



eXperimental Infrastructures for the Future Internet

XIFI Webinar XIFI for Developers

*A brief survey of how to use
FIWARE-Lab and FIWARE-Ops*

 **Fraunhofer**
FOKUS

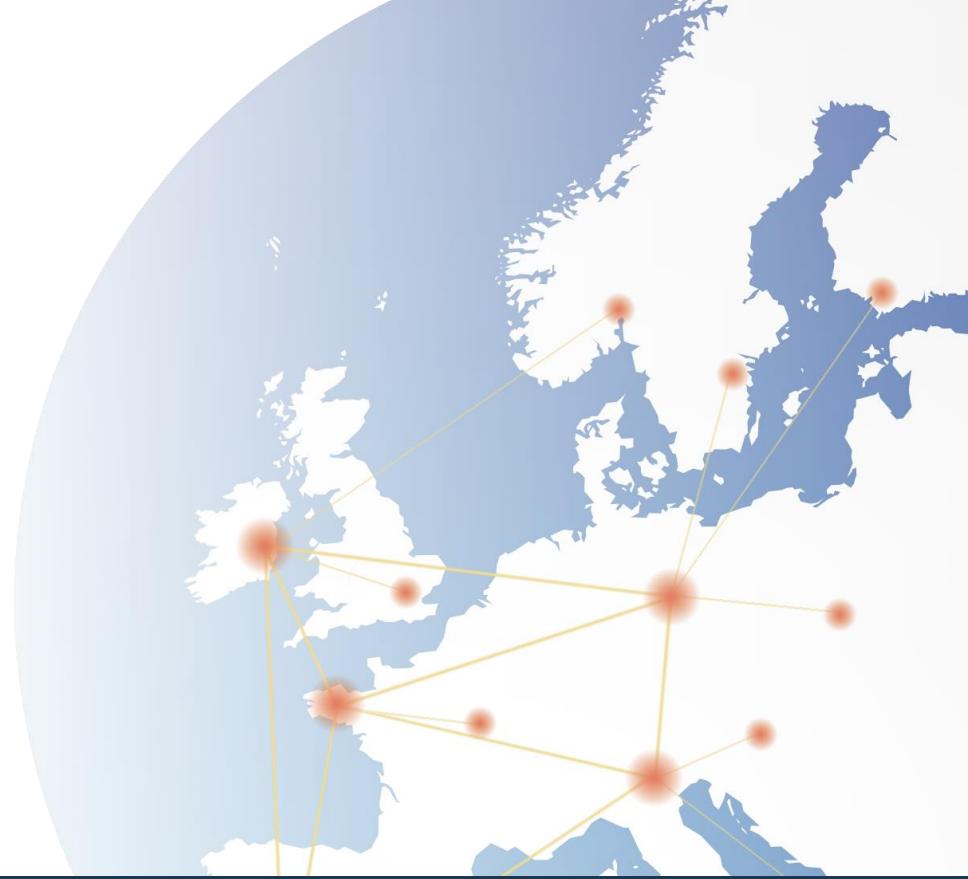
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XIFI Webinar - XIFI for Developers

- **Using the FIWARE Lab portal**
 - Getting access, getting started, getting help
 - Setting up your tenant
 - Working with your tenant
 - Exploring the cloud
- **Using command line tools**
 - Installing OpenStack client tools
 - Managing virtual machine images
 - Working with virtual machines
 - Working with volumes

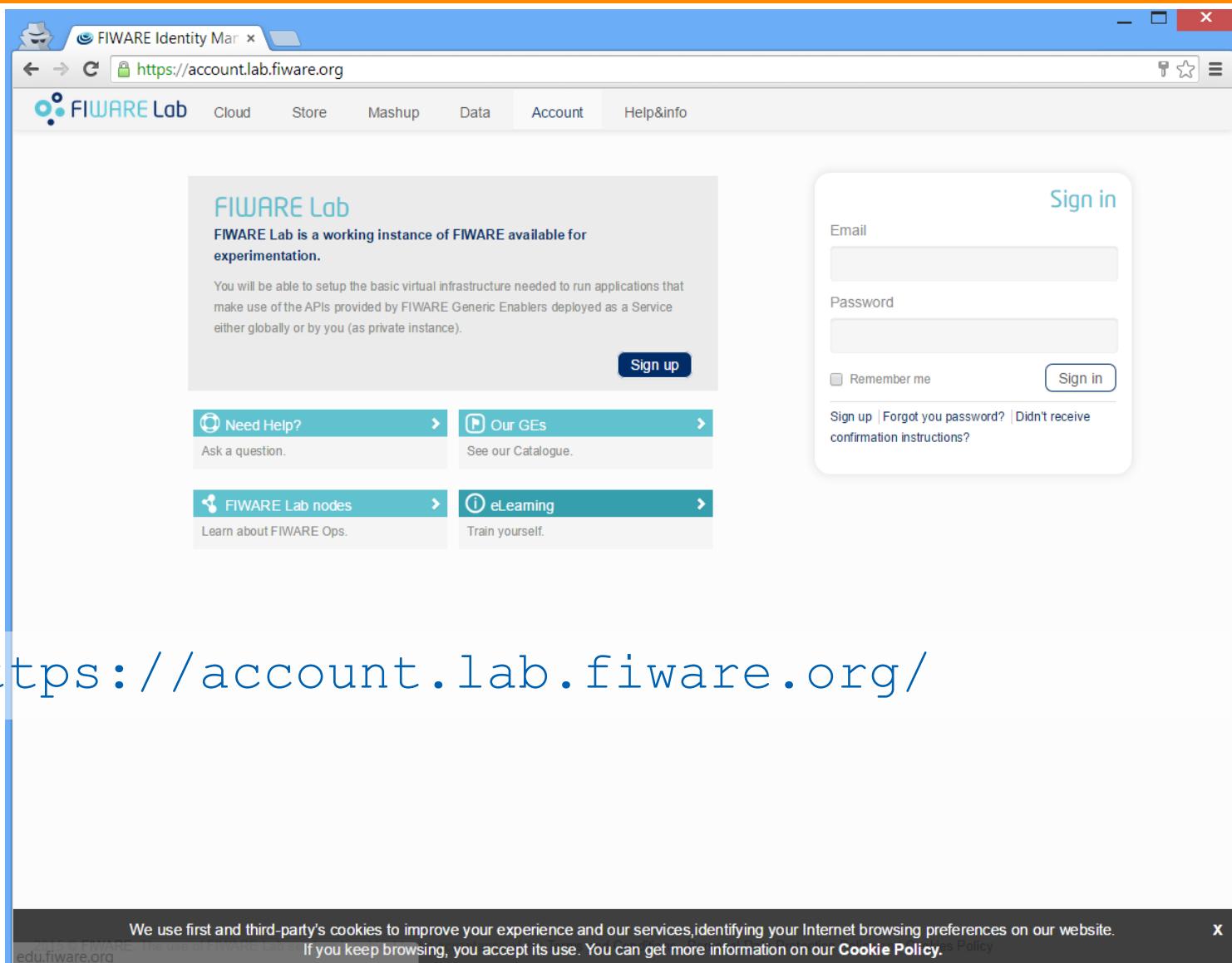


Using the FIWARE Lab portal

XIFI FOR DEVELOPERS

Using the FIWARE Lab portal

Getting access (1 of 2)



The screenshot shows a web browser window for the FIWARE Identity Manager at <https://account.lab.fiware.org>. The page has a blue header bar with the FIWARE logo and navigation links for Cloud, Store, Mashup, Data, Account, and Help&info. Below the header, there's a central panel for the FIWARE Lab, which describes it as a working instance for experimentation and provides links to Need Help, Our GEs, FIWARE Lab nodes, and eLearning. To the right is a sign-in form with fields for Email and Password, a Remember me checkbox, and a Sign in button. Below the sign-in form are links for Sign up, Forgot you password?, and Didn't receive confirmation instructions?

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.

[Sign in](#)

Email

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[Sign up](#) | [Forgot you password?](#) | [Didn't receive confirmation instructions?](#)

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Using the FIWARE Lab portal

Getting access (2 of 2)



The screenshot shows a web browser window with the URL https://account.lab.fiware.org/users/sign_up. The page title is "FIWARE Identity Manager". The main content area displays a "Sign up" form with fields for Name, Email, Password, Confirm password, and Captcha. The Captcha value shown is "YBDNO". Below the form is a note about accepting terms and conditions, with a checkbox and an "Accept" button. At the bottom of the page, there is a footer with copyright information and links to Terms and Conditions, Personal Data Protection Policy, and Cookies Policy.

