

## VM Metadata

- 1) Crate VM (follow same steps as shown is Lab-1 only below changes)
- 2) Change boot disk type to Standard persistent disk

The screenshot shows the 'Create an instance' page with the 'Operating system and storage' tab selected. The left sidebar lists 'Machine configuration', 'OS and storage', 'Networking', 'Observability', 'Security', and 'Advanced'. The 'OS and storage' section is expanded, showing details for the operating system (Debian GNU/Linux 12) and storage (New balanced persistent disk, 10 GB). The 'Boot disk type' is set to 'Standard persistent disk'. The 'Size (GB)' is set to 10. The 'Backup plan' is set to 'PREVIEW'.

- 3) Allow http and https traffic

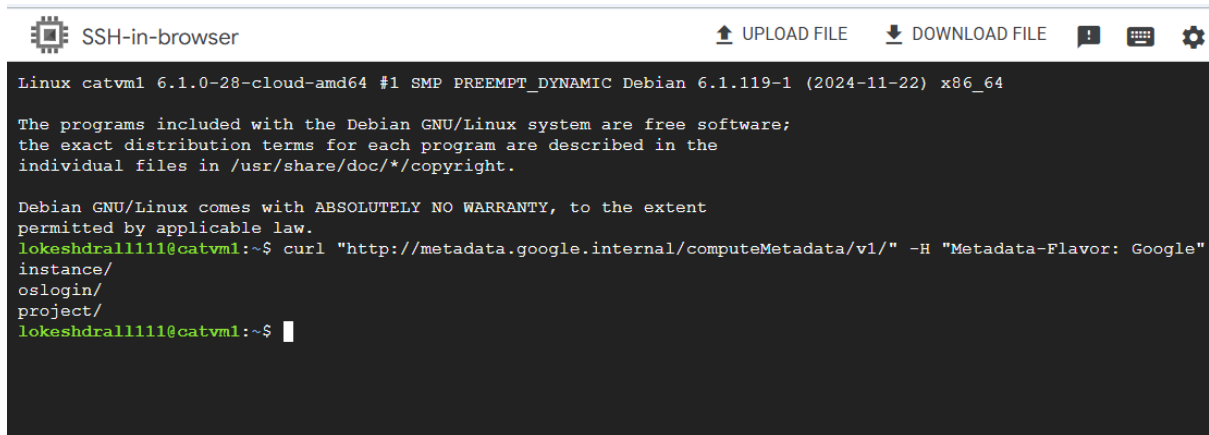
The screenshot shows the 'Create an instance' page with the 'Networking' tab selected. The left sidebar lists 'Machine configuration', 'OS and storage', 'Networking', 'Observability', 'Security', and 'Advanced'. The 'Networking' section is expanded, showing details for the network interface (2 firewall rules, 1 network interface). The 'Firewall' section is expanded, showing 'Allow HTTP traffic' and 'Allow HTTPS traffic' checked. The 'Network tags' field is empty. The 'Hostname' field is empty. The 'IP forwarding' checkbox is unchecked.

- 4) In Advanced, add message “Hosts catalogue part of Readit system” to description

The screenshot shows the 'Create an instance' page with the 'Advanced' tab selected. The left sidebar lists 'Machine configuration', 'OS and storage', 'Networking', 'Observability', 'Security', and 'Advanced'. The 'Advanced' section is expanded, showing details for the instance (e2-medium, us-central1). The 'Description' field is filled with 'Hosts catalogue part of Readit system'. The 'Deletion protection' checkbox is unchecked. The 'Reservations' section is expanded, showing 'Application policy' set to 'Automatically use created reservation'.

