UPDATE 13 APRIL 2019 :

Since leela zero 0.17 release, it is needed to use gcc-8 or later version, scripts have been updated to support it now, thanks to @ozymandias8 for testing and feedback in : https://github.com/leela-zero/leela-zero/issues/2333

VERSION OF 02 FEBRUARY 2019 :

See changelogs at the end of this message : https://github.com/gcp/leela-zero/issues/1905#issue-366048983

This tutorial may seem long, but it is because a lot of screenshots are included and take too much place in an unoptimal way.

As you can see in the video tutorial (link will be added later), all these instructions will take you less than 5 minutes to get through once you are used to them.

UPDATE 02 february 2019 : https://github.com/gcp/leela-zero is now https://github.com/leela-zero/leela-zero

Current scripts are likely not to work anymore, recreate a new template with the startup script now or you free trial will be wasted on unworking instructions..

UPDATE 26 november 2018 : due to a recent change in google cloud policy, november 2018 and newer accounts need to make a quota request for GPU and preemptible CPU or they get the following error message at instance creation : Quota 'GPUS_ALL_REGIONS' exceeded. Limit: 0.0 globally.

See “Quota requests” part in page 3 for more details

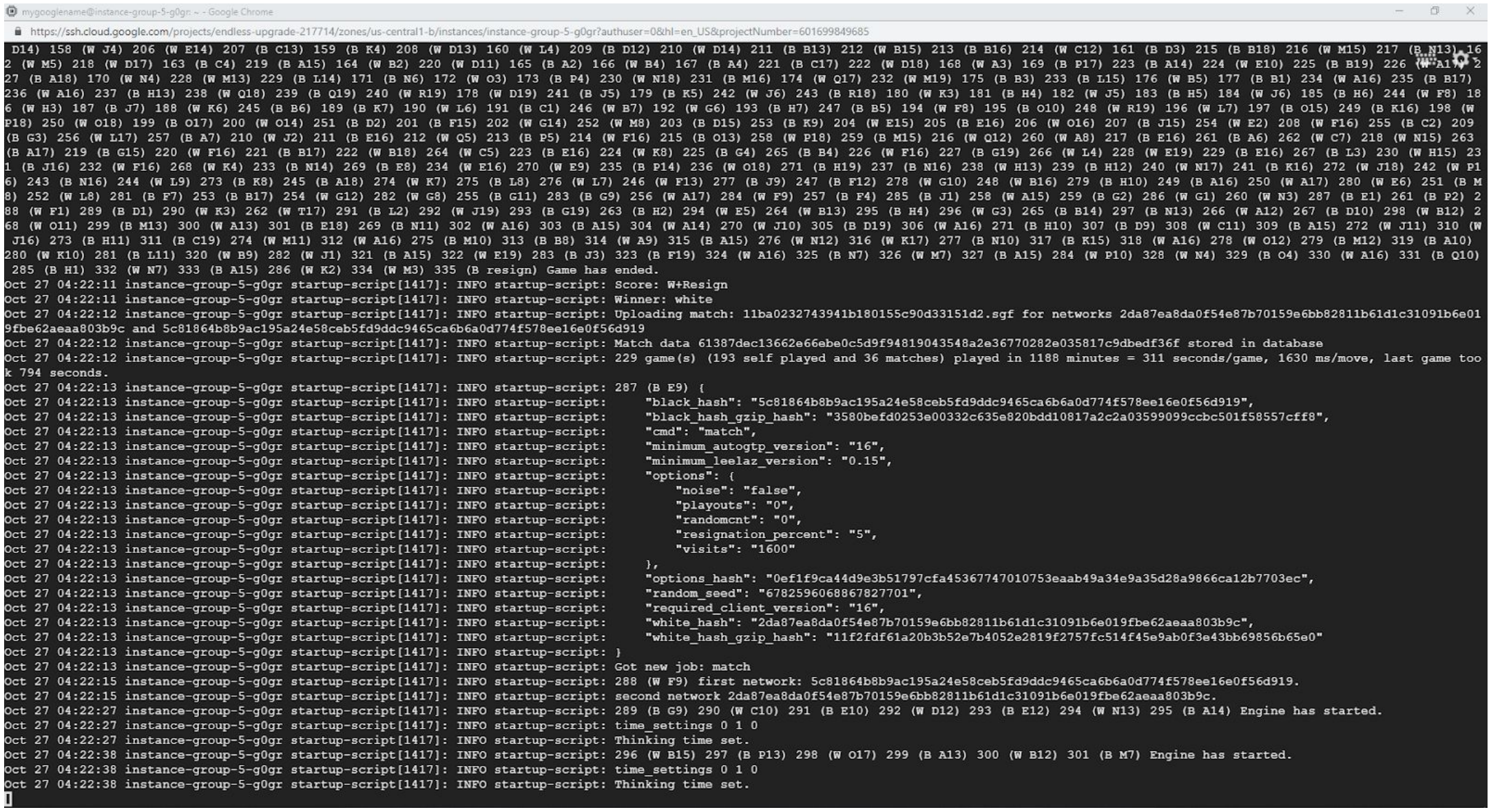
IMPORTANT UPDATE : 13 november 2018 !!!

TO ALL THOSE WHO USED THE FREE TRIAL INSTRUCTIONS BEFORE 13 NOVEMBER 2018 :

OLD STARTUP-SCRIPT DOESN’T WORK ANYMORE ! UPDATE NEEDED, OR YOUR FREE CREDIT WILL BE CONSUMED WITHOUT DOING ANY GAME PRODUCTION !

YOU NEED TO DELETE YOUR INSTANCE GROUP AND INSTANCE TEMPLATE, AND CREATE A NEW TEMPLATE WITH THE UPDATED STARTUP-SCRIPT IN PAGE 10 OF THIS DOC

Here is a preview of what you can do if you follow this tutorial :



If you want the pictures only, here they are (directly added from the drive to this doc) :
https://drive.google.com/drive/folders/1kqr5QRRiOSdC2N4CtetUtyOBcBFQ-d6E?usp=sharing

Quick facts before starting :

- This free trial is entirely and totally free of charge, without any obligatory end of free credit condition (this is the case for Google Cloud, i don't know about the other services)
- With powerful GPU like the Tesla V100, you will be able to produce 16 games per hour (all 5% resign) for leela-zero 40 blocksx256, which is much more than what a public card like a GTX 1080 Ti can do.
- To prevent abuse, spam, robots, etc, an id check will be performed with a valid credit card, but you will not be charged at all during the free trial
- These instructions will create an entirely automated leela-zero autogtp VM instance thanks to a startup-script in metadata : after setting it up correctly, it will not require any operation and will install all needed packages, compile and run leela-zero with autogtp, and will produce games automatically
- The instance uses cloud resource, not your personal machine
- The instance is running on a server : it will stay online independently from you (even if your computer is powered off)
- This instance will be Preemptible : it uses cloud resource that are not always available, causing it to be 60% cheaper (aka. to consume the free trial credit much slower) but the instance is ephemere : after 24 hours max it cannot "live" anymore and will be terminated by preemptible use rules
- The Preemptible terminations will not be a problem though, because our instance will be in a managed instance group
- Our managed instance group will automatically create our first instance, install all needed packages on it (which takes exactly 10 minutes), then automatically reboot it and automatically starting to produce games with autogtp
- Everytime our instance "dies" (max 24 hours because of preemptibility, or if you manually delete it), our managed instance group will automatically delete our "dead" instance and automatically recreate a new "child" preemptible instance (a new one, does not contain old data of the "parent" instance)
- Then, our managed instance group will automatically restart our new "child" instance, install all needed packages including leela-zero (takes exactly 10 minutes), then auto reboot, and then at reboot automatically start to produce games with autogtp, until the "child" instance "dies", giving "birth" by the group to a new "child of the child" instance, etc.
- The exception to this automated recreation+autostart by the instance group is for scheduled maintainance by Google (rare, once every few weeks) which will require you to manual restart the instance (it takes 1 minute), then the auto-start script will handle everything again.

Cloud Companies :

We are not affiliated with any cloud company, and we provide these instructions as they are a free of charge way to help public contributing to leela-zero project.

We are thankful to these cloud companies for giving us these free trial opportunities.

The instructions below are for Google Cloud Free Trial as Google is a widespread company, but much of the documentation here can be used if slightly modified for other cloud companies offering similar cloud free trials that include a GPU (Microsoft Azure, Oracle Cloud, etc.)

Video Tutorial

As an interactive help to text instructions, a video tutorial is provided here : youtube....(link will be added later)

Start the Google Cloud Free Trial (id check)

You'll first need to start your google cloud free trial here :

https://console.cloud.google.com/

The cloud public resource available being limited, especially when it comes to powerful GPU like the Tesla V100, in order to prevent abuse, spam, robots, multi accounts, etc, Google will ask to check your id with a valid credit card, but you will not be charged anything at all, even when your free trial credit ends.

You can check by yourself here :

https://cloud.google.com/free/docs/frequently-asked-questions

And this free trial does not force you to subscribe to anything at all. It is indeed entirely free of charge.

Also, just like for Google Colab, please do NOT try to use multiple accounts in any way, as Google won't hesitate to ban you, as it happened for google Colab users. If you want to help leela-zero, please rather try to spread these instructions so that more people join us in this contributed effort.