Sign up to get access

You need to accept the Terms and Conditions to proceed.

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Using the FIWARE Lab portal

Getting help (1 of 7)



The screenshot shows the FIWARE Lab portal interface. At the top, there's a navigation bar with links for Cloud, Store, Mashup, Data, Account, and Help&info. The Help&info section is currently active. On the left, there's a video player showing a video titled "FI-WARE Blueprint Templates" with a duration of 3:16. To the right of the video, there's a callout box with the text "Click on the links to see the FIWARE video tutorials" and buttons for Cloud, Store, Mashup, and Account. Below this, there are three categories: Blueprints, Instances, and Object Storage. A descriptive text block says: "Blueprint Templates let you quickly create a template from which to build your application. You can specify the software you need in the Tier Templates and easily deploy all the instances with one click." At the bottom of the page, there are four links: "Need Help? Ask a question.", "Our GEs See our Catalogue.", "FIWARE Lab nodes Learn about FIWARE Ops.", and "eLearning Train yourself.". On the right side of the screen, there's a sidebar with a Twitter feed and a footer with a message about FIWARE Lab being mandatory.

Click Help&Info for tutorials and training material.

Click Cloud to see a video tutorial on how to use the portal.

More training material can be found at
<http://edu.fi-ware.org/course/category.php?id=10>

Using the FIWARE Lab portal

Getting started (2 of 7)

A screenshot of a web browser window showing the FIWARE Identity Manager homepage at https://account.lab.fiware.org/home. The page has a header with tabs for Cloud, Store, Mashup, Data, Account, Help&info, and a user icon. On the left, there's a sidebar with "Identity Manager" and links for Home, Organizations, and My Applications. The main content area has sections for Applications (with a message: "You don't have any application." and a "Register Application" link), Organizations (listing "Fraunhofer FOK..." and "TrentoNode"), and a "Create" button. A green sticky note with the word "Important" is overlaid on the bottom left of the main content area.

User's roles and organizations are associated with tenants (sometimes called “projects”).

Please provide your tenantID when contacting the help desk – you will find your tenantID at the bottom line upon connecting to the cloud.

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Using the FIWARE Lab portal

Getting started (3 of 7)



The screenshot shows the FIWARE Identity Manager interface at <https://account.lab.fiware.org/organizations>. The top navigation bar includes links for Cloud, Store, Mashup, Data, Account, Help&info, and a user profile (tgu). The left sidebar has links for Home, Organizations, and My Applications. The main area features a "Create Organization" button and tabs for "Owned" and "Others". Under "Owned", there are two entries: "Fraunhofer FOKUS" (Participant in the XIFI project and infrastructure owner of the XIFI Berlin node) and "TrentoNode Tools Managed". A green sticky note on the left says "Important". At the bottom, a footer bar includes links for Terms and Conditions, Personal Data Protection Policy, Cookies Policy, and a link to https://account.lab.fiware.org/organizations/trentonode.

Users can create organizations to share a project among a user group.

Important

This feature is resource and security sensitive and will be significantly restricted in the future.

Using the FIWARE Lab portal

Getting started (4 of 7)



The screenshot shows the FIWARE Cloud Portal interface. On the left, there's a sidebar with sections for Project (selected), Blueprint, Region (Berlin), Compute (Instances selected), Storage, and Network. The main content area is titled "Instances" and displays a table with two rows of VM instances. The columns are: Instance Name, IP Address, Size, Keypair, Status, Task, and Power State. The first instance, "test-tgu-fed", has an IP of 192.168.113.3 and is running. The second instance, "tgu-VM", has an IP of 192.168.111.4 and is shutdown. At the bottom of the table, it says "Displaying 2 items". A footer note at the bottom right says "→ Connected to project tgu (ID 00000000000000000000000000003233)".

Instance Name	IP Address	Size	Keypair	Status	Task	Power State
test-tgu-fed	192.168.113.3	512 MB RAM 1 VCPU 0GB Disk	tgu	ACTIVE	None	RUNNING
tgu-VM	192.168.111.4 193.175.132.60	512 MB RAM 1 VCPU 0GB Disk	tgu	SHUTOFF	None	SHUTDOWN

The first view after connecting to the cloud is on the user's virtual machine (VM) instances.

By clicking on the Instance Name you get more detailed information about the VM.

Your tenant ID →

Using the FIWARE Lab portal

Getting started (5 of 7)



The screenshot shows the FIWARE Cloud Portal interface. On the left, there is a sidebar with a 'Project' dropdown set to 'tgu' and a 'Region' dropdown set to 'Berlin'. Under 'Compute', the 'Images' option is selected, revealing a list of VM images. The main content area is titled 'Images' and displays a table with the following data:

Name	Type	Status	Visibility	Container Format	Disk Format	Actions
CentOS-6.5-x64	baseimages	active	public	OVF	QCOW2	<button>Launch</button>
Ubuntu Server 14.04.1 (x64)	baseimages	active	public	OVF	QCOW2	<button>Launch</button>
CentOS-7-x64	baseimages	active	public	OVF	QCOW2	<button>Launch</button>
Ubuntu12.04-server-x86_64	baseimages	active	public	OVF	QCOW2	<button>Launch</button>
CentOS-6.3-x86_64	baseimages	active	public	OVF	QCOW2	<button>Launch</button>
CentOS_6.5	baseimages	active	public	OVF	QCOW2	<button>Launch</button>
wirecloud-img	fiware:apps	active	public	OVF	QCOW2	<button>Launch</button>
repository-image-R3.2	fiware:apps	active	public	AMI	AMI	<button>Launch</button>
wstore-img	fiware:apps	active	public	OVF	QCOW2	<button>Launch</button>
marketplace-r3.2	fiware:apps	active	public	AMI	AMI	<button>Launch</button>
repository-image-R3.2-2	fiware:apps	active	public	AMI	AMI	<button>Launch</button>
kurento-image-R5.0.4	fiware:data	active	public	OVF	QCOW2	<button>Launch</button>
sonar-hpcu-image-R3.4	fiware:data	active	public	OVF	QCOW2	<button>Launch</button>

At the bottom of the table, it says 'Displaying 45 items'. A note at the bottom of the page states: 'Info: Connected to project tgu (ID 00000000000000000000000000000000)'.

Clicking on Image in the menu to the left reveals the VM images and snapshots available to your tenant.

This list includes public (shared) and private images.

Clicking on the image Name provides more details.

Using the FIWARE Lab portal

Getting started (6 of 7)

A screenshot of the FIWARE Lab portal interface. At the top left is the FI-WARE logo. To its right is a "Cloud" button. Below this is a sidebar with a "Project" section containing a "Project Name" dropdown menu. The dropdown menu shows four options: "Fraunhofer FOKUS" (selected), "Fraunhofer FOKUS", "TrentoNode", and "bernd-bochow". Below the dropdown is a "Region" section with "Berlin" selected. A "▼" button is to the right of the region dropdown. Further down are sections for "Compute" (with "Instances" selected, indicated by a blue square icon), "Storage" (with "Containers" and "Volumes"), and "Network" (with "Networks" and "Routers").

- Project
- Project Name
- Fraunhofer FOKUS
- Fraunhofer FOKUS
- TrentoNode
- bernd-bochow

Region

Berlin

Compute

Instances

Images

Flavors

Security

Snapshots

Storage

Containers

Volumes

Network

Networks

Routers

Select your active tenant from the Project Name list in the in the menu to the left.

The list includes all tenants (projects or organizations) you are allowed to access including those shared.

Your tenant is valid for all regions.

Although OpenStack APIs enable to share images among tenants, this feature is currently not accessible.



Using the FIWARE Lab portal

Getting started (7 of 7)

A screenshot of the FIWARE Lab portal's user interface. At the top, there's a header with the FI-WARE logo and a "Cloud" button. The left side features a vertical navigation menu:

- Project (selected, indicated by a blue border), with a "Project Name" input field below it.
- Fraunhofer FOKUS (under Project)
- Blueprint
 - Blueprint Instances
 - Blueprint Templates
- Region
 - Berlin (selected, indicated by a blue border), with a dropdown menu showing: FI-LAB, Trento, Lannion, Waterford, Berlin.
 - Snapshots
- Storage
 - Containers
 - Volumes
- Network
 - Networks
 - Routers

Select your active region from the Region list in the in the menu to the left.

The region name unambiguously identifies a particular infrastructure node in the cloud – all further actions apply to the region selected.

Regions differ in terms of resources, capacities and services offered – please choose the most suitable for your project.

When contacting the help desk, please provide the name of the region you are working with.



