

Development of an OpenStack Cloud deployment tool



Motivation

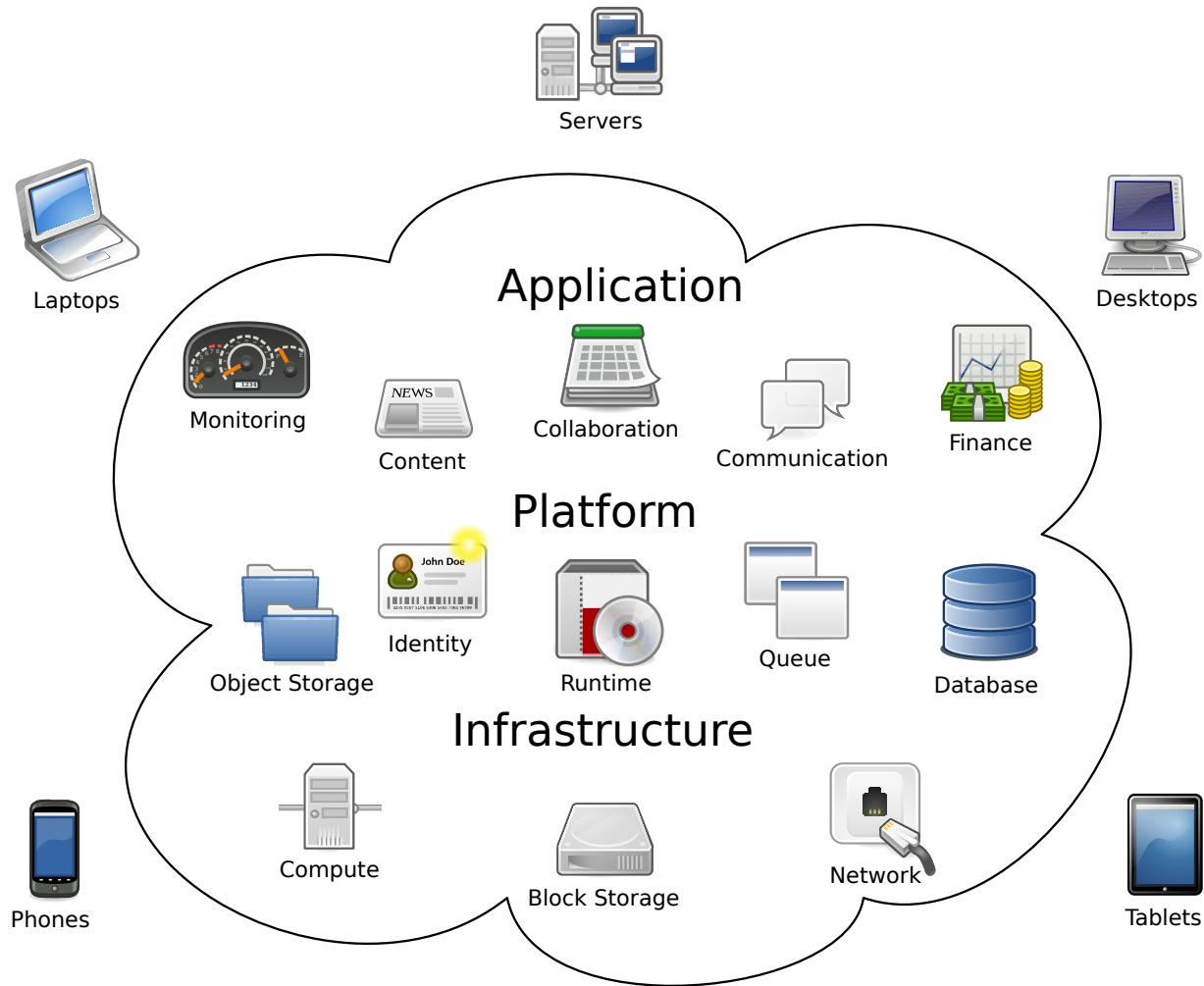
- **Distributed systems subject**
- **Professional internships**



What Cloud Computing is

- **Model for enabling ubiquitous, convenient, on-demand network access to a shared pool of computing resources**