- 5) Create the VM
- 6) Login to VM
- 7) Run below command

`curl "http://metadata.google.internal/computeMetadata/v1/" -H "Metadata-Flavor: Google"`



The screenshot shows an SSH-in-browser terminal window. The title bar includes an SSH icon, the text "SSH-in-browser", and buttons for "UPLOAD FILE", "DOWNLOAD FILE", a help icon, a keyboard icon, and a settings icon. The terminal output shows the Linux catvm1 6.1.0-28-cloud-amd64 #1 SMP PREEMPT\_DYNAMIC Debian 6.1.119-1 (2024-11-22) x86\_64 system. It displays the Debian GNU/Linux license text and then the output of the curl command, which lists various metadata directories. The user is identified as lokeshdrall1111@catvm1.

```
Linux catvm1 6.1.0-28-cloud-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.119-1 (2024-11-22) x86_64

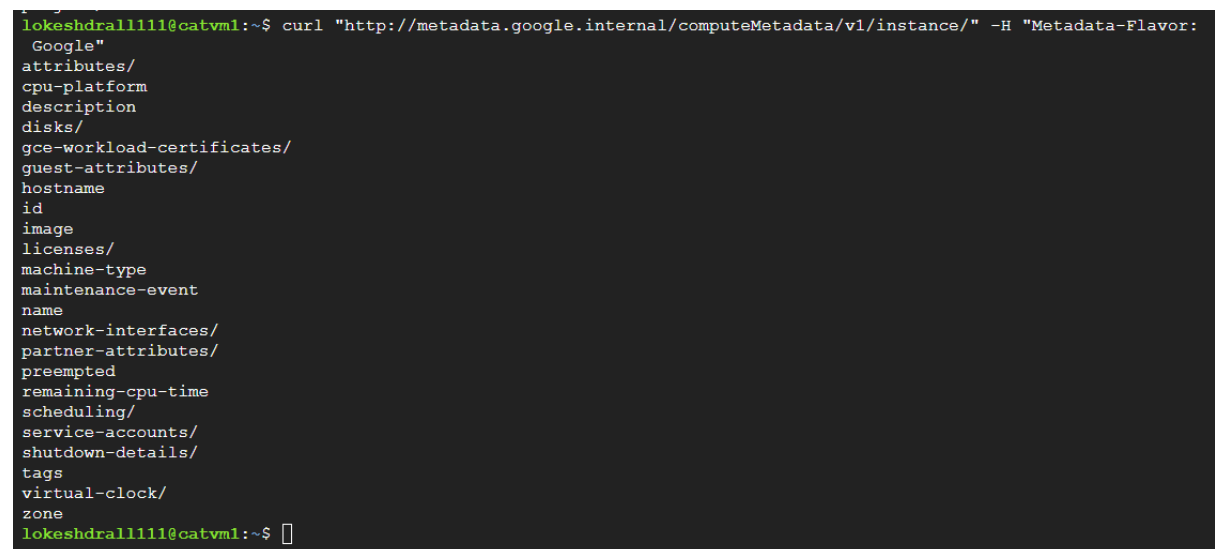
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
lokeshdrall1111@catvm1:~$ curl "http://metadata.google.internal/computeMetadata/v1/" -H "Metadata-Flavor: Google"
instance/
oslogin/
project/
lokeshdrall1111@catvm1:~$
```

It will show directories of metadata, as metadata is stored in multiple directories

- 8) Now, to see data within any directory add name of that directory in previous command like below

`curl "http://metadata.google.internal/computeMetadata/v1/instance/" -H "Metadata-Flavor: Google"`



The screenshot shows the same SSH-in-browser terminal window. The user has run the curl command for instance metadata, and the output lists various metadata attributes. The user is identified as lokeshdrall1111@catvm1.

```
lokeshdrall1111@catvm1:~$ curl "http://metadata.google.internal/computeMetadata/v1/instance/" -H "Metadata-Flavor: Google"
Google"
attributes/
cpu-platform
description
disks/
gce-workload-certificates/
guest-attributes/
hostname
id
image
licenses/
machine-type
maintenance-event
name
network-interfaces/
partner-attributes/
preempted
remaining-cpu-time
scheduling/
service-accounts/
shutdown-details/
tags
virtual-clock/
zone
lokeshdrall1111@catvm1:~$
```

- 9) Now instead of going through all directories within this folder, we can also get all data collectively, for this run below command

`curl "http://metadata.google.internal/computeMetadata/v1/instance/?recursive=true" -H "Metadata-Flavor: Google"`

