FIWARE Cloud

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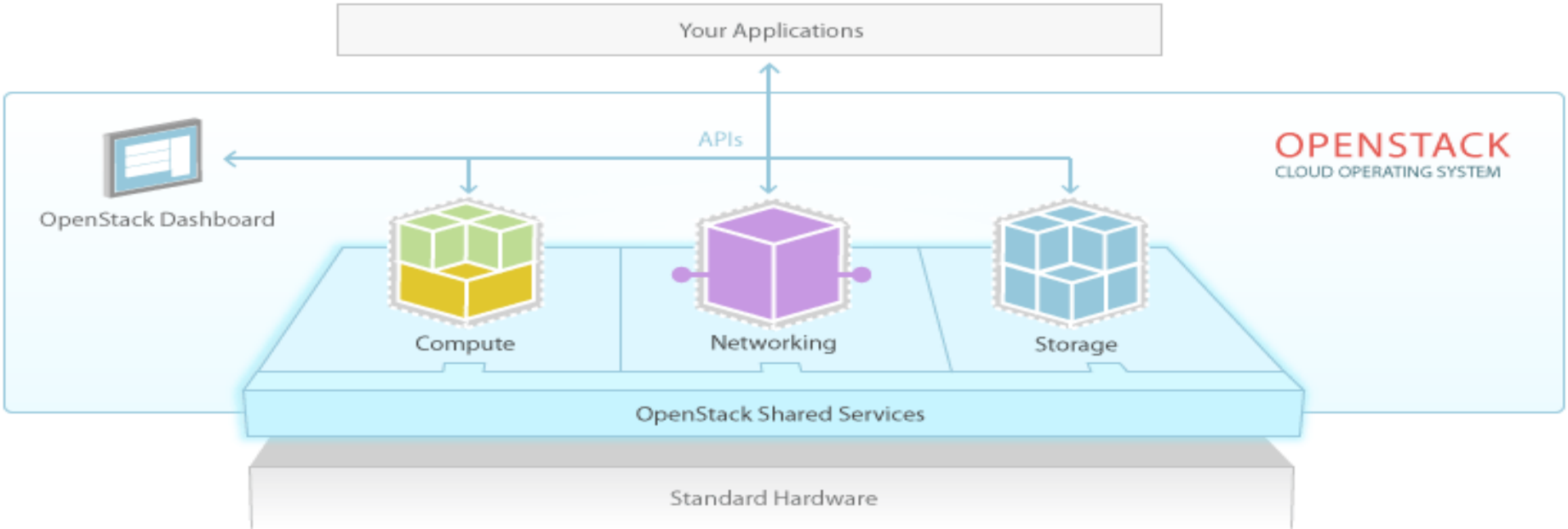
Content

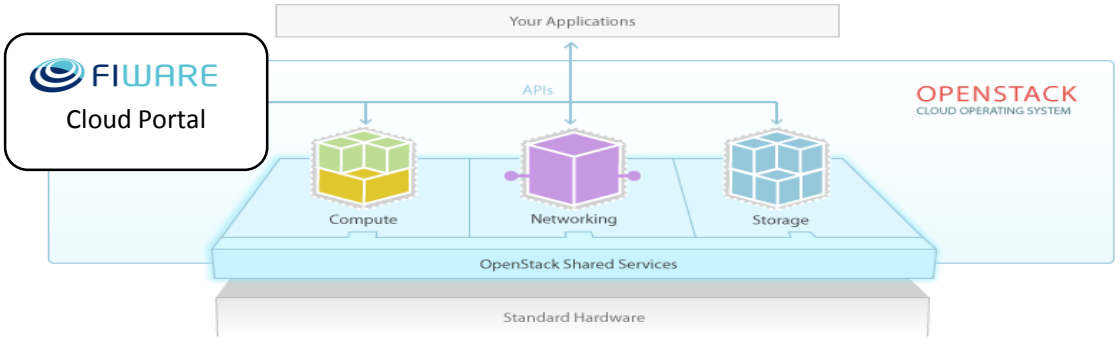
- FIWARE Lab Cloud Hosting: Overview and Architecture
- FIWARE Lab: Basic functionalities
  - FIWARE Compute Services
  - FIWARE Network Services
  - FIWARE Storage Services
- FIWARE Lab: PaaS, working with Blueprints
- Reference Information

FIWARE Lab Cloud Hosting: Overview and Architecture

FIWARE Lab Cloud Hosting



FIWARE Lab Cloud Hosting



FIWARE Cloud Portal

FIWARE Compute

FIWARE Object Storage

FIWARE PaaS

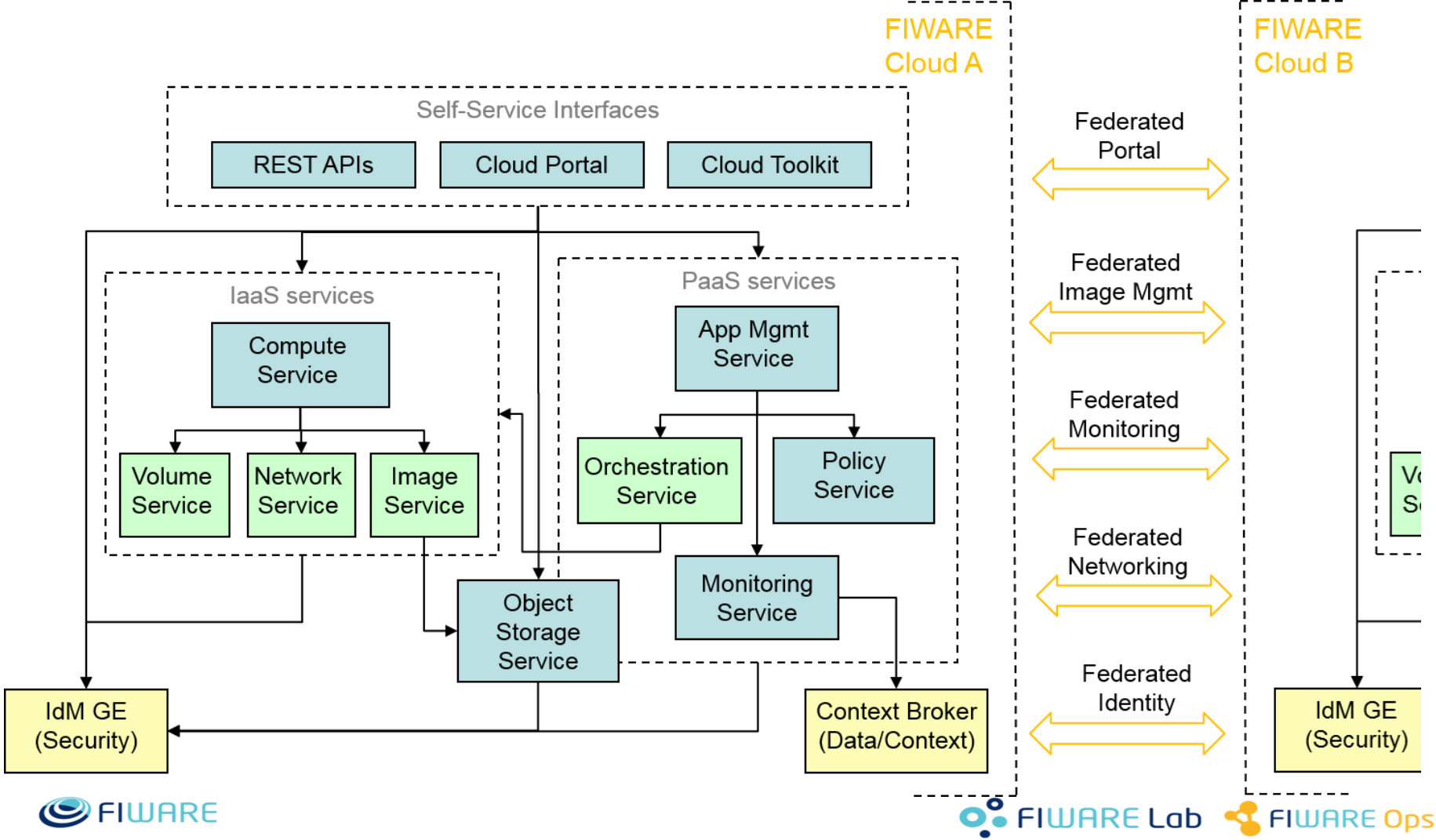
FIWARE Account

FIWARE SDC

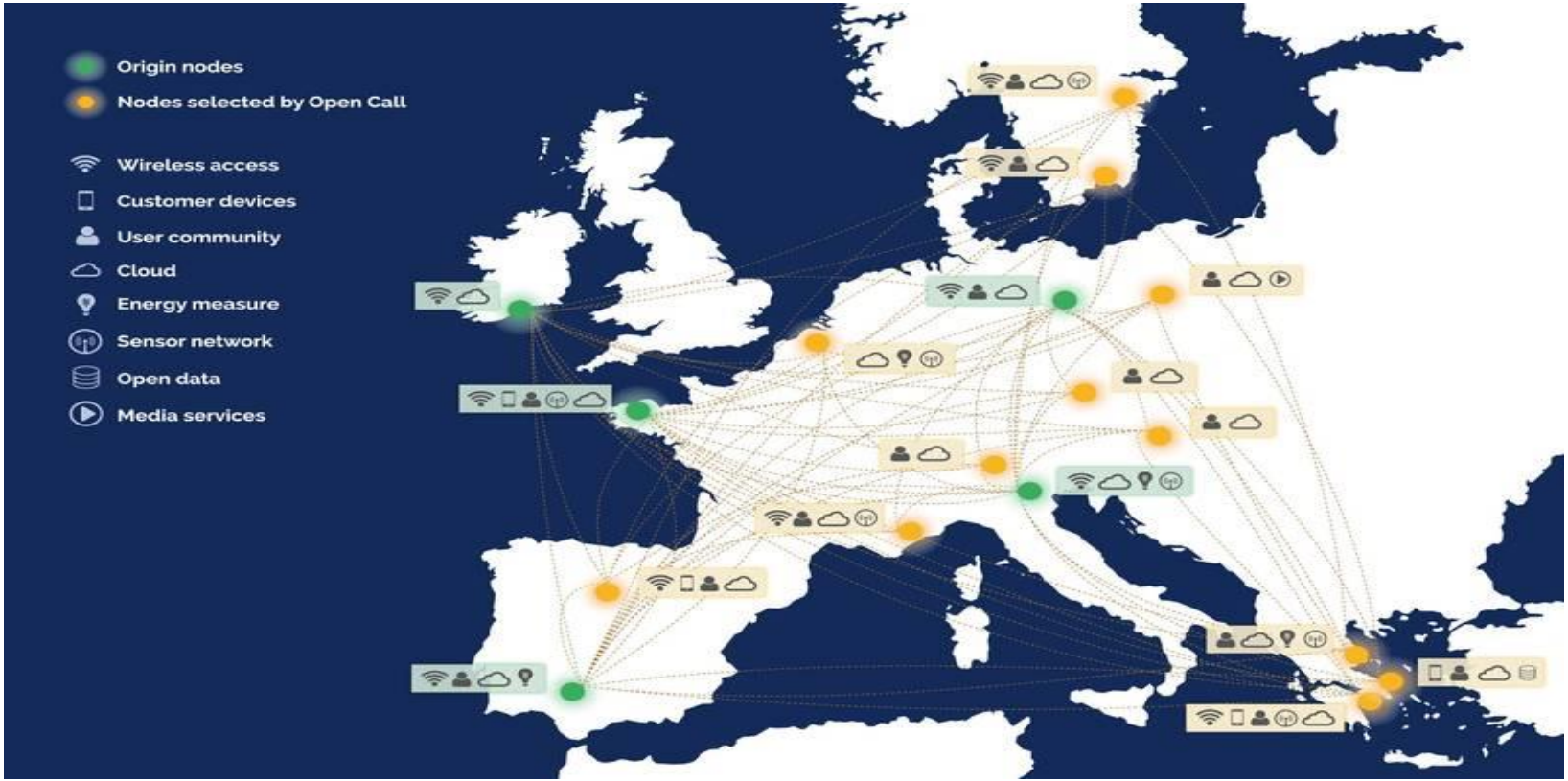
FIWARE Monitoring

Summary

- Account: Manages identity and organizations; provides authentication and authorization for other services (OpenStack Keystone)
- Compute: Manages the lifecycle of compute instances. Responsibilities include spawning, scheduling and decommissioning of VMs (OpenStack Nova)
- Network: Enable Network-Connectivity-as-a-Service for other services, e.g. Compute, (OpenStack Neutron)
- Storage:
  - Persistent block storage for running compute instances (OpenStack Cinder)
  - Stores and retrieves arbitrary unstructured data object and provide storage for other services, e.g. Image, (OpenStack Swift)
- Image: Stores and retrieves VM disk images used by compute (OpenStack Glance)
- Monitoring: Monitoring information about VMs
- SDC: Deploying Software in VMs
- PaaS Manager
  - Working with regions
  - Creating Tiers and deploying Blueprints


FIWARE
Cloud A
FIWARE
Cloud B
Self-Service Interfaces
REST APIs
Cloud Portal
Cloud Toolkit
IaaS services
Compute
Service
Volume
Service
Network
Service
Image
Service
PaaS services
App Mgmt
Service
Orchestration
Service
Policy
Service
Monitoring
Service
Object
Storage
Service
IdM GE
(Security)
Context Broker
(Data/Context)
Federated
Portal
Federated
Image Mgmt
Federated
Monitoring
Federated
Networking
Federated
Identity
IdM GE
(Security)

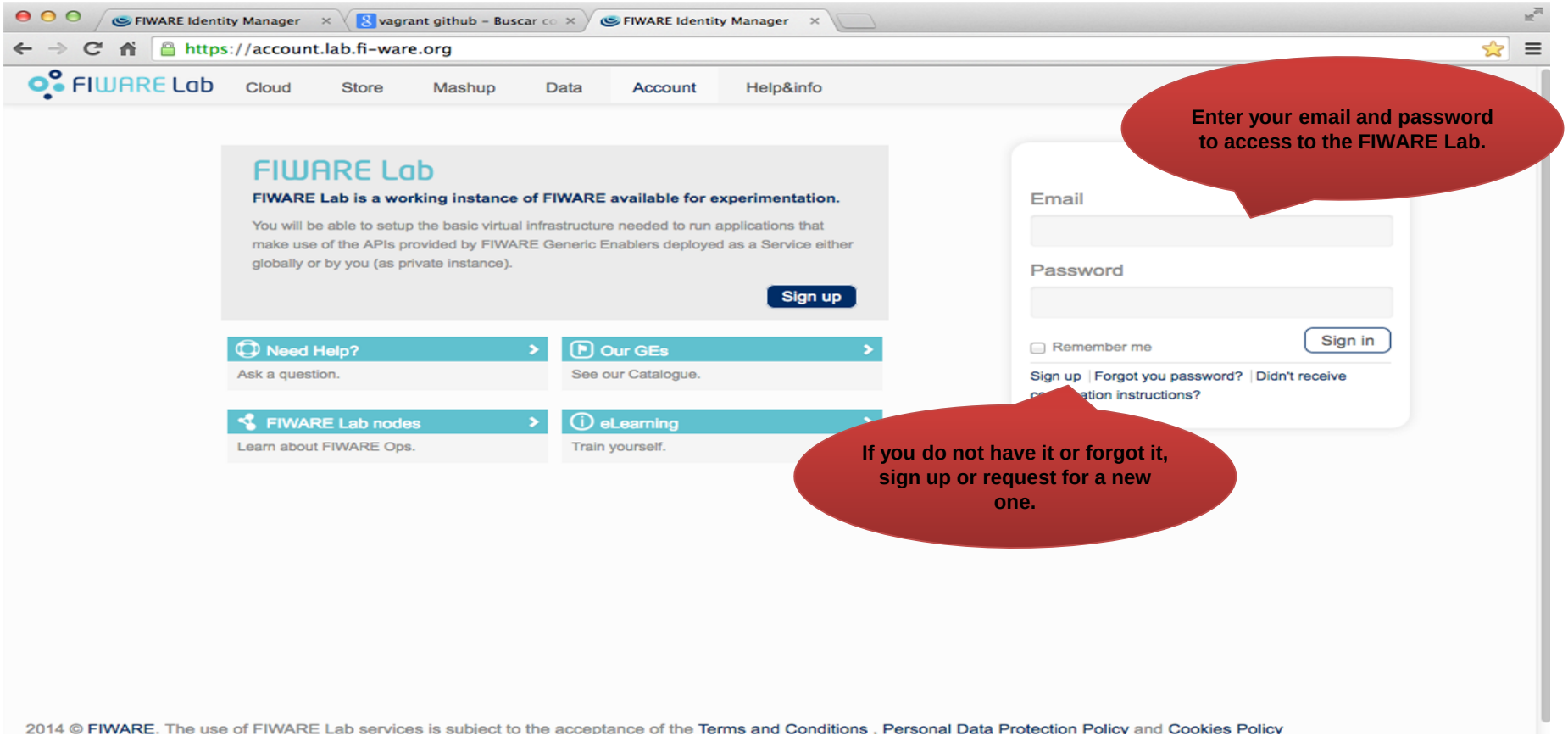
FIWARE Lab Cloud – Multiregion



Account

- Creating an account
  - https://account.lab.fi-ware.org
- Understanding organizations
  - Mapped to OS tenants
- Signing in in Cloud Portal
  - https://cloud.lab.fi-ware.org
  - SSO