Getting Started

If you are not redirected, after your id is successfully checked, you will be redirected here :https://cloud.google.com/getting-started

To navigate in Google Cloud menus, click on the sandwich bar (in the top left) in the top left.

Free credit consumption estimation :

You can check your remaining free credit, in the billing menu of the sandwich bar (in the top left).

Or, you can alternately use this link :

https://console.cloud.google.com/billing

At start, a free 300$ (or 257€) free trial credit is given to you, free of charge. With the settings later explained, our instance will consume 0,773$/hour with a Tesla V100

This will allow us to use it for around 390 hours, which would produce around 6000 games leela-zero 40 blocks per free trial (5% resign only, as 0% resign games take much more time), or around 4000 games per free trial if you include a mix of -r5 and -r0 games, all this entirely free of charge !

These 300$ can be used for around 16,1 days for a h24 7/7 use of a Tesla V100, entirely free of charge !

Quota Request for GPU (all regions) and Preemptible CPUs (all regions)

Starting from november 2018, google cloud policy changed :

Free trial accounts now have a default quota of GPU set to 0, which means if we try to create an instance with a GPU in any region we'll get the following error :

Quota 'GPUS_ALL_REGIONS' exceeded. Limit: 0.0 globally.

To solve this, we now need to send a quota increase request to google cloud support, and they'll answer you by email within 48 hours

Note : preemptible CPUs are also set to 0 so you need to increase them to 24 or more as we will see below

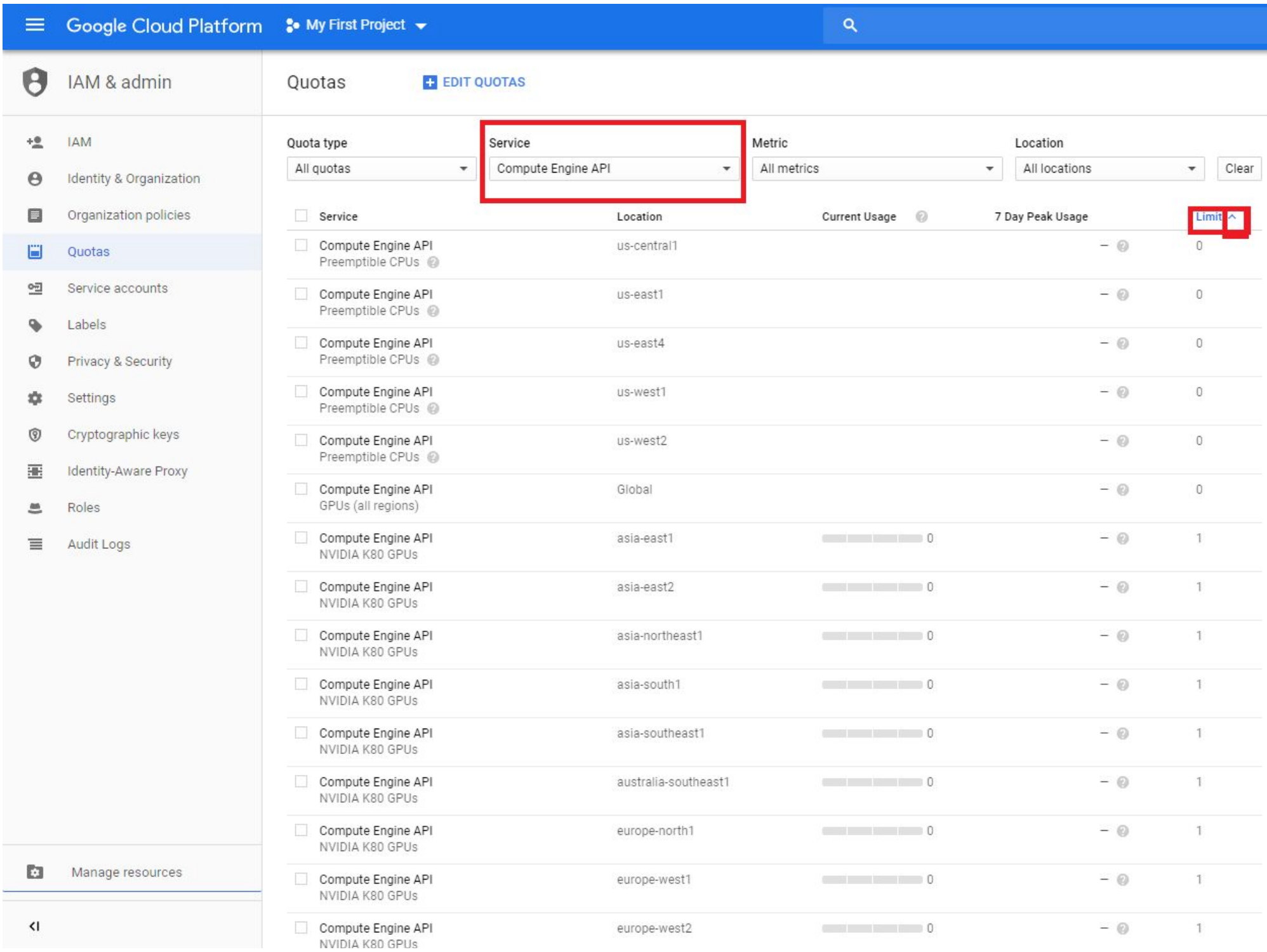
In google cloud console, go to the sandwich bar on top left, and click on : IAM & Admin -> quotas

Alternatively, you can use this link : https://console.cloud.google.com/iam-admin/quotas

Then in the quota page :

- in services select only "Compute Engine API"
- and on "Limit" click on the arrow to sort by lowest limit first (starting from 0 it will be easier to see the quota increases we need)

Scroll down and turn pages until you find GPU (all regions) - Global
As you can see here GPU (all regions) - Global quota is set to 0 :
And preemptible CPUs are also all set to 0 in every region



The steps are now what you will see in the screenshots below :

1) go back to page 1 and select all preemptible CPUs

2) go again to page 2 and select the remaining preemptible CPUs, as well as GPU (all regions) - Global

3) click on “edit quotas”

4) Write your personal information (name, mail, etc.)

5) input the new quota limit :
- For GPU all regions - Global : set to 1
- For Preemptible CPUs : set them to any number that is higher than 8 (i chose 24 in this example because the non preemptible CPUs have this limit)

6) write your personal information (name, mail, etc.)

7) You can write a smalll description like i did if you want, then click on “Done”

8) Click on “Submit Request”

As you can see below in the screenshots :

Google Cloud Platform | My First Project

IAM & admin

- IAM
- Identity & Organization
- Organization policies
- Quotas
- Service accounts
- Labels
- Privacy & Security
- Settings
- Cryptographic keys
- Identity-Aware Proxy
- Roles
- Audit Logs

Manage resources

Quotas

EDIT QUOTAS

☐	Compute Engine API Preemptible Local SSD (GB)	us-east4	–	0
☐	Compute Engine API Preemptible Local SSD (GB)	us-west1	–	0
☐	Compute Engine API Preemptible Local SSD (GB)	us-west2	–	0
☑	Compute Engine API Preemptible CPUs	asia-east1	–	0
☑	Compute Engine API Preemptible CPUs	asia-east2	–	0
☑	Compute Engine API Preemptible CPUs	asia-northeast1	–	0
☑	Compute Engine API Preemptible CPUs	asia-south1	–	0
☑	Compute Engine API Preemptible CPUs	asia-southeast1	–	0
☑	Compute Engine API Preemptible CPUs	australia-southeast1	–	0
☑	Compute Engine API Preemptible CPUs	europe-north1	–	0
☑	Compute Engine API Preemptible CPUs	europe-west1	–	0
☑	Compute Engine API Preemptible CPUs	europe-west2	–	0
☑	Compute Engine API Preemptible CPUs	europe-west3	–	0
☑	Compute Engine API Preemptible CPUs	europe-west4	–	0
☑	Compute Engine API Preemptible CPUs	northamerica-northeast1	–	0
☑	Compute Engine API Preemptible CPUs	southamerica-east1	–	0

Rows per page: 50 | 1 - 50 of 680

Google Cloud Platform | My First Project

IAM & admin

- IAM
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- Roles
- Audit Logs

Manage resources

Quotas

EDIT QUOTAS

Quota type: All quotas | Service: Compute Engine API | Metric: All metrics | Location: All locations | Clear

	Service	Location	Current Usage	7 Day Peak Usage	Limit
☑	Compute Engine API Preemptible CPUs	us-central1	–		0
☑	Compute Engine API Preemptible CPUs	us-east1	–		0
☑	Compute Engine API Preemptible CPUs	us-east4	–		0
☑	Compute Engine API Preemptible CPUs	us-west1	–		0
☑	Compute Engine API Preemptible CPUs	us-west2	–		0
☑	Compute Engine API GPUs (all regions)	Global	–		0
☐	Compute Engine API NVIDIA K80 GPUs	asia-east1	0	–	1
☐	Compute Engine API NVIDIA K80 GPUs	asia-east2	0	–	1
☐	Compute Engine API NVIDIA K80 GPUs	asia-northeast1	0	–	1
☐	Compute Engine API NVIDIA K80 GPUs	asia-south1	0	–	1
☐	Compute Engine API NVIDIA K80 GPUs	asia-southeast1	0	–	1
☐	Compute Engine API NVIDIA K80 GPUs	australia-southeast1	0	–	1
☐	Compute Engine API NVIDIA K80 GPUs	europe-north1	0	–	1
☐	Compute Engine API NVIDIA K80 GPUs	europe-west1	0	–	1
☐	Compute Engine API NVIDIA K80 GPUs	europe-west2	0	–	1