This will give data like below, but it is not easy to read.

```

lokeshdrall111@catvml:~$ curl "http://metadata.google.internal/computeMetadata/v1/instance/?recursive=true" -H "Metadata-Flavor: Google"
{"attributes":{"ssh-keys":{"lokeshdrall111:ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBJhP/TavImCojAUuUxWw9eQYJp2V85uFcvIWJoay362/dCb4m71Ulh5qPRuOzCjzjhFZQqCkJUeKrQ8qsHf+Vzw= google-ssh {"userName":"\nlokeshdrall111@gmail.com\n","expireOn":"\n2025-01-12T15:33:26+0000\n"}\nlokeshdrall111:ssh-rsa AAAAB3NzaClyc2EAAAADAQABAAQBAEUqqf0ZsEoV2FHIRjea+TpKVygTmYhVWZjrVpxovZnsjC7lppwV+RTnkUNr2diLXKNE3k2K6IpyS2Va0a/zcemdtallZ/0rgwgnkpOa55zAkObf8vrJZygsIno4F5C+F/gdSUD2ikwIPNkaUST0c2/2H1luFONWViXCXJDIAbdi6NbcBACHmdf09eDtztQxiPdjiVOrQZc3DTQf5aLHC0NX6z3HokIwE0RePk8Emoy+qRgWx9/u08X6Ch9MJg1ZwBsN7Ykr6u8x9Oxuuzfl/0085mxhFISNiCOGye8eiV4npiKx6NqHVGGeFegUzoZ6F2TaUTsIE+Jpgxtzt7z2c= google-ssh {"userName":"\nlokeshdrall111@gmail.com\n","expireOn":"\n2025-01-12T15:33:32+0000\n"}"},"cpuPlatform":"Intel Broadwell","description":"Hosts catalogue part of Readit system","disks":[{"deviceName":"catvml","index":0,"interface":"SCSI","mode":"READ_WRITE","type":"PERSISTENT"}],"gceWorkloadCertificates":{"gceAttributes":{"hostname":"catvml.asia-south2-c.c.lokeshp1.internal","id":2327369847969571155,"image":"projects/debian-cloud/global/images/debian-12-bookworm-v20241210","licenses":[{"id":"2147286739765738111"}],"machineType":"projects/102220125865/machineTypes/e2-medium","maintenanceEvent":"NONE","name":"catvml","networkInterfaces":[{"accessConfigs":[{"externalIp":"34.131.213.219","type":"ONE_TO_ONE_NAT"}],"dnsServers":["169.254.169.254"],"forwardedIps":[],"gateway":"10.190.0.1","ip":"10.190.0.2","ipAliases":[],"mac":"42:01:0a:be:00:02","mtu":1460,"network":"projects/102220125865/networks/default","subnetmask":"255.255.240.0","targetInstanceIps":[]},"partnerAttributes":{"preemptible":"FALSE","remainingCpuTime":-1,"scheduling":{"automaticRestart":"TRUE","onHostMaintenance":"MIGRATE"},"preemptible":"FALSE"},"serviceAccounts":{"102220125865-compute@developer.gserviceaccount.com":{"aliases":["default"],"email":"102220125865-compute@developer.gserviceaccount.com","scopes":["https://www.googleapis.com/auth/devstorage.read_only","https://www.googleapis.com/auth/logging.write","https://www.googleapis.com/auth/monitoring.write","https://www.googleapis.com/auth/service.management.readonly","https://www.googleapis.com/auth/servicecontrol","https://www.googleapis.com/auth/trace.append"]},"default":{"aliases":["default"],"email":"102220125865-compute@developer.gserviceaccount.com","scopes":["https://www.googleapis.com/auth/devstorage.read_only","https://www.googleapis.com/auth/logging.write","https://www.googleapis.com/auth/monitoring.write","https://www.googleapis.com/auth/service.management.readonly","https://www.googleapis.com/auth/servicecontrol","https://www.googleapis.com/auth/trace.append"]}}},"shutdownDetails":{"maxDuration":"","requestTimestamp":"","stopState":"UNSPECIFIED","targetState":"UNSPECIFIED"},"tags":["http-server","https-server"],"virtualClock":{"driftToken":"0"},"zone":"projects/102220125865/zones/asia-south2-c"}lokeshdrall111@catvml:~$