Add new user


FIWARE Identity Manager
vagrant github - Buscar
FIWARE Identity Manager
https://account.lab.fi-ware.org
FIWARE Lab
Cloud
Store
Mashup
Data
Account
Help&info
FIWARE Lab
FIWARE Lab is a working instance of FIWARE available for experimentation.
You will be able to setup the basic virtual infrastructure needed to run applications that make use of the APIs provided by FIWARE Generic Enablers deployed as a Service either globally or by you (as private instance).
Sign up
Need Help?
Ask a question.
Our GEs
See our Catalogue.
FIWARE Lab nodes
Learn about FIWARE Ops.
eLearning
Train yourself.
Email
Password
Remember me
Sign in
Sign up | Forgot you password? | Didn't receive
Enter your email and password to access to the FIWARE Lab.
If you do not have it or forgot it, sign up or request for a new one.
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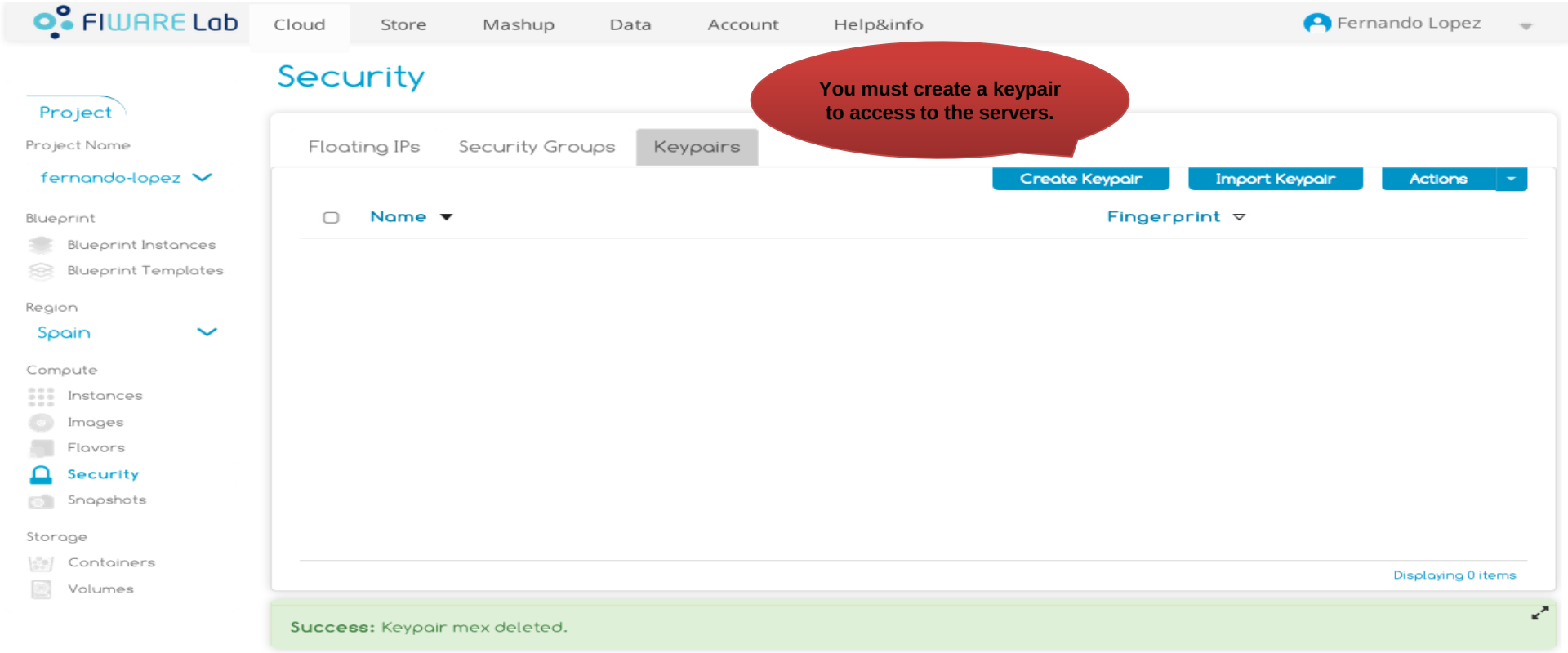
FIWARE Lab: Basic functionalities

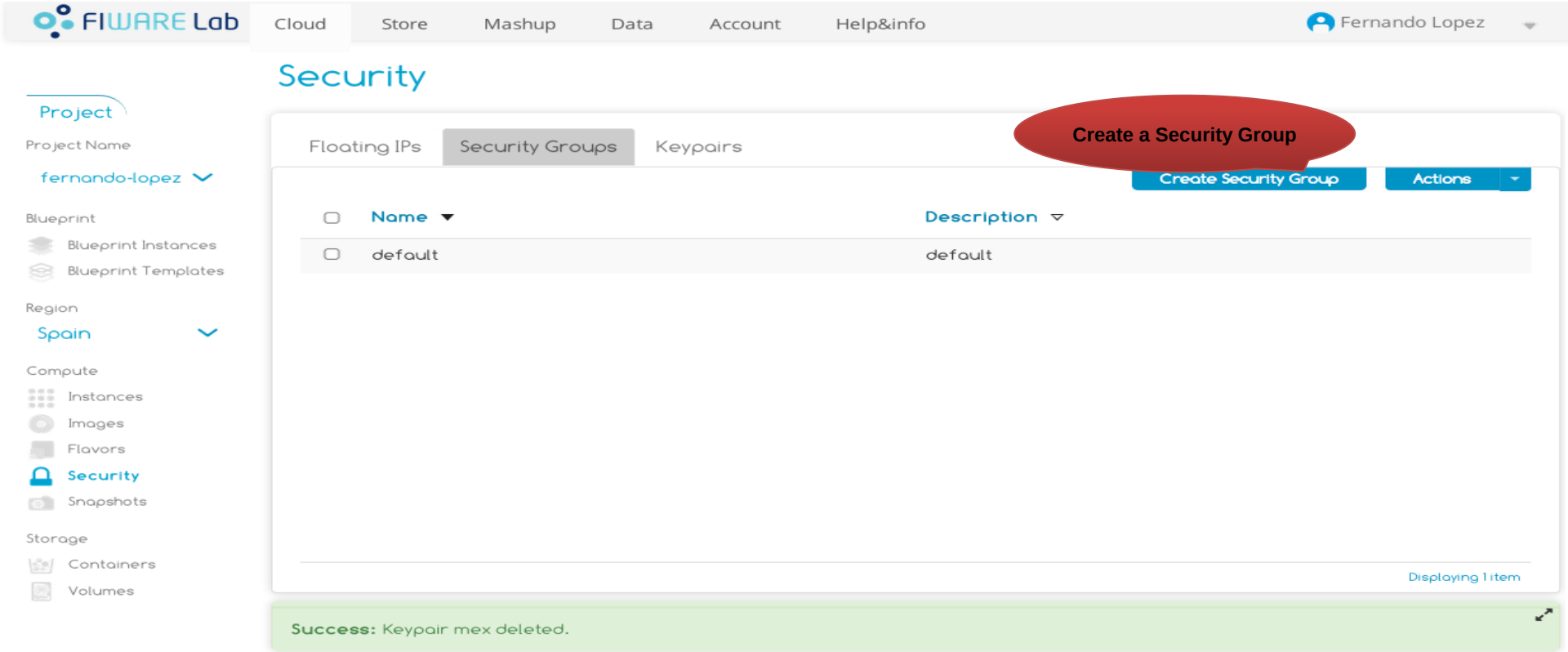
FIWARE Lab: Basic functionalities

- Create keypair (private key)
- Create security group (incoming ports to VM, e.g. 22 for ssh)
- Deploy an instance
  - choice from a library of predefined images, e.g. Centros, Ubuntu, etc.
  - choice flavor of resource configuration (vCPU, memory, user disk, ephemeral disk).
  - choice security group.
  - choice keypair to ssh into VM.
  - specify configuration scripts (optional).
- Associate public IP with VM.
- Create private networks and associate to VMs.
- Create storage volumes and attach to VM.

