

1.

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IDLE Shell 3.10.2 - /Users/haleywaddell/Documents/Topology0.py (3.10.2)
Python 3.10.2 (v3.10.2:a58ebcc701, Jan 13 2022, 14:50:16) [Clang 13.0.0 (clang-1300.0.29.30)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
>>> from mininet.topo import Topo

...
class Topology0(Topo):
...     def __init__(self):
...         Topo.__init__(self)
...         Ht1 = self.addHost('H1', ip = '10.0.1.10/24')
...         Ht2 = self.addHost('H2', ip = '10.0.1.11/24')
...         Ht3 = self.addHost('H3', ip='10.0.1.12/24')
...         Ht4 = self.addHost('H4', ip='10.0.1.13/24')
...         Ht5 = self.addHost('H5', ip='10.0.2.10/24')
...         Ht6 = self.addHost('H6', ip='10.0.2.11/24')
...         Ht7 = self.addHost('H7', ip='10.0.2.12/24')
...         Ht8 = self.addHost('H8', ip='10.0.2.13/24')
...         Ht9 = self.addHost('H9', ip='10.0.1.1/24')
...         Ht10 = self.addHost('H10', ip='10.0.2.1/24')
...         s9 = self.addSwitch('S9')
...         s10 = self.addSwitch('S10')
...         s11 = self.addSwitch('S11')
...         s12 = self.addSwitch('S12')
...         s13 = self.addSwitch('S13')
...         s14 = self.addSwitch('S14')
...         s15 = self.addSwitch('S15')
...
...         self.addLink(s9,Ht9)
...         self.addLink(s9,Ht10)
...         self.addLink(s9,s10)
...         self.addLink(s9,s13)
...         self.addLink(s10,s11)
...         self.addLink(s10,s12)
...         self.addLink(s13,s14)
...         self.addLink(s13,s15)
...         self.addLink(s11,Ht1)
...         self.addLink(s11,Ht2)
...         self.addLink(s12,Ht3)
...         self.addLink(s12,Ht4)
...         self.addLink(s14,Ht5)
...         self.addLink(s14,Ht6)
...         self.addLink(s15,Ht7)
...         self.addLink(s15,Ht8)
...
...     topos = { 'topology':( lambda : Topology0() ) }

```

2.

```

mininet@mininetvm: ~
sudo: Topology0.py: command not found
mininet@mininetvm:~$ sudo python Topology.py
python: can't open file 'Topology.py': [Errno 2] No such file or directory
mininet@mininetvm:~$ sudo python Topology0.py
mininet@mininetvm:~$ clear
mininet@mininetvm:~$ sudo python Topology0.py
mininet@mininetvm:~$ sudo mn --custom Topology0.py --topo topology
*** Creating network
*** Adding controller
*** Adding hosts:
H1 H2 H3 H4 H5 H6 H7 H8 H9 H10
*** Adding switches:
S9 S10 S11 S12 S13 S14 S15
*** Adding links:
(S9, H9) (S9, H10) (S9, S10) (S9, S13) (S10, S11) (S10, S12) (S11, H1) (S11, H2)
(S12, H3) (S12, H4) (S13, S14) (S13, S15) (S14, H5) (S14, H6) (S15, H7) (S15, H8)
*** Configuring hosts
H1 H2 H3 H4 H5 H6 H7 H8 H9 H10
*** Starting controller
c0
*** Starting 7 switches
S9 S10 S11 S12 S13 S14 S15 ...
*** Starting CLI:

```

3. Packets are lost because the switches forwarding the packets are not able to keep up. The controller is subjectable to cluster in the network vulnerable to congestion.

```
mininet@mininetvm: ~
S9 S10 S11 S12 S13 S14 S15 ...
*** Starting CLI:
mininet> pingall
*** Ping: testing ping reachability
H1 -> H2 H3 H4 X X X X H9 X
H2 -> H1 H3 H4 X X X X H9 X
H3 -> H1 H2 H4 X X X X H9 X
H4 -> H1 H2 H3 X X X X H9 X
H5 -> X X X X H6 H7 H8 X H10
H6 -> X X X X H5 H7 H8 X H10
H7 -> X X X X H5 H6 H8 X H10
H8 -> X X X X H5 H6 H7 X H10
H9 -> H1 H2 H3 H4 X X X X X
H10 -> X X X X H5 H6 H7 H8 X
*** Results: 55% dropped (40/90 received)
mininet> sudo python Topology0.py
*** Unknown command: sudo python Topology0.py
mininet>
Interrupt
```

4.

```

mininet@mininetvm: ~
8)
*** Configuring hosts
H1 H2 H3 H4 H5 H6 H7 H8 H9 H10
*** Starting controller
c0
*** Starting 7 switches
S9 S10 S11 S12 S13 S14 S15 ...
*** Starting CLI:
mininet> pingall
*** Ping: testing ping reachability
H1 -> H2 H3 H4 X X X X H9 X
H2 -> H1 H3 H4 X X X X H9 X
H3 -> H1 H2 H4 X X X X H9 X
H4 -> H1 H2 H3 X X X X H9 X
H5 -> X X X X H6 H7 H8 X H10
H6 -> X X X X H5 H7 H8 X H10
H7 -> X X X X H5 H6 H8 X H10
H8 -> X X X X H5 H6 H7 X H10
H9 -> H1 H2 H3 H4 X X X X
H10 -> X X X X H5 H6 H7 H8 X
*** Results: 55% dropped (40/90 received)
mininet> sudo python Topology0.py
*** Network connected: sudo python Topology0.py

```

Host	Ip Address	Is host pingable from h9	Is host pingable from h10	Scenario:1 Measure bw and delay H9	Scenario:2 Measure bw and delay H10
H1	10.0.1.10	yes	no	33.6 gbits/sec and 1.218ms	n/a
H2	10.0.1.11	yes	no	29.7 gbits/sec and .1.440 ms	n/a
H3	10.0.1.12	yes	no	32.8 gbits/sec and .061msss	n/a
H4	10.0.1.13	yes	no	29.8 gbits/sec and .061msss	n/a
H5	10.0.2.10	no	yes	n/a	
H6	10.0.2.11	no	yes	n/a	
H7	10.0.2.12	no	yes	n/a	
H8	10.0.2.13	no	yes	n/a	
H9	10.0.1.1	no	yes	n/a	
H10	10.0.2.1	no	yes		

