

Lab Notes for RIV MOOC

- SDN with ONOS

ONOS and mininet are the most stable solution for testing SDN in the Lab VM.

- Installing ONOS via docker is straightforward

```
sudo apt-get update
sudo apt-get install apt-transport-https ca-certificates gnupg-
agent software-properties-common
wget https://download.docker.com/linux/ubuntu/gpg
apt-key add gpg
sudo apt-key fingerprint 0EBFCD88
sudo add-apt-repository "deb [arch=amd64]
https://download.docker.com/linux/ubuntu \
$(lsb_release -cs) \
stable"
apt update
sudo apt-get install docker-ce docker-ce-cli containerd.io
docker pull onosproject/onos
```

- Start mininet (use OpenFlow10 for compatibility with ovectl commands)

```
sudo mn --topo tree,2 --mac --switch ovsk,protocols=OpenFlow13 --controller
remote,ip=172.17.0.2
```

- Start ONOS as specified in <https://wiki.onosproject.org/display/ONOS/Single+Instance+Docker+deployment> and make sure to activate the following apps:

| | | | |
|-------|-------------------------------------|----------------|------------------------------|
| * 8 | org.onosproject.drivers | 2.4.0.SNAPSHOT | Default Drivers |
| * 26 | org.onosproject.optical-model | 2.4.0.SNAPSHOT | Optical Network Model |
| * 27 | org.onosproject.openflow-base | 2.4.0.SNAPSHOT | OpenFlow Base Provider |
| * 57 | org.onosproject.netcfgghostprovider | 2.4.0.SNAPSHOT | Network Config Host Provider |
| * 60 | org.onosproject.lldpprovider | 2.4.0.SNAPSHOT | LLDP Link Provider |
| * 61 | org.onosproject.hostprovider | 2.4.0.SNAPSHOT | Host Location Provider |
| * 75 | org.onosproject.openflow | 2.4.0.SNAPSHOT | OpenFlow Provider Suite |
| * 107 | org.onosproject.gui2 | 2.4.0.SNAPSHOT | ONOS GUI2 |
| * 136 | org.onosproject.proxyarp | 2.4.0.SNAPSHOT | Proxy ARP/NDP |
| * 158 | org.onosproject.fwd | 2.4.0.SNAPSHOT | Reactive Forwarding |

- For example use: (password karaf)

```
docker run -t -d -p 8181:8181 -p 8101:8101 -p 5005:5005 -p 830:830 --name
onos onosproject/onos
docker exec -it onos /bin/bash
apt update
apt install openssh-server
ssh -p 8101 -o StrictHostKeyChecking=no karaf@localhost
```

- Check the GUI (login: onos, password: rocks) at <http://172.17.0.2:8181/onos/ui/#/topo2>
- Activate reactive forwarding:

```
app activate org.onosproject.fwd
```

- Or play with intents <https://wiki.onosproject.org/display/ONOS/Basic+ONOS+Tutorial>:

```
add-host-intent 00:00:00:00:00:01/None 00:00:00:00:00:04/None
```



- Play with ONOS and mininet
- Explore openflow or openvswitch
- Study intents and reactive routing
- Interconnect with iBGP speaker (sdn-ip)
- Explore VPLS or VxLAN

- Routing with FRR

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