Using the FIWARE Lab portal

Setting up your tenant (1 of 10)



VMs must connect to a network – prior to launching an image you should have one or two thoughts about your configuration. You should set-up your tenant accordingly.

- At least one tenant (private) network;
- At least one tenant router between networks;
- At least one default router between exactly one tenant network and exactly one public network;
- Zero or more floating IP addresses.



All regions have a strictly limited pool of public IPv4 addresses available for tenants. Public addresses are granted upon availability and may be revoked if needed.

Using the FIWARE Lab portal

Setting up your tenant (2 of 10)



The screenshot shows the FIWARE Cloud Portal interface. On the left, there's a sidebar with project navigation (Project: tgu, Blueprint, Region: Berlin), compute resources (Instances, Images, Flavors, Security, Snapshots), storage resources (Containers, Volumes), and network resources (Network: Networks, Routers). The main content area is titled "Networks" and displays a table of existing networks:

Name	Subnets associated	Shared	Status	Admin State
net-tgu	net_tgu 192.168.111.0/24	No	ACTIVE	UP
net-tgu-113	net_tgu_113 192.168.113.0/24	No	ACTIVE	UP

At the top right of the table are "Create Network" and "Actions" buttons. Below the table, a note says "Info: Connected to project tgu (ID 000000000000000000000000000003233)".

To create a network click on Networks in the menu to the left and on the Create Network button on top. You must create at least one subnet for a network.

It is recommended to add a subnet already in this step. You may add subnets later by clicking on the Network Name and choosing the Subnets tab.

Using the FIWARE Lab portal

Setting up your tenant (3 of 10)



The screenshot shows the FIWARE Cloud Portal interface. On the left, there's a sidebar with 'Project' (tgu), 'Blueprint' (Blueprint Instances, Blueprint Templates), 'Region' (Berlin), 'Compute' (Instances, Images, Flavors, Security, Snapshots), 'Storage' (Volumes, Networks), and 'Network' (selected). The main area has tabs for 'Cloud', 'Store', 'Mashup', 'Data', 'Account', and 'Help&Info'. A user 'tgu' is logged in. The central part of the screen displays a 'Networks' section with a 'Create Network' dialog box. The dialog box contains fields for 'Network Name' (empty), 'Description' (a text block about creating a new network and associating subnets), 'Admin State' (checkbox checked), 'Subnet Name' (empty), 'Gateway IP' (empty), 'Network Address*' (x.x.x.x/x), 'DNS Name Servers' (empty), 'Allocation Pools' (dropdown menu showing '<start_ip_address>,<end_ip_address>'), 'Enable DHCP' (checkbox checked), and 'Host Routes' (empty). At the bottom of the dialog are 'Cancel' and 'Create' buttons. The background shows a list of networks with 'Admin State' set to 'UP'.

Specify a network name, a subnet name and a subnet address range in CIDR notation
(e.g. my_net, my_net_22 and 192.168.22.0/24).

Important Network creation may fail if the subnet overlaps with an existing subnet – please try an alternate range.

Using the FIWARE Lab portal

Setting up your tenant (4 of 10)



The screenshot shows the FIWARE Cloud Portal interface. The top navigation bar includes a user icon, the text "FIWARE Cloud Portal", and a URL "https://cloud.lab.fiware.org/#neutron/routers/". Below the navigation is a secondary menu with tabs: Cloud, Store, Mashup, Data, Account, Help&info, and a user profile icon "tgu". On the left, a sidebar menu is open under the "Project" section, showing "Project Name: tgu" and "Blueprint" sections for Blueprint Instances and Blueprint Templates. Under "Region" and "Compute", there are links for Instances, Images, Flavors, Security, and Snapshots. Under "Storage", there are links for Containers and Volumes. Under "Network", there are links for Networks and Routers, with "Routers" currently selected. The main content area is titled "Routers" and displays a table with two rows of router information:

Name	Status	External Network
router-tgu-fed	ACTIVE	ext-net-federation
router-tgu-pub	ACTIVE	ext-net-public

Buttons for "Create Router" and "Actions" are located at the top right of the table. A message at the bottom left says "Info: Connected to project tgu ([ID 000000000000000000000000000000003233])". At the bottom, a footer note states "2014 © FIWARE. The use of FIWARE Lab services is subject to the acceptance of the [Terms and Conditions](#), [Personal Data Protection Policy](#) and [Cookies Policy](#)".

To create a router click on **Routers** in the menu to the left and on the **Create Router** button on top. Then click on the router Name, select the Interfaces tab and connect to a tenant network.

If you intend to connect to a public network, you need to promote the router into a gateway.

Using the FIWARE Lab portal

Setting up your tenant (5 of 10)



Select the router you want to make a gateway between tenant network and public network. Select Set Gateway in the Action list and chose one of the networks offered in the External Network list showing up.

It is best practice first to set the gateway and then to attach a tenant network due to a potential OpenStack quantum issue.

Important Since there may be multiple public networks, you should check the gateway address obtained if it is the desired subnet.

Info: Connected to project tgu ([ID 000000000000000000000000000000003233])

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Using the FIWARE Lab portal

Setting up your tenant (6 of 10)



The screenshot shows the FIWARE Cloud Portal interface. The top navigation bar includes links for Cloud, Store, Mashup, Data, Account, Help&info, and a user profile (tgu). The main content area is titled "Networks". On the left, there's a sidebar with sections for Project (selected), Blueprint (Blueprint Instances, Blueprint Templates), Region (Berlin selected), Compute (Instances, Images, Flavors, Security, Snapshots), Storage (Containers, Volumes), and Network (selected, showing Networks and Routers). The main table lists four networks:

Name	Subnets associated	Shared	Status	Admin State
ext-net-federation	ext_net_federation 10.0.16.0/24	No	ACTIVE	UP
ext-net-public	ext_net_public 193.175.132.32/27	No	ACTIVE	UP
private-berlin-l20	private_berlin_l20 192.168.120.0/24	No	ACTIVE	UP
private-berlin-l21	private_berlin_l21 192.168.121.0/24	No	ACTIVE	UP

All regions are currently in the process of unifying resource naming – you may still encounter region specific variations. Region Berlin, for example, provides 2 external networks:

- ext-net-public (= Internet) and
- ext-net-federation (= XIFI VPN)

Info: Connected to project Fraunhofer FOKUS (ID 000000000000000000000000000000003015)

<https://cloud.lab.fiware.org/#neutron/networks/> is subject to the acceptance of the Terms and Conditions, Personal Data Protection Policy and Cookies Policy

At this time you may have a single private (tenant) network and a gateway that is routing and NATing between the private network and a public network. A VM then can

- connect to the private network and obtain an IP address from the subnet it attaches to by DHCP (keep in mind that the network might have multiple subnets).
- can access the associated public (external) network through the NAT gateway.
- be associated with a dedicated IP address in case exactly that external network offers a floating IP pool.

The latter is required only, if the VM must be reachable under a well-known fixed IP address.

Using the FIWARE Lab portal

Setting up your tenant (8 of 10)



The screenshot shows the FIWARE Cloud Portal interface. On the left, there's a sidebar with 'Project' set to 'tgu'. Under 'Region', 'Berlin' is selected. The main menu includes 'Cloud', 'Store', 'Mashup', 'Data', 'Account', and 'Help&info'. The 'Security' section is active, with tabs for 'Floating IPs', 'Security Groups', and 'Keypairs'. The 'Keypairs' tab is selected, showing a table with one item: 'Name' (tgu) and 'Fingerprint' (91:86:80:2a:11:f2:0e:6d:45:40:8c:36:b6:71:47:95). Buttons for 'Create Keypair', 'Import Keypair', and 'Actions' are available. At the bottom, an info message says 'Info: Connected to project tgu (ID 000000000000000000000000000003233)'.

- It is best practice to prepare a keypair prior to working with your tenant. Click Security in the menu left and choose the Keypairs tab to create or import a keypair.

Important

Images available usually disable username / password login and you may need to ssh -i to the VM (requires a floating IP).

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Using the FIWARE Lab portal

Setting up your tenant (9 of 10)



The screenshot shows the FIWARE Cloud Portal interface. On the left, there's a sidebar with navigation links for Project (selected), Region (Berlin), Compute, Storage, and Network. The main content area is titled 'Security' and shows the 'Security Groups' tab selected. It displays a table with one row for a security group named 'default'. A green sticky note with the word 'Important' is overlaid on the bottom left of the main content area.

