DevOps Lab

CLOUD COMPUTE - GCP

Compute: Virtual Machine creation

Home task

TASK 1

It's aiming to gain knowledge about the mechanisms of VMs creation in Google Cloud.

Create Virtual Machine in Google cloud by the following ways:
-   gcp-ui (complete Lab: google codelabs: VM creation)

Boot disk ⑦

New 35 GB SSD persistent disk

Image

🛡 CentOS 7

Change

Identity and API access ⑦

Service account ⑦

Compute Engine default service account ▼

Access scopes ⑦
● Allow default access
○ Allow full access to all Cloud APIs
○ Set access for each API

Firewall ⑦
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)

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

| Management | Security | Disks | Networking | Sole Tenancy |

Network tags ⑦ (Optional)

Hostname ⑦
Set a custom hostname for this instance or leave it default. Choice is permanent

nginx-gcp-ui.us-central1-c.c.smooth-era-287810.internal

Network interfaces ⑦
Network interface is permanent

default default (10.128.0.0/20) ✏

＋ Add network interface

ℹ To create another network interface you need to have a new network first.

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

```
sudo yum update
sudo yum install -y nginx
sudo systemctl enable nginx
sudo systemctl start nginx
```

✅ nginx-gcp-ui

Details   Monitoring   Screenshot

Remote access

SSH ▾

Connect to serial console ▾

☐ Enable connecting to serial ports ❓

Logs

Cloud Logging

Serial port 1 (console)

≫ More

Instance Id

7559011648499969019

Machine type

custom (1 vCPU, 4.5 GB memory)

Reservation

Automatically choose

CPU platform

Intel Haswell

Display device

Turn on a display device if you want to use screen capturing and recording tools.

☐ Turn on display device

Zone

us-central1-c

Labels

os_family : red_hat   server_type : nginx_server   way_of_ins... : gcp-ui

Network interfaces

Name	Network	Subnetwork	Primary internal IP	Alias IP ranges	External IP	Network Tier	IP forwarding	Network details
nic0	default	default	10.128.0.2	—	34.71.128.132 (ephemeral)	Premium	Off	View details

Public DNS PTR Record

None

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

Confidential VM service ⓘ

Disabled

Boot disk

Name	Image	Size (GB)	Device name	Type
nginx-gcp-ui	centos-7-v20200811	35	nginx-gcp-ui	SSD persistent disk

Custom metadata

startup-script	sudo yum update sudo yum install -y nginx sudo systemctl enable nginx sudo systemctl start nginx

⌃ Less

⟩ ⟳ ⚠ Не защищено | 34.71.128.132

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CentOS

Welcome to CentOS

The Community ENTerprise Operating System

CentOS is an Enterprise-class Linux Distribution derived from sources freely provided to the p
redistribution policy and aims to be functionally compatible. (CentOS mainly changes package

CentOS is developed by a small but growing team of core developers. In turn the core develo
enterprise users, managers, core Linux contributors and Linux enthusiasts from around the w

CentOS has numerous advantages including: an active and growing user community, quickly
responsive, Special Interest Groups (SIGs) to add functionality to the core CentOS distribution
an FAQ.

- gcloud

```bash
#!/bin/bash
gcloud compute instances create nginx-gcloud \
--zone=us-central1-c \
--custom-vm-type n1 \
--custom-cpu=1 \
--custom-memory=4608MB \
--boot-disk-type=pd-ssd \
--boot-disk-size=35GB \
--image=centos-7 \
--tags="http-server","https-server" \
--labels="server_type=nginx_server","os_family=red_hat","way_of_installation=gcloud" \
--deletion-protection \
--metadata startup-script="sudo yum update
sudo yum install -y nginx
sudo systemctl enable nginx
sudo systemctl start nginx" \
--network=default
```

✅ **nginx-gcloud**

Details   Monitoring   Screenshot

Remote access

SSH ▼

Connect to serial console ▼

☐ Enable connecting to serial ports ❓

Logs
Cloud Logging

Serial port 1 (console)
≫ More

Instance Id
1733156070758612410

Machine type
custom (1 vCPU, 4.5 GB memory)

Reservation
Automatically choose (default)

CPU platform
Intel Haswell

Display device
Turn on a display device if you want to use screen capturing and recording tools.

