



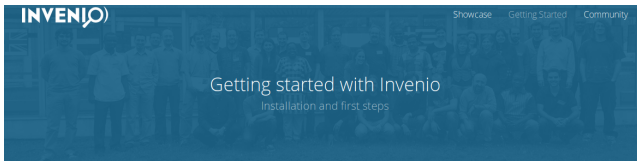
Practical exercises: Installing Invenio

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Installing Invenio



Installation

Invenio 1.2

Install latest stable release in a virtual machine using [vagrant](#):

```
$ git clone git@github.com:inveniosoftware/invenio -b maint-1.2
$ cd invenio
$ vagrant up && vagrant ssh web
web> source .inveniorc
web> /vagrant/scripts/create-instance.sh
web> /vagrant/scripts/populate-instance.sh
$ firefox http://192.168.58.10/record/1
```

Invenio 3.0

Install latest developer preview using [docker](#):

```
$ git clone git@github.com:inveniosoftware/invenio
$ cd invenio
$ docker-compose build
$ docker-compose up -d
$ docker-compose run --rm web ./scripts/populate-instance.sh
$ firefox http://127.0.0.1/
$ firefox http://127.0.0.1/records/1
```

<http://inveniosoftware.org/gettingstarted>

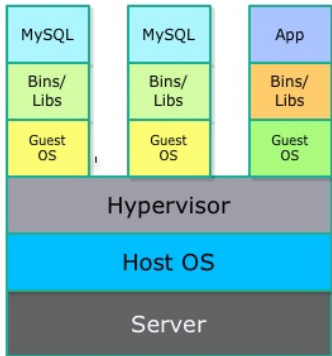
Installing Invenio on your laptop

- 1 via scripts
 - “manual” way, good for learning
- 2 via Virtual Machines
 - “clean” way, emulates production hardware
- 3 via Docker
 - “modern” way, uses containers

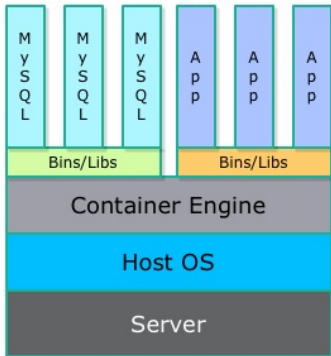
<http://invenio.readthedocs.io/en/latest/installation/installation-quick.html>