Floating IPs Security Groups Keypairs

Name Description

default default

Create Security Group Actions

Project

Project Name: tgu

Blueprint Instances Blueprint Templates

Region: Berlin

Compute: Instances, Images, Flavors, Security (selected), Snapshots

Storage: Containers, Volumes

Network: Networks, Routers

Info: Connected to project tgu (ID 00000000000000000000000000003233)

Displaying 1 item

https://cloud.lab.fiware.org/#nova/access_and_security/

help.lab.fiware.org

This slide provides instructions on how to set up security groups in the FIWARE Lab portal. It highlights the importance of preparing suitable security rules before working with a tenant. The screenshot shows the 'Security Groups' tab in the portal's interface, where a single security group named 'default' is listed. An 'Important' note is overlaid on the page to emphasize the need for configuration.

It is best practice to prepare suitable security rules prior to working with your tenant. Click Security in the menu left and choose the Security Groups tab to create or edit firewall rules.

Security groups apply to individual VMs and complement the region's infrastructure firewall. You may need to contact the help desk in case you cannot reach the VM.

Using the FIWARE Lab portal

Setting up your tenant (10 of 10)



The screenshot shows the FIWARE Cloud Portal's "Security" section. On the left, a sidebar lists "Project" (tgu), "Blueprint" (Blueprint Instances, Blueprint Templates), and "Region" (Berlin). Under "Compute", "Security" is selected. The main area displays "Edit Security Group Rules" for a group named "tgu". It shows two existing rules: ICMP (From Port -1, To Port -1, Source 0.0.0.0/0 (CIDR)) and TCP (From Port 22, To Port 22, Source 0.0.0.0/0 (CIDR)). Below this is an "Add Rule" form with dropdowns for IP Protocol (TCP), From Port (Required field), To Port (Required field), Source Group (CIDR), and a CIDR input field containing "0.0.0.0/0". A note says "Displaying 2 items".

It is best practice to prepare a default security group that enables ping and ssh.

It is recommended to create per use case security groups to avoid accidentally opening up a security breach.

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Using the FIWARE Lab portal

Working with your tenant (1 of 20)



The screenshot shows the FIWARE Cloud Portal interface. On the left, there is a sidebar with a 'Project' dropdown set to 'tgu' and a 'Compute' dropdown set to 'Berlin'. Under 'Compute', the 'Images' option is selected. The main area is titled 'Images' and displays a table of available images. The table columns are: Name, Type, Status, Visibility, Container Format, Disk Format, and Actions (with a 'Launch' button). The table contains 17 rows of data, with the first few rows being 'CentOS-6.5-x64', 'Ubuntu Server 14.04.1 (x64)', 'CentOS-7-x64', 'CentOS_6.5', 'CentOS-6.3-x86_64', 'Ubuntu12.04-server-x86_64', 'marketplace-ri-R2.3', 'wstore-img', 'marketplace-ri_2', 'repository-image-R3.2-2', 'repository-image-R3.2', 'orion-sb-image-R3.4', and 'chronos-image-R3.4'. A message at the bottom of the table says 'Showing 45 items'.

Click on Images in the menu left and select an image to launch (click on the image Name to get more details about the image if needed). Click the Launch button to proceed.

Info: Connected to project tgu (ID 000000000000000000000000000000003233)

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Using the FIWARE Lab portal

Working with your tenant (2 of 20)



Images

Launch Instances

1. Details 2. Access & Security 3. Networking 4. Post-Creation 5. Summary

Instance Name *

Description
Specify the details for launching an instance. The chart below shows the resources used by this project in relation to the project's quotas.

Flavor

Flavor Details

Name	m1.tiny
VCPU	1
Root Disk	0 GB
Ephemeral Disk	0 GB
Total Disk	0 GB
RAM	512 MB

Instance Count *

Project Quotas

Quota Type	Used	Available
Instance Count (4)	4	96 Available
VCPUs (5)	1	95 Available
Disk (100 GB)	0	NoN GB Available
Memory (10240 MB)	512	40960 MB Available

* Mandatory fields.

Cancel Next

Disk Format ▾ Actions

Disk Format	Actions
QCOW2	<button>Launch</button>

Specify Instance Name, Flavor and Instance Count.
Details regarding flavors provided can be obtained through clicking Flavors in the menu left.



Don't forget to check against your quota – in particular when using large flavors.

Using the FIWARE Lab portal

Working with your tenant (3 of 20)



Launch Instances

1. Details 2. Access & Security 3. Networking 4. Post-Creation 5. Summary

Keypair
tgu

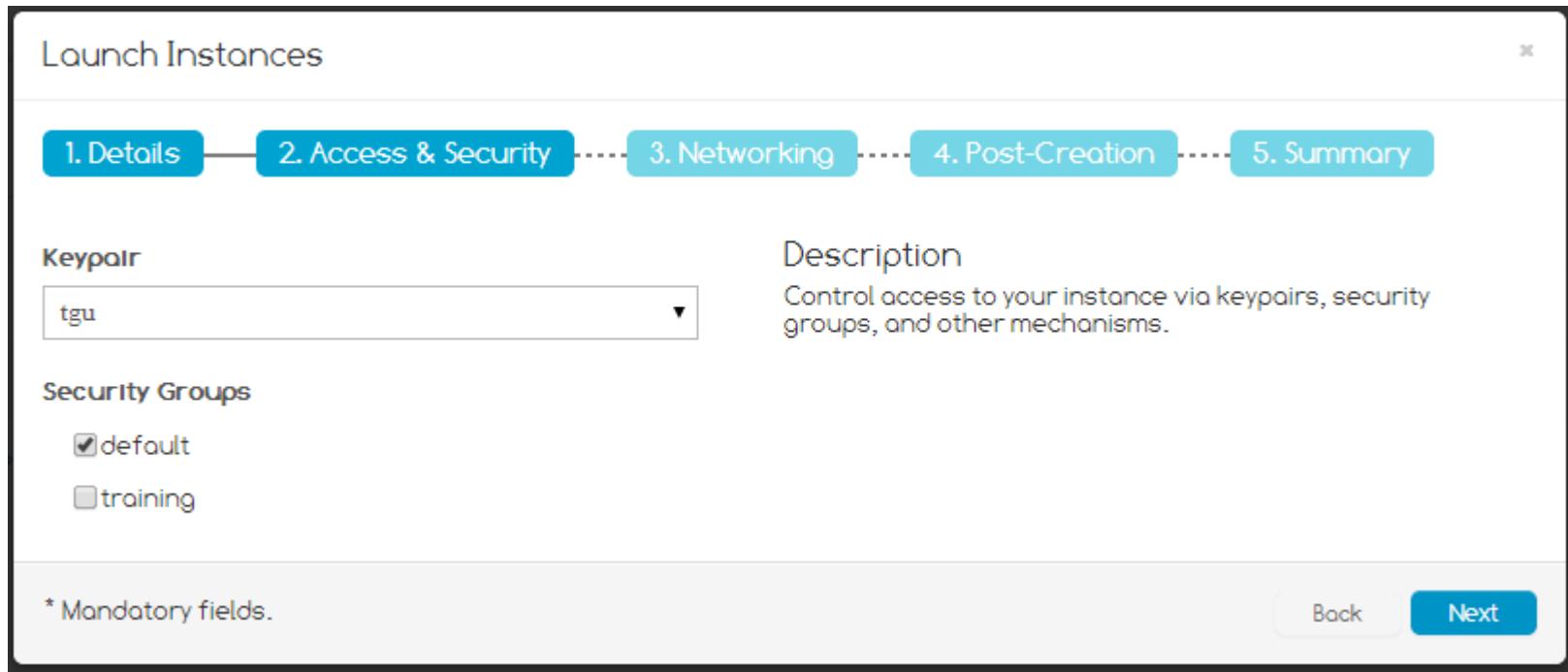
Description
Control access to your instance via keypairs, security groups, and other mechanisms.

Security Groups

default
 training

* Mandatory fields.

Back Next



Assign a Keypair and one or more Security Groups to the instance as needed.

Security rules are of additive “allow-type”. It is best practice to tailor VM security using multiple security groups.

Using the FIWARE Lab portal

Working with your tenant (4 of 20)



Launch Instances

1. Details 2. Access & Security 3. Networking 4. Post-Creation 5. Summary

Selected Networks

nic:1 private-berlin-120

Description
Control access to your instance via keypairs, security groups, and other mechanisms.

Available Networks

training-berlin-170
ext-net-federation
ext-net-public
private-berlin-121

Assign one or more tenant networks to the VM. They will be connected each to a dedicated network interface (NIC) of the VM's operating system (OS).

* Mandatory fields.

Back Next



There are some intricacies to consider when assigning tenant networks – see the next slide.

