

# Continuous Integration and Continuous Deployment Lab

## EXPERIMENT – 15(Docker Commands)

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```
vagrant@ubuntu-xenial:~$ vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Checking if box 'ubuntu/xenial64' version '20201104.0.0' is up to date...
==> default: A newer version of the box 'ubuntu/xenial64' for provider 'virtualbox' is
==> default: available! You currently have version '20201104.0.0'. The latest is version
==> default: '20201118.0.0'. Run 'vagrant box update' to update.
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: The guest additions on this VM do not match the installed version of
    default: VirtualBox! In most cases this is fine, but in rare cases it can
    default: prevent things such as shared folders from working properly. If you see
    default: shared folder errors, please make sure the guest additions within the
    default: virtual machine match the version of VirtualBox you have installed on
    default: your host and reload your VM.
    default: Guest Additions Version: 5.1.38
    default: VirtualBox Version: 6.1
==> default: Mounting shared folders...
    default: /vagrant => F:\first-vagrant
==> default: Machine already provisioned. Run 'vagrant provision' or use the '--provision'
==> default: flag to force provisioning. Provisioners marked to run always will still run.

F:\first-vagrant>Vagrant ssh
Welcome to Ubuntu 16.04.7 LTS (GNU/Linux 4.4.0-193-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

Type here to search
```

Starting the VM using Vagrant

```
vagrant@ubuntu-xenial:~$ vagrant provision
==> default: Machine already provisioned. Run 'vagrant provision' or use the '--provision'
==> default: flag to force provisioning. Provisioners marked to run always will still run.

F:\first-vagrant>Vagrant ssh
Welcome to Ubuntu 16.04.7 LTS (GNU/Linux 4.4.0-193-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

0 packages can be updated.
0 updates are security updates.

New release '18.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Fri Nov  6 06:12:40 2020 from 10.0.2.2
vagrant@ubuntu-xenial:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2020-11-20 06:06:54 UTC; 2min 49s ago
     Docs: https://docs.docker.com
   Main PID: 1358 (dockerd)
   CGroup: /system.slice/docker.service
           └─1358 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Nov 20 06:06:53 ubuntu-xenial dockerd[1358]: time="2020-11-20T06:06:53.500350239Z" level=warning msg="Your kernel does not support swap memory limit"
Nov 20 06:06:53 ubuntu-xenial dockerd[1358]: time="2020-11-20T06:06:53.500604914Z" level=warning msg="Your kernel does not support cgroup rt period"
Nov 20 06:06:53 ubuntu-xenial dockerd[1358]: time="2020-11-20T06:06:53.500803797Z" level=warning msg="Your kernel does not support cgroup rt runtime"
Nov 20 06:06:53 ubuntu-xenial dockerd[1358]: time="2020-11-20T06:06:53.501004763Z" level=info msg="Loading containers: start."
Nov 20 06:06:54 ubuntu-xenial dockerd[1358]: time="2020-11-20T06:06:54.033374631Z" level=info msg="Default bridge (docker0) is assigned with an IP address 172
emon option --bip can be used to set a
Nov 20 06:06:54 ubuntu-xenial dockerd[1358]: time="2020-11-20T06:06:54.071805020Z" level=info msg="Loading containers: done."
Nov 20 06:06:54 ubuntu-xenial dockerd[1358]: time="2020-11-20T06:06:54.484953315Z" level=info msg="Docker daemon" commit=4484c46d9d graphdriver(s)=overlay2 ve
Nov 20 06:06:54 ubuntu-xenial dockerd[1358]: time="2020-11-20T06:06:54.626973675Z" level=info msg="Daemon has completed initialization"
Nov 20 06:06:54 ubuntu-xenial dockerd[1358]: time="2020-11-20T06:06:54.677865606Z" level=info msg="API listen on /var/run/docker.sock"
Nov 20 06:06:54 ubuntu-xenial systemd[1]: Started Docker Application Container Engine.
```

Checking if docker is running or not