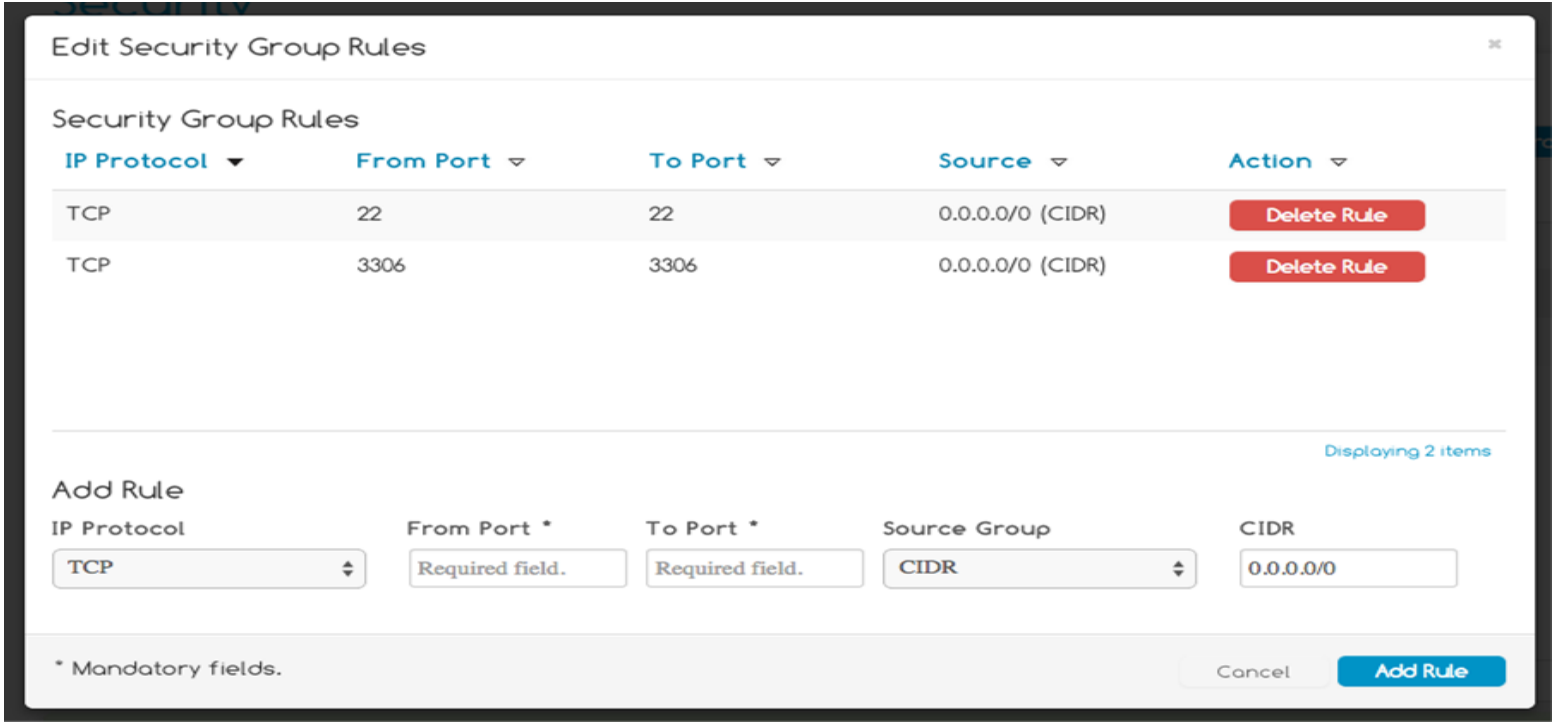
Create keypair



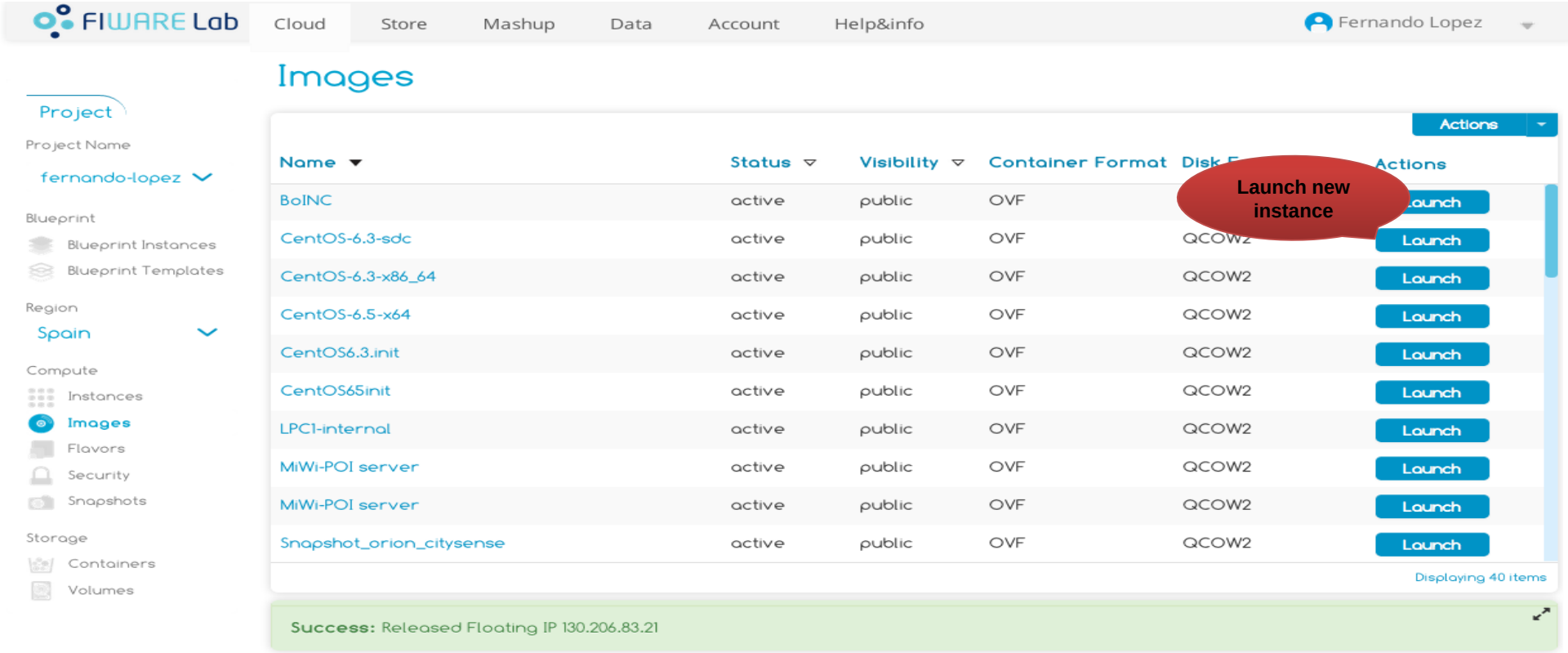
Security groups



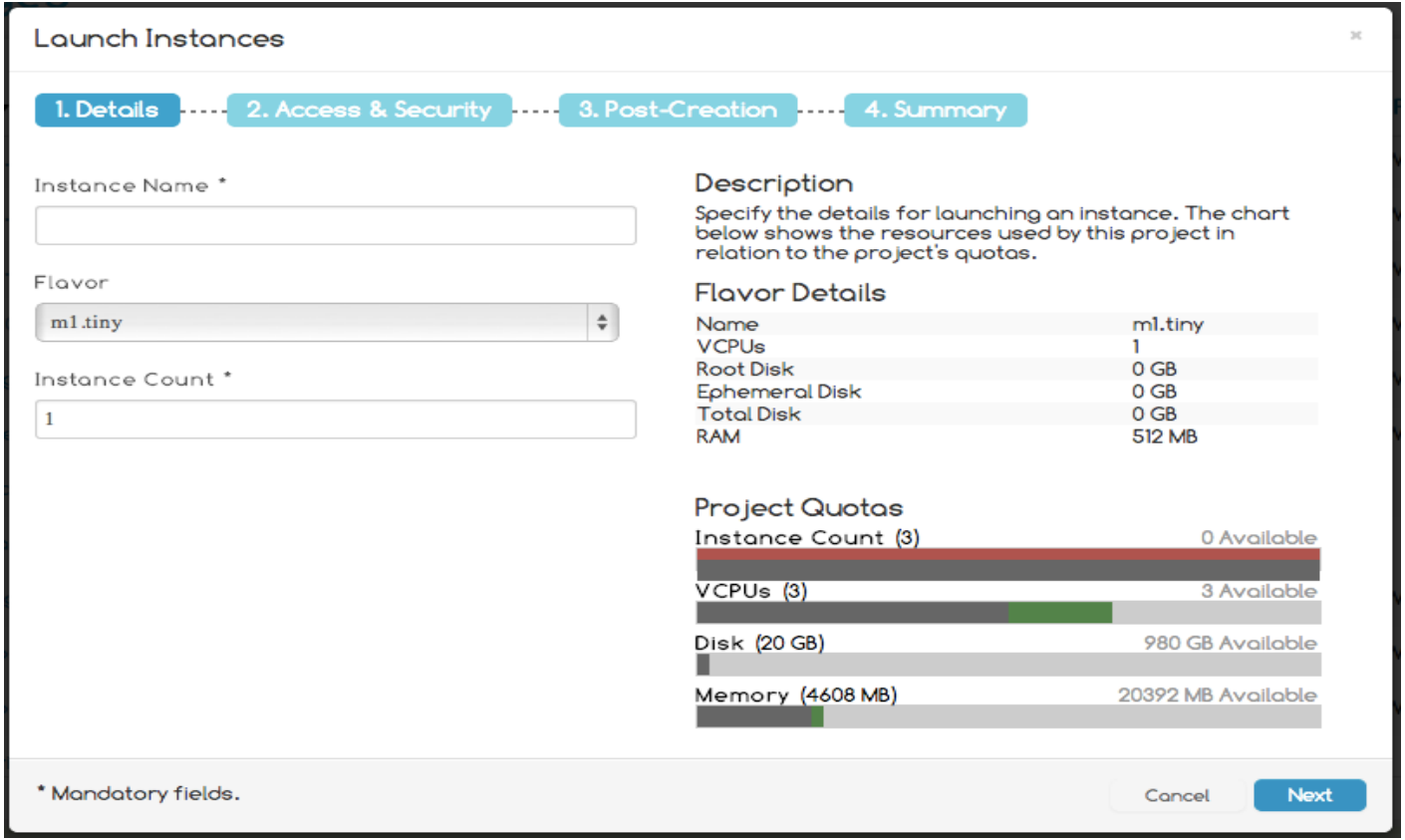
Create and edit Security Group rules



Launch Instances

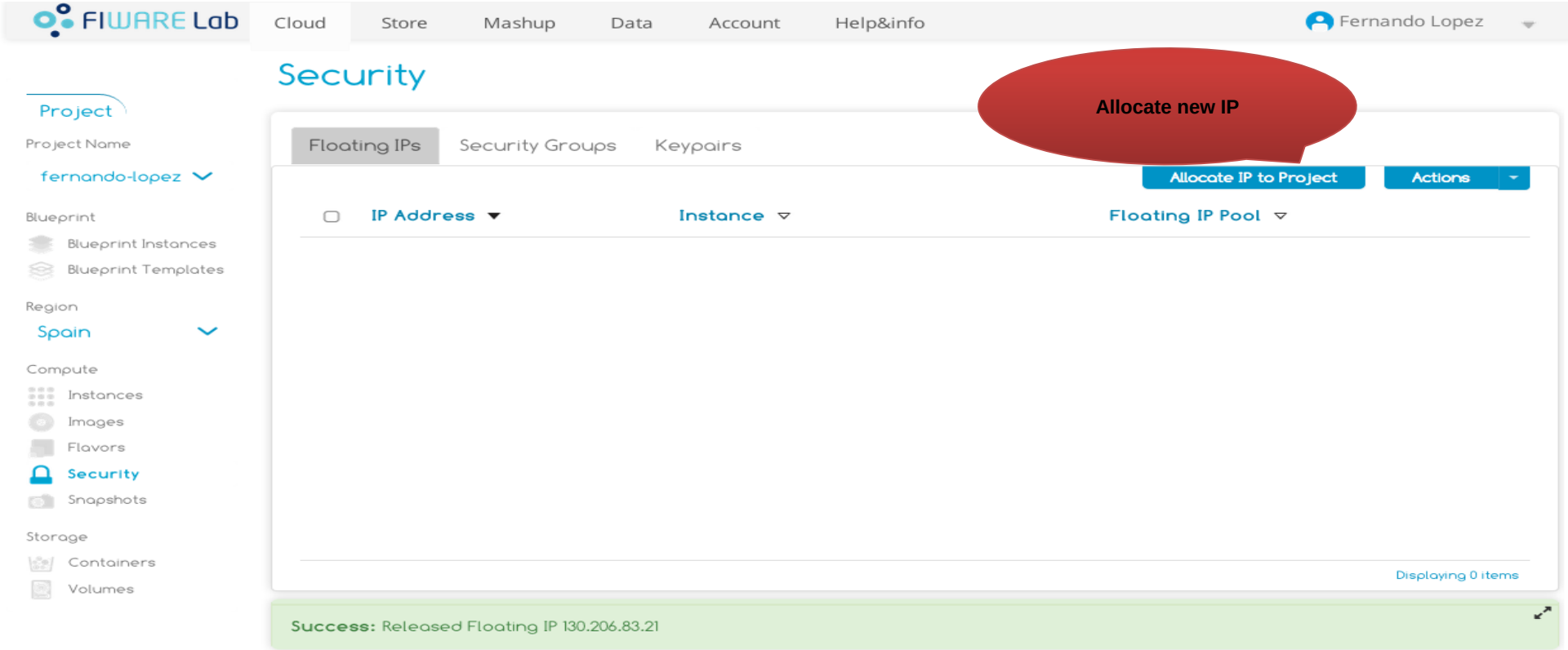


Launch Instances

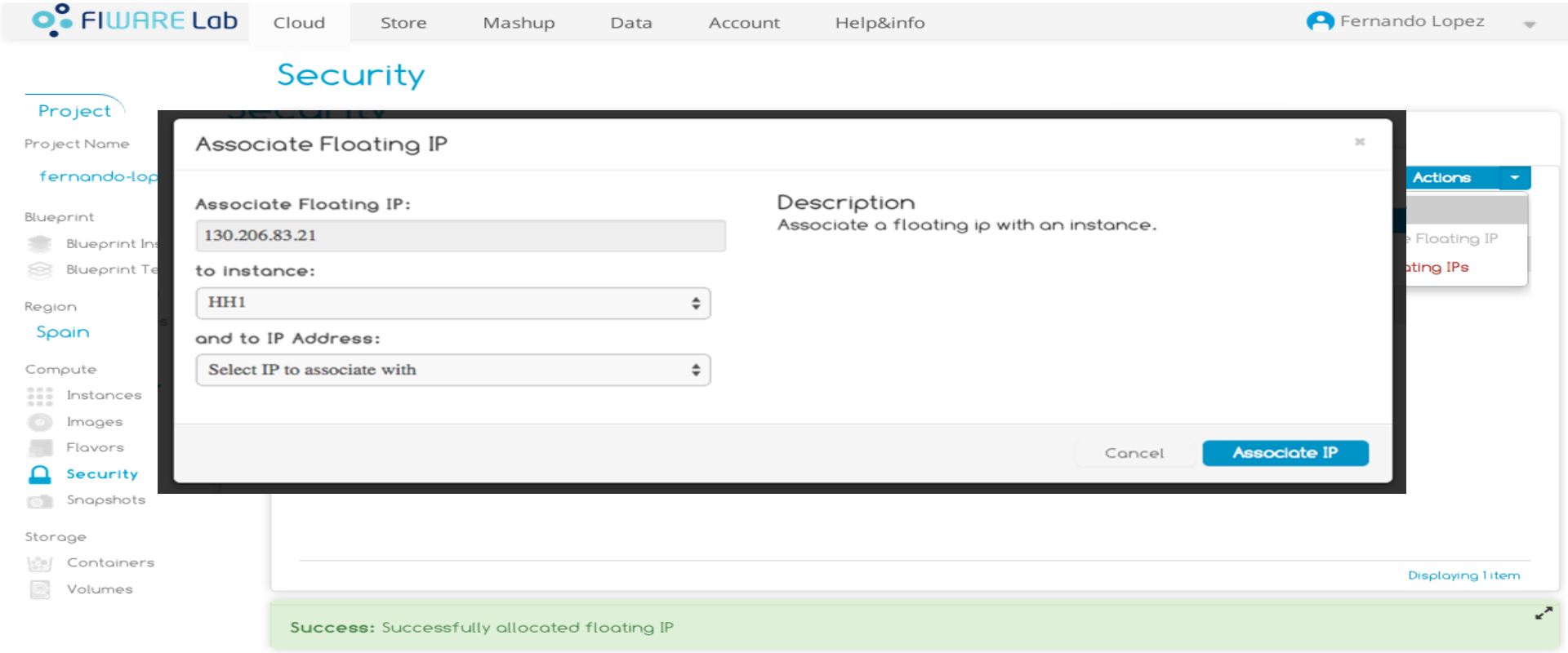


Launch Instances

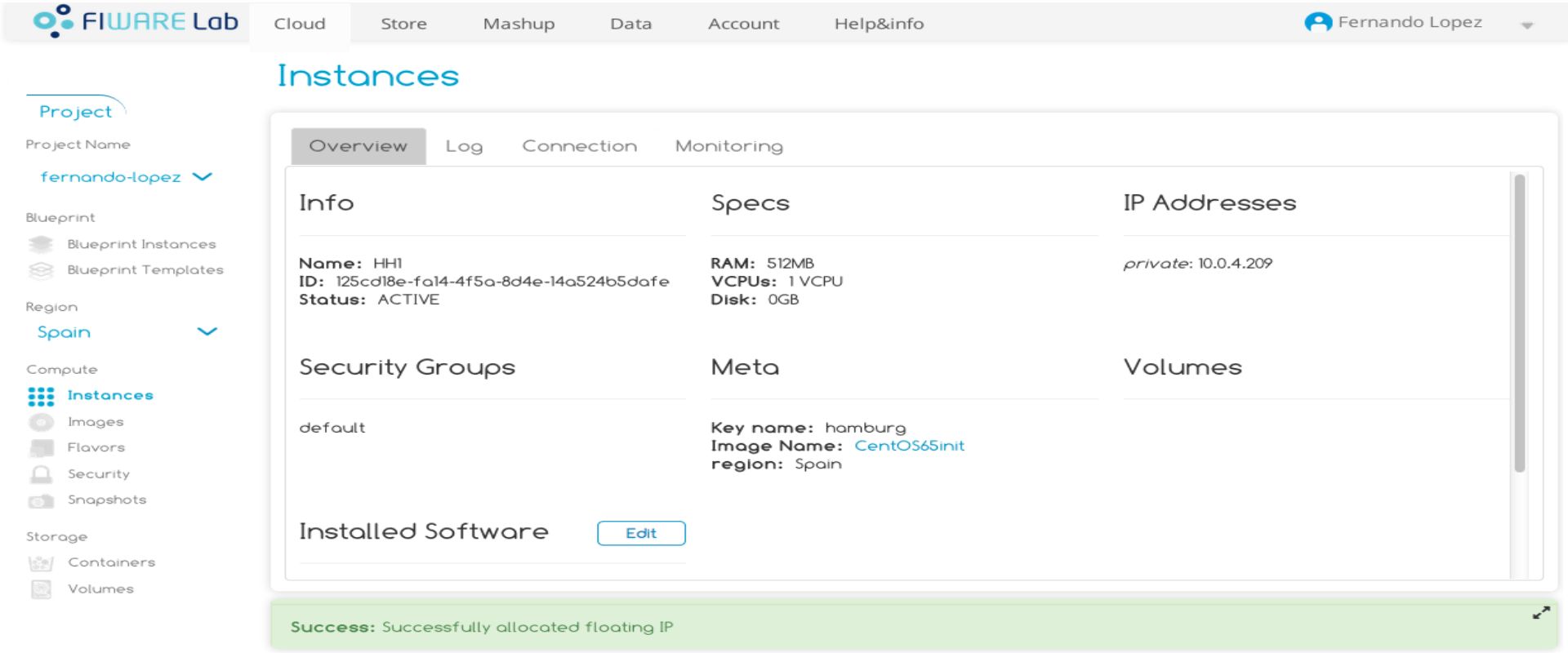
Allocate IP to a project



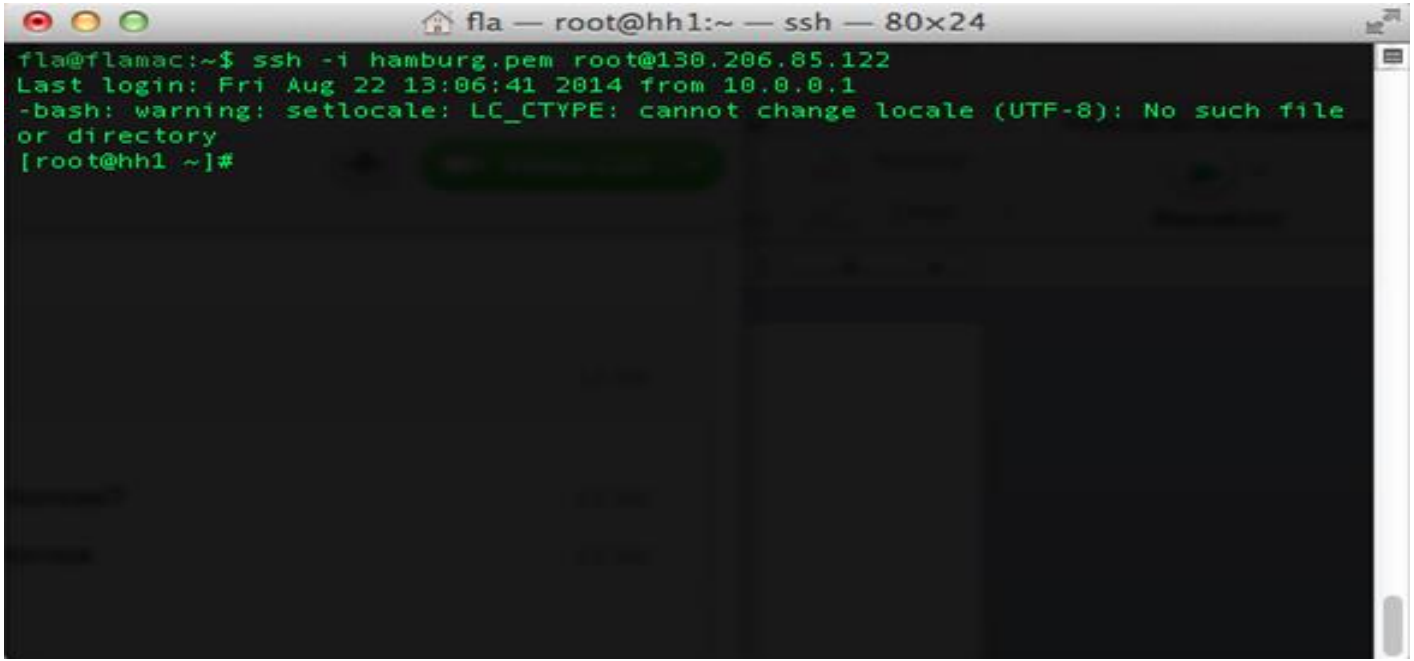
Allocate Floating IP



Instances Overview



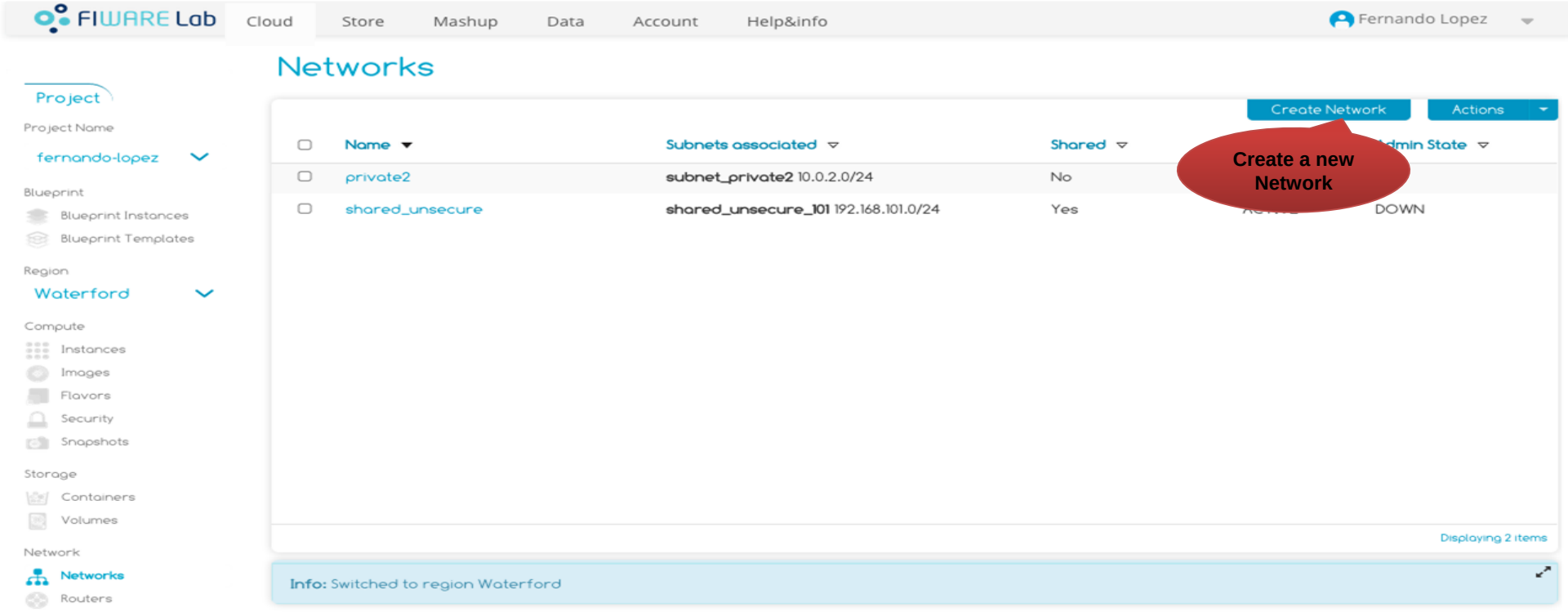
Access to the instance



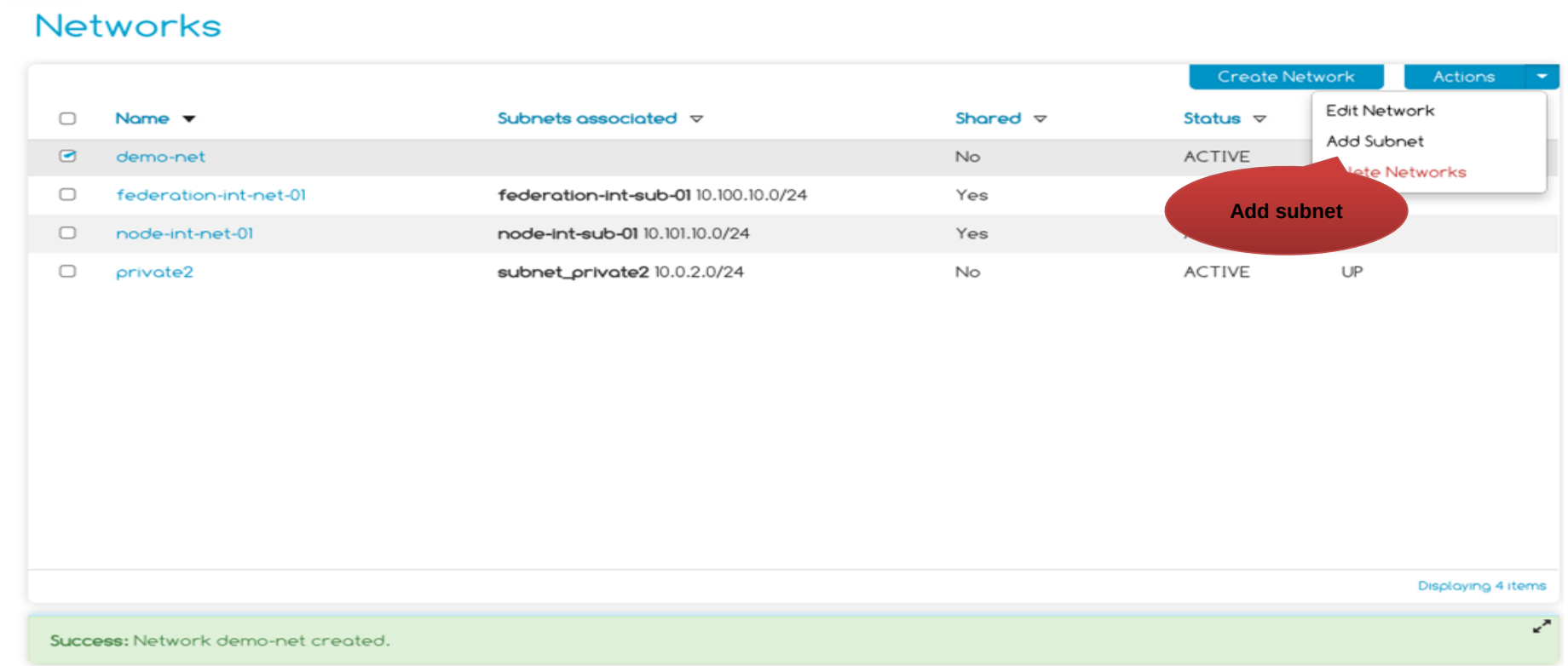
FIWARE Network

- Multi-tenancy: Do I need to isolate tenants?
  - Even if you trust them, you might want isolation.
  - Tenant creates his own network(s) and router(s) allowing complex network topologies for multi-tier applications.
- Create private network with subnets.
- Create router and interfaces.
- Set gateway.
- Deploy instance on network.

