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Google Cloud Computing Foundations: Networking & Security in Google Cloud

Lab: Multiple VPC Network

The screenshot shows the Google Cloud Platform dashboard for project "qwiklabs-gcp-04-44397758556c". The left sidebar lists various services like Cloud Hub, Cloud overview, Solutions, Billing, IAM & Admin, Marketplace, APIs & Services, Vertex AI, Compute Engine, Kubernetes Engine, Cloud Storage, Security, BigQuery, Monitoring, Cloud Run, VPC Network, and Cloud Endpoints. The main area displays "Project info" for three VMs: mynet-vm-1, privatenet-vm-1, and vm-appliance. The "Compute Engine" section shows CPU usage at 100%. The "Cloud Shell" terminal window shows the following command output:

```
NAME: mynet-vm-1
ZONE: us-west1-a
MACHINE_TYPE: e2-medium
PREEMPTIBLE:
INTERNAL IP: 10.138.0.2
EXTERNAL IP: 34.145.49.118
STATUS: RUNNING

NAME: privatenet-vm-1
ZONE: us-west1-a
MACHINE_TYPE: e2-micro
PREEMPTIBLE:
INTERNAL IP: 10.138.0.3
EXTERNAL IP: 34.169.112.85
STATUS: RUNNING

NAME: vm-appliance
ZONE: us-west1-a
MACHINE_TYPE: e2-standard-4
PREEMPTIBLE:
INTERNAL IP: 172.16.0.3
EXTERNAL IP: 34.81.210.0
10.130.0.1
10.130.0.2
10.130.0.3
136.117.68.103
136.117.68.109
136.117.68.110
STATUS: RUNNING
student_03_220454ca5f7@cloudshell:~ (qwiklabs-gcp-04-44397758556c)$ ip route
default via 10.130.0.1 dev eth0 proto kernel scope link src 10.88.0.3
10.88.0.0/16 dev eth0 proto kernel scope link src 10.88.0.1 linkdown
172.17.0.0/16 dev docker0 proto kernel scope link src 172.17.0.1 linkdown
student_03_220454ca5f7@cloudshell:~ (qwiklabs-gcp-04-44397758556c)$
```

The screenshot shows the Google Skills Lab interface for the "Multiple VPC Networks" lab. The top navigation bar includes "Google Skills", "Dashboard", "Catalog", "Paths", "Collections", and "Subscriptions". The main content area shows the lab setup instructions and requirements, which state: "Protect your account and progress. Always use a private browser window and lab credentials to run this lab." Below this, there is a "View instructions" button. A timer indicates "00:43:34". The lab steps are numbered 4 through 10, with step 4 being: "4. To test connectivity to mynet-vm-2's internal IP, run the following command, replacing mynet-vm-1's internal IP: ping -c 3 'Enter mynet-vm-2 internal IP here'". Step 5 is: "5. To test connectivity to managementnet-vm-1's internal IP, run the following command, replacing managementnet-vm-1's internal IP: ping -c 3 'Enter managementnet-vm-1 internal IP here'". Step 6 is: "6. To test connectivity to privatenet-vm-1's internal IP, run the following command, replacing privatenet-vm-1's internal IP: ping -c 3 'Enter privatenet-vm-1 internal IP here'". The right sidebar contains sections for "Send feedback", "Lab instructions and tips", "Overview", "Objectives", "Setup and requirements", "Task 1. Create custom mode VPC networks with firewall rules", "Task 2. Create VM instances", "Task 3. Explore the connectivity between VM instances", "Task 4. Create a VM instance with multiple network interfaces", and "Congratulations!". The status bar at the bottom right shows "100/100".

Lab: VPC Networks - Controlling Access

The screenshot shows the Google Cloud Skills Lab interface. At the top, there's a navigation bar with 'Google Cloud Computing Foundations Certificate' and 'VPC Networks - Controlling Access'. A search bar says 'What do you want to learn today?'. On the right, there are stats: 1223 stars, 1 comment, and a 'Get started' button.

The main content area has a 'Contents' sidebar with 'VPC Networks - Controlling Access' selected. Below it, a 'Lab setup instructions and requirements' section includes a note about protecting the account and using a private browser. A 'View instructions' button is available.

A timer at the top left shows '00:52:09'. A note below it says: 'Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked.' A 'Learn more' link is provided.

The main task area shows a completed step: 'Create a Network-admin service account.' with a green checkmark and 'Assessment Completed!'. A note says: 'Click **Check my progress** to verify your performed task. If you have completed the task successfully you will be granted an assessment score.'

On the right, a progress summary shows several tasks completed with 15/15 points: 'Create the blue server', 'Create the green server', 'Install Nginx and customize the welcome page', 'Create the tagged firewall rule', 'Create a test-vm', and 'Create a Network-admin service account'. A 'Send feedback' button is also present.

