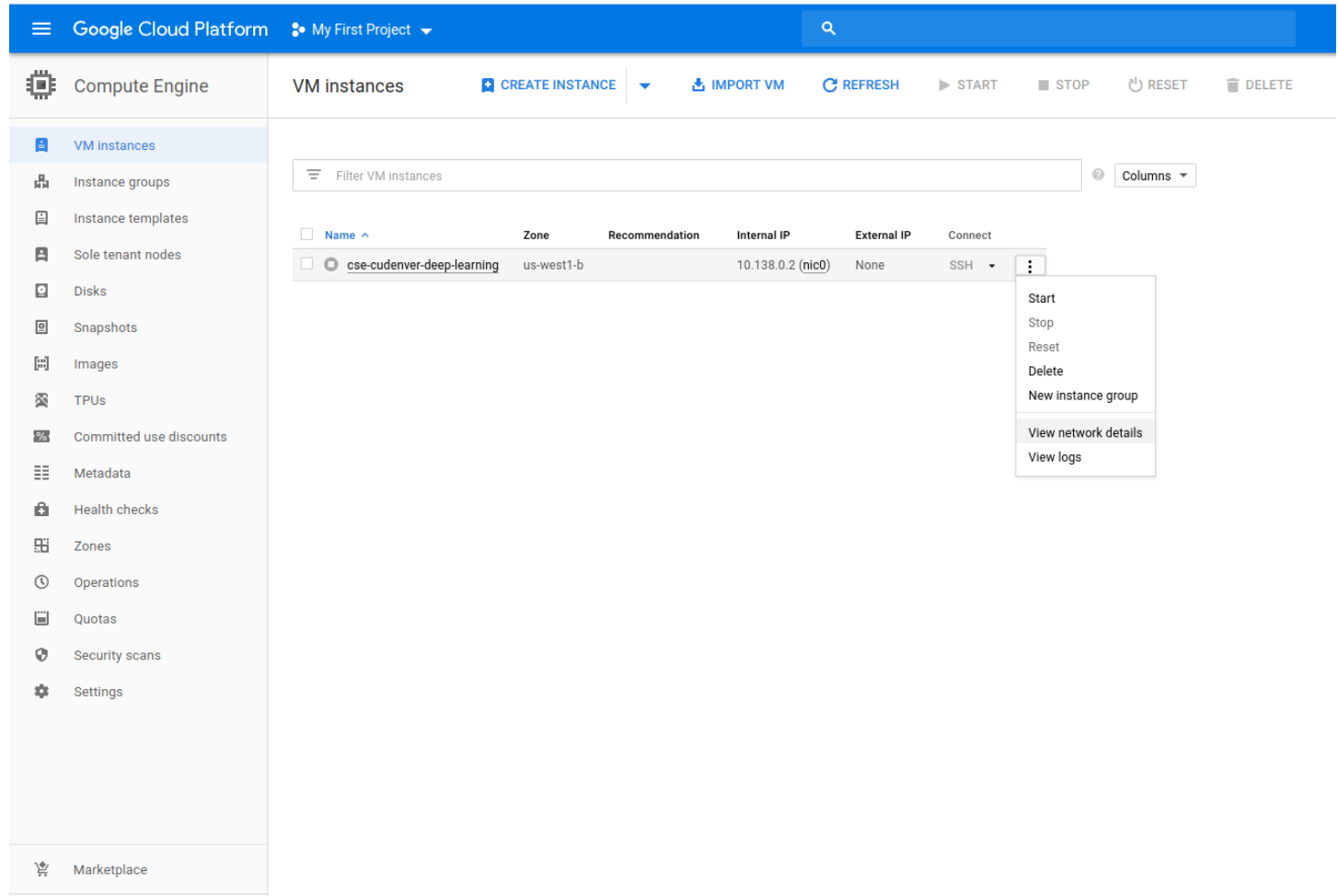
<1

([figs/allow-HTTP-HTTPS-02.png](#))

**Want to run jupyter notebook on the GCP instance?**

**Step 2: Open a port, (e.g., 5800)**

- Go to "Network details" of the instance



The screenshot shows the Google Cloud Platform interface for VM instances. The left sidebar contains a navigation menu with options like VM instances, Instance groups, Instance templates, Sole tenant nodes, Disks, Snapshots, Images, TPUs, Committed use discounts, Metadata, Health checks, Zones, Operations, Quotas, Security scans, and Settings. The main panel displays a table of VM instances. The instance 'cse-cudenvr-deep-learning' is selected, and a context menu is open, showing options: Start, Stop, Reset, Delete, New instance group, View network details (highlighted), and View logs.