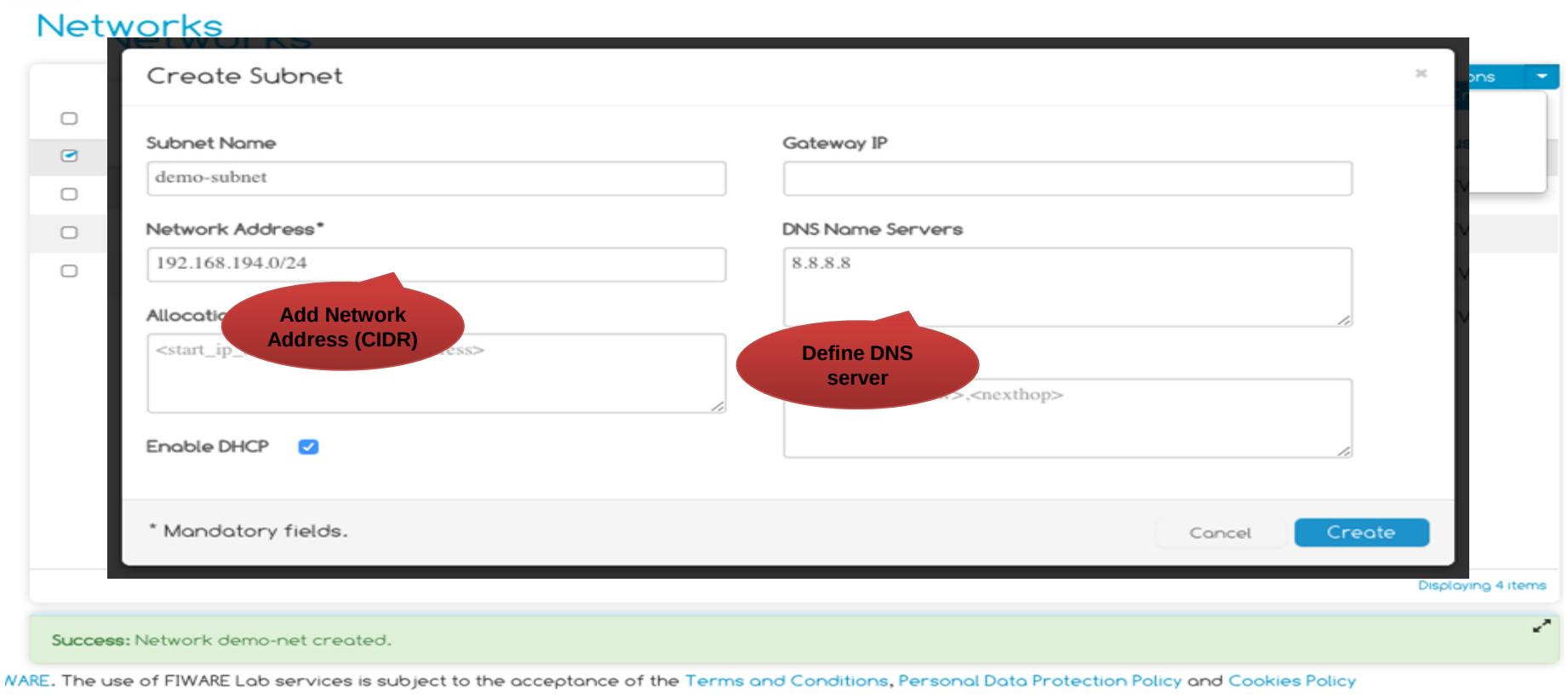
Create your own network



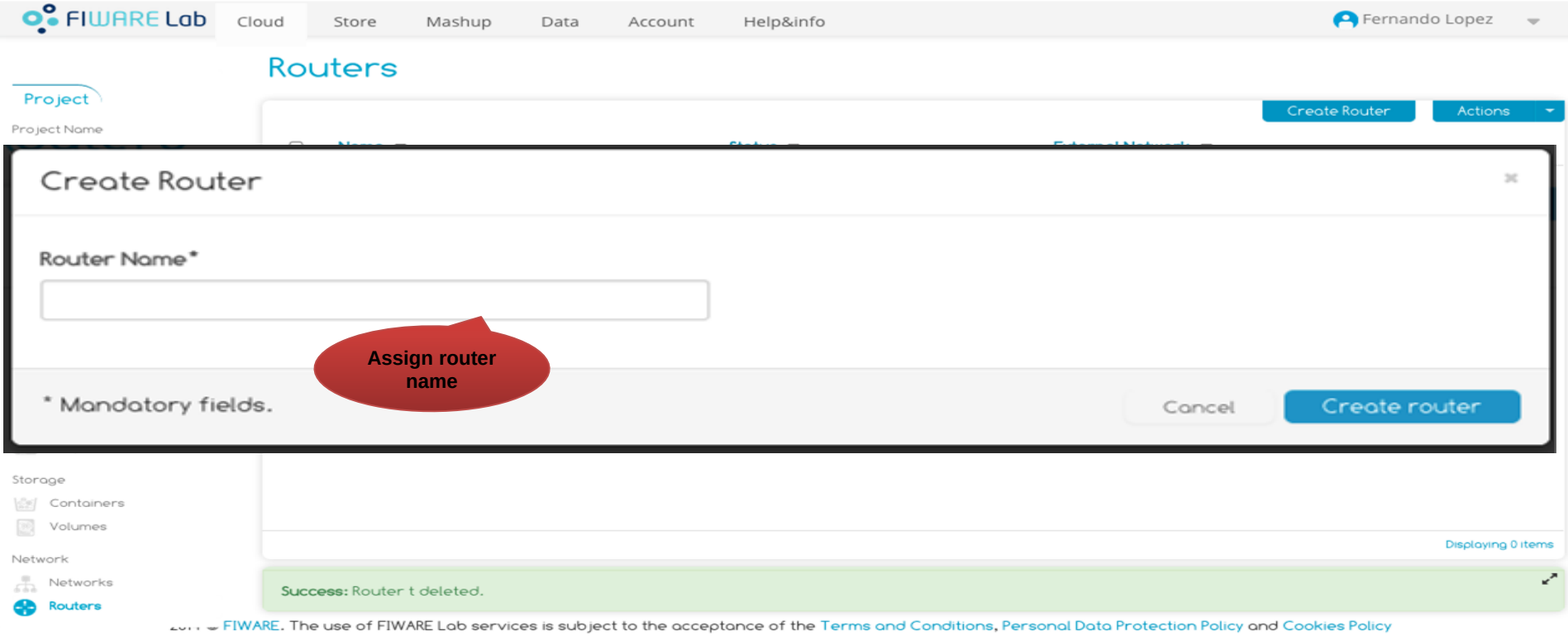
Add subnet associate to the previous network



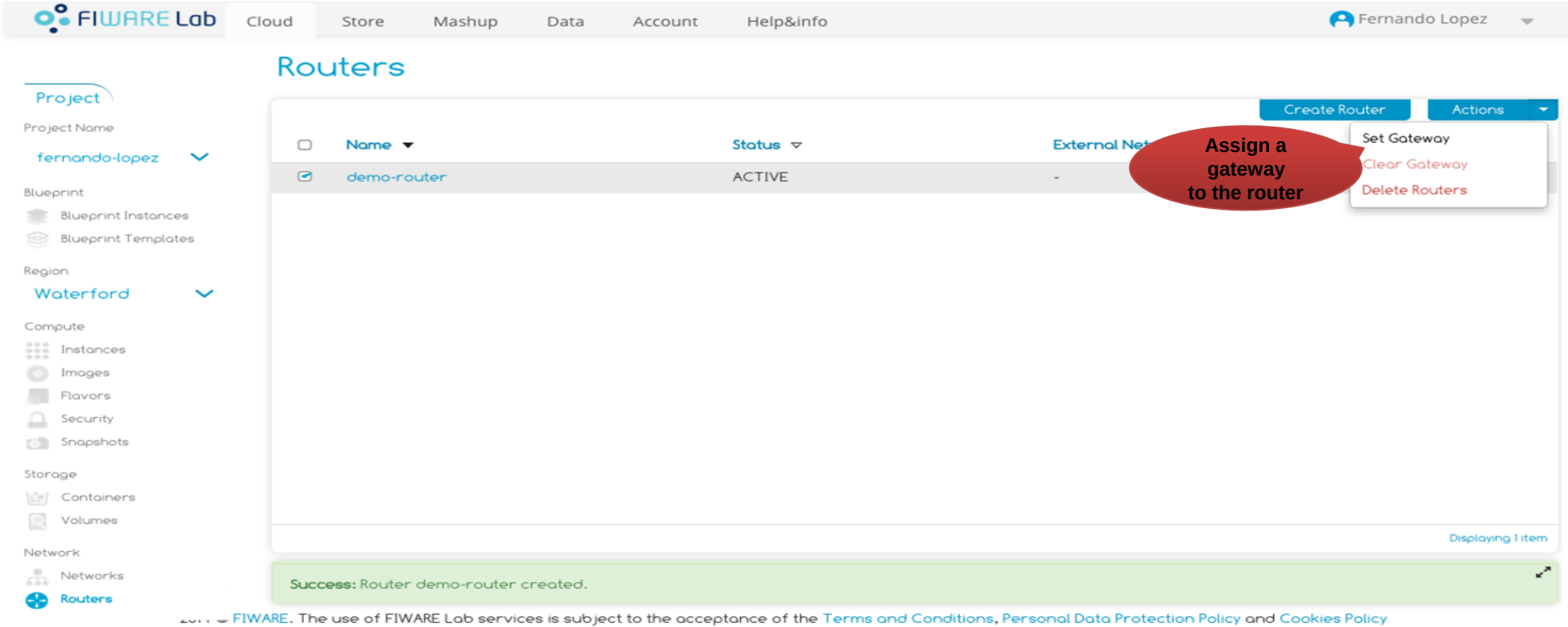
Add subnet associate to the previous network



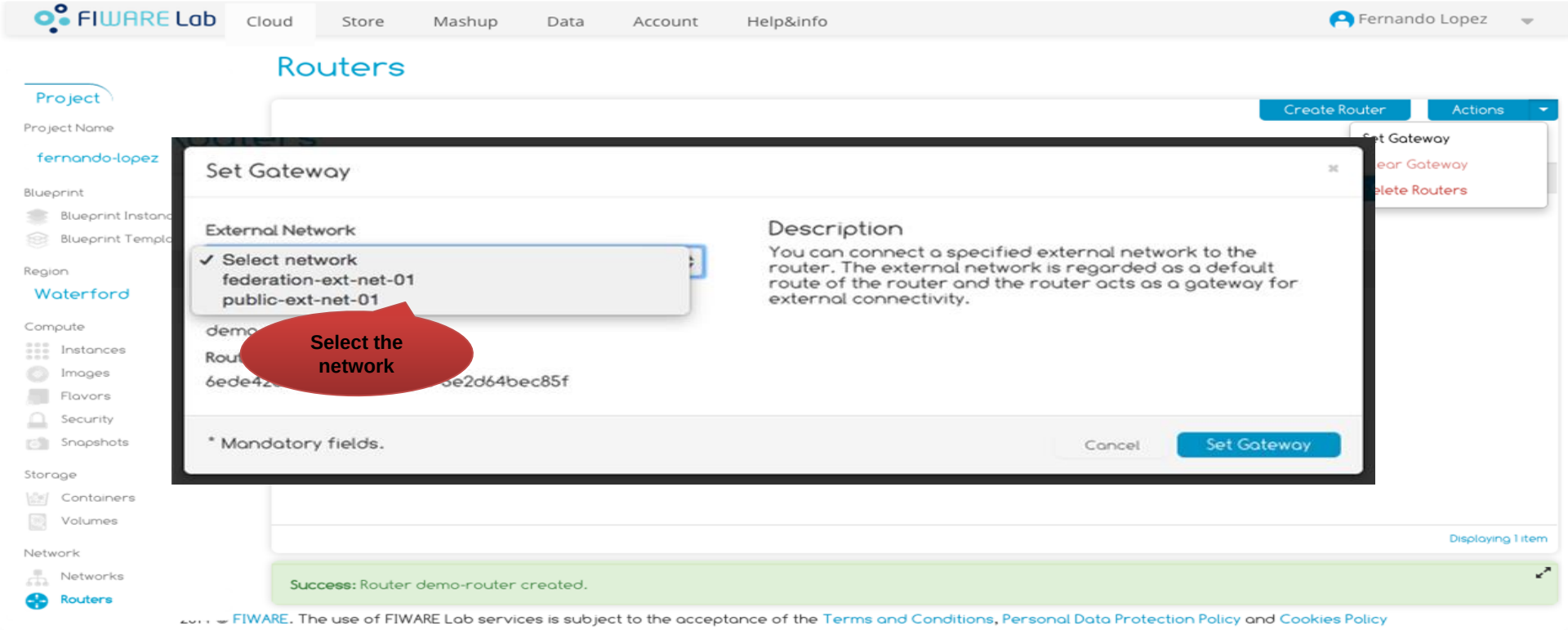
Create a router



Set gateway


FIWARE Lab
Cloud
Store
Mashup
Data
Account
Help&info
Fernando Lopez
Routers
Project
Project Name
fernando-lopez
Blueprint
Blueprint Instances
Blueprint Templates
Region
Waterford
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Network
Networks
Routers
Create Router
Actions
Set Gateway
Clear Gateway
Delete Routers
Name
Status
External Net
demo-router
ACTIVE
-
Assign a gateway to the router
Displaying 1 item
Success: Router demo-router created.
FIWARE. The use of FIWARE Lab services is subject to the acceptance of the Terms and Conditions, Personal Data Protection Policy and Cookies Policy

Set gateway


FIWARE Lab
Cloud
Store
Mashup
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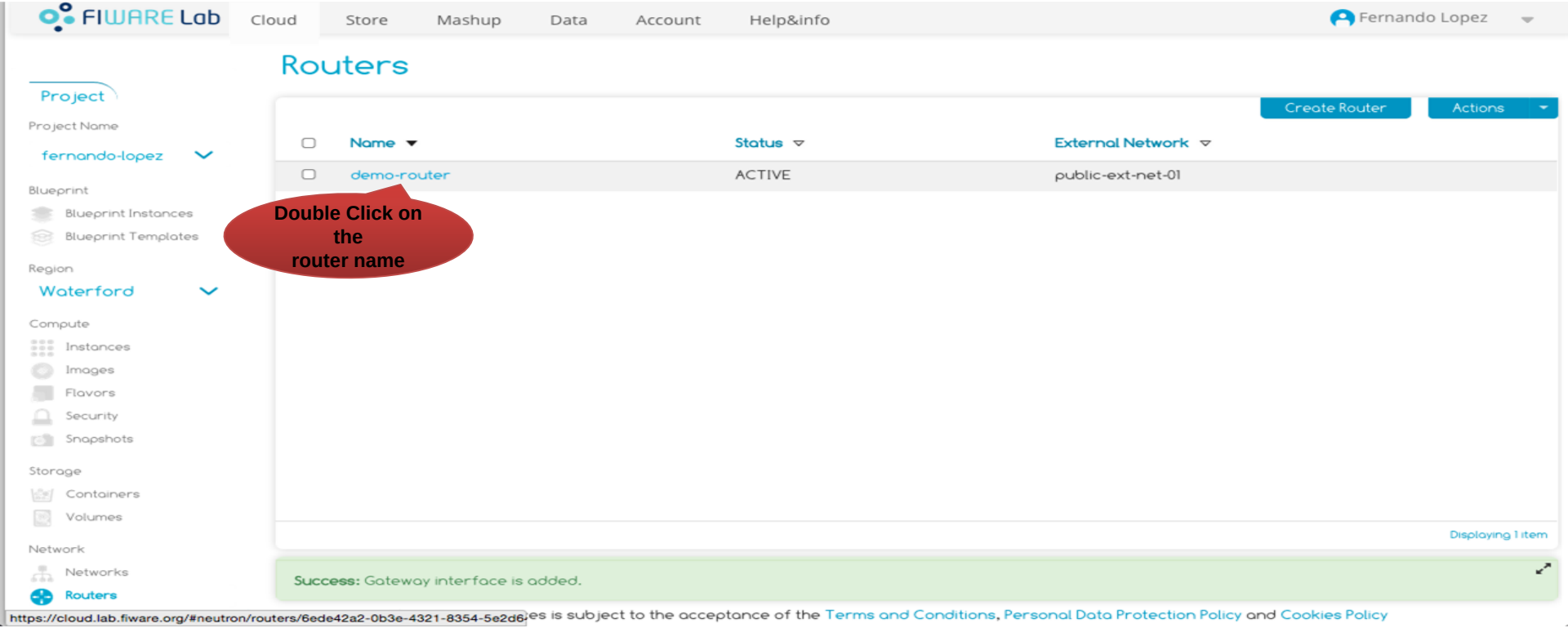
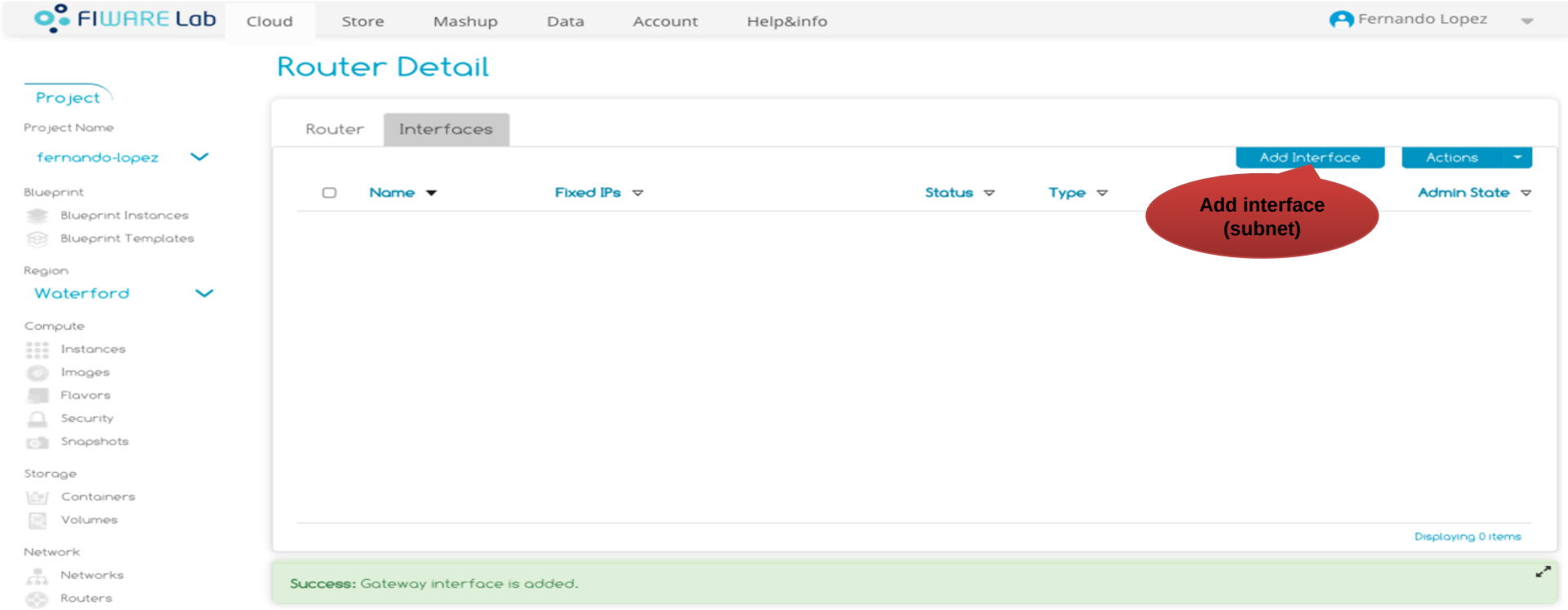
Routers
Project
Project Name
fernando-lopez
Blueprint
Region
Waterford
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Network
Networks
Routers
Create Router
Actions
Set Gateway
Clear Gateway
Delete Routers
Set Gateway
External Network
Select network
federation-ext-net-01
public-ext-net-01
Description
You can connect a specified external network to the router. The external network is regarded as a default route of the router and the router acts as a gateway for external connectivity.
Select the network
* Mandatory fields.
Cancel
Set Gateway
Displaying 1 item
Success: Router demo-router created.
FIWARE. The use of FIWARE Lab services is subject to the acceptance of the Terms and Conditions, Personal Data Protection Policy and Cookies Policy