Cloud computing service models



Some available services

- **Cloud Virtual machines**
- **Cloud storage**
- **Cloud databases**
- **Cloud containers**
- **Much more!**

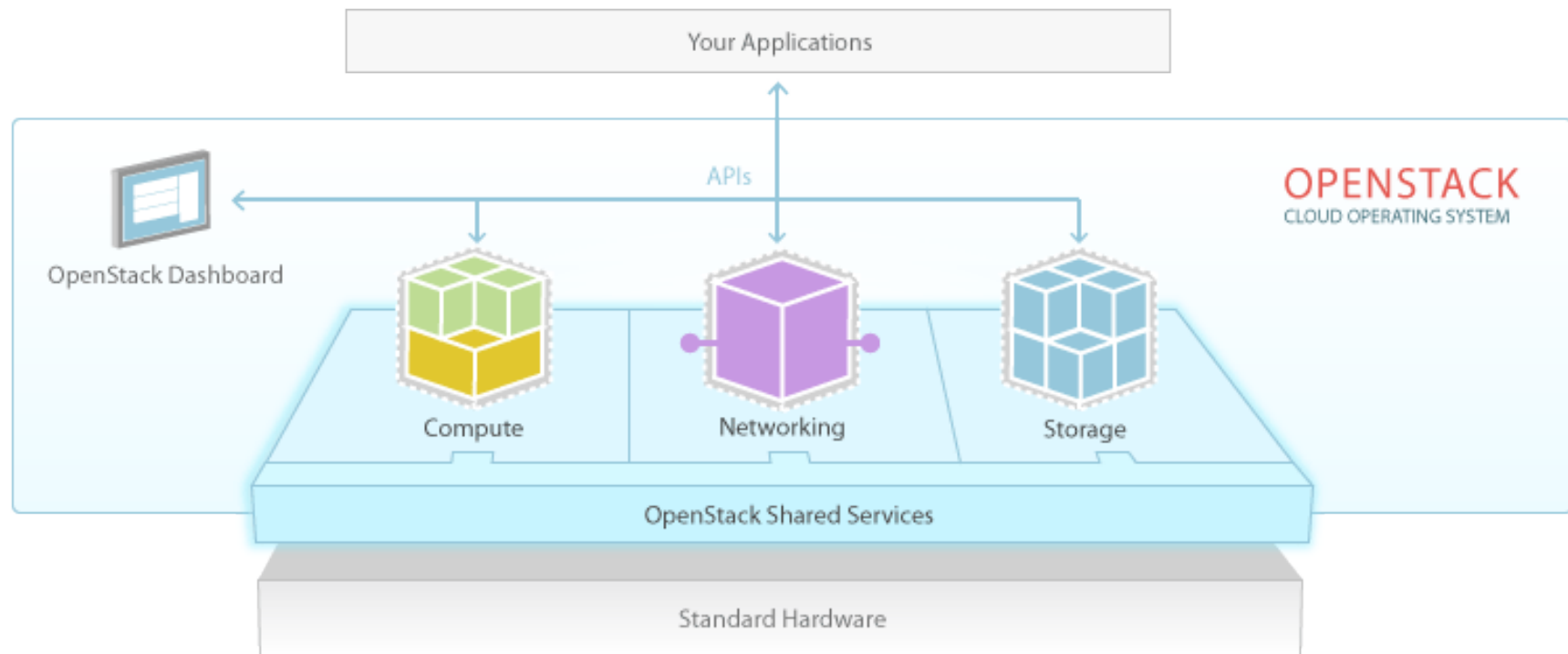


Microsoft Azure



What OpenStack is

Three main services



Other OpenStack services

- **Cinder (Block storage)**
- **Keystone (Authentication)**
- **Glance (Image)**
- **Horizon (Dashboard)**
- **Heat (Orchestration)**

More at:

<https://www.openstack.org/software/project-navigator/>

Deploying OpenStack

Three main steps:

- **Set up an environment in all nodes**
- **Install different services in the infrastructure**
- **Configure each one of the services**

Problems deploying OpenStack

- **A lot of packages which are needed taking into account the services that are installed**
- **Several configuration files which must be edited properly**
- **It is common to have mistakes**