Using the FIWARE Lab portal

Working with your tenant (5 of 20)



When assigning tenant networks to a VM instance you need to consider the following:

- A VM fails to start-up with no tenant network assigned.
- If you want to associate a floating IP to the VM later on, you should ensure that the correct tenant network is used (i.e. a network that has a suitable gateway to an external network).
- Some OSs check a NICs MAC Id upon start up. This may disable a NIC since a VMs NICs are virtualized and get random private MAC IDs assigned by OpenStack.
- Assigning multiple tenant networks currently may cause a VM to fail due to an open issue with multiple DHCP servers causing all except the first NIC to fail receiving a DHCP configuration. You may use fixed IPs in certain use cases.

Using the FIWARE Lab portal

Working with your tenant (6 of 20)



The screenshot shows a step-by-step wizard titled "Launch Instances". The current step is "1. Details", which includes a "Customization Script" input field and a "Description" section. The "Customization Script" field is empty. The "Description" section explains that it allows users to customize instances after launch using options similar to "User Data" in other systems. A note at the bottom left indicates that the "Customization Script" field is mandatory. A "Next" button is visible at the bottom right.

Launch Instances

1. Details 2. Access & Security 3. Networking 4. Post-Creation 5. Summary

Customization Script

Description

You can customize your instance after it's launched using the options available here. The "Customization Script" field is analogous to "User Data" in other systems.

* Mandatory fields.

Next

Next, a Customization Script can be added in the corresponding edit box.

It is executed after the VM started its operating system.

Currently a default script is provided as an example that configures the VMs network interfaces after the VM has been created.

Using the FIWARE Lab portal

Working with your tenant (7 of 20)



Launch Instances

1. Details 2. Access & Security 3. Networking 4. Post-Creation 5. Summary

Instance Name: xifi-dem-client-test
Image: DEM-Client
Flavor: ml.tiny
Instance Count: 1
Keypair: tgu

To access the Instance:
You need to include a security group with port 22 opened to access via SSH.
You need to assign a floating IP to access from a external network.

* Mandatory fields.

Back Launch Instance

Finally, a summary of settings is provided and the image is launched.

Using the FIWARE Lab portal

Working with your tenant (8 of 20)



Instances

	Instance Name ▾	IP Address ▾	Size ▾	Keypair ▾	Status ▾	Task ▾	Power State ▾	Actions
<input type="checkbox"/>	FirstVM-03a77236-12a8-4231-a3d9...	192.168.120.7 192.168.121.6	2048 MB RAM 1 VCPU 20GB Disk	tgu	ACTIVE	None	RUNNING	<button>Launch New Instance</button>
<input type="checkbox"/>	FirstVM-4e41e91a-eb29-4598-8a4...	192.168.120.8 192.168.121.7	2048 MB RAM 1 VCPU 20GB Disk	tgu	ACTIVE	None	RUNNING	<button>Launch New Instance</button>
<input type="checkbox"/>	FirstVM-9bc900c0-5bb7-4979-a47...	192.168.120.3 192.168.121.3 10.0.16.131	2048 MB RAM 1 VCPU 20GB Disk	tgu	ACTIVE	None	RUNNING	<button>Launch New Instance</button>
<input type="checkbox"/>	xifi-DT-showcase	192.168.120.5	4096 MB RAM 2 VCPU 40GB Disk	tgu	ACTIVE	None	RUNNING	<button>Launch New Instance</button>
<input type="checkbox"/>	xifi-dem-client-test	192.168.120.4	512 MB RAM 1 VCPU 0GB Disk	tgu	BUILD	spawning	NO STATE	<button>Launch New Instance</button>

If you successfully completed the previous steps a newly created VM should show up in the Instances list.



It is recommended to observe Status, Task and Power State during VM instantiation and to check the details of a potential Error message shown at the bottom of the page.

Some hints are given on the next slide.

Using the FIWARE Lab portal

Working with your tenant (9 of 20)



VM instantiation may fail for many reasons and error reporting from the portal is less detailed.

- It helps to know which task was causing an error (image decompression, creation, networking ...) and in which state the VM settled. Re-check after a few minutes (the VM may have done a shutdown automatically).
- When contacting the help desk, please provide details of the VM (e.g. Name, ID). Click on the Instance Name of the VM and cycle through the tabs Overview and Log to collect information from the VM and from the VMs OS.
- If everything seems ok, try also the Connection tab to get a VNC terminal to the instance and check if the VMs OS started up correctly (check if you get a login prompt, try to log in and check the network status from within).
- Please check with the command line tools section for further hints.

It is best practice to take a snapshot of a customized VM as a backup or for a later roll-back in case of failures. Select an Instance Name and click the Action button. Then select Create Snapshot.

The newly created Snapshot shows up in the Snapshots and Images Menus to the left.

A snapshot can be launched from the Images Menu.

Using the FIWARE Lab portal

Working with your tenant (11 of 20)



The screenshot shows the FIWARE Cloud Portal interface. The top navigation bar includes a user icon, the portal name, and links for Cloud, Store, Mashup, Data, Account, Help&info, and a dropdown for the user 'tgu'. The main content area is titled 'Security' and contains a sub-section for 'Floating IPs'. The 'Floating IPs' tab is selected, showing a table with one row. The table columns are 'IP Address' (with a dropdown menu), 'Instance' (with a dropdown menu), and 'Floating IP Pool' (with a dropdown menu). The single listed item is '193.175.132.60' associated with 'tgu-VM' from the 'ext-net-public' pool. On the left sidebar, under the 'Project' section, 'tgu' is selected, showing 'Blueprint Instances' and 'Blueprint Templates'. Below that, under 'Region Berlin', there are sections for Compute (Instances, Images, Flavors, Security, Snapshots), Storage (Containers, Volumes), and Network (Networks, Routers).

In case you need to access your VM through a well-known public IP address, a floating IP must be associated with the VM.

Click on Security in the menu left and then select the tab Floating IPs. Click on the Allocate IP to Project button to proceed.

Important Floating IPs are scarce shared resources. Use only if needed and release after use.

Using the FIWARE Lab portal

Working with your tenant (12 of 20)



Allocate Floating IP

Pool

ext-net-federation

Description

Allocate a floating IP from a given floating ip pool.

Project Quotas

Floating IP (6) 94 Available

A screenshot of a web-based interface titled "Allocate Floating IP". It shows a dropdown menu for "Pool" set to "ext-net-federation". To the right, there's a "Description" section with the text "Allocate a floating IP from a given floating ip pool." Below it is a "Project Quotas" section showing "Floating IP (6)" and "94 Available". A progress bar is partially filled. At the bottom right of the interface, there are two buttons: "Create" and "Update IP".

A floating IP pool is provided by an external network. You need to choose a suitable pool and to associate a floating IP from that pool to your tenant.

First check, if your tenant has a gateway between the tenant network and the external network. If not, associating the IP to a VM will fail. Additionally, the pool might be exhausted, which often occurs since the gateway already occupies one IP from that pool.



Using the FIWARE Lab portal

Working with your tenant (13 of 20)



Security

Floating IPs			Security Groups	Keypairs	
<input type="checkbox"/>	IP Address ▾	Instance ▾	Floating IP Pool ▾		Actions ▾
<input type="checkbox"/>	10.0.16.131	FirstVM-9bc900c0-5bb7-4979-a476-d0956bc2e0ca	ext-net-federation		Associate IP
<input type="checkbox"/>	10.0.16.132	-	ext-net-federation		Dissassociate Floating IP
<input type="checkbox"/>	10.0.16.133	-	ext-net-federation		Release Floating IPs
<input checked="" type="checkbox"/>	193.175.132.215	-	ext-net-public		
<input type="checkbox"/>	193.175.132.216	-	ext-net-public		
<input type="checkbox"/>	193.175.132.217	-	ext-net-public		

Floating IPs allocated to the tenant will be shown in the list.

Floating IPs from the list can be associated with a VM.

Consider to release unused floating IPs quickly. Select the IPs to release, click on the Action button and chose Release Floating IPs.

Using the FIWARE Lab portal

Working with your tenant (14 of 20)



Associate Floating IP

Floating IP
193.175.132.215

Description
Associate a floating ip with an instance.

Instance
Select an instance

Cancel Associate IP

Security

When associated, Instance name and floating IP appear together in the various lists.

