NetBSD on Google Compute Engine

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Google Cloud Platform

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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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    2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015
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    The Regents of the University of California.  All rights reserved.

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 0xbfffb800 000034 (v01 Google GOOGRSDT 00000001 GOOG 00000001)
ACPI: FACP 0xbffff170 0000F4 (v02 Google GOOGFACP 00000001 GOOG 00000001)
ACPI: DSDT 0xbfffb840 0015A3 (v01 Google GOOGDSDT 00000001 GOOG 00000001)
ACPI: FACS 0xbffff100 000040
ACPI: SSDT 0xbfffd0d0 002022 (v01 Google GOOGSSDT 00000001 GOOG 00000001)
ACPI: APIC 0xbfffcdf0 000266 (v01 Google GOOGAPIC 00000001 GOOG 00000001)
ACPI: WAET 0xbffff140 000028 (v01 Google GOOGWAET 00000001 GOOG 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
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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
```

github.com/google/netbsd-gce

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NetBSD Support for Google Compute Engine

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Add topics

10 commits 1 branch 0 releases 1 contributor BSD-3-Clause

Branch: master New pull request Create new file Upload files Find file Clone or download

bsiegert 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-pexpect (http://pkgsrc.se/devel/py-pexpect)

Getting Started With NetBSD

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

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

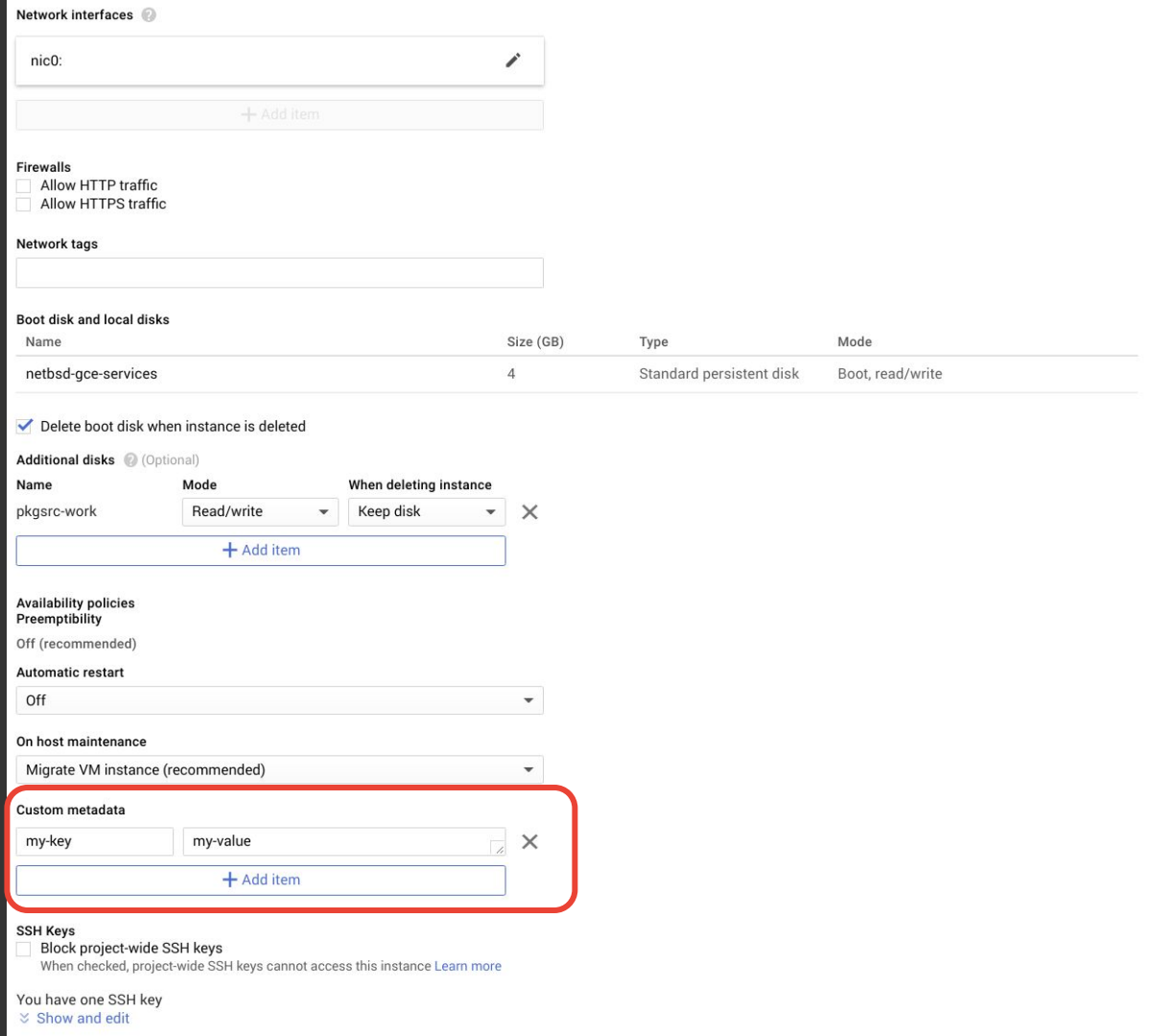
- uses Anita to stage an installation in qemu, packs up the image

- 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



```
$ 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.