Deployment automation

- **OpenStack Ansible**



<http://docs.openstack.org/developer/openstack-ansible/>

- **Packstack**



<https://wiki.openstack.org/wiki/Packstack>

- **OpenStack Autopilot**

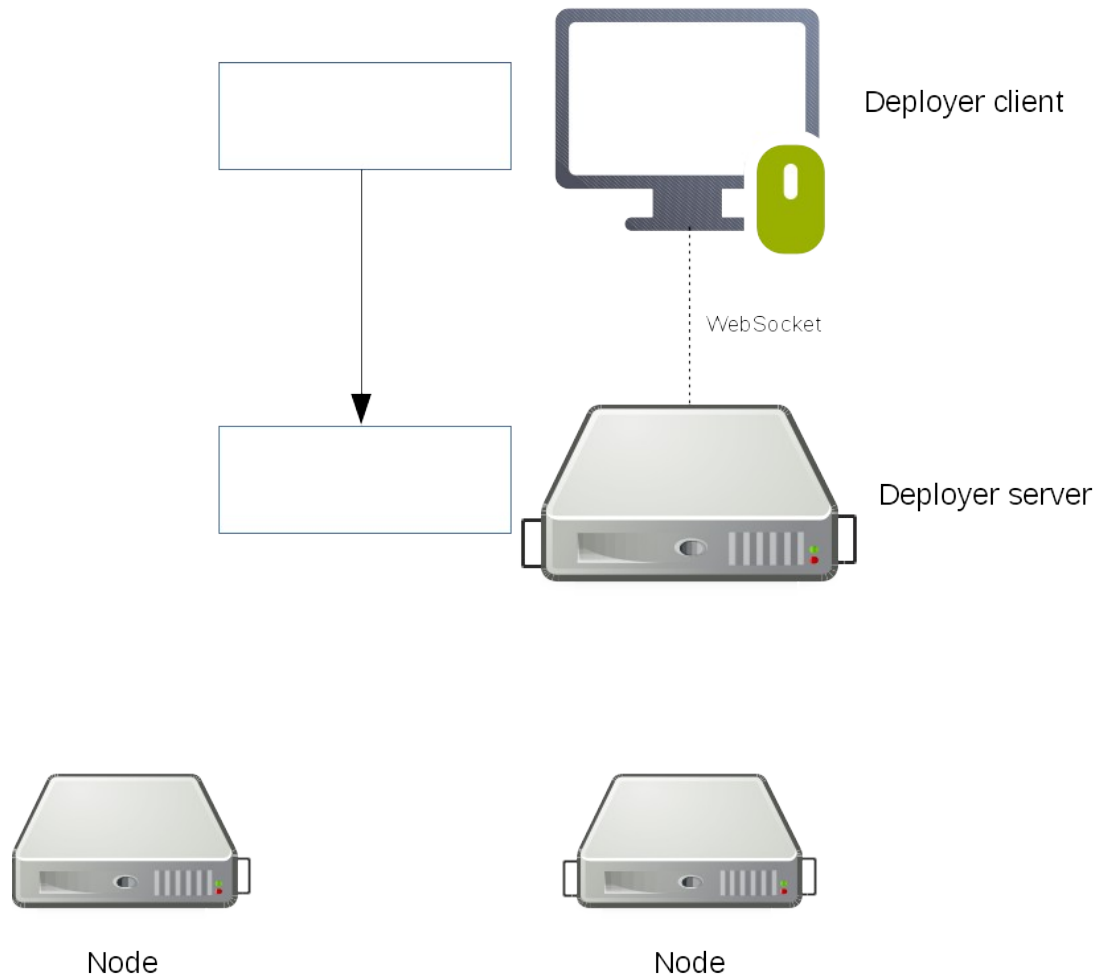


<http://www.ubuntu.com/cloud/openstack/autopilot>

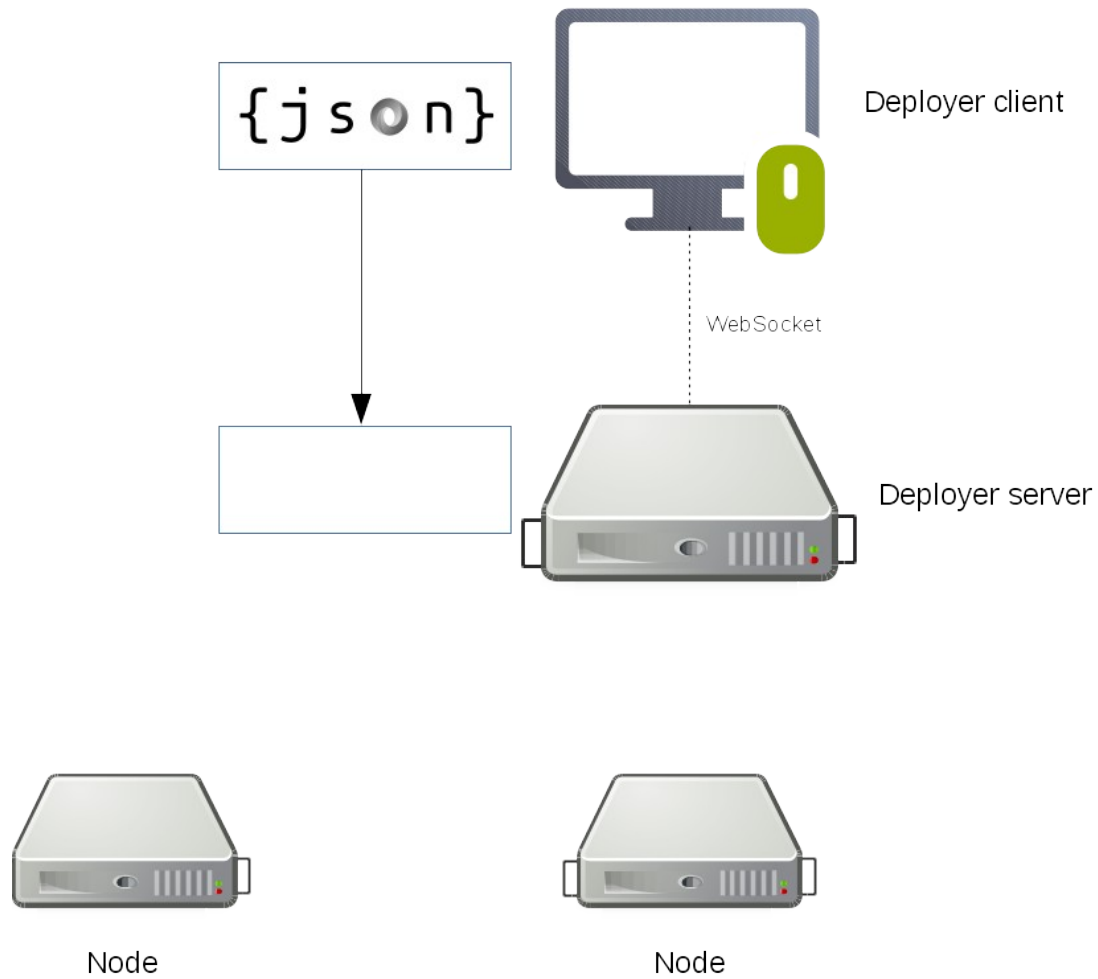
Initial ideas

- **Automatic deployment**
- **SaaS design**
- **Web interface**
- **API behavior**

