

# Preparing sandbox Environment

## Lesson 1

**Please don't write anything on this paper!**

### Objectives:

The objective of this task is to prepare the environment required for the Software Defined Networking sandbox playground. You will need this environment to be able to finish this course. This task is a pre-requisite for the upcoming tasks in the next weeks.

### Tasks:

In the end you should have a working mininet image with functioning networking. The server must have internet access and must be SSH accessible (1p)

Mininet should be running and you should be able to forward the X11 from the server (1p)

Ryu should work, and you should be able to setup a simple L2 switching topology (1p)

**3pts total.**

### Here you have a quick help guide:

Download latest image from <https://github.com/mininet/mininet/wiki/Mininet-VM-Images>

Currently 2.2.2 on Ubuntu 14.04 LTS (64bit)

Import the image to any virtual environment

Configure the networking to have ssh access to the machine and internet access too.

That's 1 NAT interface and 1 Host-only adapter in Virtualbox. (You can use any other tools of course. Eg, vmware, kvm, xen etc).

Set up networking to gain access to the Internet (DNS, IP, routing) and check whether you can SSH to your machine from your host (putty or terminal)

Login credentials: mininet:mininet

Download ryu from github to your home folder

**git clone** <https://github.com/osrg/ryu>

Go to the downloaded folder and checkout the latest release. Currently v4.28

**git checkout v4.28**

Install python development and python pip packages. Update the APT repository first

**sudo apt-get update**

**sudo apt-get install python-dev python-pip**

Install ryu using pip

**sudo pip install .**

Test if ryu works.

**ryu --version**

You might need to upgrade some packages as six. To make it work

**Install any X-server on your machine to enable X forwarding.**

On linux..no software needed

On mac you can use xQuartz

On Windows Xming X

When SSH-ing to your machine use -X argument in linux / mac or enable X Forwarding from Putty on windows.

Start a mininet topology to test the networking:

**sudo mn --topo single,3 --mac --switch ovsk,protocols=OpenFlow13 --controller remote -x**

In a new terminal session or screen start a ryu instance

**ryu-manager --verbose ryu.app.simple\_switch\_13**

In a mininet console run pingall to test the connectivity.

**Evaluation:**

Server has internet connection. **ping google.com**

You can ssh to the machine using user **mininet**. 1p

You can forward the screen to your localhost. E,g type **wireshark** in command line 1p

Hosts can ping each other in the sandbox. Use **pingall** command in mininet console. 1p

**Present the results to your supervisor**