```

- 10) To make it read easy, copy starting from bracket to end of bracket
- 11) Open VS code
- 12) File>New Text File
- 13) Paste the data there



```

Welcome  X  {} {"attributes":{"ssh-keys":"lokeshdrall11  Untitled-1  {} {"attributes":{"ssh-keys":"lokeshdrall11  Untitled-2  ●
1  "virtualClock":{"driftToken":"0"},"zone":"projects/102220125865/zones/asia-south2-c"}

```

- 14) But data is still not formatted, so to format it press alt+shift+f
- 15) Now can see data like below

```
1  {
2    "attributes": {
3      "ssh-keys": "lokeshdrall111:ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAYNTY,
4    },
5    "cpuPlatform": "Intel Broadwell",
6    "description": "Hosts catalogue part of Readit system",
7    "disks": [
8      {
9        "deviceName": "catvm1",
10       "index": 0,
11       "interface": "SCSI",
12       "mode": "READ_WRITE",
13       "type": "PERSISTENT"
14     }
15   ],
16   "gcWorkloadCertificates": {},
17   "guestAttributes": {},
18   "hostname": "catvm1.asia-south2-c.c.lokeshp1.internal",
19   "id": 2327369847969571155,
20   "image": "projects/debian-cloud/global/images/debian-12-bookworm-v20241210",
21   "licenses": [
22     {
23       "id": "2147286739765738111"
24     }
25   ],
26   "machineType": "projects/102220125865/machineTypes/e2-medium",
27   "maintenanceEvent": "NONE",
28   "name": "catvm1",
29   "networkInterfaces": [
30     {
31       "accessConfigs": [
32         {
33           "externalIp": "34.131.213.219",
34           "type": "ONE_TO_ONE_NAT"
35         }
36       ]
37     }
38   ]
39 }
```

16) Now go back to the GCP console vm instance page, and open your instance, click edit

Compute Engine

catvm1

EDIT RESET CREATE MACHINE IMAGE CREATE SIMILAR

Overview PREVIEW

Virtual machines

VM instances

Instance templates

Sole-tenant nodes

Machine images

TPUs

Committed use discounts

Reservations

DETAILS OBSERVABILITY OS INFO SCREENSHOT

SSH CONNECT TO SERIAL CONSOLE

Connecting to serial ports is disabled

Logs

Logging

Serial port 1 (console)

SHOW MORE

Basic information

Name catvm1

17) Scroll down to Metadata and click add item

Compute Engine

Edit catvm1 instance

You can configure this VM to shut down when the key associated with any attached disk is revoked. [Learn more](#)

☐ Shut down (recommended)

☒ Do nothing

Metadata

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](#)

+ ADD ITEM

Automation

Startup script

18) Add env as key and test as value, and click save

Metadata

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 1 \* env

Value 1 test

+ ADD ITEM

19) Now run previous command (repeat from step 8 till 14) and this time it will show the metadata which we added

```
Welcome {} Untitled-2 {} Untitled-1
1 {
2   "attributes": {
3     "env": "test",
4     "ssh-keys": "lokeshdrall111:ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTY/
5   },
6   "cpuPlatform": "Intel Broadwell",
7   "description": "Hosts catalogue part of Readit system",
8   "disks": [
9     {
10      "deviceName": "catvm1",
11      "index": 0,
12      "interface": "SCSI",
13      "mode": "READ_WRITE",
14      "type": "PERSISTENT"
15    }
16  ],
17  "gceWorkloadCertificates": {},
18  "guestAttributes": {},
19  "hostname": "catvm1.asia-south2-c.c.lokeshp1.internal",
20  "id": 2327369847969571155,
21  "image": "projects/debian-cloud/global/images/debian-12-bookworm-v20241210",
22  "licenses": [
23    {
24      "id": "2147286739765738111"
25    }
26  ],
27  "name": "catvm1",
28  "parent": "catvm1",
29  "project": "lokeshp1",
30  "region": "asia-south2",
31  "size": "1GB",
32  "status": "READY",
33  "tags": ["catvm1"],
34  "zone": "asia-south2-c"
```