Name	Zone	Recommendation	Internal IP	External IP	Connect
cse-cudenvr-deep-learning	us-west1-b		10.138.0.2 (nic0)	None	SSH

([figs/step-01.png](#)).



**Want to run jupyter notebook on the GCP instance?**

**Step 2: Open a port, (e.g., 5800)**

- Click on the "Firewall rules" option

Google Cloud Platform

My First Project

VPC network

VPC networks

External IP addresses

Firewall rules

Routes

VPC network peering

Shared VPC

Network interface details

Network interface details

Name	Network	Subnetwork	Primary internal IP	Alias IP ranges	External IP	Network Service Tier	IP forwarding
nic0	default	default	10.128.0.2	—	Ephemeral	Premium	Off

VM instance details

Name	Zone	Network tags	Service account
cse-cudnver-deep-learning	us-west1-b	None	858757706810-compute@developer.gserviceaccount.com

Firewall rules and routes details

Firewall rules

Routes

Name	Type	Description	Targets	Filters	Protocols / ports	Action	Priority
default-allow-icmp	Ingress	Allow ICMP from anywhere	Apply to all	IP ranges: 0.0.0.0/0	icmp	Allow	65534
default-allow-internal	Ingress	Allow internal traffic on the default network	Apply to all	IP ranges: 10.128.0.0/9	tcp:0-65535 udp:0-65535 icmp	Allow	65534
default-allow-rdp	Ingress	Allow RDP from anywhere	Apply to all	IP ranges: 0.0.0.0/0	tcp:3389	Allow	65534
default-allow-ssh	Ingress	Allow SSH from anywhere	Apply to all	IP ranges: 0.0.0.0/0	tcp:22	Allow	65534

Network analysis

BETA

Ingress analysis

Egress analysis

Route analysis

Source	Protocols and ports	Active firewall rules
10.128.0.0/9	<div>all</div> <div>tcp</div> <div>udp</div> <div>icmp</div>	default-allow-ssh, default-allow-rdp, 2 more
0.0.0.0/0	<div>all</div> <div>tcp:22,3389</div> <div>icmp</div>	default-allow-ssh, default-allow-rdp, default-allow-icmp

(figs/step-02.png).

**Want to run jupyter notebook on the GCP instance?**

**Step 2: Open a port, (e.g., 5800)**

- Create a new rule.
- we use dl-rule. Select “All instances in the network” for Targets (if the menu item exists). Enter 0.0.0.0/0 for Source IP ranges and tcp: for Specified protocols and ports where is the number you used above. Click on the blue Create button. See the screenshot below.

**VPC network**

- VPC networks
- External IP addresses
- Firewall rules**
- Routes
- VPC network peering
- Shared VPC

**Create a firewall rule**

**Name** ⓘ

dl-rule

**Description** ⓘ (Optional)

Make sure port 5800 is open to public connectors

**Logs** ⓘ

Turning on firewall logs can generate a large number of logs which can increase costs in Stackdriver. [Learn more](#)

☐ On

☒ Off

**Network** ⓘ

default

**Priority** ⓘ

Priority can be 0 - 65535 [Check priority of other firewall rules](#)