Virtual Machines vs Containers

Virtual Machines

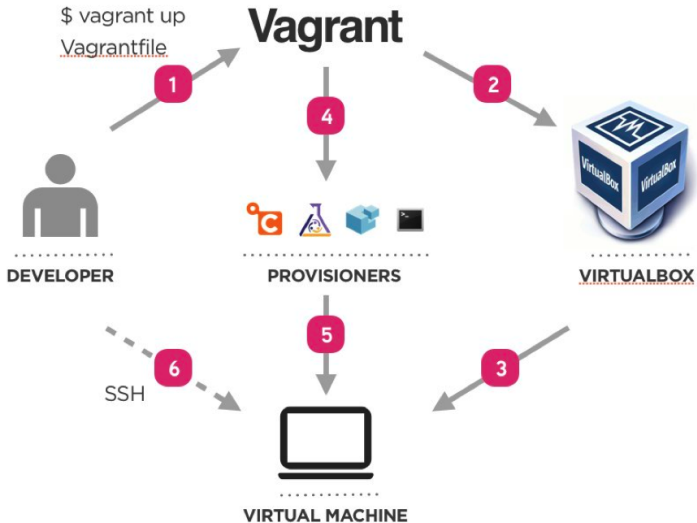


Containers



<http://qafe.com/what-is-docker-why-en-how-use-it/>

VirtualBox and Vagrant



<https://wiki.tankywo.com/tool/vagrant.html>

Example: Invenio Vagrantfile

```
OS = 'ubuntu/trusty64'
```

```
Vagrant.configure("2") do |config|
```

```
  if Vagrant.has_plugin?("vagrant-cachier")
    config.cache.scope = :box
  end
```

```
  config.vm.define "web" do |web|
```

```
    web.vm.box = OS
```

```
    web.vm.hostname = 'web'
```

```
    web.vm.provision "file", source: ".inveniorc", destination: ".inveniorc"
```

```
    web.vm.provision "shell", inline: "source .inveniorc && /vagrant/scripts/provision-web.sh", privileged: false
```

```
    web.vm.network "forwarded_port", guest: 80, host: 80
```

```
    web.vm.network "forwarded_port", guest: 5000, host: 5000
```

```
    web.vm.network "private_network", ip: ENV.fetch('INVENIO_WEB_HOST', '192.168.50.10')
```

```
    web.vm.provider :virtualbox do |vb|
```

```
      vb.customize ["modifyvm", :id, "--memory", "1024"]
```

```
      vb.customize ["modifyvm", :id, "--cpus", 2]
```

```
    end
```

```
  end
```

```
  config.vm.define "postgresql" do |postgresql|
```

```
    postgresql.vm.box = OS
```

```
    postgresql.vm.hostname = 'postgresql'
```

```
    postgresql.vm.provision "file", source: ".inveniorc", destination: ".inveniorc"
```

```
    postgresql.vm.provision "shell", inline: "source .inveniorc && /vagrant/scripts/provision-postgresql.sh", privileged: false
```

```
    postgresql.vm.network "private_network", ip: ENV.fetch('INVENIO_POSTGRESQL_HOST', '192.168.50.11')
```

```
  end
```

```
  [...]
```

Task 1: Invenio v1.2.2 on Vagrant

The screenshot shows the Atlantis Institute of Fictive Science website. At the top, there is a logo on the left and the text "ATLANTIS INSTITUTE OF FICTIVE SCIENCE" in the center. To the right of the header, it says "guest" and "logout". Below the header is a navigation bar with "Search", "Submit", "Personalize", and "Help" buttons. The main content area features a search bar with the text "Search 111 records for:" and a dropdown menu set to "any field". There are "Search" and "Browse" buttons next to the search bar. Below the search bar, there are two columns of navigation links. The left column is titled "Narrow by collection:" and includes links for "Articles & Preprints (71)", "Books & Reports (25)", and "Multimedia & Arts (16)". The right column is titled "Focus on:" and includes links for "CERN Divisions (1)", "CERN Experiments (6)", and "Authorities (24)". On the right side of the page, there is a section titled "ABOUT THIS SITE" with a welcome message and a "SEE ALSO" section with a link to "Invenio CERN". At the bottom of the page, there is a footer with the text "Atlantis Institute of Fictive Science" and "This site is also available in the following languages:" followed by a list of languages.

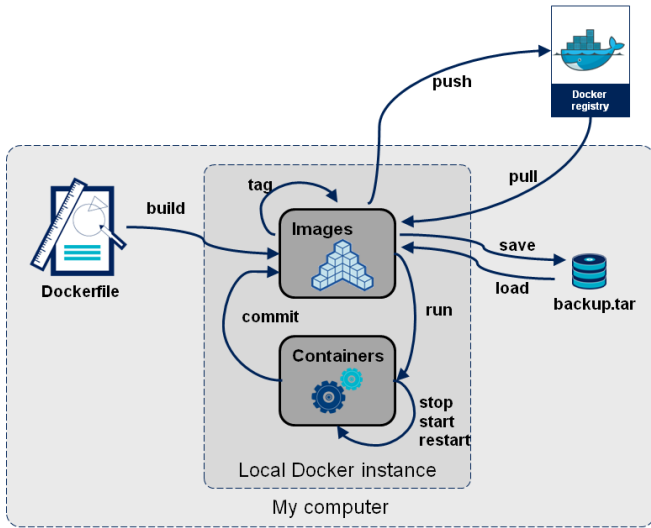
Install Invenio 1.2.2 locally via Vagrant.

Observe multiple machines emulating production setup.