19 quotas selected

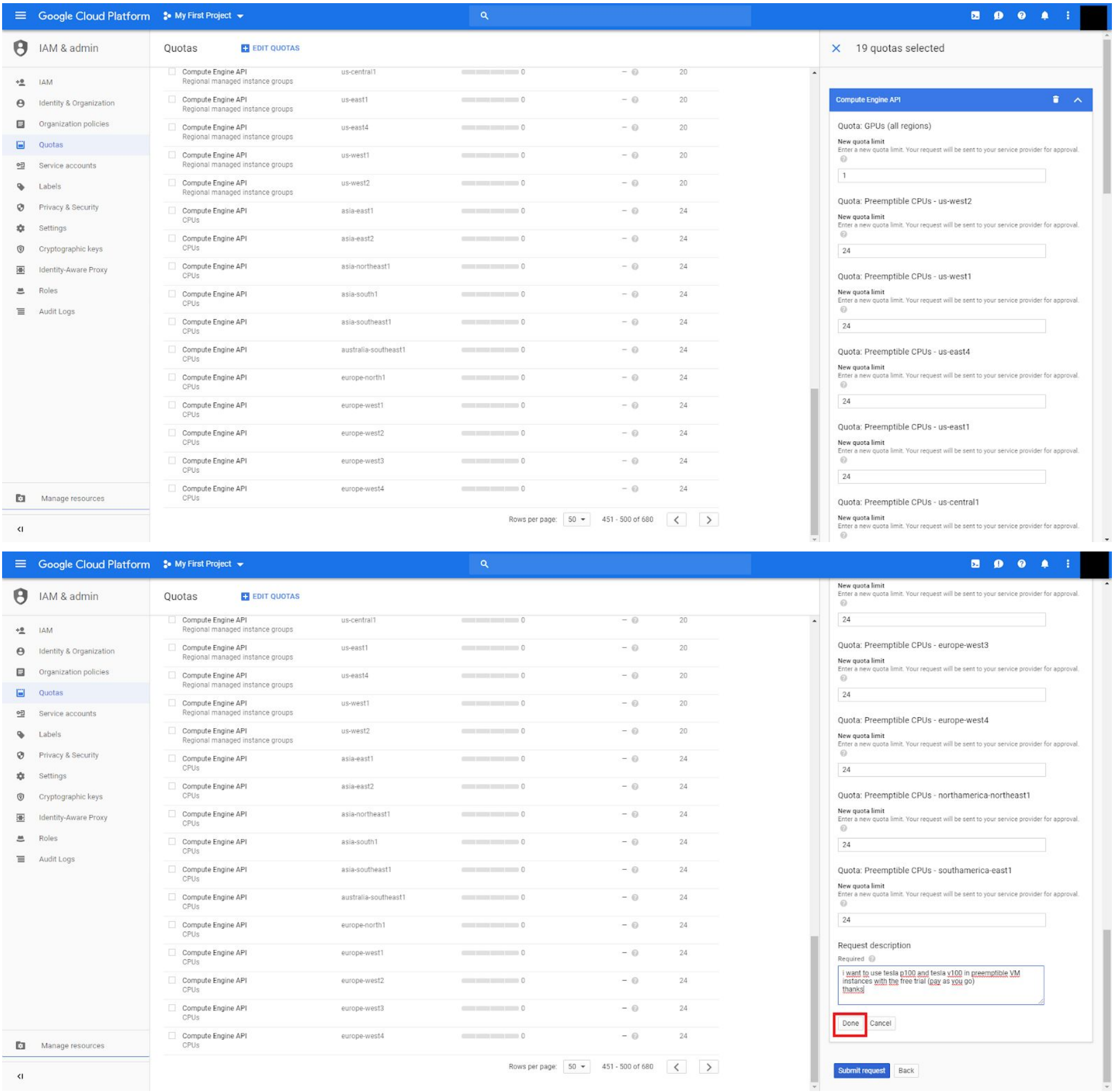
Edit quotas

Name [redacted]

Email [redacted]

Phone [redacted]

Next


Google Cloud Platform
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IAM & admin
Quotas
EDIT QUOTAS
IAM
Identity & Organization
Organization policies
Quotas
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Settings
Cryptographic keys
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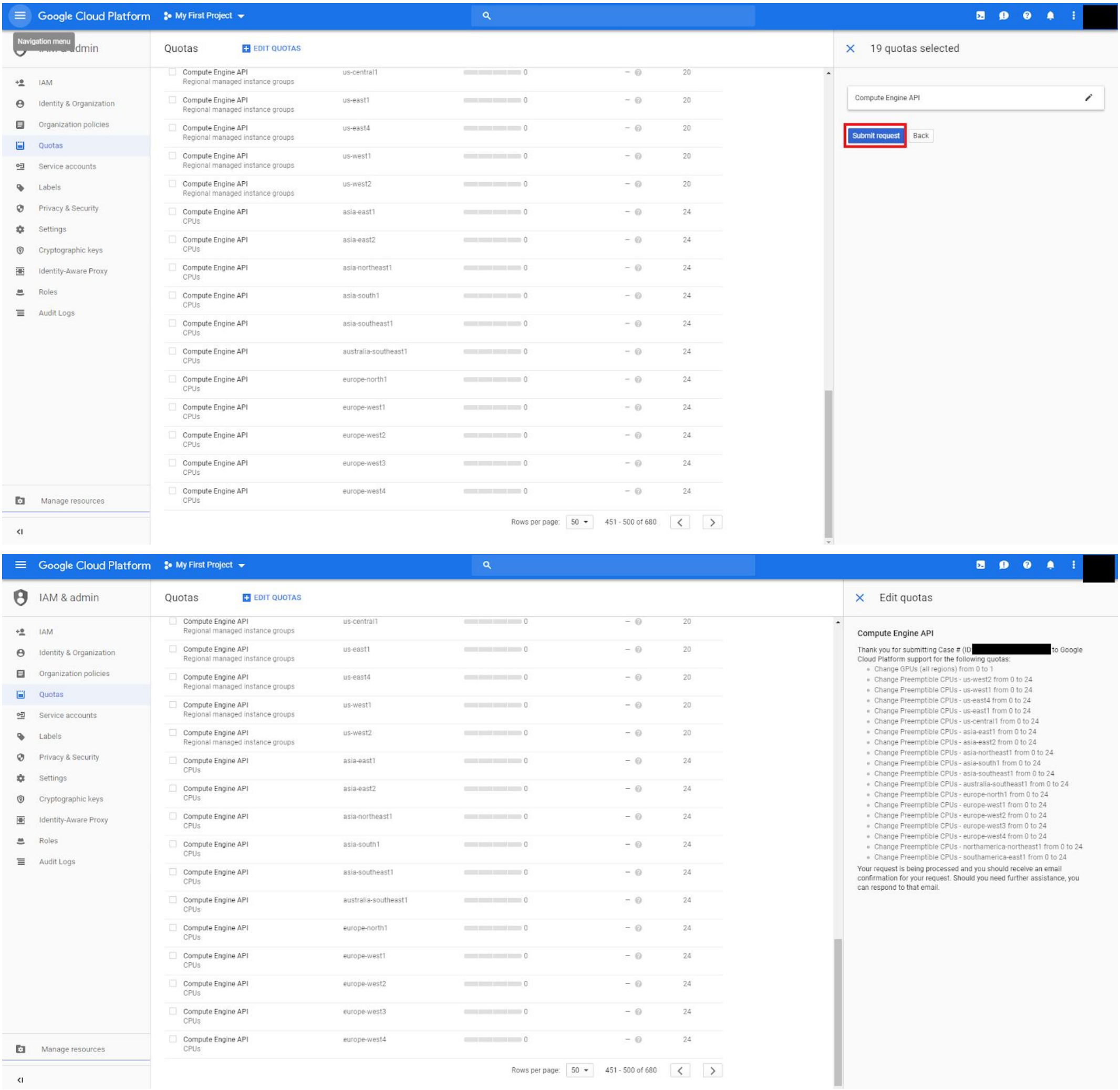
Roles
Audit Logs
Manage resources
Compute Engine API
Regional managed instance groups
us-central1
us-east1
us-east4
us-west1
us-west2
CPUs
asia-east1
asia-east2
asia-northeast1
asia-south1
asia-southeast1
australia-southeast1
europe-north1
europe-west1
europe-west2
europe-west3
europe-west4
Rows per page: 50
451 - 500 of 680
19 quotas selected
Compute Engine API
Quota: GPUs (all regions)
New quota limit
Enter a new quota limit. Your request will be sent to your service provider for approval.
1
Quota: Preemptible CPUs - us-west2
24
Quota: Preemptible CPUs - us-west1
24
Quota: Preemptible CPUs - us-east4
24
Quota: Preemptible CPUs - us-east1
24
Quota: Preemptible CPUs - us-central1
24
Quota: Preemptible CPUs - europe-west3
24
Quota: Preemptible CPUs - europe-west4
24
Quota: Preemptible CPUs - northamerica-northeast1
24
Quota: Preemptible CPUs - southamerica-east1
24
Request description
Required
i want to use tesla p100 and tesla v100 in preemptible VM instances with the free trial (pay as you go)
thanks
Done
Cancel
Submit request
Back