1000

**Direction of traffic** ⓘ

☒ Ingress

☐ Egress

**Action on match** ⓘ

☒ Allow

☐ Deny

**Targets** ⓘ

All instances in the network

**Source filter** ⓘ

IP ranges

**Source IP ranges** ⓘ

0.0.0.0/0 ⓘ

**Second source filter** ⓘ

None

**Protocols and ports** ⓘ

☐ Allow all

☒ Specified protocols and ports

☒ tcp: 5800

☐ udp: all

☐ Other protocols

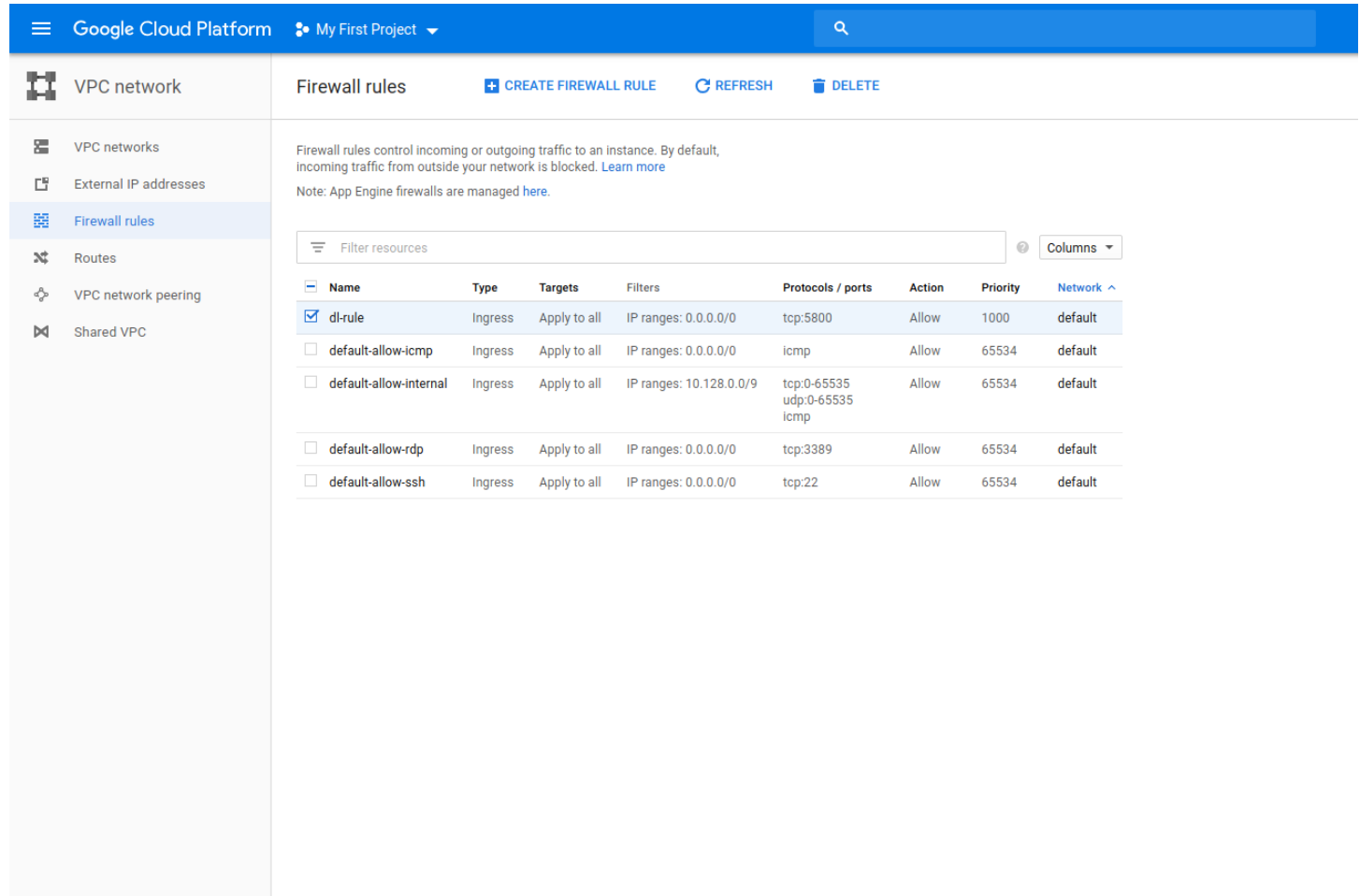
protocols, comma separated, e.g. ah, sctp

(figs/step-03.png).

