

Task 1: Build and run the Network Services Orchestrator (NSO) container

1. Clone the repo:

```
$ git clone \
https://github.com/ganuzelli/Network_Automation_Docker.git
```

2. Copy the NSO installer binary (nso-4.7.linux.x86_64.installer.bin) to the Network_Automation_Docker/lab files/NSO-container directory
3. Open a terminal window in the NSO directory, build the container, and launch an interactive shell in the container:

```
$ docker-compose run --rm --service-ports nso
```

4. From inside the container, start a simulated IOS device:

```
# ncs-netsim delete-network
# ncs-netsim create-device cisco-ios r1
# cd netsim
# ncs-netsim start
```

5. Verify the simulation is alive and list the active devices:

```
# ncs-netsim is-alive
DEVICE r1 OK

# ncs-netsim list
ncs-netsim list for /home/nso/netsim

name=r1 netconf=12022 snmp=11022 ipc=5010 cli=10022
dir=/home/nso/netsim/r1/r1
```

6. From a new terminal window, verify that you can connect to the simulated IOS device (the password is "admin"):

```
$ ssh -o UserKnownHostsFile=/dev/null admin@127.0.0.1 -p 10022
admin@localhost's password:

admin connected from 172.18.0.1 using ssh on 16e405b0c039
r1> exit
```

Task 2: Build and run a container with a Python network automation

If you get stuck on a particular step, I created branches with the solutions up to and including that task. For example, to switch to the branch that has the solution for task #1 type:

```
$ git branch task-1
```

1. Clone the Python docker repo
2. Make the necessary corrections to fix the Dockerfile and docker-compose.yml files
3. Review restconf-test.py
4. Build and run the Python container:

```
$ docker-compose run --rm python
```

5. Verify that the changes were made to the simulated IOS device
6. Edit the restconf-test.py script to assign a different description to the *Loopback 1* interface, rebuild the container, and re-run the script in the container
7. When finished with the interactive NSO container, stop the simulation and exit the container. From the shell in the NSO container:

```
# ncs-netsim stop  
# exit
```