

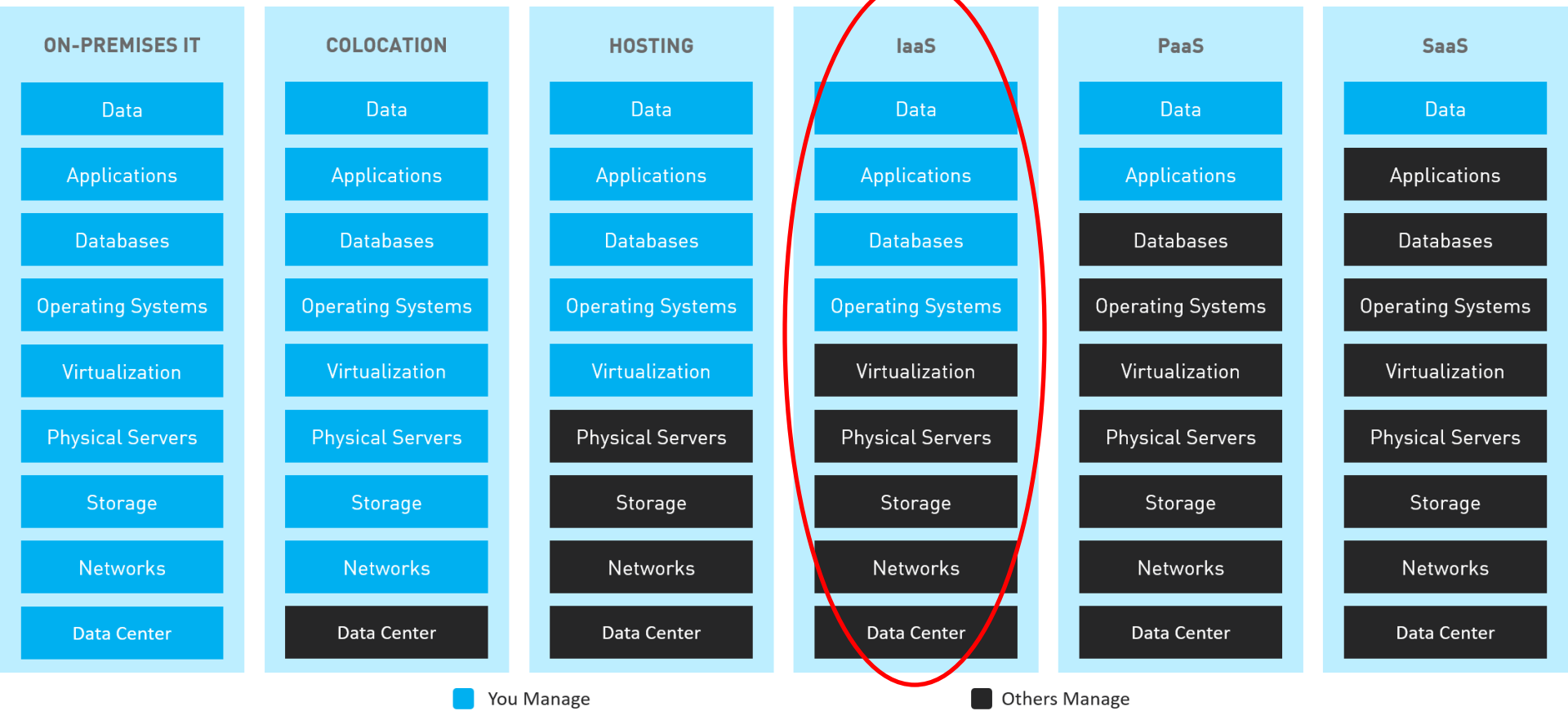


MASTER OF SCIENCE  
IN ENGINEERING



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**TSM\_SecIndOpT**  
**SWITCHengines Openstack**  
**Introduction, Version: 1.0**

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# Make sure you have accepted the invitation

 cloud@switch.ch <cloud@switch.ch>  
To:  Haab Luca

You don't often get email from [cloud@switch.ch](mailto:cloud@switch.ch). [Learn why this is important](#)


# SWITCHengines

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## Invitation to Project

# SWITCHengines Dashboard (openstack)

engines.switch.ch/horizon/auth/login/?next=/horizon/



Use your edu-ID to access

SWITCHengines

SWITCH edu-ID

Log in to access the SWITCHengines Dashboard.