Wait for google cloud support answer within 48 hours
It should be enough to solve the issue

But if the issue still remains, email google support again and please also tell us on github so that we update these instructions again

Note : you may find extra information on this page if you want :
https://cloud.google.com/compute/quotas

Create an instance template

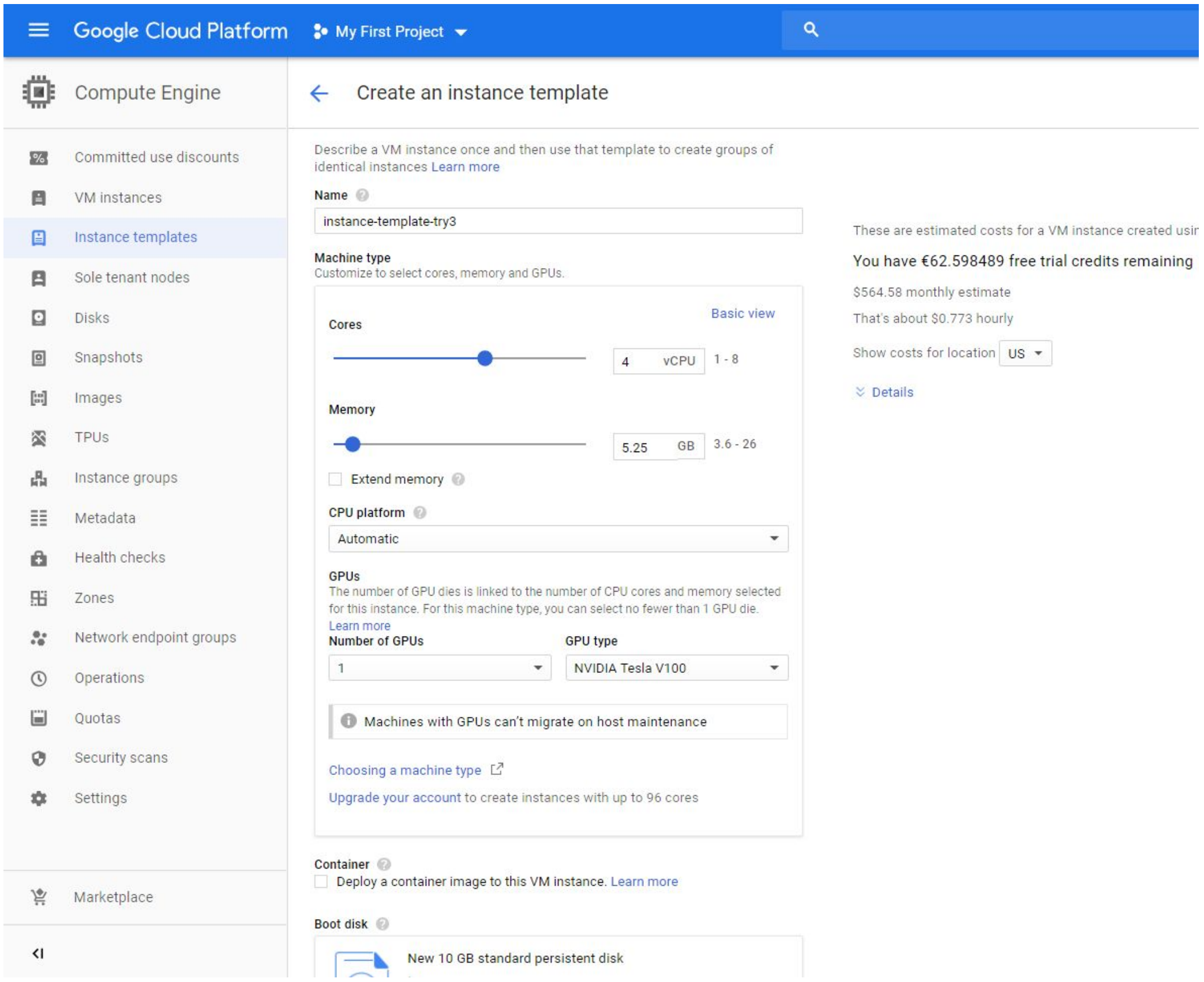
In google cloud console, go to the sandwich bar on top left, and click on : Compute Engine -> Instance templates

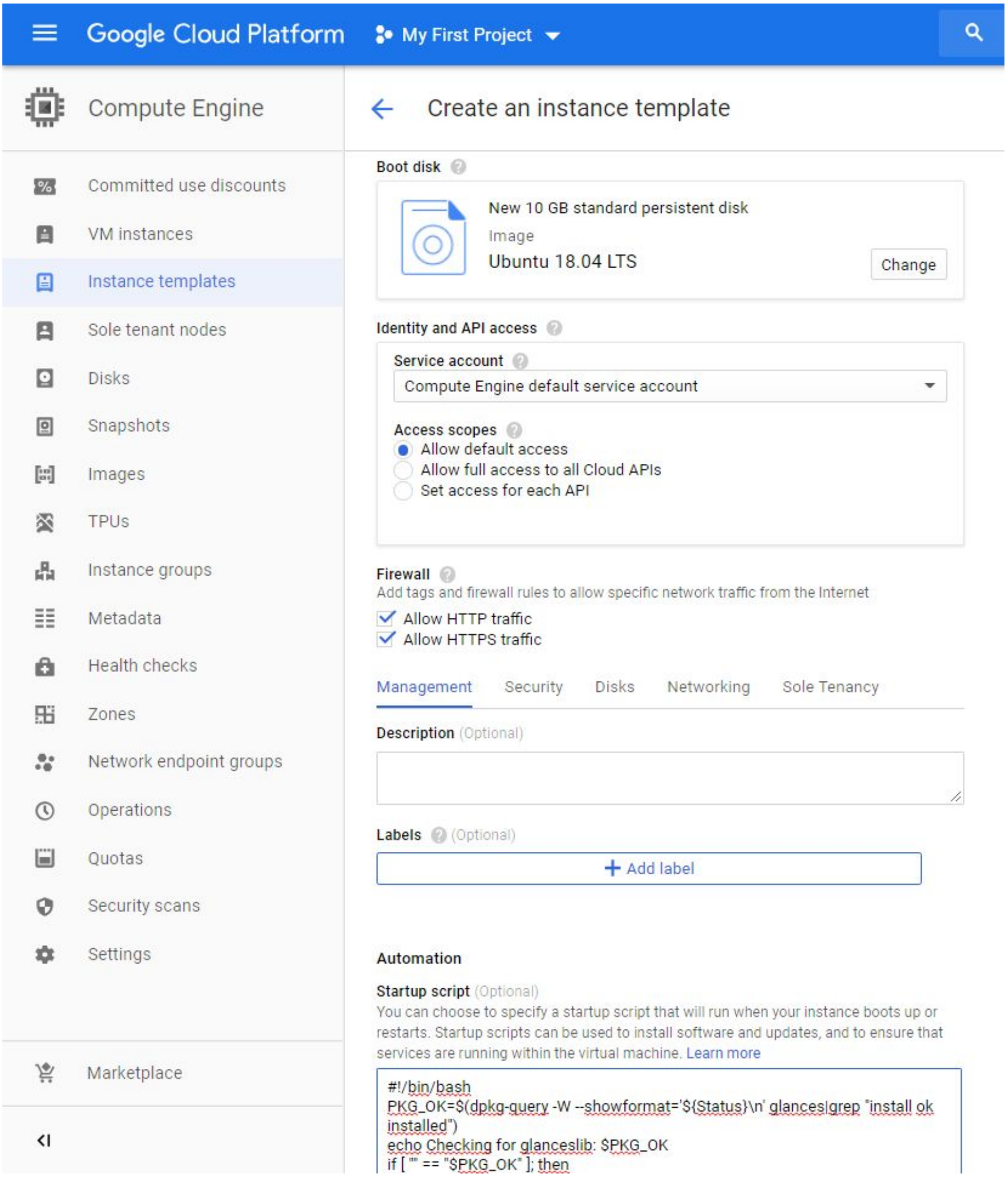
Alternatively, you can use this link : https://console.cloud.google.com/compute/instanceTemplates/

An instance template is a recording of the settings we want every new instance to be automatically recreated with. Click on blue button "Create instance template" :

Then, choose these settings :

As you can see in the 4 screenshots below :


Google Cloud Platform
My First Project
Compute Engine
Create an instance template
Committed use discounts
VM instances
Instance templates
Sole tenant nodes
Disks
Snapshots
Images
TPUs
Instance groups
Metadata
Health checks
Zones
Network endpoint groups
Operations
Quotas
Security scans
Settings
Marketplace
Describe a VM instance once and then use that template to create groups of identical instances Learn more
Name
instance-template-try3
Machine type
Customize to select cores, memory and GPUs.
Basic view
Cores
4 vCPU
1 - 8
Memory
5.25 GB
3.6 - 26
Extend memory
CPU platform
Automatic
GPUs
The number of GPU dies is linked to the number of CPU cores and memory selected for this instance. For this machine type, you can select no fewer than 1 GPU die.
Learn more
Number of GPUs
1
GPU type
NVIDIA Tesla V100
Machines with GPUs can't migrate on host maintenance
Choosing a machine type
Upgrade your account to create instances with up to 96 cores
Container
Deploy a container image to this VM instance. Learn more
Boot disk
New 10 GB standard persistent disk
These are estimated costs for a VM instance created usir
You have €62.598489 free trial credits remaining
$564.58 monthly estimate
That's about $0.773 hourly
Show costs for location US
Details