<input type="checkbox"/> IP Address ▾	Instance ▾	Floating IP Pool ▾
<input type="checkbox"/> 10.0.16.131	FirstVM-9bc900c0-5bb7-4979-a476-d0956bc2e0ca	ext-net-federation
<input type="checkbox"/> 10.0.16.132	-	ext-net-federation
<input type="checkbox"/> 10.0.16.133	-	ext-net-federation
<input checked="" type="checkbox"/> 193.175.132.215	xifi-dem-client-test	ext-net-public
<input type="checkbox"/> 193.175.132.216	-	ext-net-public
<input type="checkbox"/> 193.175.132.217	-	ext-net-public

Using the FIWARE Lab portal

Working with your tenant (15 of 20)



Instances

Overview Log Connection Monitoring

Connect using a SSH client

You need to associate a Floating IP to this Instance in order to connect via SSH.

1. Go to Security -> Floating IPs
2. If you have not any Floating IP available, [allocate a new one to the project](#).
3. Associate a Floating IP to this Instance.

Access to your VM is through the portal by a VNC terminal, or by SSH.

Connect to VM display

Connect directly to the Virtual Machine display

[View display](#)

Click on Instances in the left menu, then on the Instance name, then select the Connection tab and click on the View Display button to obtain a VNC terminal window.



Your VM's OS may be configured to reject a terminal login. In that case you need to use SSH.

Using the FIWARE Lab portal

Working with your tenant (16 of 20)



Virtual Machine Display

If display is not responding to keyboard input: click the grey status bar below.

Connected (unencrypted) to: QEMU (instance-00000045) Send CtrlAltDel

```
CentOS release 6.4 (Final)
Kernel 2.6.32-358.23.2.el6.x86_64 on an x86_64

localhost login: root
Password:
Last login: Thu Nov 28 08:50:16 from 172.18.19.10
[root@localhost ~]#
```

You may need to click several times into the VNC window until the VM responds – a screen saver might be active or the VM's OS has not completed booting up yet. You may check the VM's OS state with the Log tab.

In case the VM still does not respond, try to switch to full screen instead.

Full-screen Close

Using the FIWARE Lab portal

Working with your tenant (17 of 20)



```
tgu@potemkin:~$ ssh ubuntu@193.175.132.215
Enter passphrase for key '/net/u/tgu/.ssh/id_rsa':
Welcome to Ubuntu 12.04.4 LTS (GNU/Linux 3.2.0-49-virtual x86_64)

 * Documentation:  https://help.ubuntu.com/

System information as of Fri May 16 07:42:36 UTC 2014

System load:  0.1           Processes:      65
Usage of /:   75.3% of 1.96GB  Users logged in:    0
Memory usage: 19%
Swap usage:   0%
Graph title: state and managed links
  https://landscape.canonical.com/
Get cloud support with Ubuntu Advantage Cloud Guest:
  http://www.ubuntu.com/business/services/cloud
Use Juju to deploy your cloud instances and workloads
  https://juju.ubuntu.com/#cloud/precise
*** System restart required ***
Last login: Fri May 16 07:34:06 2014 from potemkin.fokus.fraunhofer.de
ubuntu@xifi-dem-client-test:~$
```

Important

SSH login is usually required if you VM's OS does not accept a VNC client or a username / password login.

In that case you need a public IP address to access the VM through ssh -i

Please consider to utilize one VM associated with a floating IP to forward your SSH to other VMs of the tenant through their private address, avoiding to request more floating IPs.

Using the FIWARE Lab portal

Working with your tenant (18 of 20)



FIWARE Lab Cloud Store Mashup Data Account Help&info Bernd Bochow ▾

Volumes

<input type="checkbox"/>	Name ▾	Description ▾	Size (GB) ▾	Status ▾	Attachments ▾
<input type="checkbox"/>	XIFI Software Repository	This virtual disk is allocated ...	200	available	-
<input type="checkbox"/>	test_ghk	-	1	in-use	1
<input type="checkbox"/>	tgutest	-	1	available	-

Create Volume **Actions** ▾

Project
Project Name
Fraunhofer FOKUS ▾

Blueprint
Blueprint Instances
Blueprint Templates

Region
Berlin ▾

Compute
Instances
Images
Flavors
Security
Snapshots

Storage
Containers
Volumes

Network
Networks
Routers

For some use cases it is convenient to manage VMs and their virtual discs separately (e.g. for sharing data).

To create a virtual disc select Volumes in the menu left, then click on the Create Volume button.

Displaying 3 items

Info: Connected to project Fraunhofer FOKUS (ID 000000000000000000000000000003015)

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Using the FIWARE Lab portal

Working with your tenant (19 of 20)

A screenshot of the FIWARE Lab portal interface. On the left, there's a sidebar with project details (Fraunhofer FOKUS, Blueprint, Region Berlin), compute resources (Instances, Images, Flavors, Security, Snapshots), storage resources (Volumes), and network resources. The main area shows a list of volumes. A modal window titled "Create Volume" is open, prompting for "Volume Name *" (data_volume), "Description" (Testing shared storage), and "Size (GB) *" (10).

You can specify name and size of the virtual disc.

It is best practice to also provide a description of the purpose of the data disc since there currently is no metadata other than the name available that may characterize the disc in your tenant.

Using the FIWARE Lab portal

Working with your tenant (20 of 20)



FIWARE Lab Cloud Store Mashup Data Account Help Info Period Recovery

Volumes

Manage Volume Attachments

Attachments Detach Volumes

Instance	Actions
	Displaying 0 items

Attach To Instance

Attach to Instance * Device Name *

test_boc /dev/vdc

You can specify the VM to attach the volume in the Attach to Instance list and the Device Name it should show up under in the VM's OS.

Important

The attachment is not configuring the VM's OS. You need to verify the device name (it might be different) and to mount the volume manually in the VM.

Using the FIWARE Lab portal

Exploring the cloud (1 of 8)



The XIFI federation offers a number of public images – mostly Generic Enablers (GEs) and Specific Enablers (SEs).

Many regions also provide instances of commonly used GEs and particular SEs to support dedicated local services.

For more details on available GEs see <http://catalogue.fiware.org/>

Info: Connected to project TrentoNode (ID 00000000000000000000000002782)

Displaying 14 items

Instance Name	IP Address	Size	Keypair	Status	Task	Power State
CEPTEST		512 MB RAM 1 VCPU 0GB Disk	Dem_panos_K	ERROR	deleting	NO STATE
CEP_GE	192.168.111.26	1024 MB RAM 1 VCPU 10GB Disk	Dem_panos_K	ACTIVE	None	RUNNING
DEMO_RESP	192.168.111.29 193.205.211.86	2048 MB RAM 2 VCPU 20GB Disk	Dem_panos_K	ACTIVE	None	RUNNING
DEM_VM2	192.168.111.25	1024 MB RAM 2 VCPU 20GB Disk	Dem_Keypair	ACTIVE	None	RUNNING
Market		512 MB RAM 1 VCPU 0GB Disk	Dem_panos_K	ERROR	deleting	NO STATE
RepositoryGE	192.168.111.17	2048 MB RAM 1 VCPU 40GB Disk	SLA-Manager-keypair	ACTIVE	None	RUNNING
SLA-Manager	192.168.111.10 193.205.211.71	2048 MB RAM 2 VCPU 30GB Disk	SLA-Manager-keypair	ACTIVE	None	RUNNING
reverse-proxy	192.168.111.1 193.205.211.78	1024 MB RAM 1 VCPU 10GB Disk	trento-key	ACTIVE	None	RUNNING
test_giuseppe	192.168.111.30 193.205.211.80	512 MB RAM 1 VCPU 0GB Disk	giuseppe-keypair	ACTIVE	None	RUNNING
ubuntu_12.04_mod	192.168.111.31 193.205.211.75	1024 MB RAM 1 VCPU 10GB Disk	crl_keypair	ACTIVE	None	RUNNING

Using the FIWARE Lab portal

Exploring the cloud (2 of 8)



Screenshot of the FI-WARE Cloud Portal showing real-time monitoring for an instance named 'TrentoNode' in the 'Trento' region.

The left sidebar shows navigation categories: Project, Blueprint, Region, Compute, Storage, and Network. Under Compute, 'Instances' is selected.

The main area displays three circular gauges under the 'Monitoring' tab:

- CPU:** Current usage is 0% (blue needle at 0%).
- DISK:** Current usage is 0 GB (blue needle at 0). Values range from 0 to 20 GB.
- RAM:** Current usage is 0 MB (blue needle at 0). Values range from 0 to 2048 MB.

At the bottom of the screenshot, a message says: "Info: Switched to region Trento".

A large blue text overlay on the right side of the screenshot reads:

A number of public Images provide internal monitoring.
Click on Instances in the menu left, then on the
Instance Name and select the Monitoring tab to
get a real-time display through the portal.