Assign subnet

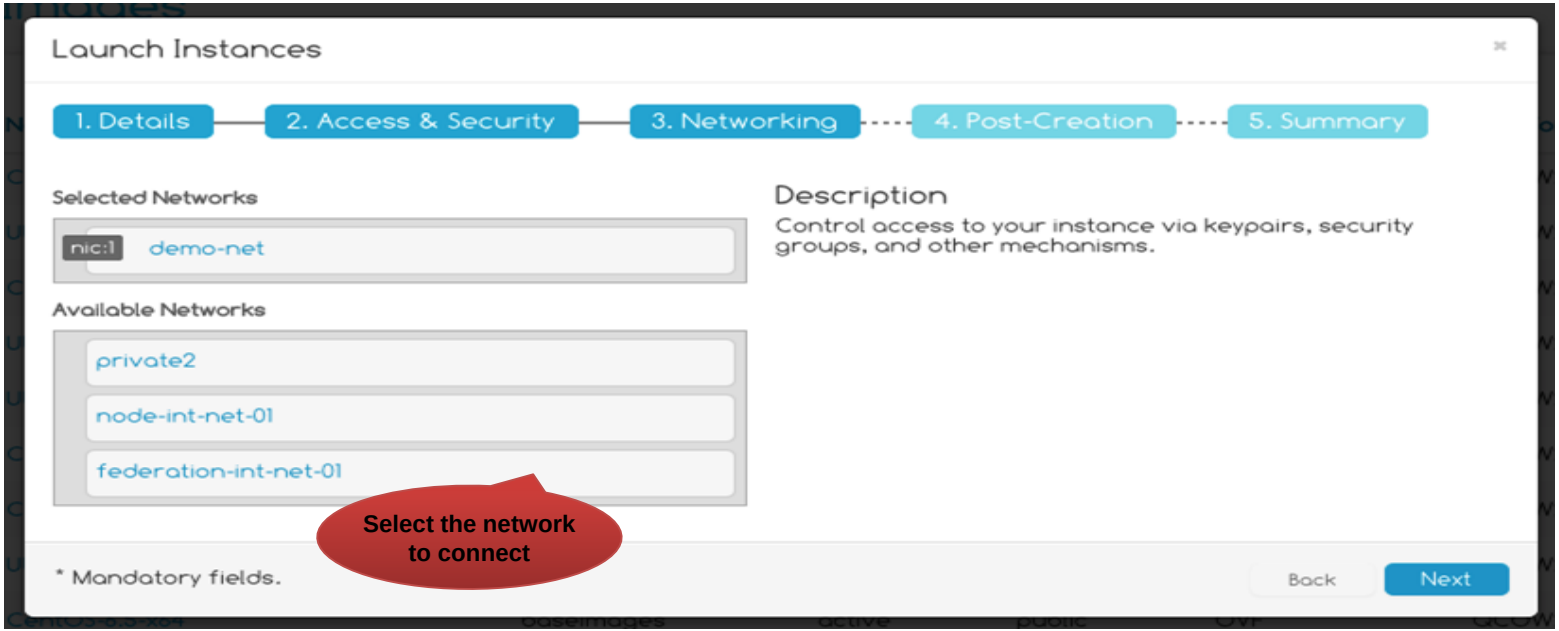


Assign subnet

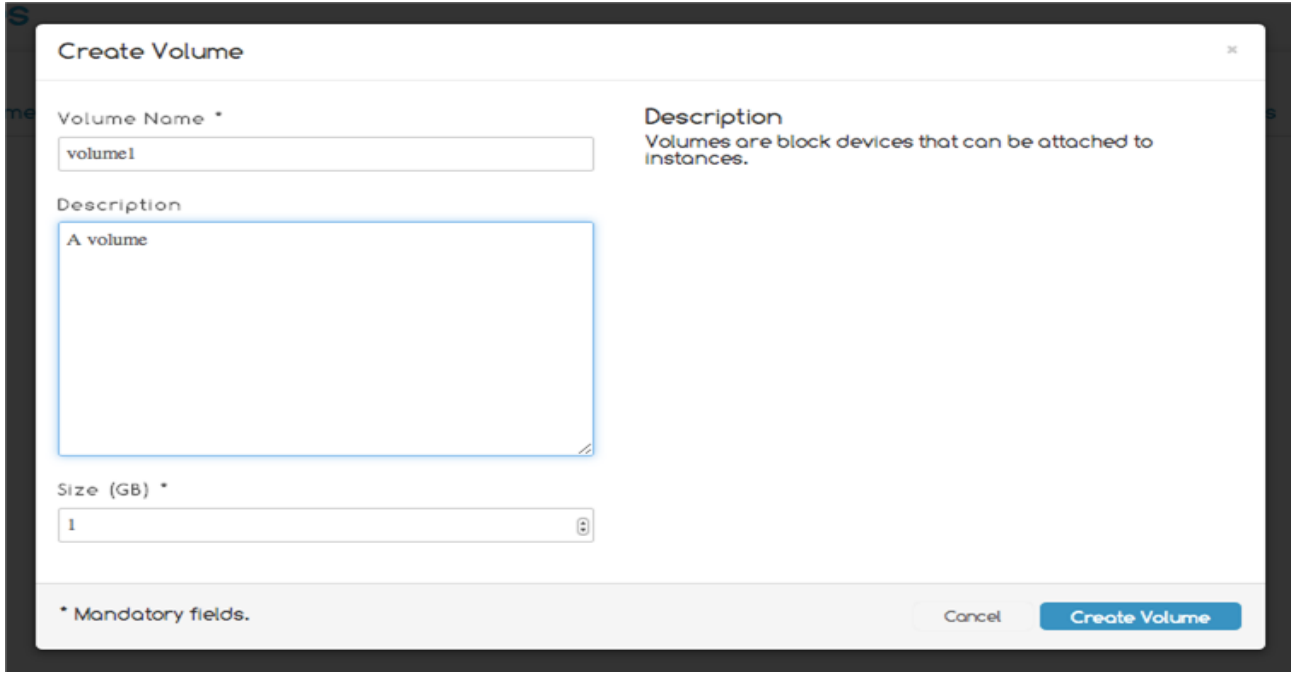


Assign subnet

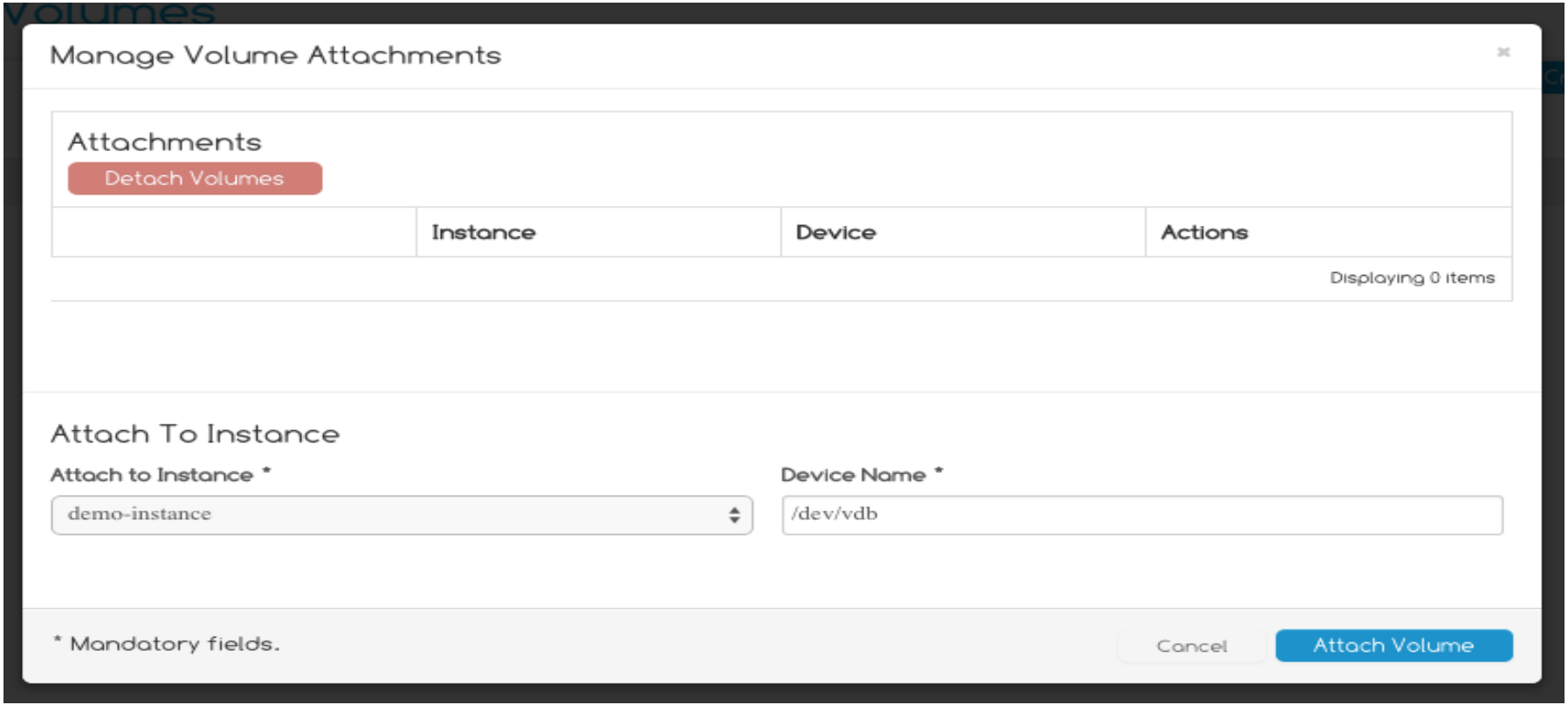
Deploy a new instance: Networking



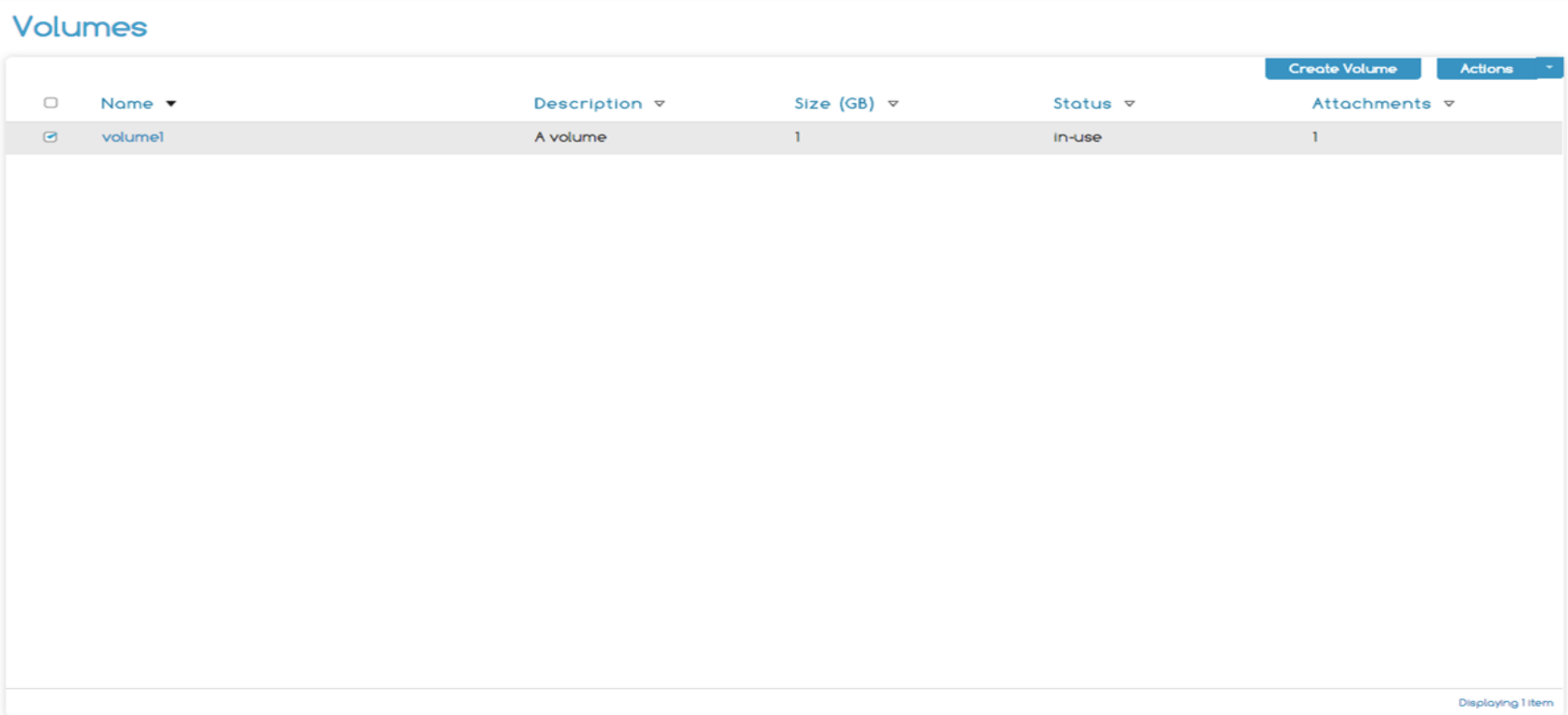
Create a volume



Attach a volume to an instance

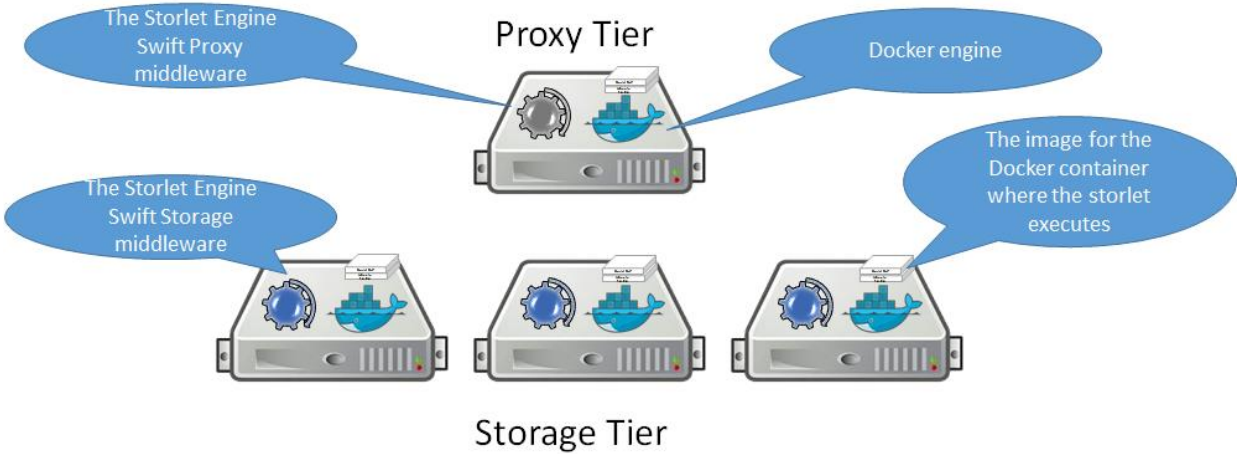


Volume attached



FIWARE Object Store, i.e. OpenStack Swift

- Create container
- Upload objects, i.e. files
- Download objects
- Storlets (to be deployed)
  - Small computer programs that can be deployed and get executed inside a Swift cluster in an isolated manner.
  - Bring the compute to the data thus saving on the bandwidth required to bring the data to the compute.
  - Based on a Swift cluster empowered with the storlet engine Swift middleware and Docker, which allows the execution of user written code inside Swift in an isolated manner.



Object Storage API

- **http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/Object_Storage_-_User_and_Programmers_Guide**

- **Authentication to get initial token**

  username='email@company.com' password='mypassword' curl -d '{"auth": {"passwordCredentials": {"username":"'$username'", "password":"'$password'"}}}' \ -H 'Content-type: aplication/json' \ http://cloud.lab.fi-ware.org:4730/v2.0/tokens \ -vvv

- **Use initial token to get tenant**

  curl -H 'x-auth-token: '$token http://cloud.lab.fi-ware.org:4730/v2.0/tenants

- **Authenticate tenant to get token for Object Storage**

  curl -d '{"auth": {"passwordCredentials": {"username":"'$username'", "password":"'$password'"}, "tenantId":"'$tenantId'"}}' \ -H 'Content-type: aplication/json' \http://cloud.lab.fi-ware.org:4730/v2.0/tokens

- **Object Storage URL**

  http://130.206.82.9:8080/v1/AUTH_tenantId

FIWARE Lab: PaaS, working with Blueprints

FIWARE PaaS

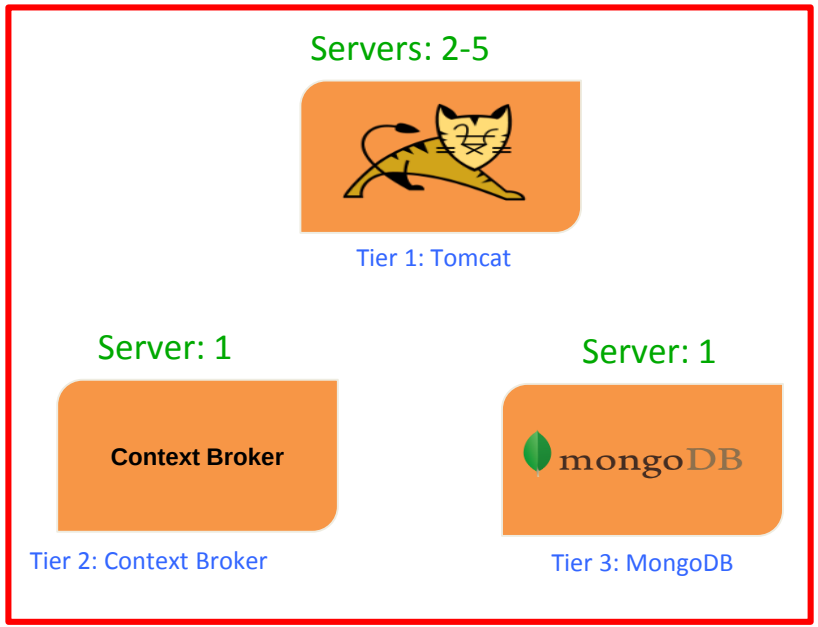
- Deploying components for your application.
- Create blueprint templates.
- Create Tiers on a blueprint template.
- Launch blueprint templates -> create blueprint instances.
- See details of the blueprint instance.
- Check the SW installed on the blueprint instance.