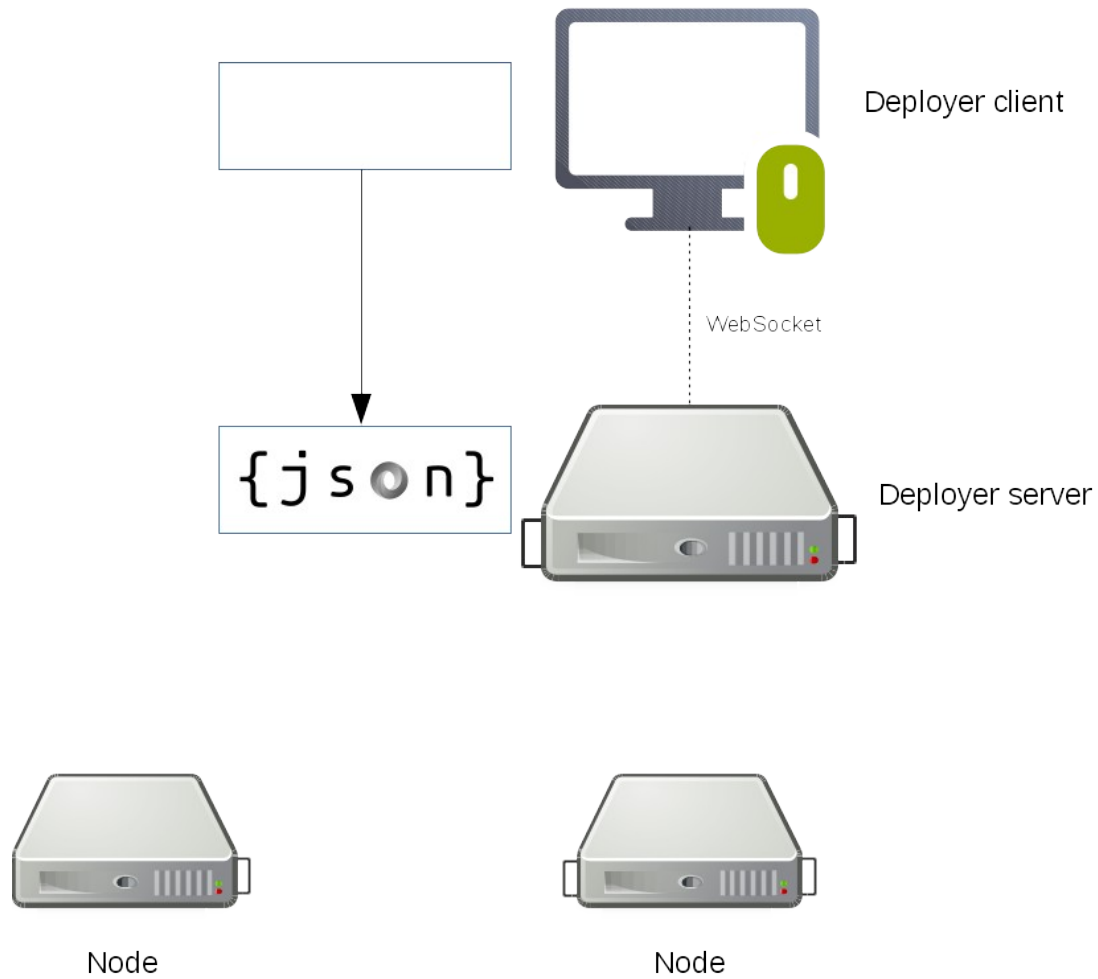
Application design (1/5)