Google Cloud Platform
My First Project
Compute Engine
Create an instance template
Committed use discounts
VM instances
Instance templates
Sole tenant nodes
Disks
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Images
TPUs
Instance groups
Metadata
Health checks
Zones
Network endpoint groups
Operations
Quotas
Security scans
Settings
Marketplace
Boot disk
New 10 GB standard persistent disk
Image
Ubuntu 18.04 LTS
Change
Identity and API access
Service account
Compute Engine default service account
Access scopes
Allow default access
Allow full access to all Cloud APIs
Set access for each API
Firewall
Add tags and firewall rules to allow specific network traffic from the Internet
Allow HTTP traffic
Allow HTTPS traffic
Management
Security
Disks
Networking
Sole Tenancy
Description (Optional)
Labels (Optional)
Add label
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
#!/bin/bash
PKG_OK=$(dpkg-query -W --showformat='${Status}\n' glances|grep "install ok installed")
echo Checking for glanceslib: $PKG_OK
if ["" == "$PKG_OK"]; then

Google Cloud Platform | My First Project

Compute Engine

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

Marketplace

Create an instance template

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

```
#!/bin/bash
PKG_OK=$(dpkg-query -W --showformat='${Status}\n' glances|grep "install ok installed")
echo Checking for glanceslib: $PKG_OK
if [ "" == "$PKG_OK" ]; then
  echo "No glanceslib. Setting up glanceslib and all other leela-zero packages."
  sudo apt-get update && sudo apt-get -y upgrade && sudo apt-get -y dist-upgrade && sudo add-apt-repository -y ppa:graphics-drivers/ppa && sudo apt-get update && sudo apt-get -y install nvidia-driver-410 linux-headers-generic nvidia-opencl-dev && sudo apt-get -y install clinfo cmake git libboost-all-dev libopenblas-dev zlib1g-dev build-essential qtbase5-dev qttools5-dev qttools5-dev-tools libboost-dev libboost-program-options-dev opencl-headers ocl-icd-libopencl1 ocl-icd-opencl-dev qt5-default qt5-qmake curl && git clone https://github.com/gcp/leela-zero && cd leela-zero && git checkout next && git pull && git clone https://github.com/gcp/leela-zero && git submodule update --init --recursive && mkdir build && cd build && cmake .. && cmake --build . && cd ../autogtp && cp ../build/autogtp/autogtp . && cp ../build/leelaz . && sudo apt-get -y install glances zip && sudo apt-get clean && sudo reboot
else
  sudo -i && cd /leela-zero/autogtp && ./autogtp -g 2
fi
```

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

Key | Value

+ Add item

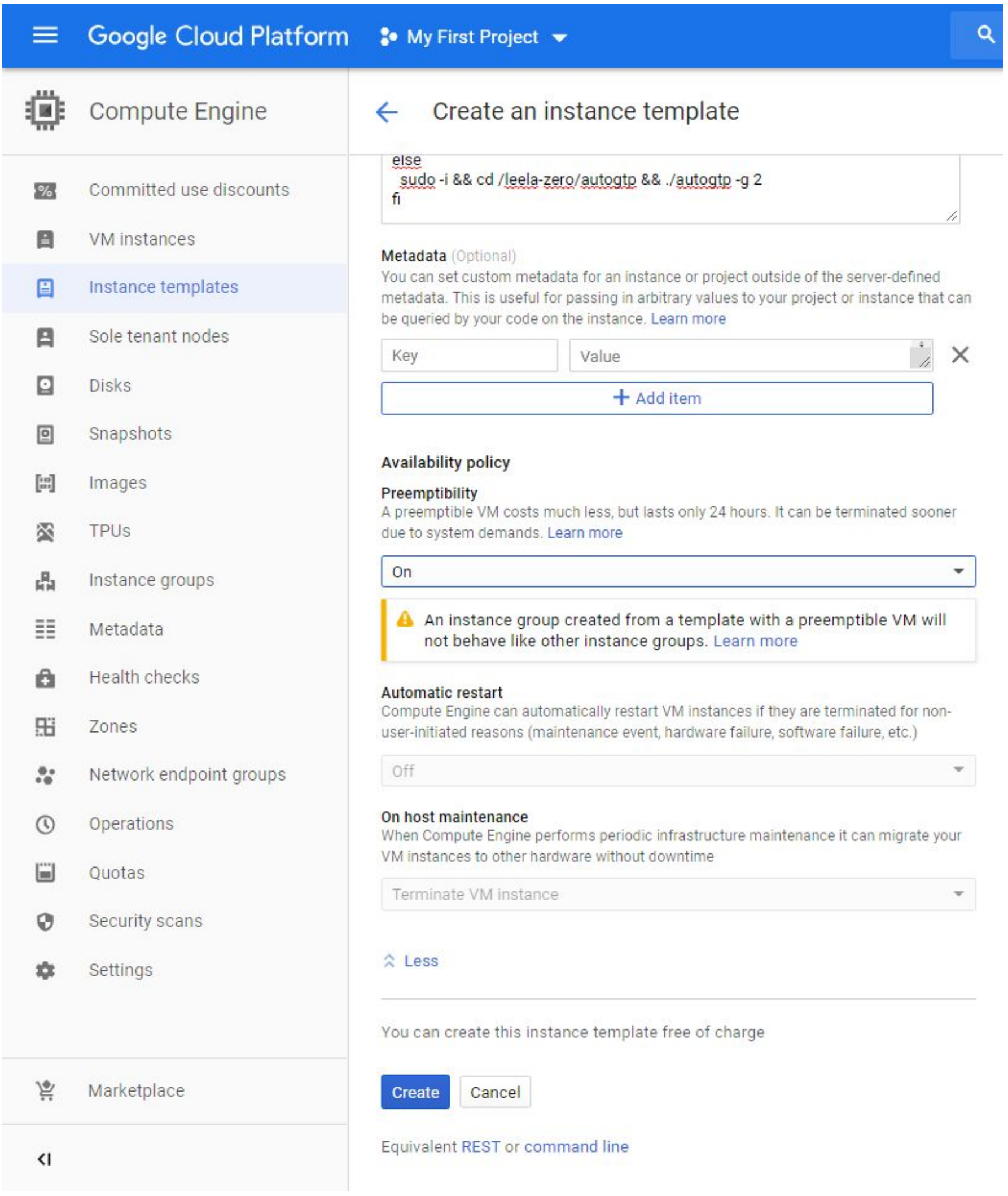
Availability policy

Preemptibility

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

On

⚠ An instance group created from a template with a preemptible VM will not behave like other instance groups. Learn more



- template name : any name you want
- on machine type, click "customize"
- 4 vcpu / 5.25 GB ram
- 1 GPU : Tesla V100
- untick "Extend memory"
- Boot Disk : click on "change" and choose Ubuntu 18.04 LTS with 10GB HDD (standard persistent disk)
- Firewall : allow http/https Then click on "Management, security,disks, networking, sole tenacy" : These new options will appear :
- Automation : in startup script, copy paste all the script below :

CHOOSE one of the 2 scripts below :

(updated scripts : 7 december 2018 versions now work again with google cloud, shrinked) :

- -> OPTION A : if you want to use MASTER (more stable) branch, choose this script :

```
#!/bin/bash
PKG_OK=$(dpkg-query -W --showformat='${Status}\n' glances|grep "install ok installed")
echo Checking for glanceslib: $PKG_OK
if [ "" == "$PKG_OK" ]; then
  echo "No glanceslib. Setting up glanceslib and all other leela-zero packages."
  sudo -i && sudo add-apt-repository -y ppa:graphics-drivers/ppa && sudo apt-get update && sudo apt-get -y -f install nvidia-driver-410 libboost-dev libboost-program-options-dev libboost-filesystem-dev opencl-headers ocl-icd-libopencl1 ocl-icd-opencl-dev zlib1g-dev clinfo cmake qt5-default qt5-qmake curl git zip glances && sudo add-apt-repository -y ppa:ubuntu-toolchain-r/test && sudo apt-get update && sudo apt-get -y install gcc-8 g++-8 && sudo update-alternatives --install /usr/bin/gcc gcc /usr/bin/gcc-8 40 --slave /usr/bin/g++ g++ /usr/bin/g++-8 && git clone https://github.com/leela-zero/leela-zero && cd leela-zero && git submodule update --init --recursive && mkdir build && cd build && cmake .. && cmake --build . && cp leelaz autogtp && sudo reboot
else
  sudo -i && cd /leela-zero/build/autogtp && ./autogtp -g 2
fi
```