Real scenario

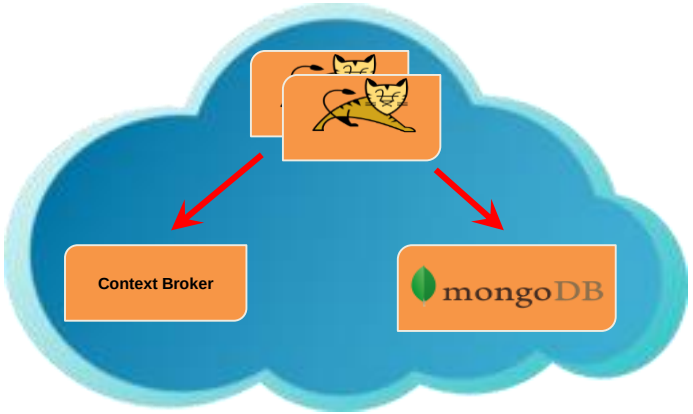
- Users want to define lots of parameters.
  - Password, ports, default installation.
- Users want to install several things in the same server.
  - Tomcat + git, tomcat + java + git, …
- Users need to deploy complex environment.
  - One server for Tomcat, another for MySQL, …
- Some parameters are unknown before instantiate the system.

Deploy example

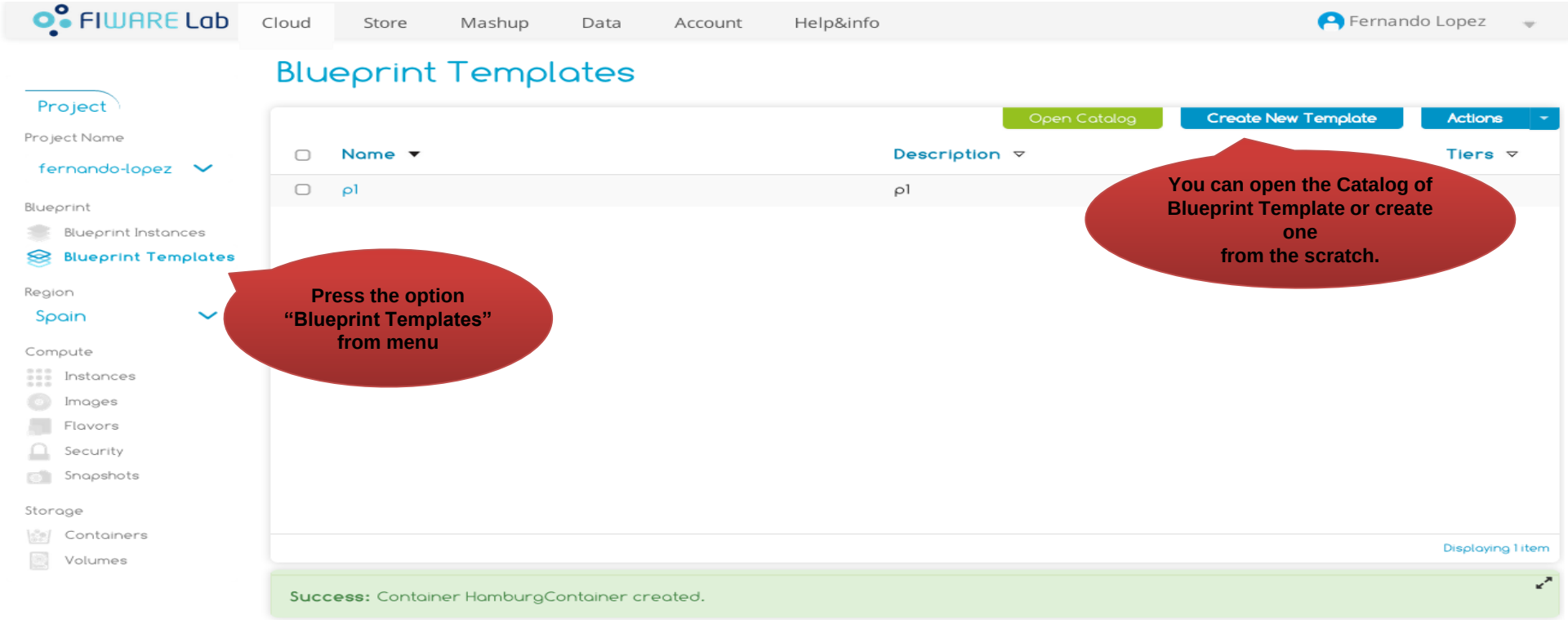
Blueprint template: fiware1



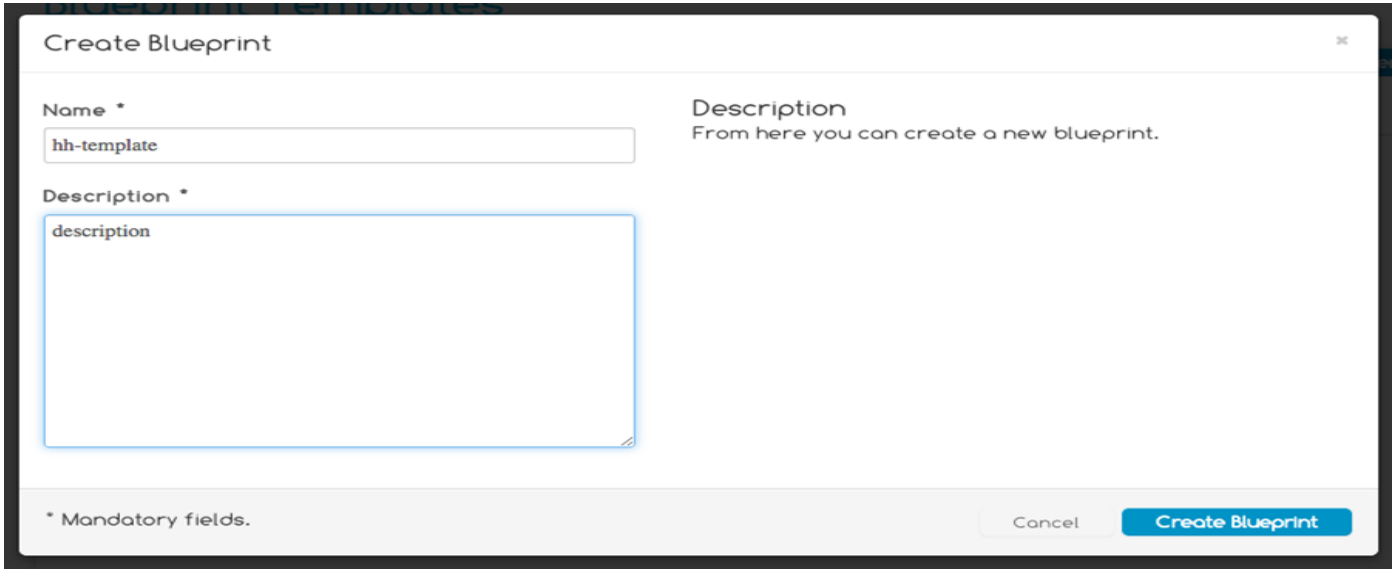
- Blueprint Template: platform specification to be deployed.
- Tier: Each kind of software and server to be deployed.
- Each Tier can be deployed in one or several servers (e.g. tomcat, 2-5 servers).
- Blueprint Instance: Deployed in the testbed.



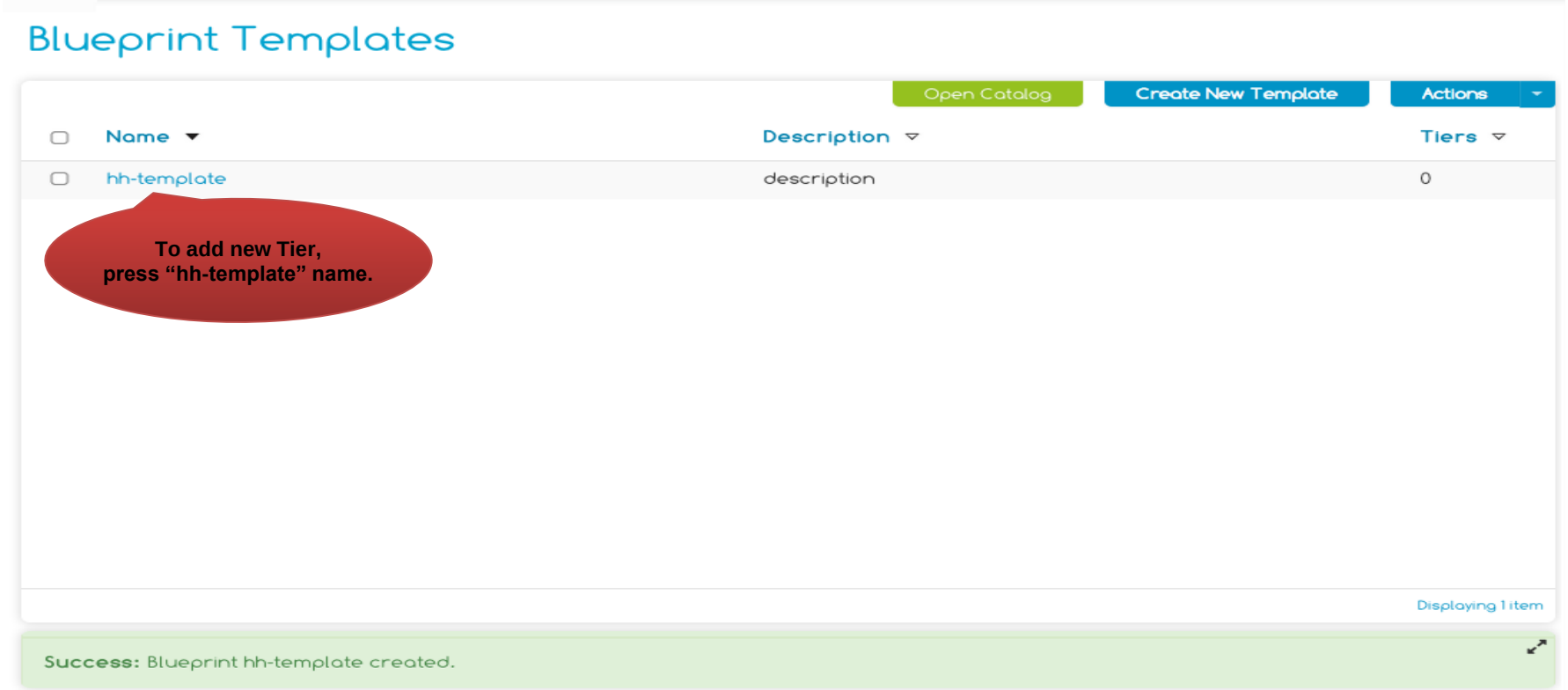
Create a new blueprint template



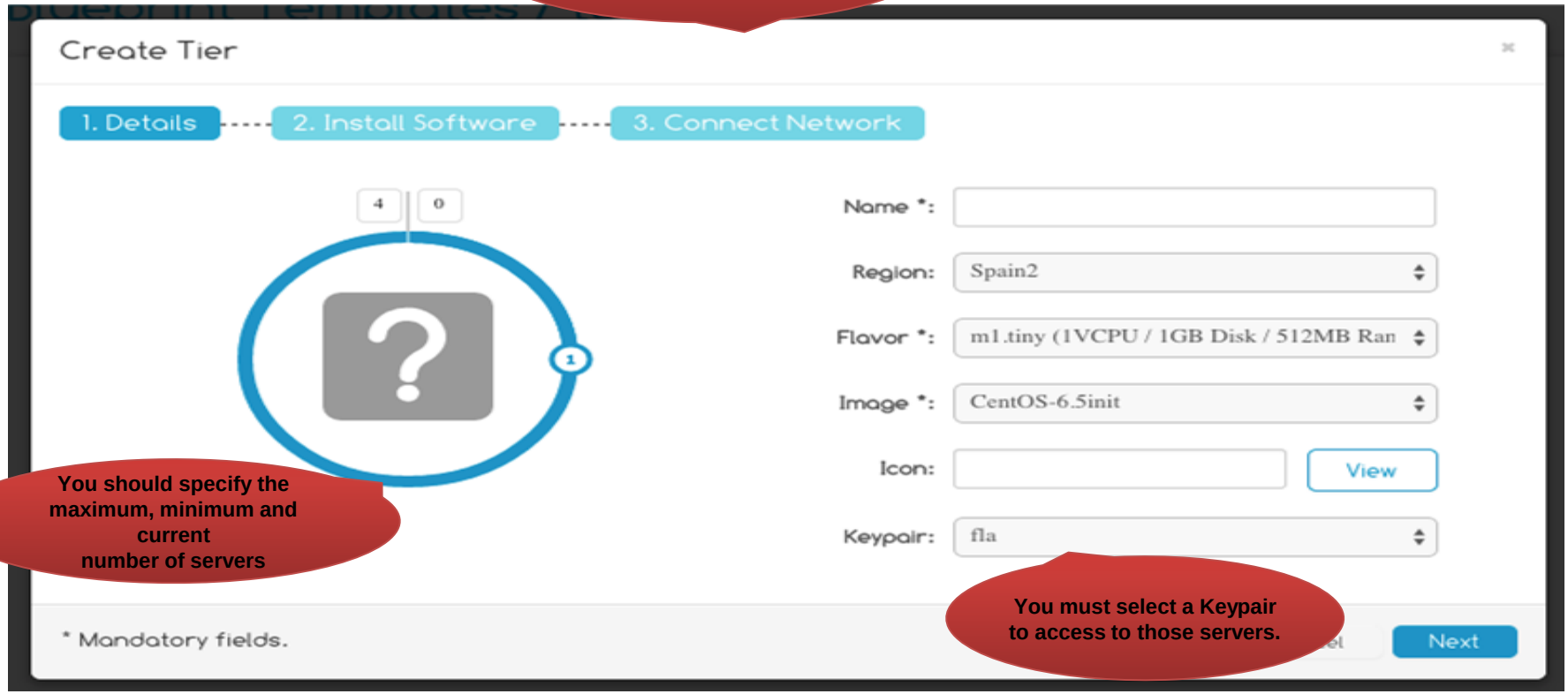
Create a new blueprint template



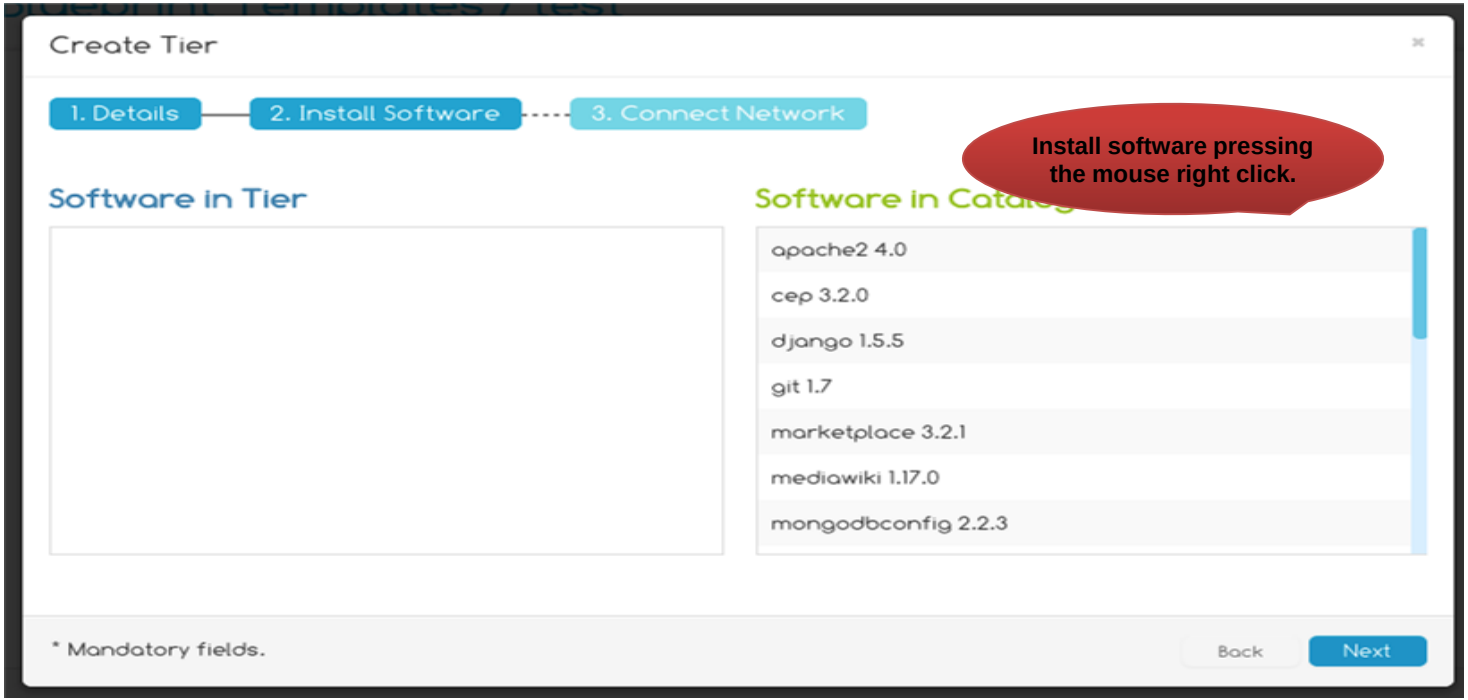
Add tiers



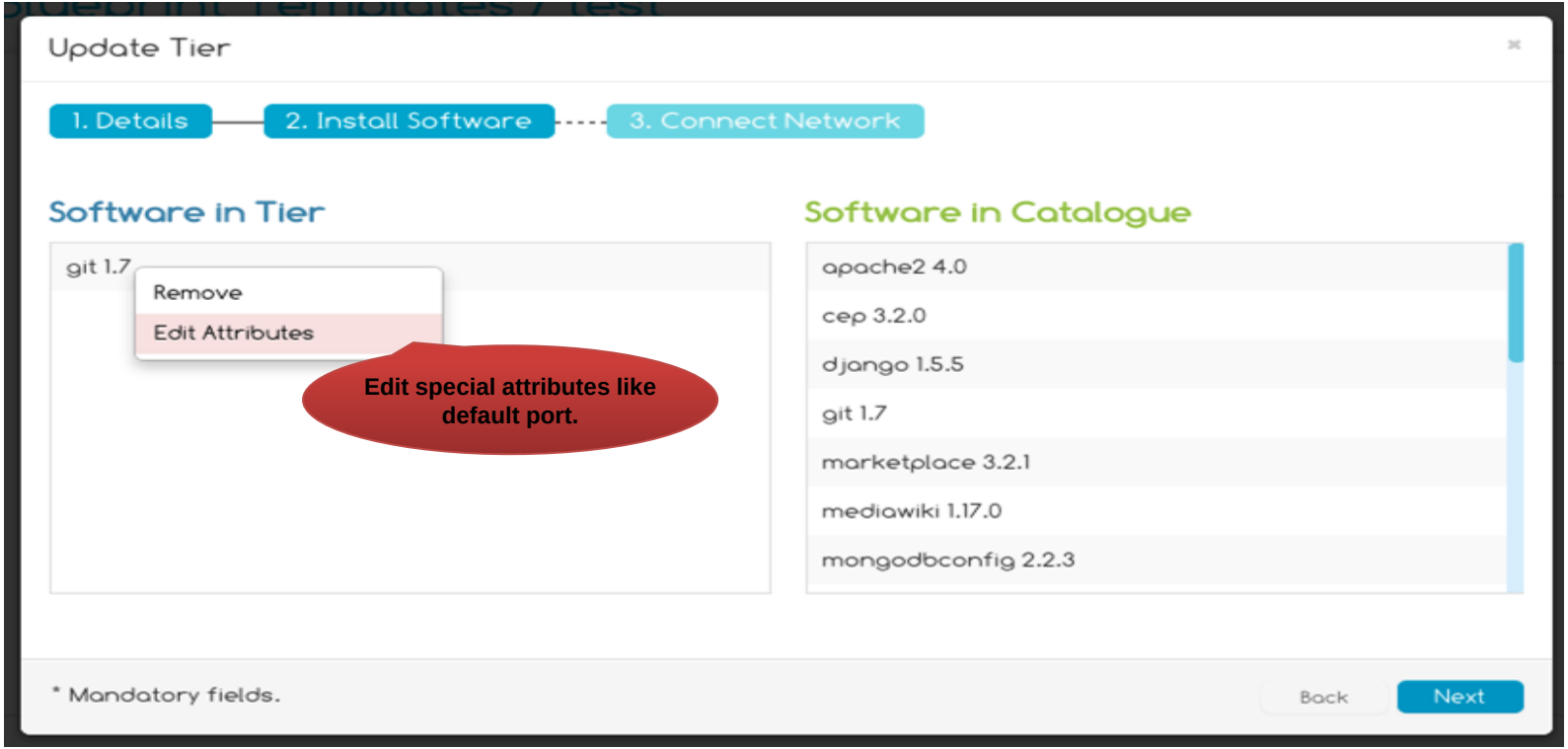
Add tiers


After press “Add Tier” you see this windows to define the servers of this tier.
Create Tier
1. Details
2. Install Software
3. Connect Network
4
0
1
Name *:
Region:
Spain2
Flavor *:
m1.tiny (1VCPU / 1GB Disk / 512MB Ran
Image *:
CentOS-6.5init
Icon:
View
Keypair:
fla
You should specify the maximum, minimum and current number of servers
You must select a Keypair to access to those servers.
* Mandatory fields.
Next