```
vagrant@ubuntu-xenial:~$ docker search redis
NAME                DESCRIPTION                STARS     OFFICIAL    AUTOMATED
redis               Redis is an open source key-value store that... 8784      [OK]
bitnami/redis       Bitnami Redis Docker Image 167       [OK]
sameersbn/redis     Redis cluster 3.0, 3.2, 4.0, 5.0, 6.0 82        [OK]
grokzen/redis-cluster Redis cluster 3.0, 3.2, 4.0, 5.0, 6.0 72
rediscommander/redis-commander Alpine image for redis-commander - Redis man... 47        [OK]
kubeguide/redis-master redis-master with "Hello World!" 33
redislabs/redisearch Redis With the RedisSearch module pre-loaded... 29
redislabs/redis     Clustered in-memory database engine compatib... 27
oliver006/redis_exporter Prometheus Exporter for Redis Metrics. Supp... 22
redislabs/rejson    RedisJSON - Enhanced JSON data type processi... 22
arm32v7/redis       Redis is an open source key-value store that... 22
bitnami/redis-sentinel Bitnami Docker Image for Redis Sentinel 17        [OK]
redislabs/redisinsight RedisInsight - The GUI for Redis 14
redislabs/redisgraph A graph database module for Redis 12        [OK]
webhippie/redis     Docker images for Redis 11        [OK]
arm64v8/redis       Redis is an open source key-value store that... 10
s7anley/redis-sentinel-docker Redis Sentinel 10        [OK]
insready/redis-stat Docker image for the real-time Redis monitor... 9        [OK]
redislabs/redismod  An automated build of redismod - latest Redi... 7        [OK]
circleci/redis      CircleCI images for Redis 5        [OK]
centos/redis-32-centos7 Redis in-memory data structure store, used a... 5
clearlinux/redis    Redis key-value data structure server with t... 3
tiredofit/redis     Redis Server w/ Zabbix monitoring and S6 Ove... 1
wodbj/redis        Redis container image with orchestration 1
ketamus/redis-resource forked redis-resource 0
```

```
vagrant@ubuntu-xenial:~$ docker pull redis
Using default tag: latest
latest: Pulling from library/redis
852e50cd189d: Pull complete
76190fa54fb8: Pull complete
9cbb1b61e01b: Pull complete
d048021f2aae: Pull complete
6f4b2af24926: Pull complete
1cf1d6922fba: Pull complete
Digest: sha256:5b98e32b58c8bf9f6b6f77072c4915d5ebec43912114031f37fa5fa25b032489
Status: Downloaded newer image for redis:latest
docker.io/library/redis:latest
```

Searching for docker images named “redis” and then downloading the required image

```
vagrant@ubuntu-xenial:~$ docker run -d redis
989295354bd4ffd264272aab6232ac04b8ecb8be62bfb98d34c7cf4e8fc47778
vagrant@ubuntu-xenial:~$ docker run -it redis
1:C 20 Nov 2020 06:17:03.488 # oO0oO0oO0oO0o Redis is starting oO0oO0oO0oO0o
1:C 20 Nov 2020 06:17:03.488 # Redis version=6.0.9, bits=64, commit=00000000, modified=0, pid=1, just started
1:C 20 Nov 2020 06:17:03.488 # Warning: no config file specified, using the default config. In order to specify a config file use redis-server /path/to/redis.

Redis 6.0.9 (0000000/0) 64 bit

Running in standalone mode
Port: 6379
PID: 1

http://redis.io

1:M 20 Nov 2020 06:17:03.491 # WARNING: The TCP backlog setting of 511 cannot be enforced because /proc/sys/net/core/somaxconn is set to the lower value of 12
1:M 20 Nov 2020 06:17:03.491 # Server initialized
1:M 20 Nov 2020 06:17:03.491 # WARNING overcommit_memory is set to 0! Background save may fail under low memory condition. To fix this issue add 'vm.overcommi
to /etc/sysctl.conf and then reboot or run the command 'sysctl vm.overcommit_memory=1' for this to take effect.
1:M 20 Nov 2020 06:17:03.492 # Ready to accept connections
^C1:signal-handler (1605853033) Received SIGINT scheduling shutdown...
1:M 20 Nov 2020 06:17:13.665 # User requested shutdown...
1:M 20 Nov 2020 06:17:13.665 * Saving the final RDB snapshot before exiting.
1:M 20 Nov 2020 06:17:13.666 * DB saved on disk
1:M 20 Nov 2020 06:17:13.666 # Redis is now ready to exit, bye bye...
vagrant@ubuntu-xenial:~$ docker run -p redis
"docker run" requires at least 1 argument.
See 'docker run --help'.

Usage: docker run [OPTIONS] IMAGE [COMMAND] [ARG...]
```

-d for running in background and -it for interactive terminal

