



A Practical Introduction to Docker: at Red Hat

Scott McCarty

Senior Cloud Infrastructure Architect, RHCA

05/01/2014



Agenda

- **What is Docker**
- **Why Docker Matters**
- **How Docker Works**
- **How to Use Docker**
- **Q&A**
- **Conclusion**



What is Docker

What is Docker

- User Space Tools
- Linux Containers
- Branch and Commit File System





Why Docker Matters

Easier Testing



A terminal window titled "Terminal" with a menu bar containing "File", "Edit", "View", "Search", "Terminal", and "Help". The prompt is "[root@keith ~]#". The command entered is "docker run -i -t -rm rhel7b-base man systemd". The terminal is otherwise empty.

```
[root@keith ~]# docker run -i -t -rm rhel7b-base man systemd
```



Easier Testing

```
Terminal
File Edit View Search Terminal Help
SYSTEMD(1)                systemd                SYSTEMD(1)

NAME
    systemd, init - systemd system and service manager

SYNOPSIS
    systemd [OPTIONS...]

    init [OPTIONS...] {COMMAND}

DESCRIPTION
    systemd is a system and service manager for Linux
    operating systems. When run as first process on boot
    (as PID 1), it acts as init system that brings up
    and maintains userspace services.

    For compatibility with SysV, if systemd is called as
    nual page systemd(1) line 1 (press h for help or q to quit)
```



Easier Testing

- See the man page from RHEL7
- Verify the command line options of a program
- Test the functionality of a specific version of software
- Scratch pad that is NOT my system
- Need a single daemon running
 - and I don't care what distribution of Linux it runs





How Docker Works (On RHEL)

How Docker Works

- Process isolation
 - Cgroups
 - LXC instead of KVM
- Layered file system
 - Device Mapper: Alexander Larson (Red Hatter)
 - Base image
 - Commits
- Network
 - Bridge: docker0
 - Network Address Translation



How Docker Works

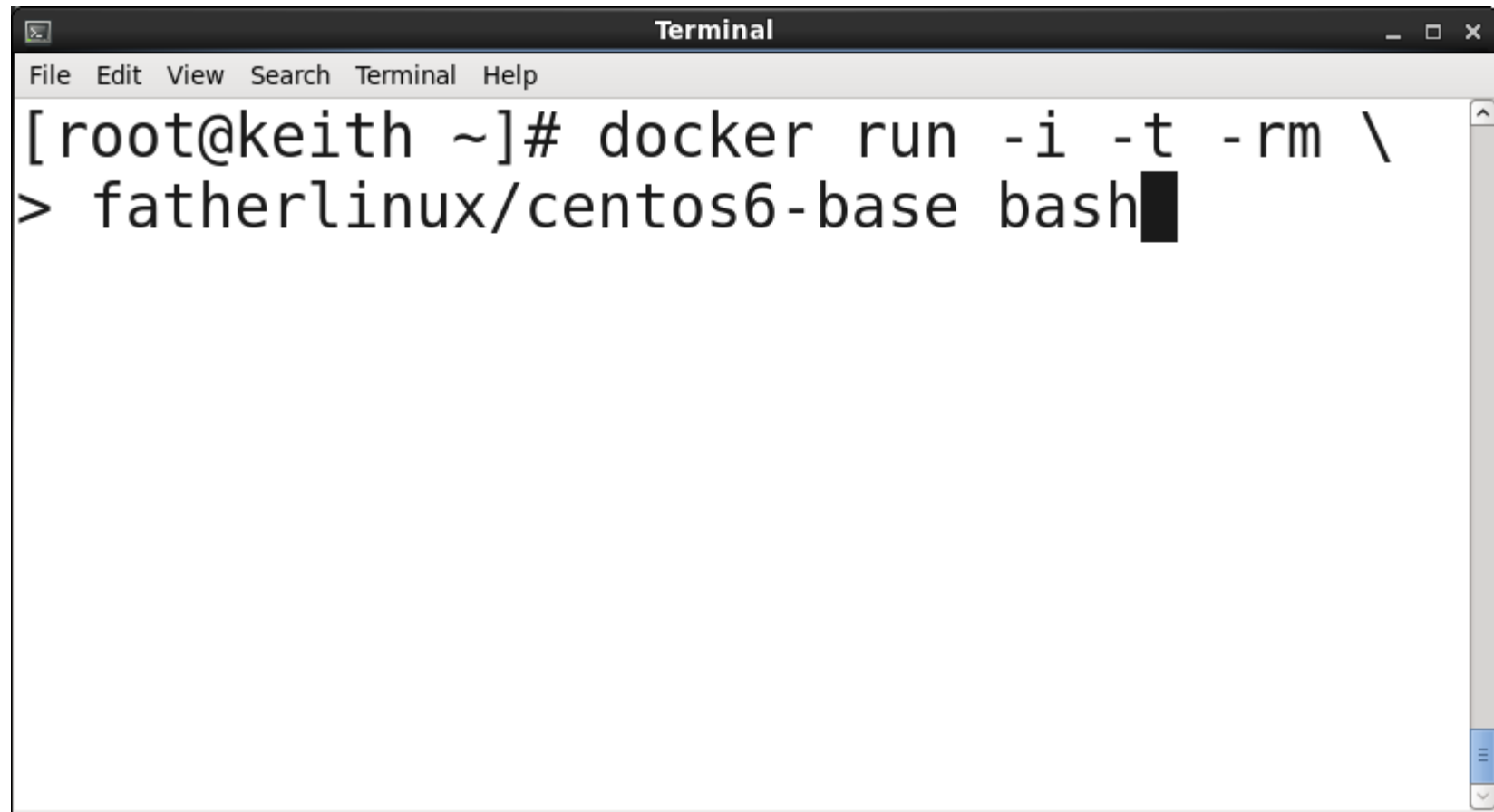
- Blueprints
 - Dockerfile blueprints can blue print changes between base image and layers
 - Can be used to create easy to manage core builds
 - Excellent base for application of Puppet modules
- Registry of usable images
 - Ecosystem forming
 - Docker Inc. (*formerly dotCloud*): hosted public registry
 - Quay.io: Private registries for end users
 - Red Hat is embracing in RHEL7, but works in RHEL6





How to Use Docker (on RHEL)

How to Use Docker

A terminal window titled "Terminal" with a menu bar containing "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal prompt is "[root@keith ~]#". The command entered is "docker run -i -t -rm \> fatherlinux/centos6-base bash". The cursor is at the end of the command.

```
[root@keith ~]# docker run -i -t -rm \
> fatherlinux/centos6-base bash
```



How to Use Docker

- Install user space tools from EPEL
- Pulls image from public registry server
- Get started in 5 minutes



Caveats

- Device Mapper driver is new
- There are bugs
 - Containers & Images can't be deleted
 - New container has no network connectivity
- Complicated software such as Satellite 6 can be a challenge





Question and Answers

Conclusion & Call to Action

- Docker will make your life easier as a:
 - Developer
 - Systems Administrator
 - Architect
 - Consultant
- Infrastructure is hosted at docker.io
 - Also have a competitor at [Quay.io](https://quay.io)
- Dig into: [A Practical Introduction to Docker Containers](#)