- -> OPTION B : else, if you want to use NEXT (latest improvements) branch, choose this script :

```
#!/bin/bash
PKG_OK=$(dpkg-query -W --showformat='${Status}\n' glances|grep "install ok installed")
echo Checking for glanceslib: $PKG_OK
if [ "" == "$PKG_OK" ]; then
  echo "No glanceslib. Setting up glanceslib and all other leela-zero packages."
  sudo -i && sudo add-apt-repository -y ppa:graphics-drivers/ppa && sudo apt-get update && sudo apt-get -y -f install nvidia-driver-410 libboost-dev libboost-program-options-dev libboost-filesystem-dev opencl-headers ocl-icd-libopencl1 ocl-icd-opencl-dev zlib1g-dev clinfo cmake qt5-default qt5-qmake curl git zip glances && sudo add-apt-repository -y ppa:ubuntu-toolchain-r/test && sudo apt-get update && sudo apt-get -y install gcc-8 g++-8 && sudo update-alternatives --install /usr/bin/gcc gcc /usr/bin/gcc-8 40 --slave /usr/bin/g++ g++ /usr/bin/g++-8 && git clone https://github.com/leela-zero/leela-zero -b next && cd leela-zero && git submodule update --init --recursive && mkdir build && cd build && cmake .. && cmake --build . && cp leelaz autogtp && sudo reboot
else
  sudo -i && cd /leela-zero/build/autogtp && ./autogtp -g 2
fi
```

What this script makes is basically :

- if glances package is not installed (i.e: if it is first boot of this new instance) : then install all needed packages (system,driver,leela-zero), then reboot
- if glances package is installed (i.e: if it is 2nd or more boot of this new instance) : then run autogtp

Note : please make sure you dont add a CAPS at the “fi” while editing this google doc.

- Availability Policy : Preemptibility ON

This is important as it will reduce cost (free credit consumption) by 60%

(0.773$/hour instead of 1.8$/hour for a Tesla V100 !)

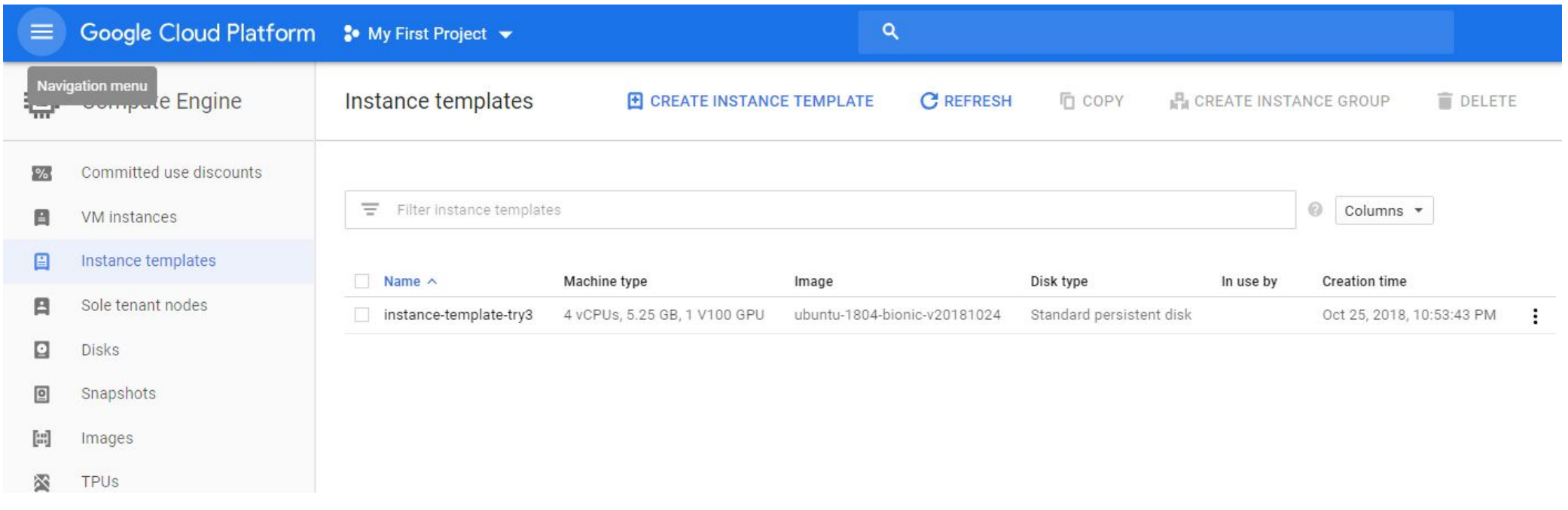
note : in `nvidia-driver-410` , replace `410` version number by whatever latest version number you find here :https://launchpad.net/~graphics-drivers/+archive/ubuntu/ppa

note 2 : an instance template cannot be modified/updated, if you want for example to change nvidia-driver-410 in the script, change username, or modify anything in the instance template, you will have to create a new instance template, then delete your current instance group, and create a new instance group with your latest instance template.

note 3 : i chose ./autogtp -g 2 in the script as it is 25% faster on a Tesla V100 from my extensive long time tests

note 4 : credits for the script go to (i modified it) : https://stackoverflow.com/a/10439058

After instance template finishes creating, you will get a screen like that :



Preparations : Check the regions and subregions that can provide a Tesla V100 :

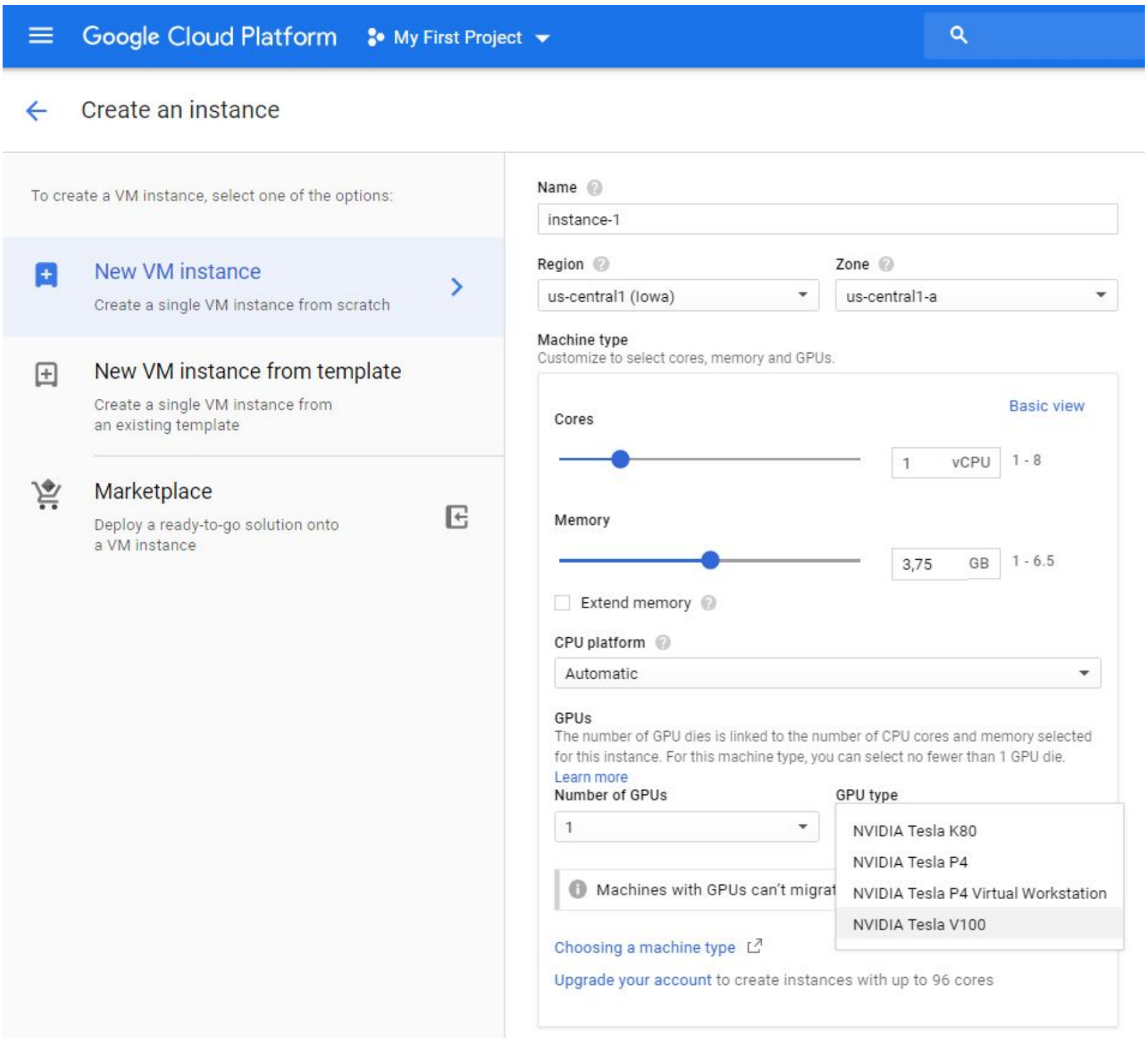
In this part, we will only be checking which regions have a Tesla V100 available, but we will NOT create any instance. When we are finished checking all regions, we will click on “Cancel” and exit the VM instance page without creating anything.

This step will be fast, but important in order to create a group in the correct regions. In another browser tab, if you're still in Compute engine (else use the top left sandwich bar), on the left panel you will see "instance groups", click on it.

Alternatively, you can use this link : https://console.cloud.google.com/compute/instances

To know which regions and subregions have a Tesla V100, click on "create instance" (we will not actually create an instance, but just scroll through regions and subregions, then exit it) Then click on "custom" machine.