Task 1: answer

```
$ mkdir src
$ cd src
$ git clone https://github.com/inveniosoftware/invenio
$ cd invenio
$ git checkout maint-1.1
$ vagrant up
$ vagrant ssh web -c 'source .inveniorc && /vagrant/scripts/create-instance.sh'
$ vagrant ssh web -c 'source .inveniorc && /vagrant/scripts/populate-instance.sh'
$ firefox http://192.168.50.10/
```


Docker



<http://blog.octo.com/en/docker-registry-first-steps/>

On your USB stick

```
data
  World_historical_and_predicted_populations_in_percentage.csv
```

```
docker
  invenio-1.2.2.img

  invenio_nginx.img          postgres.img
  invenio_static.img         rabbitmq.img
  invenio_web.img            redis.img

  zenodo_es.img              kibana.img
  zenodo_frontend.img
  zenodo_lb.img
  zenodo_static.img
  zenodo_statsd.img
  zenodo_web.img
  zenodo_worker.img
```

```
src
  invenio
  zenodo
```

Task 2: Load docker images

Load provided docker images from pre-saved files.

Task 2: answer

```
$ docker images
```

```
$ docker load < invenio-1.2.2.img
```

```
$ docker images
```

| REPOSITORY | TAG | IMAGE ID | CREATED | SIZE |
|--------------------|-------|--------------|------------|----------|
| tiborsimko/invenio | 1.2.2 | 12a42499b670 | 5 days ago | 2.354 GB |

Task 3: Docker basics

Download Python docker image. (optional)

Start a simple one-time container.

Add two numbers.

Observe images and running and “sleeping” containers.

Task 3: answer

```
$ docker pull python
```

```
Using default tag: latest
```

```
latest: Pulling from library/python
```

```
Digest: sha256:f142b7cd6ae3538ba2c661999003099ef1e1e3fb9d79732170d82280871f
```

```
Status: Downloaded newer image for python:latest
```

```
$ docker run -i -t --rm python /bin/bash
```

```
root@5962013475fa:/# python
```

```
Python 3.5.2 (default, Nov 17 2016, 22:42:56)
```

```
[GCC 4.9.2] on linux
```

```
Type "help", "copyright", "credits" or "license" for more information.
```

```
>>> 1+1
```

```
2
```

```
>>>
```

```
root@5962013475fa:/# exit
```

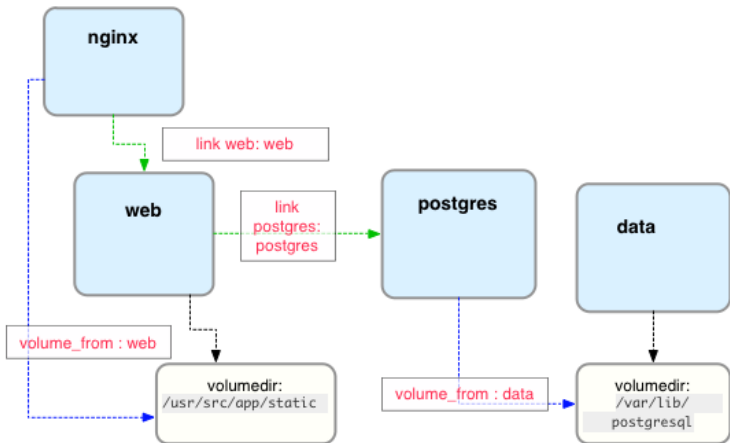
```
$ docker images
```

```
$ docker ps -a
```


Task 4: answer

```
$ docker pull tiborsimko/invenio:1.2.2
$ docker run -i -t --rm -p 80:80 -p 443:443 \
    tiborsimko/invenio:1.2.2
$ firefox http://0.0.0.0/
```