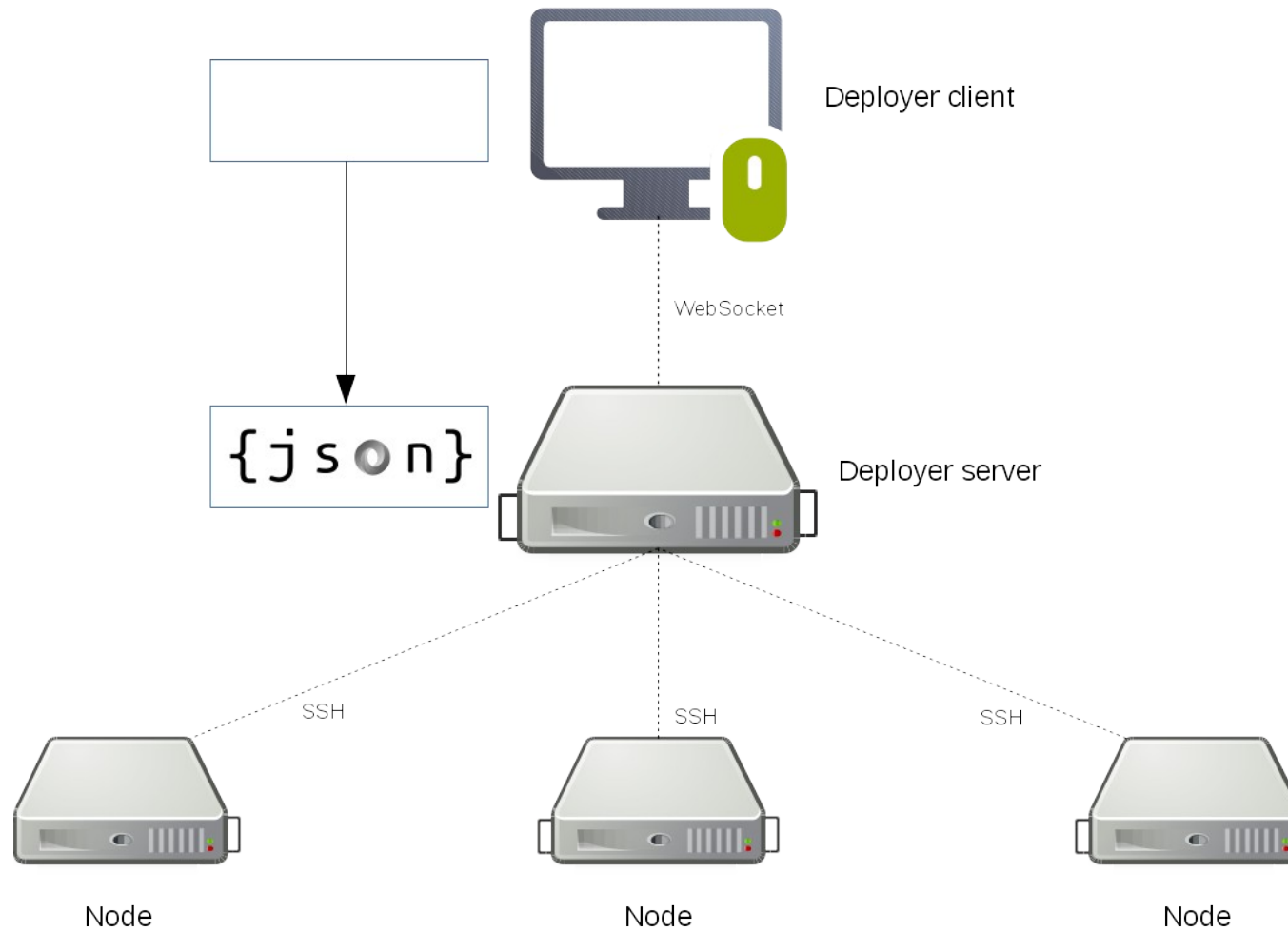
Application design (2/5)