Using the FIWARE Lab portal

Exploring the cloud (3 of 8)



The screenshot shows the FIWARE Cloud Portal's Instances page. On the left, a sidebar lists categories: Project (selected), Blueprint (TrentoNode), Region (Trento), Compute (Instances selected), Storage, Network, and others. The main content area is titled "Instances". It displays an instance named "ubuntu_12.04_mod" with ID "3759098b-930b-4b16-9e98-c1fc312b7160" in ACTIVE status. The instance has 1024MB RAM, 1 VCPU, and 10GB Disk. It is associated with a security group using key name "cri_keypair" and image name "ubuntu_12.04.04_new". There are no volumes attached. The "Installed Software" section notes that the image does not allow Software Management. The top navigation bar shows tabs for Marketing Material, XIFI Wp7-d72 – XIFI-WIKI, Training: FI-XIFI, and FI-WARE Cloud Portal, along with other browser tabs and a user profile.

To learn more about the capacities of an image or an instance click on the instance or image Name.

Most of the information is provide by the object's metadata, which will be continuously expanded.

Using the FIWARE Lab portal

Exploring the cloud (4 of 8)



FIWARE Lab Cloud Store Mashup Data Account Help&info Bernd Bochow ▾

Blueprint Templates

Project Project Name Fraunhofer FOKUS Blueprint Blueprint Instances Blueprint Templates Region Berlin Compute Instances Images Flavors Security Snapshots Storage Containers Volumes Network Networks Routers

Name	Description	Tiers
Marketplace-tgu	Clone of Marketplace from Catalog	1
Orion	Orion Template from catalog	1
blueprint-test	This is only for testing.	1

Open Catalog Create New Template Actions ▾

You can create and customize complex services through the portal using Blueprints – start by creating (or using) Blueprint Templates, configure Blueprint Instances and launch a blueprint instance just if you would launch any other image.

Important

The Blueprint service is not yet fully functional for all regions. You may experience problems to launch an instance. Please evaluate if you can switch regions before contacting the help-desk.

Displaying 3 items

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Using the FIWARE Lab portal

Exploring the cloud (5 of 8)



The screenshot shows the FIWARE Store interface. On the left, there's a sidebar with icons for Services, Data, Widgets/Mashups, and My Offerings. The main area is titled "Top rated" and displays several offerings:

- OrionStarterKit** by CoNWeT: 5 stars, Free. Description: Offering composed of three mashable application.
- MapViewer** by alvaro-arranz-garcia: 5 stars, Free. Description: Place things on map! Explore the world, trace routes... Don't
- SecondTry** by fi-ware-developer: 5 stars, Free. Description: A second demo app.
- MultimediaPack** by CoNWeT: 5 stars, Free. Description: A pack of multimedia Wirecloud widgets.
- CRQ Sensors** by Crq Gestión: 5 stars, Open. Description: Show Data from CRQ Gestión SL.
- ComValorOS** by hugo-fonseca: 5 stars, 20.0 €. Description: ComValorOS.
- PedroDataset_test1** by pedro-on-resource: 5 stars, 10.0 €. Description: PedroDataset_test1.
- TesteOSXXXXXXXXXX** by dsgfdhh: 5 stars, Free. Description: TesteOSXXXXXXXXXX.

At the bottom, there's a footer with the URL <https://store.lab.fiware.org> and a note: "s is subject to the acceptance of Terms and conditions , Personal Data Protection Policy and Cookies Policy".

Additional offerings can be accessed through the Store and Mashup catalogues provided through the portal.

A brief introduction how to use the store is in the video tutorials and is available on YouTube:

<https://www.youtube.com/watch?v=yainBAU32E>

Using the FIWARE Lab portal

Exploring the cloud (6 of 8)



A screenshot of a web browser window displaying the FIWARE Lab portal. The URL in the address bar is https://mashup.lab.fiware.org/tgu/Workspace#view=workspace&tab=Tab. The page title is "tgu / Workspace". The navigation menu includes Cloud, Store, Mashup, Data, Account, Help&info, and a user profile icon. A sub-menu for "tgu" is open. The main content area contains a message: "Hey! Welcome to Wirecloud! This is an empty workspace. To create really impressive mashup applications, the first step to take is always to add widgets in this area. To do so, please surf the Marketplace the place where resources are all in there, by clicking on the proper button up in the right corner! If you prefer, you can follow some of these tutorials: • Basic concepts". Below this message is a dashed-line box. At the bottom of the page, there are tabs for "Tab" and "+", a "Powered by" link with the WI logo, and a footer with copyright information: "2014 © FIWARE. The use of FIWARE Testbed services is subject to the acceptance of the Terms and Conditions, Personal Data Protection Policy and Cookies Policy" and the URL "https://lab.fiware.org".

A Wirecloud mashup workspace is also available through the portal.

A brief introduction how to use Wirecloud is available through the portal (click on [Basic Concepts](#) to start the tutorial), in the video tutorials or on YouTube:

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

Using the FIWARE Lab portal

Exploring the cloud (7 of 8)



This page provides a real time infographics of the capacities of FIWARE Lab nodes.

FIWARE Lab status
Check the status of FIWARE Lab

FIWARE Lab nodes
Who are FIWARE Lab nodes

Operating FIWARE Lab
Learn about FIWARE Ops

Be part of FIWARE Lab
Connect your Cloud to FIWARE Lab

6903 users
1320 organizations
9 regions
1472 core
3824900 Mb RAM
431 VM

Since all regions provide own infrastructure monitoring, the FIWARE Lab status can be easily queried by gathering the real-time status from all XIFI nodes through the URL <http://infographic.lab.fi-ware.org/>

Using the FIWARE Lab portal

Exploring the cloud (8 of 8)



Nodes



The status list is continuously updated with new regions joining and will also provide more history data in the future.

Node	Overall	Nova	Neutron	Cinder	Glance	Keystone P.	Support
Prague	●	●	●	●	●	●	🌐 🛡️
Stockholm	●	●	●	●	●	●	🌐 🛡️
Waterford	●	●	●	●	●	●	🌐 🛡️
Berlin	●	●	●	●	●	●	🌐 🛡️
Karlskrona	●	●	●	●	●	●	🌐 🛡️
Lannion	●	●	●	●	●	●	🌐 🛡️
Trento	●	●	●	●	●	●	🌐 🛡️
SophiaAntipolis	●	●	●	●	●	●	🌐 🛡️
PiraeusU	●	●	●	●	●	●	🌐 🛡️

Clicking on the rightmost buttons near to a region name also allows to contact the region's help desk.



Using command line tools

XIFI FOR DEVELOPERS

OpenStack client tools for the command line are available for several platforms – see

http://docs.openstack.org/user-guide/content/install_clients.html.

They can be obtained from your favorite python repository.

You may install the following tools locally:

- cinder - Block Storage API and extensions
- glance - Image Service API
- keystone - Identity service API and extensions
- quantum / neutron - Networking API
- nova - Compute API and extensions
- swift - Object Storage API

Installation of the client tools is straight forward. The example below is for Linux:

- Install the Python Package Index

```
# sudo apt-get install python-pip
```

- Install the client packages

```
# pip install python-novaclient python-keystoneclient \
python-glanceclient python-neutronclient
```

In case you experience version conflicts with your existing Python environment that cause one or more of the client tools to fail with cryptic errors, it is suggested to consider installing Virtual Environments first – see

<http://docs.python-guide.org/en/latest/dev/virtualenvs/>

Prior to using the tools you need to set-up some environment variables.

It is best practice to source these from a file since you may need to switch between regions frequently.

Example:

```
export OS_TENANT_NAME=<your_tenantID>,,  
export OS_USERNAME=<your_username>  
export OS_PASSWORD=<your_password>  
export OS_AUTH_URL=http://cloud.lab.fi-ware.org:4730/v2.0  
export OS_REGION_NAME=<your_region>
```



OpenStack client tool documentation usually refers to the most recent release. Try the `help` command to check for supported commands / options.

Using command line tools

Managing images (1 of 4)



The portal has limited functionality regarding image manipulation – it is recommended to utilize the glance client tool for managing images.

