

Mininet e OpenFlow

Felippe César

Mininet

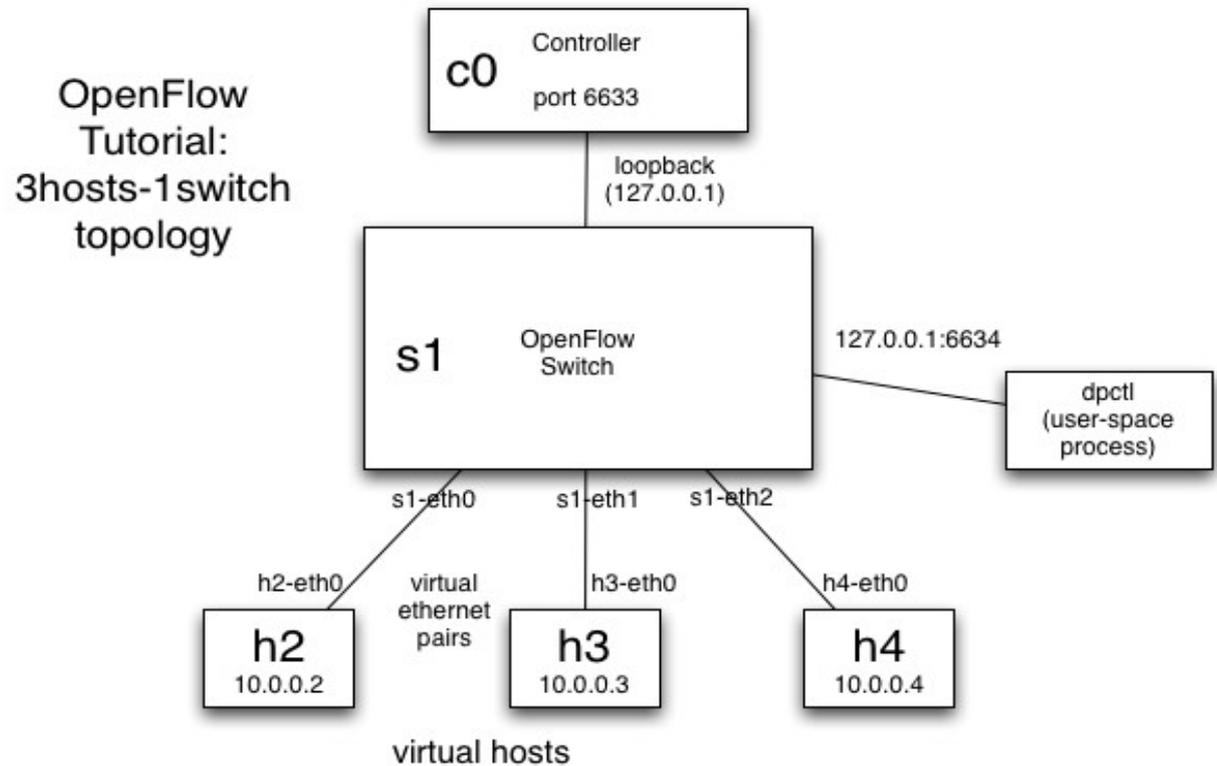
- Simulador de redes;
- Rapido, topologias customizadas, rodar programas reais;
- Recursos de um laptop;
- Open Source;
- Dependente do linux;

Mininet

- Download e instalação;
- VM, GitHub > mininet/util/install.sh -n[0|3]fw;
- Inicialização;
- sudo mn [options]
- -v info/debug/output/warning
- -h, --help
- --switch ivs|ovsk|ovsl|user
- --controller none|nox|ovsc|ref|remote
- --topo linear|minimal|reversed|single|tree
- --custom myfile.py

Mininet

- `sudo mn --topo single,3 --mac --switch user --controller remote`



Mininet

- `sudo mn --custom ./topologia.py --topo mytopo --controller remote`

```
from mininet.topo import Topo
class MyTopo( Topo ):
    "Simple topology example."

    def __init__( self ):
        "Create custom topo."

        # Initialize topology
        Topo.__init__( self )

        # Add hosts and switches
        h1 = self.addHost( 'h1' )
        h2 = self.addHost( 'h2' )
        h3 = self.addHost( 'h3' )
        s1 = self.addSwitch( 's1' )

        # Add links
        self.addLink( s1, h1, 1, 1 )
        self.addLink( s1, h2, 2, 1 )
        self.addLink( s1, h3, 3, 1 )

topos = { 'mytopo': ( lambda: MyTopo() ) }
```

Mininet

- Nós diferentes, mesmo filesystem;
- help, nodes, net, dump, exit;
- ping, pingall;
- python;
- link up/down
- xterm

Of-wireshark dissector

- Plugin do wireshark para capturar pacotes openflow;
- Testar ping: `of && (of.type != 3) && (of.type != 2)`

dpctl

- Manipula datapath;
- Difere para cada versão do OpenFlow;

Dpctl OpenFlow 1.0

- dpctl [options] command [switch] [args...]
- Alguns comandos:
 - show
 - status
 - dump-flows
 - mod-flows
 - add-flow
 - Del-flows
- \$ dpctl del-flows tcp:127.0.0.1:6634
- \$ dpctl add-flow tcp:127.0.0.1:6634 in_port=2,actions=output:1
- \$ dpctl add-flow tcp:127.0.0.1:6634
in_port=*,idle_timeout=0,actions=mod_dl_src:12:34:56:78:9a:bc,output:2
- \$ dpctl dump-flows tcp:127.0.0.1:6634

Dpctl OpenFlow 1.3

- `dpctl [options] switch command [args...]`
- Principais comandos:
 - features
 - get/set-config
 - stats-flow
 - stats-table
 - Flow-mod
- `$ dpctl tcp:127.0.0.1:6634 flow-mod table=0,cmd=del`
- `$ dpctl tcp:127.0.0.1:6634 flow-mod table=0,cmd=add in_port=2
apply:output=1`
- `$ dpctl tcp:127.0.0.1:6634 flow-mod table=0,cmd=add
apply:set_field=eth_src:12:34:56:78:9a:bc,output=2`
- `$ dpctl tcp:127.0.0.1:6634 stats-flow`

Links Relacionados

- <http://mininet.org/>
- <https://github.com/mininet/mininet/wiki/Introduction-to-Mininet>
- <https://github.com/CPqD/ofsoftswitch13/wiki/Dpctl-Documentation>
- http://archive.openflow.org/wk/index.php/OpenFlow_Tutorial
- <http://eventos.redclara.net/indico/getFile.py/access?contribId=1&resId=3&materialId=slides&confId=197>