And for every region, if you can add a GPU, add 1 GPU, and check if among these GPU a Tesla V100 is providable, as shown in the screenshot below :



Repeat this step for every subregion inside a region and similarly for every other regions : At the time of these instructions, these are the regions and subregions that can provide a Tesla V100 :

us-central1 (iowa) (has Tesla V100 in 3 subregions : a f b)

europe-west4 (netherlands) (has Tesla V100 in 3 subregions : a b c)

us-west1 (oregon) (has Tesla V100 in 2 subregions : b a)

asia-east1 (Taiwan) (has Tesla V100 in 1 subregion : c)

But please remember that these can change in the future for the better or the worse, this is why all the methodology is described here.

Then, when you saw all regions and subregions, go back at the bottom of the page and click on “Cancel” (we will not create a VM instance but an instance group)

We will now use the information we gathered to actually create our instances with an instance group.

Create a managed instance group :

This managed instance group will take care of automatically recreating a new instance every time preemptible use shuts it down (frequent), or if it is deleted by you (but NOT for scheduled maintainance which will require a manual restart of the instance, much more rare).

If you're still in Compute engine (else use the top left sandwich bar), on the left panel you will see "instance groups", click on it. Alternatively, you can use this link : https://console.cloud.google.com/compute/instanceGroups/

Click on "Create instance group"

Then, choose these settings :

As you can see in the screenshots below :

Compute Engine

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

Marketplace

Create a new instance group

Use an instance group when configuring a load-balancing backend service or to group VM instances. Learn more

Name

instance-group-1

Description (Optional)

Location

Multi-zone groups span multiple zones which assures higher availability Learn more

- Single-zone
- Multi-zone

Region

us-central1

Zones

- [x] us-central1-a
- [x] us-central1-b
- [ ] us-central1-c
- [x] us-central1-f

Less

Specify port name mapping (Optional)

Instance template

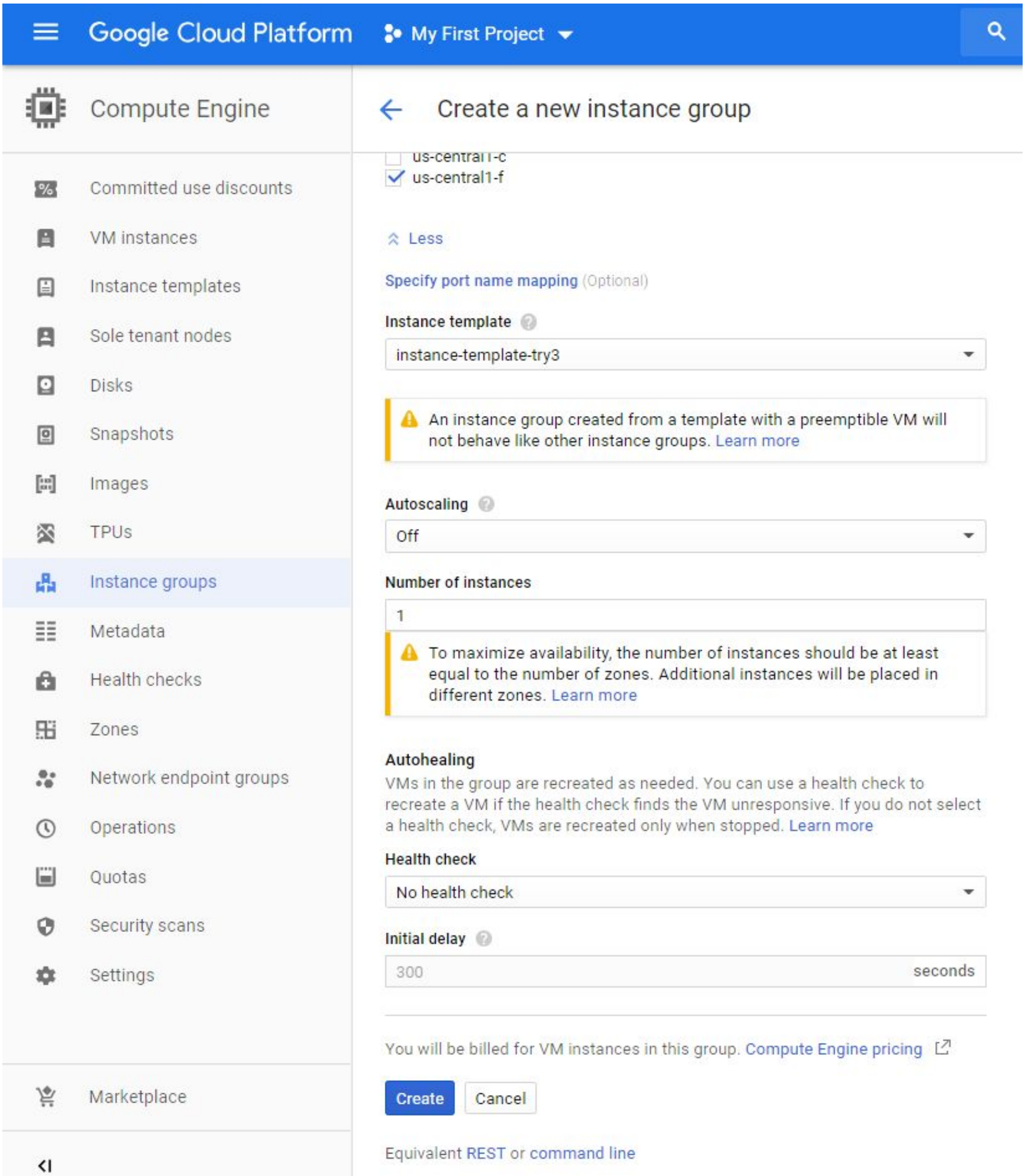
instance-template-try3

⚠ An instance group created from a template with a preemptible VM will not behave like other instance groups. Learn more