At the bottom, there are 'Previous' and 'Next' buttons.

The screenshot shows the Google Cloud Platform dashboard. The left sidebar lists various services like Cloud Hub, Cloud overview, Solutions, and Recently visited. The main area shows a 'Cloud Shell' terminal window titled '(qwiklabs-gcp-02-cda23ad22c10)'. It displays a command-line session where the user is installing Nginx on an Ubuntu VM. The terminal output includes:

```
After this operation, 1,492 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx-common all 1.24.0-2ubuntu7.5 [43.4 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx amd64 1.24.0-2ubuntu7.5 [520 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble/universe amd64 libnginx-mod-http-echo amd64 1:0.63-6build12 [20.4 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble/universe amd64 nginx-light amd64 1:1.24.0-2ubuntu7.5 [4,446 B]
Fetched 586 kB in 2s (305 kB/s)
debconf: delaying package configuration, since post-pkg-select was not installed
Selecting previously unselected package nginx-common.
(Reading database ... 128938 files and directories currently installed.)
Preparing to unpack .../nginx-common_1.24.0-2ubuntu7.5_all.deb ...
Unpacking nginx-common (1.24.0-2ubuntu7.5) ...
Selecting previously unselected package nginx.
Preparing to unpack .../nginx_1.24.0-2ubuntu7.5_amd64.deb ...
Unpacking nginx (1.24.0-2ubuntu7.5) ...
Selecting previously unselected package libnginx-mod-http-echo.
Preparing to unpack .../libnginx-mod-http-echo_1:0.63-6build12_amd64.deb ...
Unpacking libnginx-mod-http-echo (1:0.63-6build12) ...
Selecting previously unselected package libnginx-mod-http-echo.
Preparing to unpack .../libnginx-mod-http-echo_1:0.63-6build12_amd64.deb ...
Unpacking libnginx-mod-http-echo (1:0.63-6build12) ...
Selecting previously unselected package libnginx-light.
Preparing to unpack .../libnginx-light_1.24.0-2ubuntu7.5_all.deb ...
Unpacking nginx-light (1.24.0-2ubuntu7.5) ...
Setting up nginx-common (1.24.0-2ubuntu7.5) ...
debconf: unable to initialize frontend: Dialog
debconf: falling back to frontend: Readline
Creating /etc/nginx/nginx.conf ...
Setting up nginx (1.24.0-2ubuntu7.5) ...
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.dребет: no start/stop script found.
Setting up libnginx-mod-http-echo (1:0.63-6build12) ...
Setting up nginx-light (1.24.0-2ubuntu7.5) ...
Processing triggers for man-db (2.1.4-0.4+build1) ...
Processing triggers for man-db (2.1.4-0.4+build1) ...
student 0$ 7ea95308527@cloudshell:1 ~ (qwiklabs-gcp-02-cda23ad22c10)$
```

To the right of the terminal, there's a 'Google Cloud Platform status' section showing 'All services normal' and a 'Billing' section. A 'Snipping Tool' window is open, showing a screenshot of the terminal output. A message says 'Screenshot copied to clipboard'.

Application Load Balancer with Cloud Armor

Application Load Balancer with Cloud Armor

1. In the console, navigate to Navigation menu (≡) > Compute Engine > VM instances.

2. Click Create instance.

3. In the Machine configuration:

Select the following values:

Property	Value (type value or select option as specified)
Name	siege-vm
Region	europe-west4
Zone	europe-west4-c
Series	E2

Given that europe-west4 is closer to us-west1 than to us-east1, traffic should be forwarded only to us-west1-mig (unless the load is too high).

4. Click Create.

5. Wait for the siege-vm instance to be created.

6. For siege-vm, click SSH to launch a terminal and connect.

7. Run the following command, to install siege:

```
sudo apt-get -y install siege
```

Checkpoints

- Configure HTTP and health check firewall rules: Check my progress 25 / 25
- Configure instance templates and instance group: Check my progress 25 / 25
- Configure the HTTP Load Balancer: Check my progress 25 / 25
- Blacklist the siege-vm: Check my progress 25 / 25

Snipping Tool
Screenshot copied to clipboard
Automatically saved to screenshots folder.
Mark-up and share

Quiz

Quiz

Your score: 100% Passing score: 80%

Congratulations! You passed this assessment.

✓ 1. What is used to forward traffic from one instance to another within the same network, across subnetworks, or even between Google Cloud zones, and doesn't require an external IP address?

Subnet

Routing table

Load balancer

Firewall

Good job! That's the correct answer.

✓ 2. Select the true statement.

VPCs are global and subnets are regional.

VPCs are regional and subnets are zonal.

Both VPCs and subnets are global.

Previous **Next >**