☐ Turn on display device

Zone
us-central1-c

Labels

os_family : red_hat   server_type : nginx_server   way_of_ins... : gcloud

Network interfaces

Name	Network	Subnetwork	Primary internal IP	Alias IP ranges	External IP	Network Tier ❓	IP forwarding	Network details
nic0	default	default	10.128.0.3	–	35.232.202.77 (ephemeral)	Premium	Off	View details

Public DNS PTR Record
None

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

Confidential VM service ❓
Disabled

Boot disk

Name	Image	Size (GB)	Device name	Type
nginx-gcloud	centos-7-v20200811	35	persistent-disk-0	SSD persistent disk

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- terraform (all settings should be provided via variables (tfvars), add URL ("http://IP. Address/" to output)

✅ **nginx-terraform**

Details   Monitoring   Screenshot

Remote access

SSH ▾

Connect to serial console ▾

☐ Enable connecting to serial ports ❔

Logs
Cloud Logging

Serial port 1 (console)
⌄ More

Instance Id
3506365187569537960

Machine type
custom (1 vCPU, 4.5 GB memory)

Reservation
Automatically choose (default)

CPU platform
Intel Haswell

Display device
Turn on a display device if you want to use screen capturing and recording tools.
☐ Turn on display device

Zone
us-central1-c

Labels
os_family : red_hat   server_type : nginx_server   way_of_ins... : terraform

Network interfaces

Name	Network	Subnetwork	Primary internal IP	Alias IP ranges	External IP	Network Tier ⓘ	IP forwarding	Network details
nic0	default	default	10.128.0.7	—	35.223.161.67 (ephemeral)	Premium	Off	View details

Public DNS PTR Record

None

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

Confidential VM service ⓘ

Disabled

Boot disk

Name	Image	Size (GB)	Device name	Type
nginx-terraform	centos-7-v20200811	35	persistent-disk-0	SSD persistent disk

```
Do you want to perform these actions?
  Terraform will perform the actions described above.
  Only 'yes' will be accepted to approve.

  Enter a value: yes

google_compute_instance.nginx-terraform: Creating...
google_compute_instance.nginx-terraform: Still creating... [10s elapsed]
google_compute_instance.nginx-terraform: Creation complete after 15s [id=projects/smooth-era-287810/zones/us-central1-c/instances/nginx-terraform]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

URL = http://35.223.161.67
```

⟳   ⚠ Не защищено | 35.223.161.67

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CentOS

Welcome to CentOS

The Community ENTerprise Operating System

CentOS is an Enterprise-class Linux Distribution derived from sources freely provided to the public by Red
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responsive, Special Interest Groups (SIGs) to add functionality to the core CentOS distribution, and multipl
an FAQ.

Virtual Machine Properties:
- InstanceName : nginx-${creation-way}
- Region: us-central1
- Zone: us-central1-c
- Type: General Purpose, n1, 1CPU 4.5GB RAM, Disk SSD 35Gb;
- OS: Centos7
- Allow http,https traffic
- Labels:
    - ServerType=NginxServer
    - OSFamily=RedHat
    - WayOfInstallation=${creation-way}

- The instance should be protected for deletion.
- VM should have the up and running Nginx (automatically provisioned after VM is started via yum, default configuration)
- The instance is running in **default** network

P.S.:
For **gcp-ui** way please use the following guide for reference:
https://cloud.google.com/compute/docs/quickstart-linux

For **gcloud** way please use the following guide for reference:
https://cloud.google.com/ai-platform/deep-learning-vm/docs/quickstart-cli

For **terraform** way please use the following guide for reference:
https://www.terraform.ioU/docs/providers/google/guides/getting_started.html
https://cloud.google.com/community/tutorials/managing-gcp-projects-with-terraform

TASK 2

It's aiming to gain knowledge about the mechanisms of Persistent disk creation in Google Cloud.

Create Persistent Disk and attach it to one of existing Virtual machine (nginx-gcp-ui).
   1) Complete Lab goolge codelabs: persistent disk with using your VM name
   2) Create terraform configuration to do the same via terraform (use VM: nginx-gcp-terraform).
        For reference:
        -   google_compute_disk
        -   google_compute_attached_disk

	mydisk	✓	Standard persistent disk	200 GB	us-central1-c	nginx-gcp-ui	None
	terraform-disk	✓	Standard persistent disk	200 GB	us-central1-c	nginx-terraform	None

All **reports**/code please place into repository:
https://github.com/MNT-Lab/google-cloud-module into appropriate branches: *first char of name + surname*.

For example:
Student: Siarhei Ivanou
Branch Name: **sivanou**

Format depends on case: README.md/scripts/terraform files

Email pattern: [MNT-CD-10.2]-FirstName-LastName

Email should contain the link to personalized branch.