Add software in tier

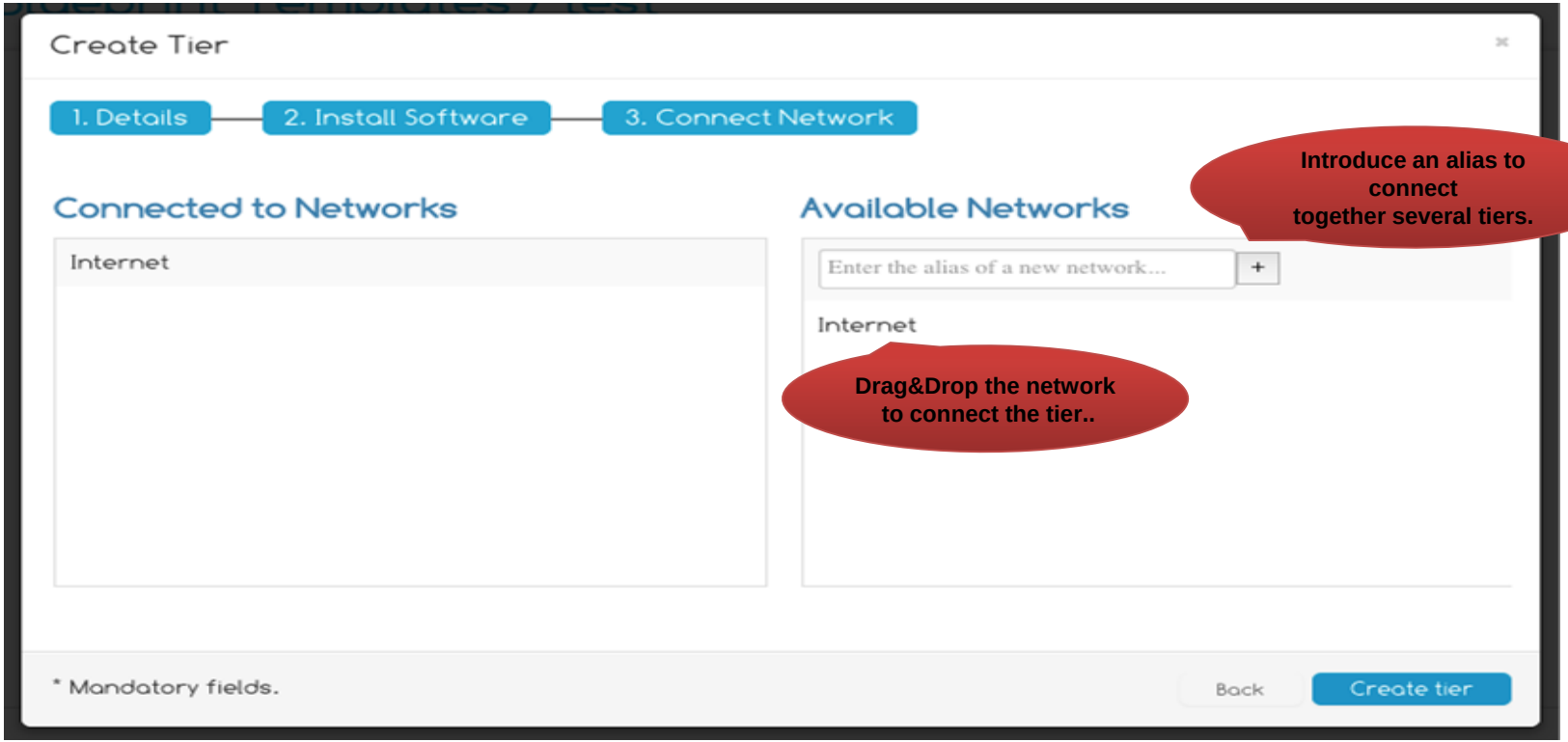


Add software in tier

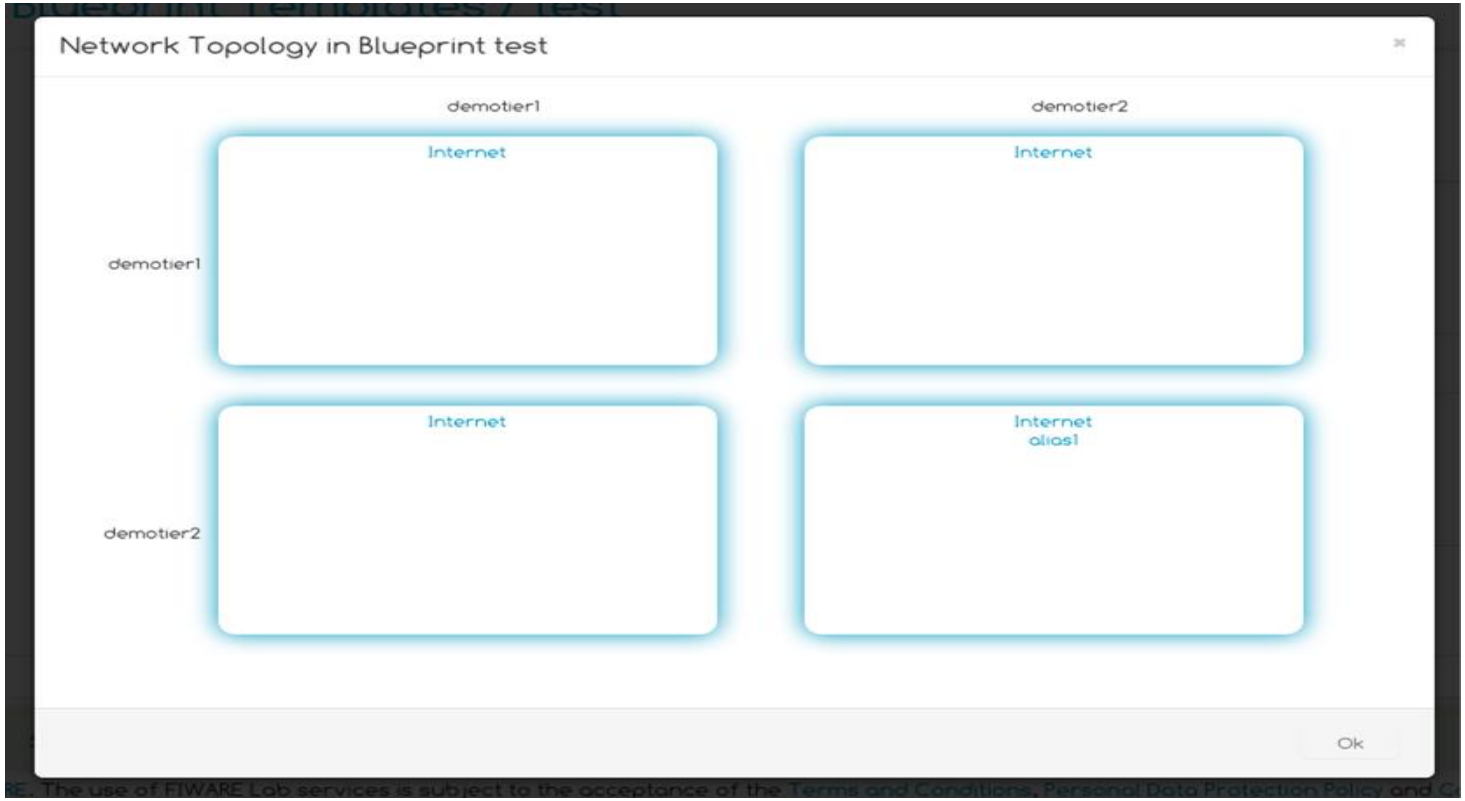


Add software in tier

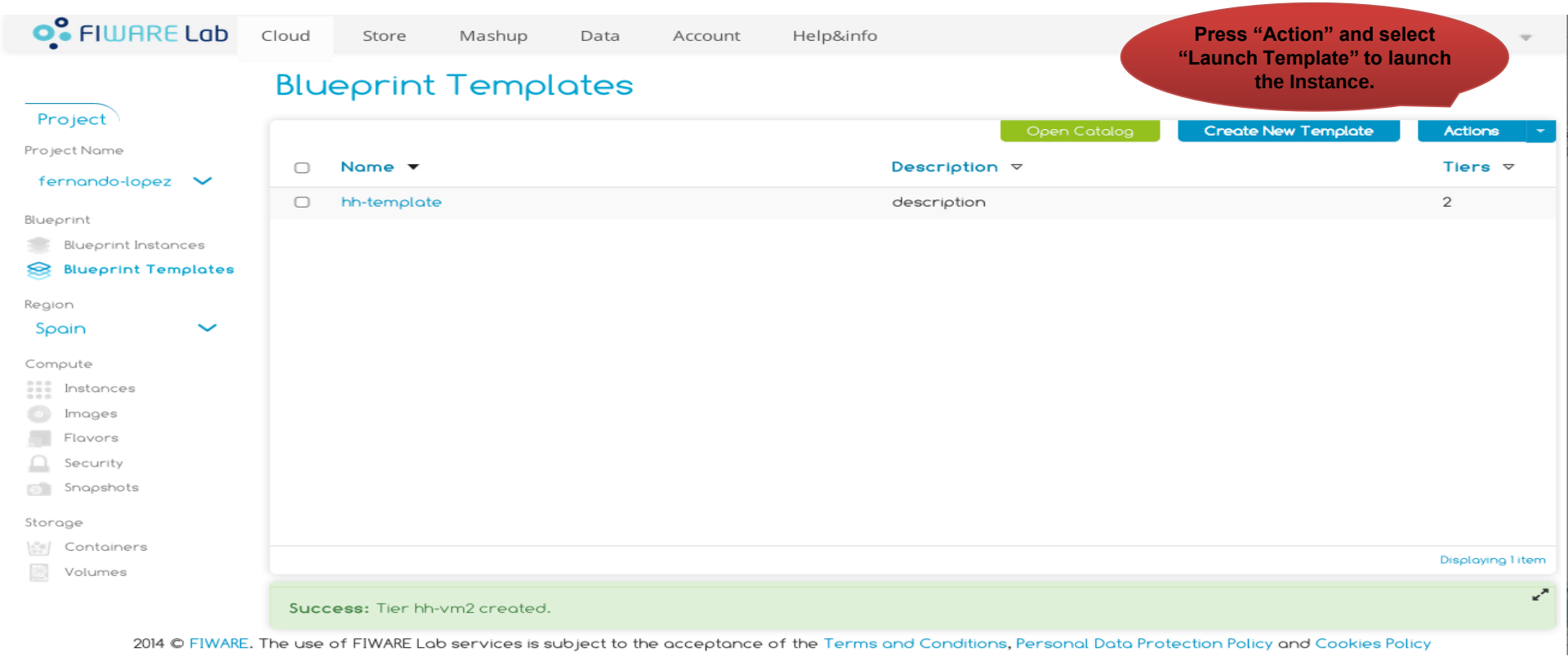
Connect network



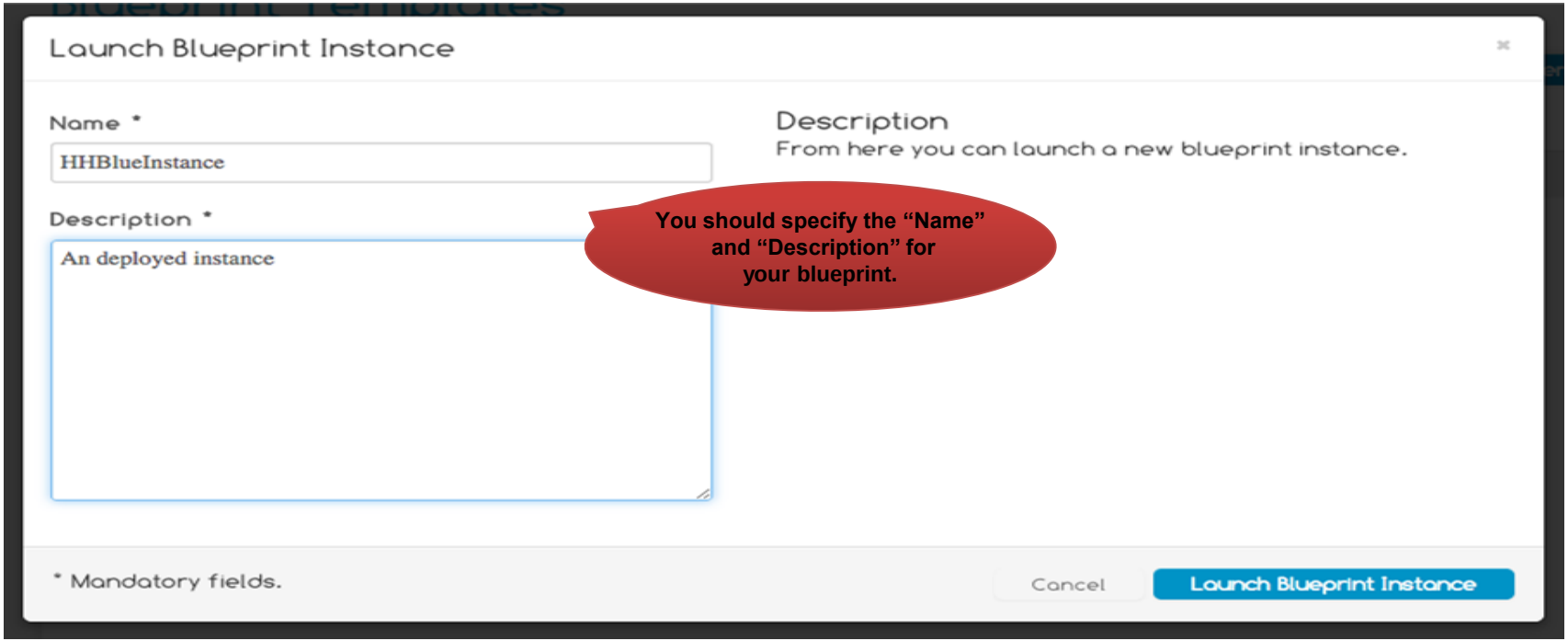
Topology


Network Topology in Blueprint test
demotier1
demotier2
Internet
Internet
demotier1
Internet
Internet
alias1
demotier2
Ok

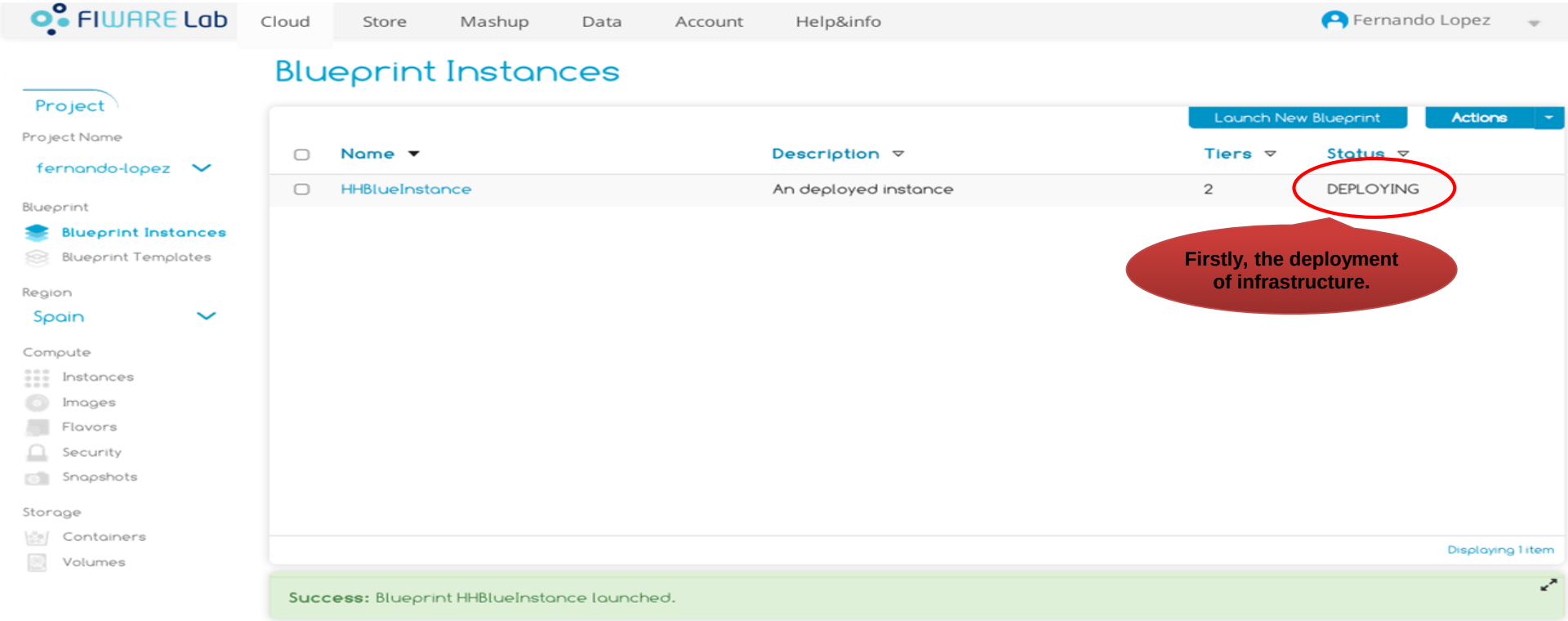
Launch a Blueprint Template -> Blueprint Instance