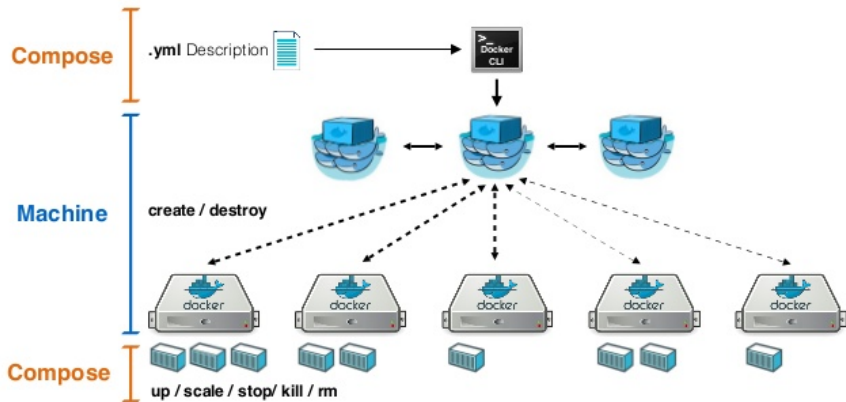

Docker Compose



<http://containertutorials.com/docker-compose/nginx-flask-postgresql.html>

Docker Swarm

Swarm + Machine + Compose



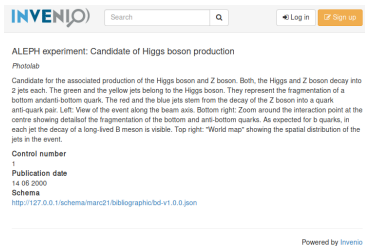
<http://www.slideshare.net/Docker/docker-online-meetup-28-productionready-docker-swarm>

Example: Invenio docker compose

```
web:
  restart: "always"
  build: .
  command: /bin/bash -c "invenio3 run -h 0.0.0.0"
  environment:
    - PATH=/home/invenio/.virtualenvs/invenio3/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
    - VIRTUALENVWRAPPER_PYTHON=/usr/local/bin/python
    - INVENIO_WEB_HOST=127.0.0.1
    - [...]
  volumes_from:
    - static
  links:
    - postgresql
    - redis
    - elasticsearch
    - rabbitmq
  ports:
    - "5000:5000"

postgresql:
  restart: "always"
  image: postgres
  environment:
    - POSTGRES_USER=invenio3
    - POSTGRES_DB=invenio3
    - POSTGRES_PASSWORD=dbpass123
  ports:
    - "25432:5432"
  [...]
```

Task 5: Invenio v3.0 alpha



INVENIO Search

ALEPH experiment: Candidate of Higgs boson production
Photolab

Candidate for the associated production of the Higgs boson and Z boson. Both, the Higgs and Z boson decay into 2 jets each. The green and the yellow jets belong to the Higgs boson. They represent the fragmentation of a bottom and anti-bottom quark. The red and the blue jets stem from the decay of the Z boson into a quark anti-quark pair. Left: View of the event along the beam axis. Bottom right: Zoom around the interaction point at the center showing details of the fragmentation of the bottom and anti-bottom quarks. As expected for b quarks, in each jet the decay of a long-lived B meson is visible. Top right: "World map" showing the spatial distribution of the jets in the event.

Control number
1

Publication date
14 06 2000

Schema
<http://127.0.0.1/schema/marc21/obblitographic/bd-v1.0.0.json>

Powered by Invenio

Install Invenio v3.0 alpha demo site via provided complex docker environment.

Load demo records.

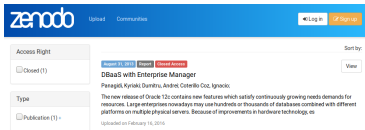
Execute a simple task in the running container.

Task 5: answer

```
$ cd src/invenio
$ docker-compose build
$ docker-compose up -d
$ docker-compose run --rm web ./scripts/populate-instance.sh
$ firefox http://127.0.0.1/records/1

$ docker-compose run --rm web /bin/bash
$ docker exec -i -t invenio_web_1 /bin/bash
```

Task 6: Zenodo



Install Zenodo locally via provided complex docker environment.

Load demo records and launch indexing processes.

Observe a plethora of containers emulating full production setup.

Task 6: answer

```
$ cd src/zenodo
$ docker-compose build
$ docker-compose up
$ docker-compose run --rm web bash /code/zenodo/scripts/init.sh
$ docker-compose run --rm statsd bash /init.sh
$ docker-compose run --rm web zenodo fixtures loaddemorecords
$ docker-compose run --rm web zenodo migration recordsrun
$ docker-compose run --rm web zenodo index reindex --yes-i-know
$ docker-compose run --rm web zenodo index run -d
$ firefox https://0.0.0.0/
```