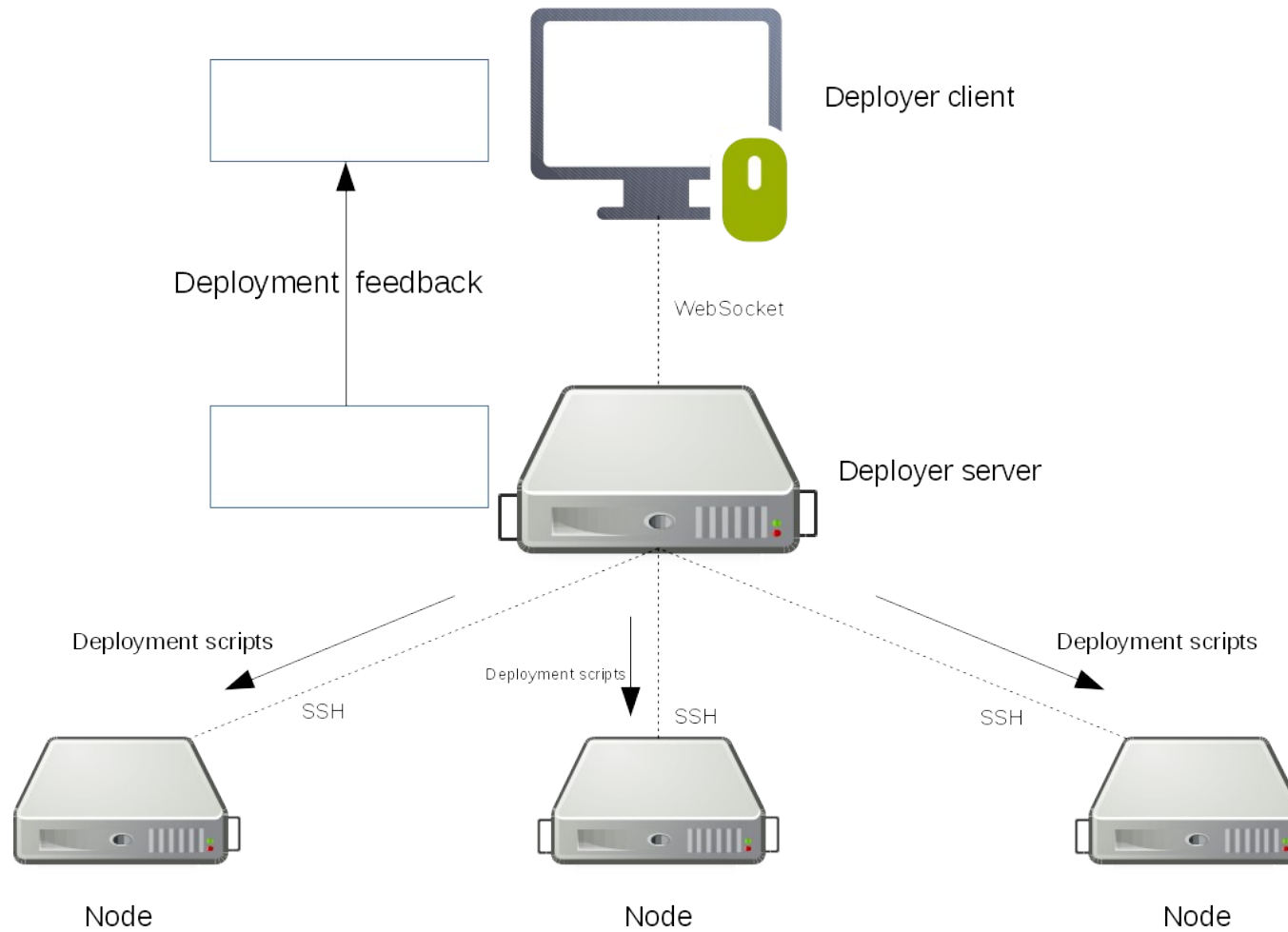
Application design (3/5)



Application design (4/5)

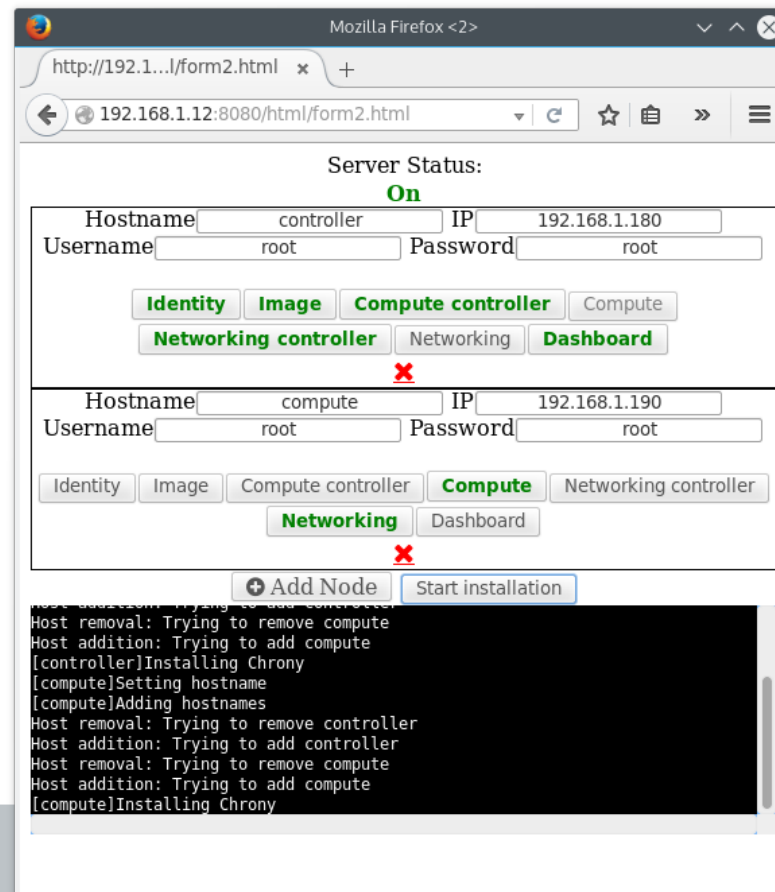


Application design (5/5)