Autoscaling

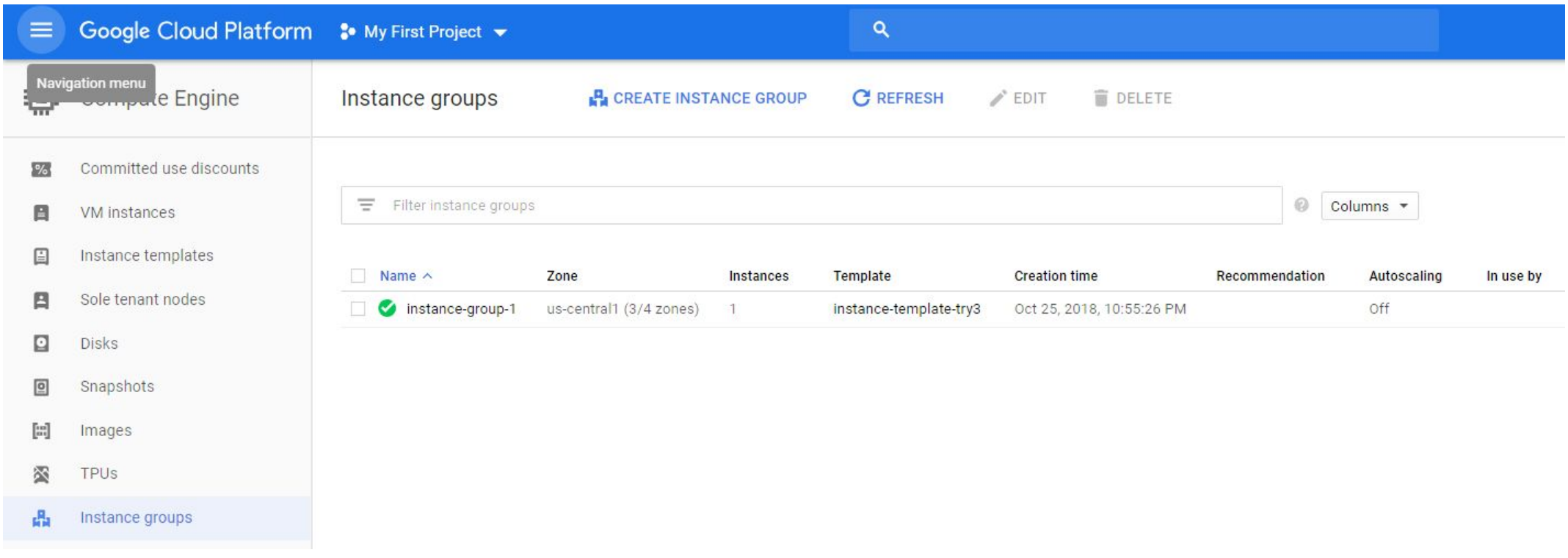
Off

Number of instances



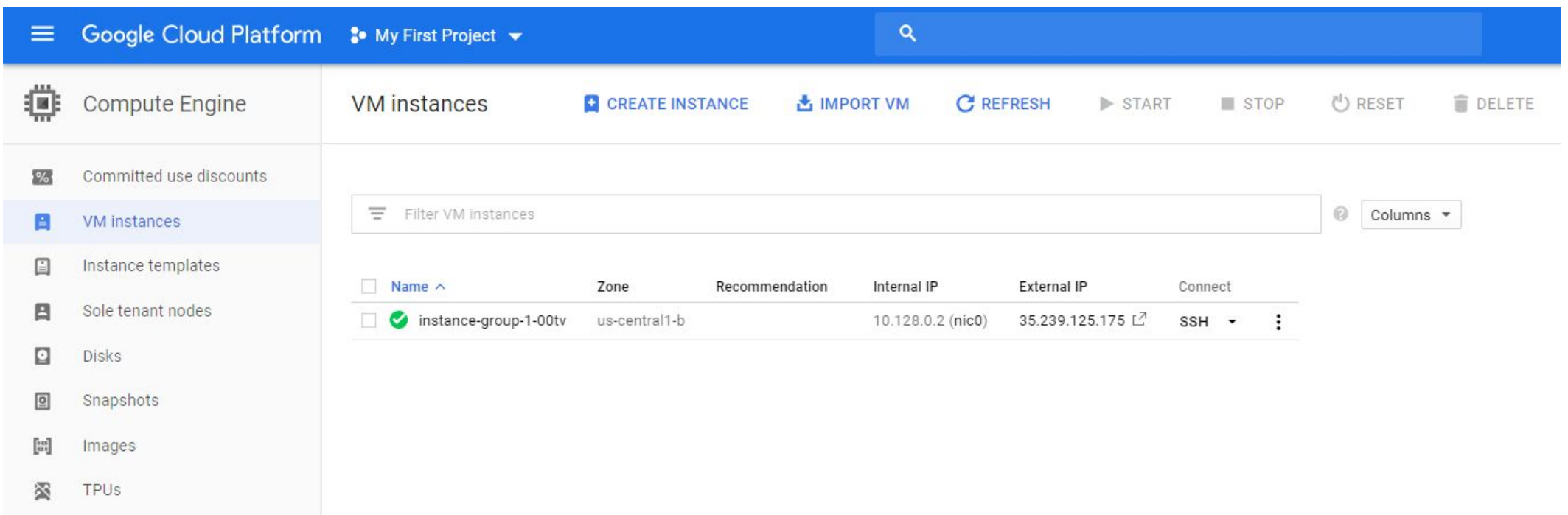
- group name : any name you want
- location : multi-zone, then click on more As explained earlier choose only one of the regions that can provide a Tesla V100 in at least one of its subregions (zones). The instance group that we are creating will continuously be in charge of trying to recreate and restart the instance in any of the subregions (zones) that we will choose until it finds one where hardware is providable on the cloud. This is why it is preferred to choose a region that can provide a Tesla V100 in many of its subregions. In the video tutorial, i chose us-central1 (iowa) in this example. Then click on "configure zones"
- zone (subregion) : tick only the subregions (zones) that can provide a Tesla V100 In this example i ticked subregions a f and b, and unticked all other subregions.
- instance template : choose the template that we created earlier. This template will tell what the group what hardware to use, and also include a startup-script that will automatically install all packages needed, then install leela-zero, and then at every boot will start autogtp. It is entirely automated
- autoscaling : off
- number of instances : 1 As free trial accounts have a GPU quota of 1, we will not be able to create anymore simultaneously running instances with a GPU.
- Health check : no

Click on blue button "create". After some time, we get a screen like this :



if you go back to "VM instances" (https://console.cloud.google.com/compute/instances) :

You can see that a new instance has been created by the managed instance group This instance will automatically update, upgrade and install all system packages then compile leela-zero and reboot, and then automatically run autogtp.



The last obligatory thing you need to know :

How to manually restart an instance after it has been stopped due to scheduled maintainance :

As explained earlier, Preemptible instances are much cheaper (60% less) but can't last more than 24 hours, and can be stopped sooner (frequent).

This case is not at all a problem though, because, every time the instance is stopped by preemptible use or deleted by yourself, the managed instance group will immediately and continuously automatically keep trying to recreate and restart our instance in any of the subregions(zones) we selected earlier that have a Tesla V100 available, until it succeeds. You don't have to do anything at all for that.

However, sometimes both preemptible and non preemptible instances will get stopped by Google Cloud due to scheduled maintainance events.

note : when your instance is stopped, the free credit stops being consumed, so you don't have to worry about failing to restart a stopped instance, you can do it anytime later.

This case is rare (maybe once every few weeks), but Preemptible instances can't be automatically restarted after that, unlike non Preemptible instances.

If that rare case happens, the user (you) will have to manually recreate the instance group.

To do that, go on "instance groups" page in Compute engine : https://console.cloud.google.com/compute/instanceGroups/

Then click on the 3 dots at the right of your instance group (or tick the box at the left of your group name), and choose “Delete”.

Deleting the group will also automatically delete all VM instances managed by this group (in our case only 1), but will not delete other instances that are not related to this group (if you have other projects, etc).

Then just recreate our instance group as we saw earlier (it takes 2 minutes) and you’ll be good to go for a long time again !

note : recreating the instance will start consuming the free trial credit again, as explained in the pre-start message.

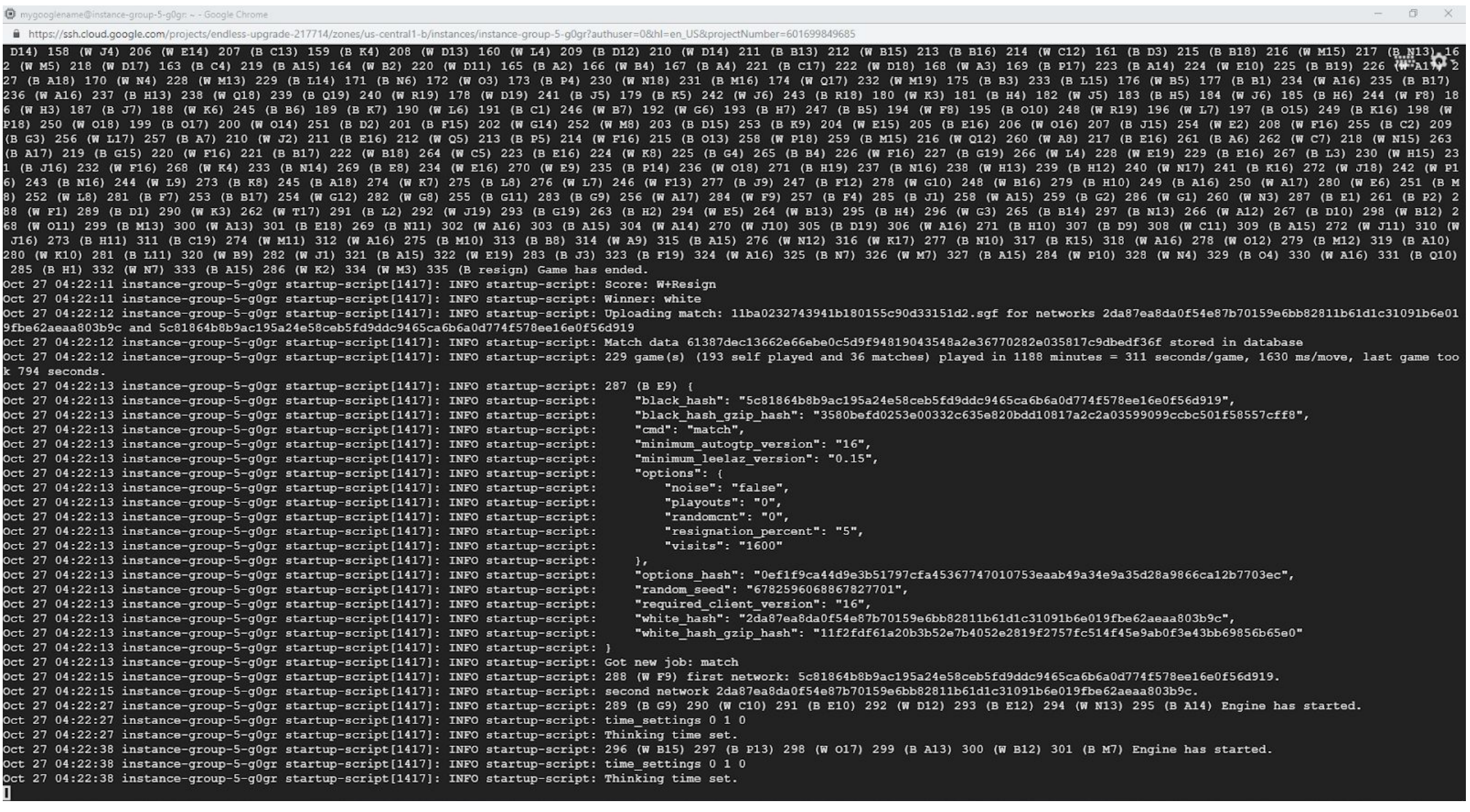
Finally, whenever you want, you can willingly choose to stop contributing for some time by deleting the instance group, then whenever you want start contributing again.

This concludes the obligatory steps ! You are now a Tesla V100 leela-zero contributor ! You can exit chrome, power off your computer, you don't have to do anything ! It is entirely automated (except for scheduled maintainance events requiring a manual restart as explained earlier).

Optional extra steps

The following instructions are optional, but they may interest you.

It includes for example how to easily access your instance and see games being produced in live mode



You can find them here : https://docs.google.com/document/d/1SobPo-D9Ry1jBIt4CChvsNIYfaFk9WJDl9lEAgeAMJI/edit?usp=sharing