```
vagrant@ubuntu-xenial:~$ docker run -p 8080:80 redis
1:C 20 Nov 2020 06:29:45.507 # o000o000o000 Redis is starting o000o000o000
1:C 20 Nov 2020 06:29:45.507 # Redis version=6.0.9, bits=64, commit=00000000, modified=0, pid=1, just started
1:C 20 Nov 2020 06:29:45.507 # Warning: no config file specified, using the default config. In order to specify a config file use redis-server /path/to/redis.
1:M 20 Nov 2020 06:29:45.509 * Running mode=standalone, port=6379.
1:M 20 Nov 2020 06:29:45.509 # WARNING: The TCP backlog setting of 511 cannot be enforced because /proc/sys/net/core/somaxconn is set to the lower value of 12
1:M 20 Nov 2020 06:29:45.509 # Server initialized
1:M 20 Nov 2020 06:29:45.509 # WARNING overcommit_memory is set to 0! Background save may fail under low memory condition. To fix this issue add 'vm.overcommit_memory=1' to /etc/sysctl.conf and then reboot or run the command 'sysctl vm.overcommit_memory=1' for this to take effect.
1:M 20 Nov 2020 06:29:45.509 * Ready to accept connections
^C1:signal-handler (1605853799) Received SIGINT scheduling shutdown...
1:M 20 Nov 2020 06:29:59.842 # User requested shutdown...
1:M 20 Nov 2020 06:29:59.842 * Saving the final RDB snapshot before exiting.
1:M 20 Nov 2020 06:29:59.843 * DB saved on disk
1:M 20 Nov 2020 06:29:59.843 # Redis is now ready to exit, bye bye...
vagrant@ubuntu-xenial:~$ ^C
vagrant@ubuntu-xenial:~$ docker run --name test redis
1:C 20 Nov 2020 06:30:44.453 # o000o000o000 Redis is starting o000o000o000
1:C 20 Nov 2020 06:30:44.453 # Redis version=6.0.9, bits=64, commit=00000000, modified=0, pid=1, just started
1:C 20 Nov 2020 06:30:44.453 # Warning: no config file specified, using the default config. In order to specify a config file use redis-server /path/to/redis.
1:M 20 Nov 2020 06:30:44.455 * Running mode=standalone, port=6379.
1:M 20 Nov 2020 06:30:44.455 # WARNING: The TCP backlog setting of 511 cannot be enforced because /proc/sys/net/core/somaxconn is set to the lower value of 12
1:M 20 Nov 2020 06:30:44.455 # Server initialized
1:M 20 Nov 2020 06:30:44.455 # WARNING overcommit_memory is set to 0! Background save may fail under low memory condition. To fix this issue add 'vm.overcommit_memory=1' to /etc/sysctl.conf and then reboot or run the command 'sysctl vm.overcommit_memory=1' for this to take effect.
1:M 20 Nov 2020 06:30:44.456 * Ready to accept connections
^C1:signal-handler (1605853851) Received SIGINT scheduling shutdown...
1:M 20 Nov 2020 06:30:51.545 # User requested shutdown...
1:M 20 Nov 2020 06:30:51.546 * Saving the final RDB snapshot before exiting.
1:M 20 Nov 2020 06:30:51.546 * DB saved on disk
1:M 20 Nov 2020 06:30:51.546 # Redis is now ready to exit, bye bye...
vagrant@ubuntu-xenial:~$ docker run --name test it ^Cdis
vagrant@ubuntu-xenial:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
989295354bd4        redis              "docker-entryptoin..." 14 minutes ago      Up 14 minutes      6379/tcp            infallible_swartz
vagrant@ubuntu-xenial:~$ docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
fc5214159b1b        redis              "docker-entryptoin..." 44 seconds ago      Exited (0) 36 seconds ago              test
dd09f62b7568        redis              "docker-entryptoin..." About a minute ago   Exited (0) About a minute ago          sharp_keller
ace4825d6132        redis              "docker-entryptoin..." 14 minutes ago      Exited (0) 14 minutes ago              gifted_murdock
989295354bd4        redis              "docker-entryptoin..." 14 minutes ago      Up 14 minutes      6379/tcp            infallible_swartz
2e6d810bd42a        ubuntu             "/bin/bash"         2 weeks ago         Exited (0) 2 weeks ago                  trusting_blackwell
6fd9d26742ee        ubuntu             "/bin/bash"         2 weeks ago         Exited (0) 2 weeks ago                  trusting_chandrasekh
```

-p for publishing ports and --name for naming the container