Frontend

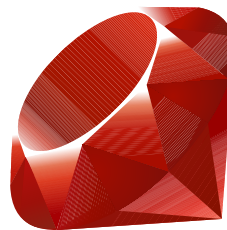
- Sends a JSON to the deployment server
- Shows the feedback received from the server



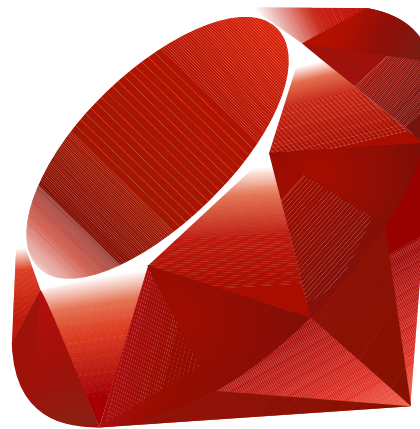
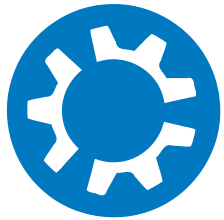
Backend

- websocketd
- Ruby
- SSH
- JSON

```
final : run.sh
Archivo  Editar  Ver  Marcadores  Preferencias  Ayuda
sergio@sergio-ubuntu:~/tfg/openstack-deployer-dev/final$ ./run.sh
Thu, 06 Oct 2016 02:45:21 +0200 | INFO | server | | Serving using application :
./deploy.rb
Thu, 06 Oct 2016 02:45:21 +0200 | INFO | server | | Serving static content from :
.
Thu, 06 Oct 2016 02:45:21 +0200 | INFO | server | | Starting WebSocket server :
ws://sergio-ubuntu:8080/
Thu, 06 Oct 2016 02:45:21 +0200 | INFO | server | | Serving CGI or static files :
http://sergio-ubuntu:8080/
```



Software used at the project



Conclusions

- **Worked with distributed systems**
- **Worked creating a distributed deployment tool**
- **Learned a lot about OpenStack**

Future work

- **Publish the project**
- **Support more OpenStack services**
- **Jump to HTTPs in websocketd**
- **Add support for more GNU/Linux distributions**

Deployer video

<https://www.youtube.com/watch?v=7boUenbvm4c>

Deployer results

```
[compute@OpenStack keys]
ROOT_DBPASS=b5b6486a13987acbce7a1
ADMIN_PASS=f8744e664b646890d6858
CEILOMETER_DBPASS=3dfe0cc413968b48e5423
CEILOMETER_PASS=e26617b21bb5e1db31d6c
CINDER_DBPASS=95be47e35603fa88615e3
CINDER_PASS=7bd67dae0f56d9be86442
DASH_DBPASS=084d5b8ea6c6503a027a8
DEMO_PASS=8ed3e7053048e
GLANCE_DBPASS=97968e2d1
GLANCE_PASS=30756530316
```

file:///home/.../form2.html x Projects - OpenStack ... x +

192.168.1.180/horizon/identity/

ubuntu® default • admin ▾ admin ▾

Project ▾
Admin ▾
Identity ^

Projects

Users
Groups
Roles

Filter 🔍 + Create Project Delete Projects

<input type="checkbox"/>	Name	Description	Project ID	Domain Name	Enabled	Actions
<input type="checkbox"/>	demo	Demo Project	97c54efe0765424fbf7c1738cf52304b	default	Yes	Manage Members ▾
<input type="checkbox"/>	service	Service Project	9de572fbf2b7434cb1ad9ef0caf84615	default	Yes	Manage Members ▾
<input type="checkbox"/>	admin	Admin Project	9fbca414352f471295379f9969b1aa9b	default	Yes	Manage Members ▾

Displaying 3 items

Questions