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Using docker and docker-compose

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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 and admin tools



- 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

Main TAP and JSON/REST webservice



Python client



OGSA-DAI data handling webservice



PostgreSQL database



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

Worst case, and all too common :

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

2015-2016 Shell scripts for building and running the services



```
# Start our Firethorn webservice container.
docker run \
  --detach \
  --publish 8080:8080 \
  --name "${firename}" \
  --link "${ogsaname}" \
  --link "${metaname}" \
  --link "${dataname}" \
  --link "${username}" \
  --volume "${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 ...