Authenticate using

SWITCH edu-ID

If you are not sure which authentication method to use, contact your administrator.

Forgot password?

Login

SWITCH

SWITCHengines | lucia.haas@ethz.ch • ZH • lucia.haas@ethz-so.ch


Project: Quickstart /

Quickstart

Instances: Create instance

Identity

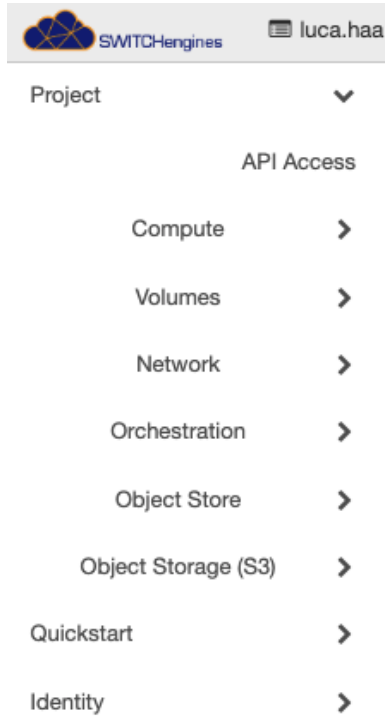
Education Project: lucia.haas@ethz.ch



Name	Status	IPs	SSH keypair	Actions
real_router	Shut off	10.10.10.122 86.119.46.180 172.16.32.122		▶
opensense	Shut off	10.10.10.130 172.16.32.153	Mighty Beast	▶
dns_server Debian (SWITCHengines) Bullseye 11	Shut off	192.168.100.200 86.119.46.180	Mighty Beast	▶

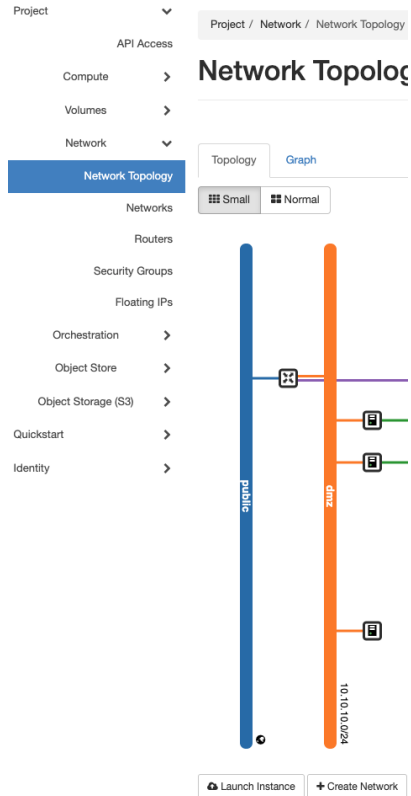
<https://engines.switch.ch/horizon>

# Resources



- Under "Compute->Overview" you can see the resources available and those used

# Create a network and give it access to the internet



- Add a network
- Add a router and connect both your newly created network and the public network

# 1-st Virtual Machine Creation – ssh keys

- Attention: make sure ssh key is ready

<https://help.switch.ch/engines/documentation/creating---importing-ssh-keys/>

## Option 1: Import SSH-Key

With the import function you can import a previously created SSH key (e.g. one you have already created on your laptop) with a simple cut and paste function.

Openstack support rsa and ecdsa SSH key type. The SSH key type ed25519 will be supported in future release.

To do so, open your public ssh key file and copy your public key to the clipboard. The public key is usually in `~/.ssh/id_rsa.pub`, but you may need to check your specific documentation for your local environment.

Please make sure that your Key Pair Name or Public Key does not use any accented characters such as ä, ö, ü, é, à, etc.

**Import Key Pair**

Key Pairs are how you login to your instance after it is launched.

