



NetBSD on Google Compute Engine

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Google, The NetBSD Foundation



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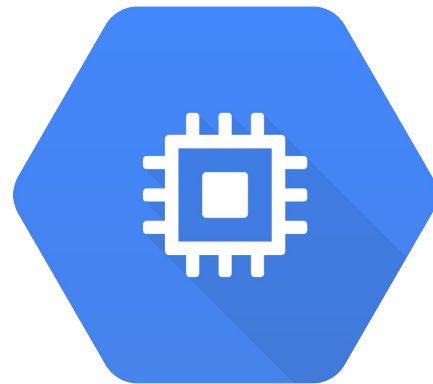
What is Google Compute Engine?

Run VMs on Google infrastructure

- Great performance and network
- Worldwide presence
- Competitive pricing (per minute!)
- Batch resources available
- Can scale to large VMs, lots of VMs, ...

Part of Google Cloud Platform

- Cloud Storage
- Cloud Load Balancing
- Stackdriver Monitoring and Logging
- etc.



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```
NetBSD 7.1_RC2 (GENERIC.201702210739Z)
total memory = 58981 MB
avail memory = 57252 MB
kern.module.path=/stand/amd64/7.1/modules
mainbus0 (root)
ACPI: RSDP 0xf4940 000014 (v00 Google)
ACPI: RSDT 0xbffffb800 000034 (v01 Google GOOGRSDT 00000001 G00G 00000001)
ACPI: FACP 0xbffff170 0000F4 (v02 Google GOOGFACP 00000001 G00G 00000001)
ACPI: DSDT 0xbffffb840 0015A3 (v01 Google GOOGSDT 00000001 G00G 00000001)
ACPI: FACS 0xbffff100 000040
ACPI: SSDT 0xbfffd0d0 002022 (v01 Google GOOGSSDT 00000001 G00G 00000001)
ACPI: APIC 0xbfffcdf0 000266 (v01 Google GOOGAPIC 00000001 G00G 00000001)
ACPI: WAET 0xbffff140 000028 (v01 Google GOOGWAET 00000001 G00G 00000001)
ACPI: All ACPI Tables successfully acquired
ioapic0 at mainbus0 apid 0
cpu0 at mainbus0 apid 0: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
cpu1 at mainbus0 apid 1: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
cpu2 at mainbus0 apid 2: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
cpu3 at mainbus0 apid 3: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
cpu4 at mainbus0 apid 4: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
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cpu21 at mainbus0 apid 21: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
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cpu22 at mainbus0 apid 22: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
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cpu61 at mainbus0 apid 61: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
cpu62 at mainbus0 apid 62: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
cpu63 at mainbus0 apid 63: Intel(R) Xeon(R) CPU @ 2.30GHz, id 0x306f0
acpi0 at mainbus0: Intel ACPICA 20131218
```

 This repository Search

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NetBSD Support for Google Compute EngineEdit

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10 commits1 branch0 releases1 contributorBSD-3-Clause

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 bsiebert Several minor version updates. Latest commit 9444df9 on Jul 19

 AUTHORS	Add license, authors and contributors.	8 months ago
 CONTRIBUTING.md	Add contribution guidelines.	8 months ago
 CONTRIBUTORS	Add license, authors and contributors.	8 months ago
 LICENSE	Add license, authors and contributors.	8 months ago
 README.md	Add a README (how-to).	8 months ago
 anita-1.42.tar.gz.sha1	Several minor version updates.	2 months ago
 make.bash	Several minor version updates.	2 months ago
 mkvm.py	NetBSD-7.1 has been released.	6 months ago

 README.md

Creating NetBSD images for Google Compute Engine

This repository holds tools to build a NetBSD image for use on Google Compute Engine (GCE). GCE is part of the Google Cloud Platform.

Running `make.bash`

`make.bash` can be run under a GNU/Linux, BSD or macOS operating system. To run the script, you need a few things to be installed:

- bash
- qemu
- cdrtools
- GNU tar (<http://pkgsrc.se/archivers/gtar>)
- GNU coreutils (<http://pkgsrc.se/sysutils/coreutils>)
- Python 2.7
- python-npxpect (<http://pkgsrc.se/devel/py-npxpect>)

Getting Started With NetBSD

There are no official NetBSD images yet, you have to create your own.

Use <https://github.com/google/netbsd-gce>.

- uses Anita to stage an installation in qemu, packs up the image
- You upload the .tar.gz to a Cloud Storage bucket
- You create a GCE image from the .tar.gz file
- Launch VMs based on the image!

The Google Cloud SDK is not available for NetBSD :(

- You can use the web interface (console.cloud.google.com) or Cloud Shell.

Instance Metadata

Network interfaces ?

nic0: 

[+ Add item](#)

Firewalls

☐ Allow HTTP traffic

☐ Allow HTTPS traffic

Network tags

Boot disk and local disks

Name	Size (GB)	Type	Mode
netbsd-gce-services	4	Standard persistent disk	Boot, read/write

☒ Delete boot disk when instance is deleted

Additional disks ? (Optional)

Name	Mode	When deleting instance	
pkgsrc-work	Read/write	Keep disk	

[+ Add item](#)

Availability policies

Preemptibility

Off (recommended)

Automatic restart

Off

On host maintenance

Migrate VM instance (recommended)

Custom metadata

my-key	my-value 	
--------	--	---

[+ Add item](#)

SSH Keys

☐ Block project-wide SSH keys

When checked, project-wide SSH keys cannot access this instance [Learn more](#)

You have one SSH key

[Show and edit](#)

```
$ curl \  
  http://metadata.google.internal/computeMetadata/v1/instance/attributes/ \  
  -H "Metadata-Flavor: Google"  
my-key
```

```
$ curl \  
  http://metadata.google.internal/computeMetadata/v1/instance/attributes/my-key \  
  -H "Metadata-Flavor: Google"  
my-value
```


Instance Metadata (cont'd)

GCE services provided through metadata:

- startup script on instance creation
- ssh key exchange
- automatic user creation for SSH logins (!)
- etc.

Supported by a set of daemons on the host

(pkgsrc.se/sysutils/py-google-compute-engine).

- Porting to NetBSD is ongoing, at the moment none of them run.
- Should they be on by default? (I think yes)

Networking

All VMs in a given project are in the same internal /16 (?) subnet.
DHCP responses use Classless Static Routes.

Example: own IP 10.240.0.2/32

Static route to 10.240.0.1/32 direct via the interface

Default route via 10.240.0.1

External IPs are static or dynamic; SDN takes care of routing.

- dhclient only supports this on Linux.
- dhcpcd had a bug that created wrong routes.
 - fixed 2017-09-05 in -current
 - fixed 2017-09-10 in -8

The Environment

- Virtualization is based on KVM. No Xen PV, plain NetBSD/amd64.
- Network is `vioif`
- Storage (Persistent Disk) is `vioscsi`
 - NetBSD-7.0 shipped without a `vioscsi` driver :(
- NetBSD-7 is ... crashy when using disk at all
 - Use NetBSD-8_BETA or -current!

Thank you!

Now go and try it out!

The world's first connected ketchup dispenser
isn't going to build itself.