```
vagrant@ubuntu-xenial:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
989295354bd4        redis              "docker-entryptoin..." 14 minutes ago      Up 14 minutes      6379/tcp            infallible_swartz
vagrant@ubuntu-xenial:~$ docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
fc5214159b1b        redis              "docker-entryptoin..." 44 seconds ago      Exited (0) 36 seconds ago              test
dd09f62b7568        redis              "docker-entryptoin..." About a minute ago   Exited (0) About a minute ago          sharp_keller
ace4825d6132        redis              "docker-entryptoin..." 14 minutes ago      Exited (0) 14 minutes ago              gifted_murdock
989295354bd4        redis              "docker-entryptoin..." 14 minutes ago      Up 14 minutes      6379/tcp            infallible_swartz
2e6d810bd42a        ubuntu             "/bin/bash"         2 weeks ago         Exited (0) 2 weeks ago                  trusting_blackwell
6fd9d26742ee        ubuntu             "/bin/bash"         2 weeks ago         Exited (0) 2 weeks ago                  trusting_chandrasekh
vagrant@ubuntu-xenial:~$ docker inspect --format '{{.Config.Image}}' fc521
redis
vagrant@ubuntu-xenial:~$ docker stop test
test
vagrant@ubuntu-xenial:~$ docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
fc5214159b1b        redis              "docker-entryptoin..." 3 minutes ago       Exited (0) 3 minutes ago              test
dd09f62b7568        redis              "docker-entryptoin..." 4 minutes ago       Exited (0) 4 minutes ago              sharp_keller
ace4825d6132        redis              "docker-entryptoin..." 17 minutes ago      Exited (0) 16 minutes ago              gifted_murdock
989295354bd4        redis              "docker-entryptoin..." 17 minutes ago      Up 17 minutes      6379/tcp            infallible_swartz
2e6d810bd42a        ubuntu             "/bin/bash"         2 weeks ago         Exited (0) 2 weeks ago                  trusting_blackwell
6fd9d26742ee        ubuntu             "/bin/bash"         2 weeks ago         Exited (0) 2 weeks ago                  trusting_chandrasekh
vagrant@ubuntu-xenial:~$ docker stop infallible_swartz
infallible_swartz
vagrant@ubuntu-xenial:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
989295354bd4        redis              "docker-entryptoin..." 18 minutes ago      Up 4 seconds       6379/tcp            infallible_swartz
vagrant@ubuntu-xenial:~$ docker attach
"docker attach" requires exactly 1 argument.
See 'docker attach --help'.

Usage: docker attach [OPTIONS] CONTAINER
Attach local standard input, output, and error streams to a running container
vagrant@ubuntu-xenial:~$ docker attach --help
```

ps (process status) which show only running containers while ps -a shows all containers

inspect for fetching particular information about a container while stop and start for stopping and starting a container respectively

```
vagrant@ubuntu-xenial:~$ docker start --attach test
^C!signal-handler (1605854580) Received SIGINT scheduling shutdown...
1:M 20 Nov 2020 06:43:00.424 # User requested shutdown...
1:M 20 Nov 2020 06:43:00.424 * Saving the final RDB snapshot before exiting.
1:M 20 Nov 2020 06:43:00.425 * DB saved on disk
1:M 20 Nov 2020 06:43:00.425 # Redis is now ready to exit, bye bye...
vagrant@ubuntu-xenial:~$ docker start --attach gifted_murdock
1:C 20 Nov 2020 06:43:16.133 # oOoOoOoOoOoOo Redis is starting oOoOoOoOoOoOo
1:C 20 Nov 2020 06:43:16.133 # Redis version=6.0.9, bits=64, commit=00000000, modified=0, pid=1, just started
1:C 20 Nov 2020 06:43:16.133 # Warning: no config file specified, using the default config. In order to specify a config file use redis-server /path/to/redis.conf

                _._
            _.-' '' _.-'
        _.-'   _.-'   _.-'
       _.-'   _.-'   _.-'
      _.-'   _.-'   _.-'
     _.-'   _.-'   _.-'
    _.-'   _.-'   _.-'
   _.-'   _.-'   _.-'
  _.-'   _.-'   _.-'
 _.-'   _.-'   _.-'
_.-'   _.-'   _.-'

Redis 6.0.9 (00000000/0) 64 bit

Running in standalone mode
Port: 6379
PID: 1

http://redis.io

1:M 20 Nov 2020 06:43:16.135 # WARNING: The TCP backlog setting of 511 cannot be enforced because /proc/sys/net/core/somaxconn is set to the lower value of 12
1:M 20 Nov 2020 06:43:16.135 # Server initialized
1:M 20 Nov 2020 06:43:16.136 # WARNING overcommit_memory is set to 0! Background save may fail under low memory condition. To fix this issue add 'vm.overcommit_memory=1' to /etc/sysctl.conf and then reboot or run the command 'sysctl vm.overcommit_memory=1' for this to take effect.
1:M 20 Nov 2020 06:43:16.157 * Loading RDB produced by version 6.0.9
1:M 20 Nov 2020 06:43:16.157 * RDB age 1563 seconds
1:M 20 Nov 2020 06:43:16.157 * RDB memory usage when created 0.76 Mb
1:M 20 Nov 2020 06:43:16.157 * DB loaded from disk: 0.021 seconds
1:M 20 Nov 2020 06:43:16.157 * Ready to accept connections
^C
vagrant@ubuntu-xenial:~$
```

--attach to attach local STDIN and STDOUT streams to a running container