Choose a key pair name you will recognise and paste your SSH public key into the space provided.

SSH key pairs can be generated with the `ssh-keygen` command:

```
ssh-keygen -t rsa -f ccloud.key
```

import public key  
A key pair consists of two keys: a key you keep private (`cloud.key`) and a public key (`cloud.key.pub`). Paste the contents of the public key file here.

After launching an instance, you login using the private key (the username might be different depending on the image you launched):

```
ssh -i ccloud.key <username>@<instance_ip>
```

Cancel Import Key Pair

# 1-st Virtual Machine Creation – ssh keys

- `ssh-keygen` (e.g. `ssh-keygen -t ed25519`)
- Accepted connections  
`~/.ssh/known_hosts`  
-> You may need to erase your machine from there in case you changed your key pair
- Accepted public keys  
`~/.ssh/authorized_keys`  
Remember to remove the old one if you change it
- Copy  
`ssh-copy-id -i ~/.ssh/tatu-key-ecdsa user@host`
- Copy from GH/GL  
`curl https://github.com/username.keys >> ~/.ssh/authorized_keys`
- Ask the public key to your professor (e.g.  
`curl https://github.com/fooltinkerer.keys >> ~/.ssh/authorized_keys`)

# 1-st Virtual Machine Creation – Concretely

**Launch Instance**

Please provide the initial hostname for the instance, the availability zone where it will be deployed, and the instance count. Increase the Count to create multiple instances with the same settings.

**Instance Name \***  
PI E2EEDA

**Description**

**Availability Zone**  
nova

**Count \***  
1

**Total Instances (10 Max)**  
80%

7 Current Usage  
1 Added  
2 Remaining

**Details**  
Source \*  
Flavor \*  
Networks \*  
Network Ports  
Security Groups  
Key Pair  
Configuration  
Server Groups  
Scheduler Hints  
Metadata

**Cancel** **< Back** **Next >** **Launch Instance**

- Source indicates the base image used
- There are multiple flavours (size of resources) to choose from
- Add the machine to the network you created
- Add your `ssh` key
- Optional: `cloud-init.yaml`

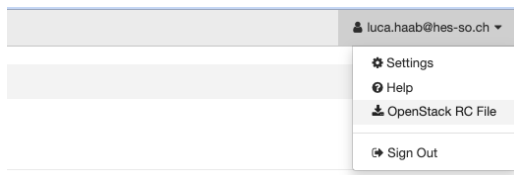
# 1-st Virtual Machine Creation – Granting access



- Default: no access
- Need to give a floating IP address to the server
- Need to add the service(s) to the list of allowed ones - applies to ICMP and `ssh` as well

# Use the openstack cli

- Download the file to source



- Create the credentials by following

<https://help.switch.ch/engines/faq/how-to-create-api-credentials/>

- Source the file and enter the generated credentials

```
+ openstack source luca.haab@hes-so.ch-openrc.sh
Enter your SWITCHengines API credentials for project luca.haab@hefr.ch as user luca.haab@hes-so.ch:
```

**STORE THE CREDENTIALS  
SAFELY!**

# Use the openstack cli

- Add your ssh key  

```
openstack keypair create --public-key  
~/.ssh/id_openstack.pub  
mighty_openstack
```
- Create an instance  

```
openstack server create --image  
"Debian Bullseye 11 (SWITCHengines)" -  
-flavor c1.small --key-name "Mighty  
Beast" --network office --network dmz  
client1
```

- Create a floating IP address  

```
openstack floating ip create public
```
- Bind the floating IP to an address  

```
openstack floating ip set --port  
e9d2ccf4-b291-43ce-b315-b158000fe149  
a7610fb9-862e-400c-befb-a0464abcc6f5
```
- Get the existing security groups  

```
openstack security group list
```
- Show the content of a group  

```
openstack security group show MyApp
```
- Create an entry in an existing security group  

```
openstack security group rule create -  
-ingress --protocol tcp --dst-port 22  
--ethertype IPv4 MyApp
```

*Adapt the values  
obviously ;-)*