Glance CLI man page and command reference see

<http://docs.openstack.org/developer/python-glanceclient/man/glance.html>

http://docs.openstack.org/cli-reference/content/glanceclient_commands.html

Listing images (including VM snapshots)

```
# glance image-list
```

ID	Name	Disk Format	Container Format	Size	Status
b383bea1-7844-45de-adad-f292b798da85	CentOS_6.5	qcow2	ovf	344457216	active
cc4fc2a8-7006-4fe4-b89e-ed3e3892507d	Cirros 3.2 amd64	qcow2	bare	13167616	active
074766de-1fee-4361-bdcf-60efbaef8665	Ubuntu 12.04 Server CloudImg amd64	qcow2	bare	260309504	active
0973cdbc-1585-45e2-bf76-e8dfd0fd658f	xifi-mon-dem-snapshot	qcow2	bare	1090715648	active
96c93d65-a955-443b-866c-f6a1dfb07bd1	xifi-orion-0.6-DT-showcase	qcow2	bare	2063204352	active

Using command line tools

Managing images (2 of 4)



Images can be created from a file import.

```
# glance image-create --name DEM-Client --disk-format=qcow2 \
--container-format=bare --file /tmp/DEM-Client.img
```

Property	Value
checksum	67f3761fad4246d90af4177cbf832528
container_format	bare
created_at	2014-05-16T07:04:02
deleted	False
deleted_at	None
disk_format	qcow2
id	ffe3a570-3f96-45ca-b871-f0e06372f60d
is_public	False
min_disk	0
min_ram	0
name	DEM-Client
owner	00000000000000000000000000003015
protected	False
size	2029780992
status	active
updated_at	2014-05-16T07:05:01

Using command line tools

Managing images (3 of 4)



Properties can be explored revealing more details than through the portal.

```
# glance image-show 100e2c2f-ddb0-47d7-bcb5-4ec55d845934
```

Property	Value
Property 'nid'	855
Property 'type'	fiware:data
checksum	4d707bf0b1a3f60370cccc31ad8ea6e0
container_format	ovf
created_at	2014-11-27T15:22:22
deleted	False
disk_format	qcow2
id	100e2c2f-ddb0-47d7-bcb5-4ec55d845934
is_public	True
min_disk	0
min_ram	0
name	kurento-image-R5.0.4
owner	00000000000000000000000000000001
protected	False
size	3849977856
status	active
updated_at	2014-11-27T15:25:51

Further manipulations can be applied to images, for example:

- Delete a virtual machine image

```
# glance image-delete 0973cdbe-1585-45e2-bf76-e8df0fd658f
```

- Update image metadata

```
# glance update 4319f871-6d9b-47ab-b1b2-86fcb702598b is_public=True  
protected=False nid=344
```

- Export image

```
# glance image-download 177d05a5-3b9c-447d-bd49-4dee946c907f --  
file /tmp/DEM-Client.img
```

The portal does not yet reveal everything about instances – it is recommended to utilize the nova client tool for exploring into the details and status of instances.

Nova CLI man page and command reference see

<http://docs.openstack.org/developer/python-novaclient/man/nova.html>

http://docs.openstack.org/cli-reference/content/novaclient_commands.html

Listing instances

```
# nova list
```

ID	Name	Status	Task State	Power State	Networks
97cbea1e-d1c2-4465-80b6-55428591f3c1	test_boc	ACTIVE	-	Running	test_boc=192.168.101.2
ac03aeb9-bd22-4b24-942f-b4c590bd18a0	test_vm	ACTIVE	-	Running	internal-net=10.10.10.3
0b91399f-0315-41a1-874d-e07003ab92b5	xifi-sw-repository	SHUTOFF	deleting	Shutdown	private-berlin-120=192.168.120.14, 193.175.132.52

Using command line tools

Working with virtual machines (2 of 4)



Listings properties of instances

```
# nova show 0b91399f-0315-41a1-874d-e07003ab92b5
```

Property	Value
OS-DCF:diskConfig	MANUAL
OS-EXT-AZ:availability_zone	nova
OS-EXT-SRV-ATTR:host	node-5
OS-EXT-SRV-ATTR:hypervisor_hostname	node-5.fokus.fraunhofer.de
OS-EXT-SRV-ATTR:instance_name	instance-000001f7
OS-EXT-STS:power_state	4
OS-EXT-STS:task_state	deleting
OS-EXT-STS:vm_state	stopped
accessIPv4	
accessIPv6	
config_drive	
created	2014-10-22T10:15:06Z
flavor	m1.medium (3)
hostId	bc06d71bf32577ae56362103ef501dd04abf2aad316243057209837e
id	0b91399f-0315-41a1-874d-e07003ab92b5
image	xifi-sw-repository_20141023 (8a3a26b2-5ae6-4b79-8ae7-47dc3efb37ae)
key_name	boc_XIFI
name	xifi-sw-repository
private-berlin-120 network	192.168.120.14, 193.175.132.52
status	SHUTOFF
tenant_id	00000000000000000000000000003015
updated	2015-01-14T15:44:12Z
user_id	bernd-bochow

The client tools also reveal more details on VMs in error.

Property	Value
:	
OS-EXT-STS:task_state	deleting
OS-EXT-STS:vm_state	error
:	
fault	{"message": "ClientException", "code": 500, "details": "The server has either erred or is incapable of performing the requested operation. (HTTP 500) (Request-ID: req-817997f7-fb57-4ea8-bd9c-25d9aad9fc0e)"}
File \"/usr/lib/python2.7/dist-packages/nova/compute/manager.py\", line 224, in decorated_function	
return function(self, context, *args, **kwargs)	
File \"/usr/lib/python2.7/dist-packages/nova/compute/manager.py\", line 1416, in terminate_instance	
do_terminate_instance(instance, bdms)	
File \"/usr/lib/python2.7/dist-packages/nova/openstack/common/lockutils.py\", line 242, in inner	
retval = f(*args, **kwargs)	
File \"/usr/lib/python2.7/dist-packages/nova/compute/manager.py\", line 1408, in do_terminate_instance	
reservations=reservations)	
File \"/usr/lib/python2.7/dist-packages/nova/hooks.py\", line 85, in inner	
rv = f(*args, **kwargs)	
File \"/usr/lib/python2.7/dist-packages/nova/compute/manager.py\", line 1371, in _delete_instance	
project_id=project_id)	
:	
File \"/usr/lib/python2.7/dist-packages/cinderclient/client.py\", line 135, in request	
raise exceptions.from_response(resp, body)	

The client tools can (sometimes) help to clean-up blocked resources from earlier faults

```
# nova reset-state --active 0b91399f-0315-41a1-874d-e07003ab92b5  
# nova delete 0b91399f-0315-41a1-874d-e07003ab92b5
```

can be used to create own resources

```
# nova flavor-create test_boc auto 1000 1 2
```

ID	Name	Memory_MB	Disk	Ephemeral	Swap	VCPUs	RXTX_Factor	Is_Public
0ad1613c-016c-47c4-afdf-511c02ff3735	test_boc	1000	1	0		2	1.0	True

or to query resource pools.

```
# nova floating-ip-pool-list  
# nova floating-ip-list
```

Using command line tools

Working with volumes (1 of 2)



The portal does not yet allow many operations on volumes such as resizing or managing metadata – it is recommended to utilize the cinder client tool for exploring into the details and status of volumes.

Cinder CLI man page and command reference see

<http://docs.openstack.org/developer/python-cinderclient/man/cinder.html>

http://docs.openstack.org/cli-reference/content/cinderclient_commands.html

Listing volumes

```
# cinder list
```

ID	Status	Display Name	Size	Volume Type	Bootable	Attached to
1ff4f5a8-2d07-4f4e-b9f4-f053f846c192	available	XIFI Software Repository	200	None	false	
36b2c085-3911-4f0e-a94b-b5c38535dbdd	in-use	test_gkh	1	None	false	90d5bc0a-4638-451d-9ab8-2dff0e7faabb
3f70d1ff-213a-4a78-b859-dfb8b59a5d033	available	tgutest	1	None	false	

Using command line tools

Working with volumes (2 of 2)



List properties of volumes

```
# cinder show 1ff4f5a8-2d07-4f4e-b9f4-f053f846c192
```

Property	Value
attachments	[{u'device': u'/dev/vdb', u'server_id': u'0b91399f-0315-41a1-874d-e07003ab92b5', u'id': u'1ff4f5a8-2d07-4f4e-b9f4-f053f846c192', u'volume_id': u'1ff4f5a8-2d07-4f4e-b9f4-f053f846c192'}]]
availability_zone	nova
bootable	false
created_at	2014-10-17T10:41:21.000000
display_description	This virtual disk is allocated for storing the XIFI sub-system software packages
display_name	XIFI Software Repository
id	1ff4f5a8-2d07-4f4e-b9f4-f053f846c192
metadata	{}
os-vol-host-attr:host	node-1
os-vol-tenant-attr:tenant_id	00000000000000000000000000003015
size	200
snapshot_id	None
source_volid	None
status	available
volume_type	None



XIFI FOR DEVELOPERS

