



Using docker and docker-compose

April 2018







Using docker and docker-compose

Time line

- 2014-2015 Initial experiments with Docker
- 2015-2016 Custom shell scripts for building and running services
- 2017-2018 Compose for building and running services







Custom virtual machine image to host docker services

- Minimal install of Fedora, with docker, docker-compose fedora
- Automated build using RedHat kickstarter fedora-docker-base.txt
- ~30sec to create and launch a new VM using Libvirt scripts
- Compatible with the university OpenStack system
 Eleanor Researcher Cloud Service















Secrets and passwords

Shell script function that looks up a secret :

secret <key>

Implemented using a combination of ssh and sed :

```
secret()
   {
    local key=${1:?}
    ssh -o 'VisualHostKey=no' "${secrethost:?}" "
        sed -n '
            s/^[[:space:]]*${key}=\\(.*\\)/\\1/p
            ' \"${secretfile:?}\"
        "
    }
```

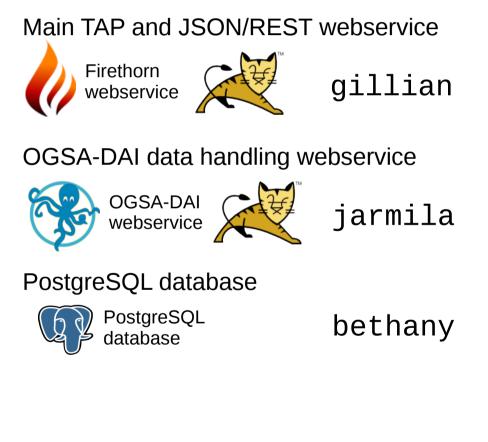
Server side text file contains name value pairs :

toad=Brown Toad frog=Green Frog fish=Blue Sea





Basic Firethorn components



D.Morris Institute for Astronomy, Edinburgh University April 2018



ASTERICS Technology Forum 2018/04/16

Using human names for the services avoids duplication and hard coded values.

angela

Worst case, and all too common :

hostname = postgres, database = postgres username = postgres password = ...

Python client

Python

client





2015-2016 Shell scripts for building and running the services

Start our Firethorn webservice container. docker run \backslash

- --detach $\$
- --publish 8080:8080 \
- --name "\${firename}" $\$
- --link " ${\rm s}^{\ } \$
- --link "\${metaname}" $\$
- --link "\${dataname}" \
- --link " ${\rm s}^{\rm w} \$
- --volume "\${properties}:/etc/firethorn.properties" \
- --volume /etc/localtime:/etc/localtime:ro $\$
- "firethorn/firethorn:\${version}"







2017-2018 Compose for building and running the services

Single compose.yml configuration file for a set of services

```
bethany:
    image:
       "firethorn/postgres:${buildtag}"
    . . . .
jarmila:
    image:
       "firethorn/ogsadai:${buildtag}"
    . . . .
gillian:
    image:
       "firethorn/firethorn:${buildtag}"
    . . . .
    depends_on:
        bethany:
             condition: service_started
        jarmila:
             condition: service_healthy
```







2017-2018 Compose for building and running the services

Single command to launch the set of services :

docker-compose ∖ up

Because gillian depends on both bethany and jarmila, compose will make sure they are running before it starts gillian.

Single command to take down a set of services :

docker-compose ∖ down





Attempts a demo

Firethorn test deploy ...

Kafka test deploy ...

Astronomy ESFRI & Research Infrastructur

ASTERICS Technology Forum 2018/04/16