**Want to run jupyter notebook on the GCP instance?**

**Step 2: Open a port, (e.g., 5800)**

- Just created the rule "dl\_rule"



Google Cloud Platform My First Project

VPC network

Firewall rules CREATE FIREWALL RULE REFRESH DELETE

Firewall rules control incoming or outgoing traffic to an instance. By default, incoming traffic from outside your network is blocked. [Learn more](#)

Note: App Engine firewalls are managed [here](#).

Filter resources

Name	Type	Targets	Filters	Protocols / ports	Action	Priority	Network
<input checked="" type="checkbox"/> dl-rule	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:5800	Allow	1000	default
<input type="checkbox"/> default-allow-icmp	Ingress	Apply to all	IP ranges: 0.0.0.0/0	icmp	Allow	65534	default
<input type="checkbox"/> default-allow-internal	Ingress	Apply to all	IP ranges: 10.128.0.0/9	tcp:0-65535 udp:0-65535 icmp	Allow	65534	default
<input type="checkbox"/> default-allow-rdp	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:3389	Allow	65534	default
<input type="checkbox"/> default-allow-ssh	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:22	Allow	65534	default

([figs/step-04.png](#)).

**Want to run jupyter notebook on the GCP instance?**

**Step 2: Open a port, (e.g., 5800)**

- Now, you are ready to start the instance. Also, make note of the external IP address (e.g., here in this case it is 35.227.148.50. It might change overtime. Or, you can have a static external ip address with a fee so that you don't have to worry about the change of external ip over time.

Google Cloud Platform My First Project

Compute Engine VM instances CREATE INSTANCE IMPORT VM REFRESH START STOP RESET DELETE

Filter VM instances Columns

Name	Zone	Recommendation	Internal IP	External IP	Connect
cse-cudenver-deep-learning	us-west1-b		10.138.0.2 (nic0)	35.227.148.50	SSH

([figs/step-05.png](#)).



# Want to run jupyter notebook on the GCP instance?

## Step 3: Configure jupyter notebook

- Open up an SSH session with the GCP instance, and check if you have a jupyter configure file at:

```
ls ~/.jupyter/jupyter_notebook_config.py
```

- If the file does not exist, create on with the following command:

```
jupyter notebook --generate-config
```

- Open the config file and browse through the following 3 lines (uncomment and change the values to the following):

```
c.NotebookApp.ip = '*'  
c.NotebookApp.open_browser = False  
c.NotebookApp.port = 5800
```

Here, 5800 is the desired port number for the jupyter notebook.

**Want to run jupyter notebook on the GCP instance?**

**Step 3: Configure jupyter notebook**

- Now, launch jupyter notebook and copy the :5800/?token..... portion of the url as highlighted in the following snapshot