Launch a Blueprint Template -> Blueprint Instance



Demo


FIWARE Lab
Cloud
Store
Mashup
Data
Account
Help&info
Fernando Lopez
Blueprint Instances
Project
Project Name
fernando-lopez
Blueprint
Blueprint Instances
Blueprint Templates
Region
Spain
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Launch New Blueprint
Actions
Name
Description
Tiers
Status
HHBlueInstance
An deployed instance
2
DEPLOYING
Firstly, the deployment of infrastructure.
Displaying 1 item
Success: Blueprint HHBlueInstance launched.
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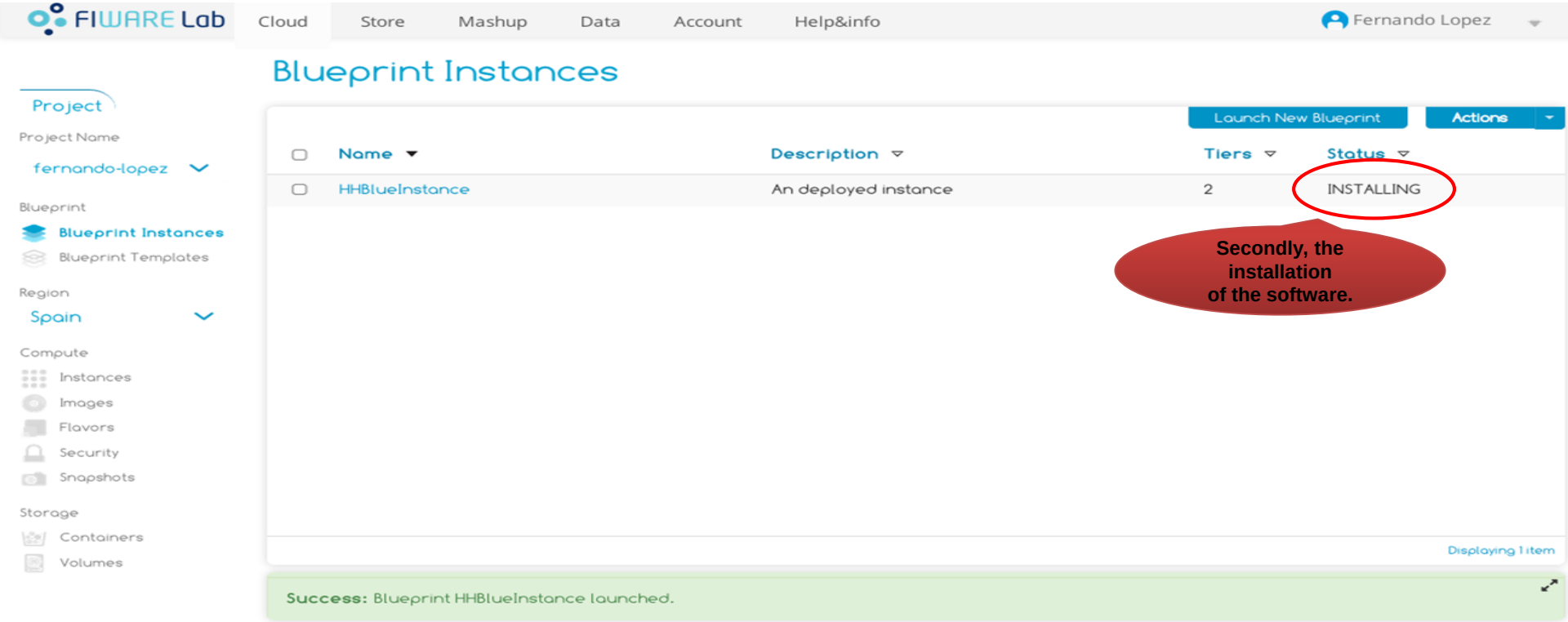
Demo


FIWARE Lab
Cloud
Store
Mashup
Data
Account
Help&info
Fernando Lopez
Blueprint Instances
Project
Project Name
fernando-lopez
Blueprint
Blueprint Instances
Blueprint Templates
Region
Spain
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Launch New Blueprint
Actions
Name
Description
Tiers
Status
HHBlueInstance
An deployed instance
2
INSTALLING
Secondly, the installation of the software.
Displaying 1 item
Success: Blueprint HHBlueInstance launched.
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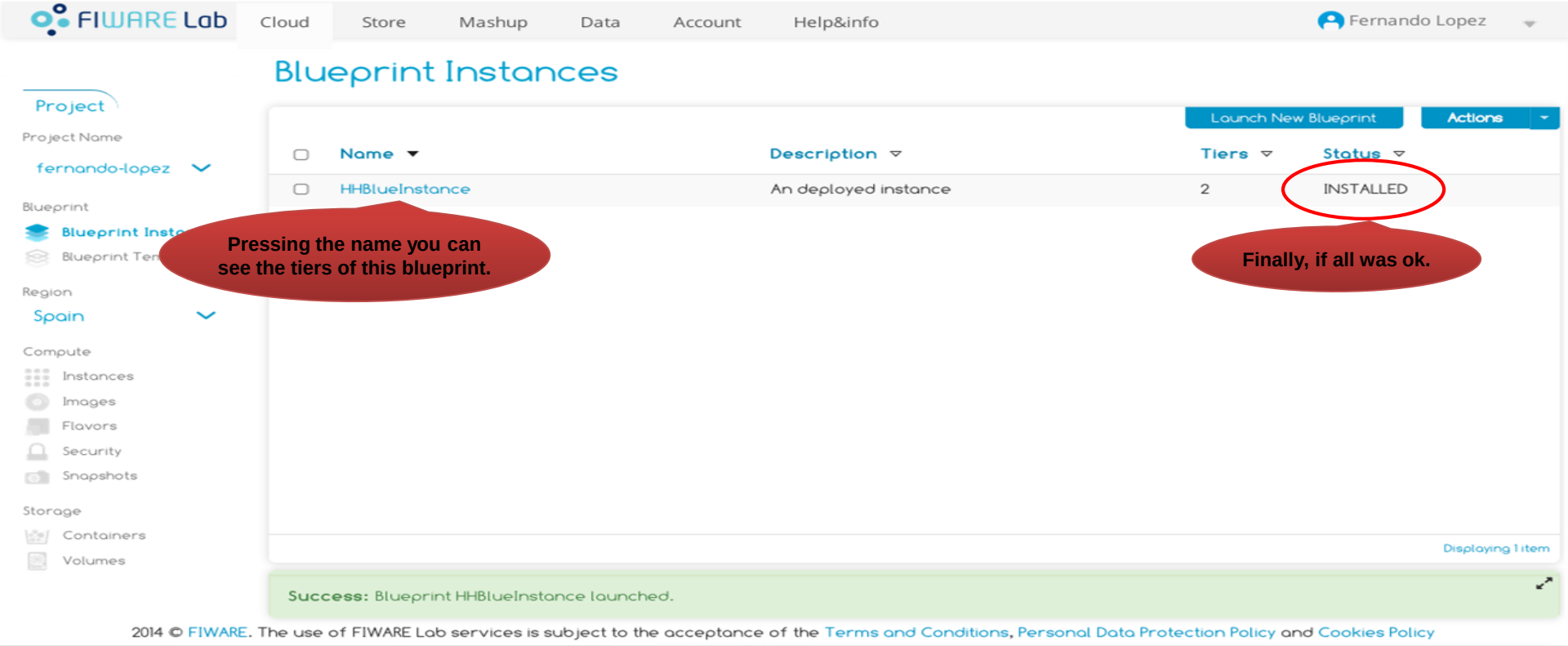
Demo


FIWARE Lab
Cloud
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Mashup
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Account
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Fernando Lopez
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Project Name
fernando-lopez
Blueprint
Region
Spain
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Launch New Blueprint
Actions
Name
Description
Tiers
Status
HHBlueInstance
An deployed instance
2
INSTALLED
Pressing the name you can see the tiers of this blueprint.
Finally, if all was ok.
Displaying 1 item
Success: Blueprint HHBlueInstance launched.
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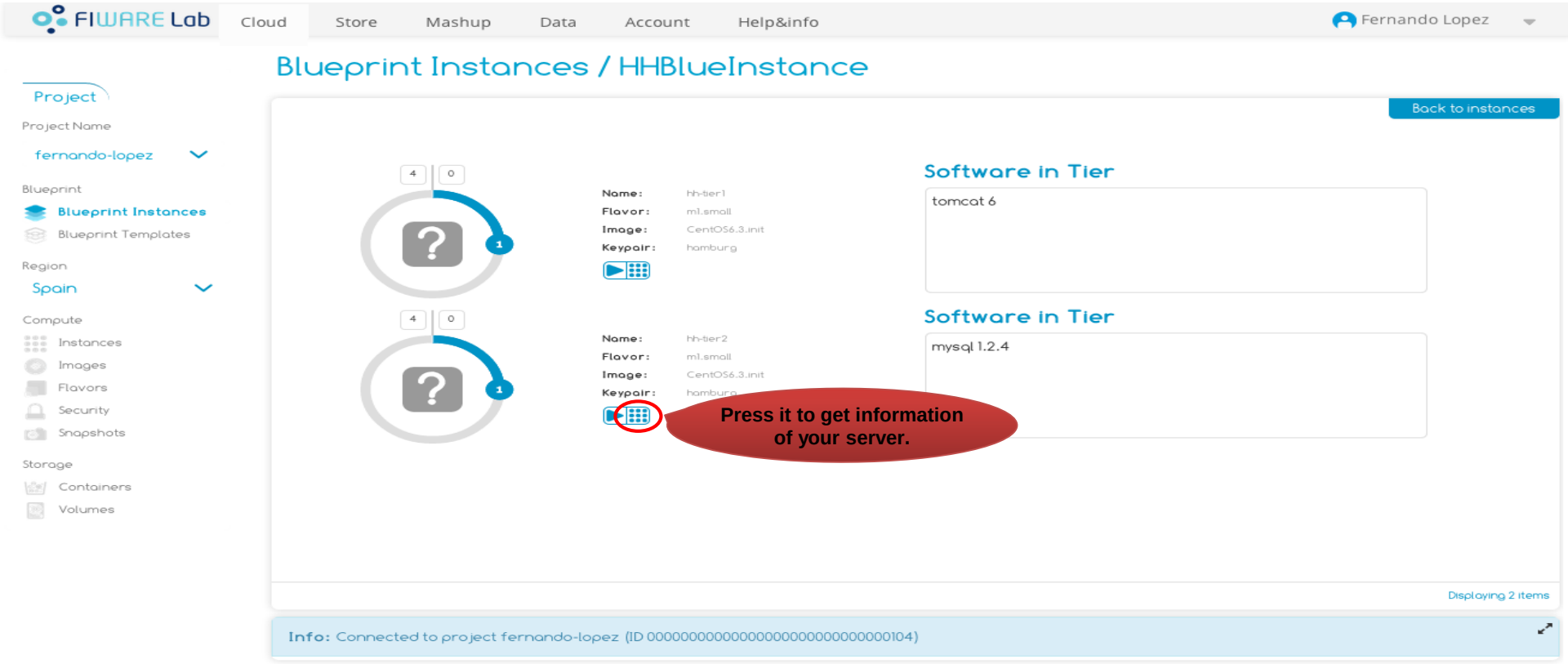
Demo


FIWARE Lab
Cloud
Store
Mashup
Data
Account
Help&info
Fernando Lopez
Blueprint Instances / HHBlueInstance
Project
Project Name
fernando-lopez
Blueprint
Blueprint Instances
Blueprint Templates
Region
Spain
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Back to instances
Name: hh-tier1
Flavor: m1.small
Image: CentOS6.3.init
Keypair: hamburg
Software in Tier
tomcat 6
Name: hh-tier2
Flavor: m1.small
Image: CentOS6.3.init
Keypair: hamburg
Software in Tier
mysql 1.2.4
Press it to get information of your server.
Displaying 2 items
Info: Connected to project fernando-lopez (ID 00000000000000000000000000000104)
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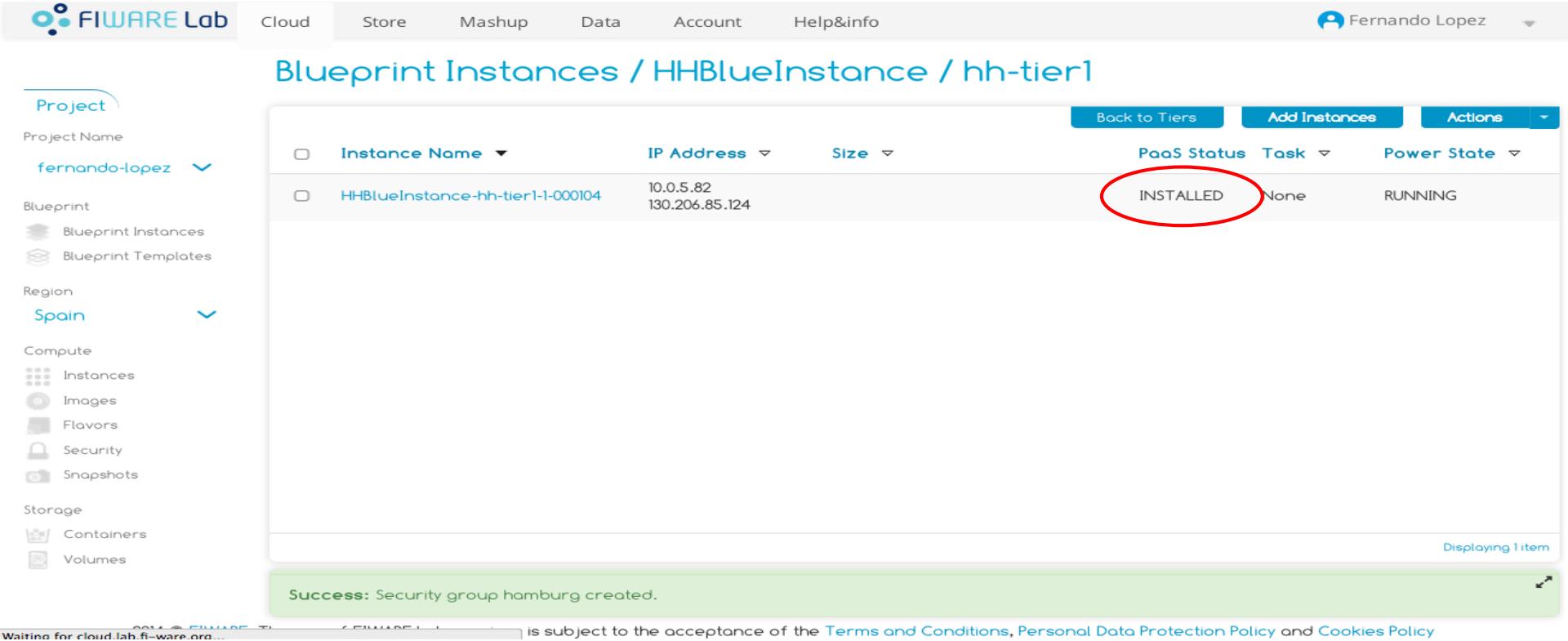
Demo


FIWARE Lab
Cloud
Store
Mashup
Data
Account
Help&info
Fernando Lopez
Blueprint Instances / HHBlueInstance / hh-tier1
Project
Project Name
fernando-lopez
Blueprint
Blueprint Instances
Blueprint Templates
Region
Spain
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Back to Tiers
Add Instances
Actions
Instance Name
IP Address
Size
PaaS Status
Task
Power State
HHBlueInstance-hh-tier1-1-000104
10.0.5.82
130.206.85.124
INSTALLED
None
RUNNING
Displaying 1 item
Success: Security group hamburg created.
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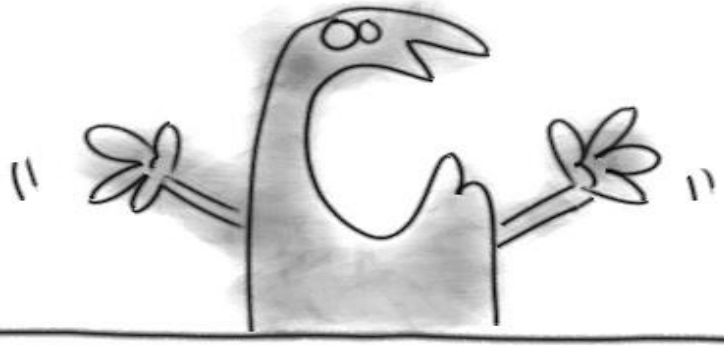
Waiting for cloud.lab.fi-ware.org...

Reference Information

Documentation

- FIWARE Cloud Portal:
  - Documentation: http://catalogue.fi-ware.org/enablers/self-service-interfaces-cloud-portal-upm
- FIWARE Cloud Infrastructure
  - Account: http://catalogue.fi-ware.org/enablers/identity-management-keyrock
  - SDC: http://catalogue.fi-ware.org/enablers/software-deployment-configuration-sagitta
  - PaaS Manager: http://catalogue.fi-ware.org/enablers/paas-manager-pegasus
- FIWARE eLearning Platform
  - http://edu.fi-ware.org/
- More detailed presentation
  - Slides: http://tinyurl.com/fiwarelab-cloud

Now What?!!

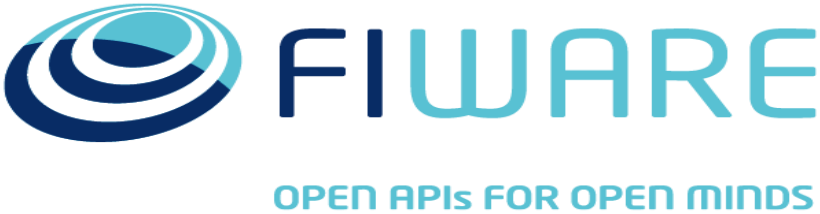


If you have any question or problem contact to

fiware-lab-help@lists.fi-ware.org

You can go to stackoverflow and ask question with the tag fiware and/or filab.

Thanks!



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