The screenshot shows a terminal window with the following content:

```

biswas_ashiskumer@cse-cudenver-deep-learning: ~ - Google Chrome
https://ssh.cloud.google.com/projects/eighth-orbit-217404/zones/us-west1-b/instances/cse-cudenver-deep-learning?authuser=0&hl...

TensorFlow comes pre-installed with this image. To install TensorFlow binaries in a virtualenv (or conda env), please use the binaries that are pre-built for this image. You can find the binaries at /opt/deeplearning/binaries/tensorflow/
If you need to install a different version of Tensorflow manually, use the common Deep Learning image with the right version of CUDA

Linux cse-cudenver-deep-learning 4.9.0-8-amd64 #1 SMP Debian 4.9.110-3+deb9u4 (2018-08-21) 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.

biswas_ashiskumer@cse-cudenver-deep-learning:~$ jupyter notebook --no-browser --port=5800
[I 07:31:40.534 NotebookApp] Writing notebook server cookie secret to /run/user/1001/jupyter/notebook_cookie_secret
[W 07:31:40.720 NotebookApp] WARNING: The notebook server is listening on all IP addresses and not using encryption. This is not recommended.
/usr/lib/python3/dist-packages/h5py/_init_.py:34: FutureWarning: Conversion of the second argument of issubdtype from `float` to `np.floating` is deprecated. In future, it will be treated as `np.float64 == np.dtype(float).type`.
  from ._conv import register_converters as _register_converters
[I 07:31:41.913 NotebookApp] jupyter tensorboard extension loaded.
[I 07:31:41.939 NotebookApp] JupyterLab extension loaded from /usr/local/lib/python3.5/dist-packages/jupyterlab
[I 07:31:41.939 NotebookApp] JupyterLab application directory is /usr/local/share/jupyter/lab
[I 07:31:41.943 NotebookApp] Serving notebooks from local directory: /home/biswas_ashiskumer
[I 07:31:41.943 NotebookApp] The Jupyter Notebook is running at:
[I 07:31:41.943 NotebookApp] http://(cse-cudenver-deep-learning or 127.0.0.1):5800/?token=02eld39ac39e56ff044cc44cb29d6efa8118ff20d53c5d79
[I 07:31:41.943 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 07:31:41.944 NotebookApp]

Copy/paste this URL into your browser when you connect for the first time,
to login with a token:
    http://(cse-cudenver-deep-learning or 127.0.0.1):5800/?token=02eld39ac39e56ff044cc44cb29d6efa8118ff20d53c5d79
79
[I 07:31:46.997 NotebookApp] 302 GET / (73.78.68.134) 0.67ms
[W 07:31:47.098 NotebookApp] Clearing invalid/expired login cookie username-35-227-148-50-5800
[W 07:31:47.099 NotebookApp] Clearing invalid/expired login cookie username-35-227-148-50-5800
[I 07:31:47.100 NotebookApp] 302 GET /tree? (73.78.68.134) 2.26ms

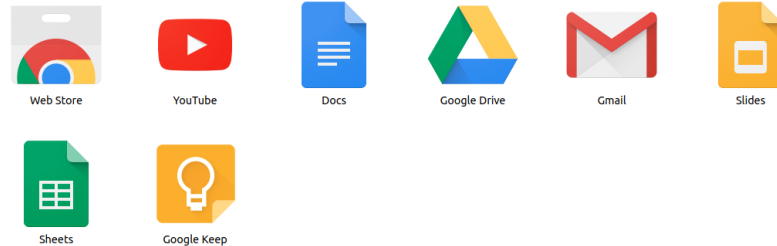
```

(figs/jpn-01.png)

# Want to run jupyter notebook on the GCP instance?

## Step 4: Now go to your browser (in your local machine)

- At the address bar, type the external IP and the :5800/?token... portion to get the exact jupyter notebook URL



([figs/jpn-02.png](#)).

# Want to run jupyter notebook on the GCP instance?

## Step 4: Now go to your browser (in your local machine)

- You should see the following



([figs/jpn-03.png](#)).

**Want to run jupyter notebook on the GCP instance?**

**Step 4: Now go to your browser (in your local machine)**

# Commandline tools to Connect to GCP instance

- Download the Google Cloud SDK that is appropriate for your platform from <https://cloud.google.com/sdk/docs/> (<https://cloud.google.com/sdk/docs/>), and follow their installation instructions.
- Then run `gcloud init` to get started:

```
gcloud init
```

  - When prompted, make sure you select `us-west1-b` as the timezone.
- When the GCP instance is running, from your local machine you can get to prompt directly via the following command:

```
gcloud compute ssh --zone=us-west1-b cse-cudenvver-deep-learning
```
- To know more about the GCP api commands, please look into the SDK documentation above.

## **BIG REMINDER: Make sure you stop your instances!**

- Don't forget to stop your instance when you are done (by clicking on the stop button at the top of the page showing your instances).
- You can restart your instance and the downloaded software will still be available.



```
In [1]: print("Thanks all for your attention. See you in class. - Dr. B")
```

```
Thanks all for your attention. See you in class. - Dr. B
```