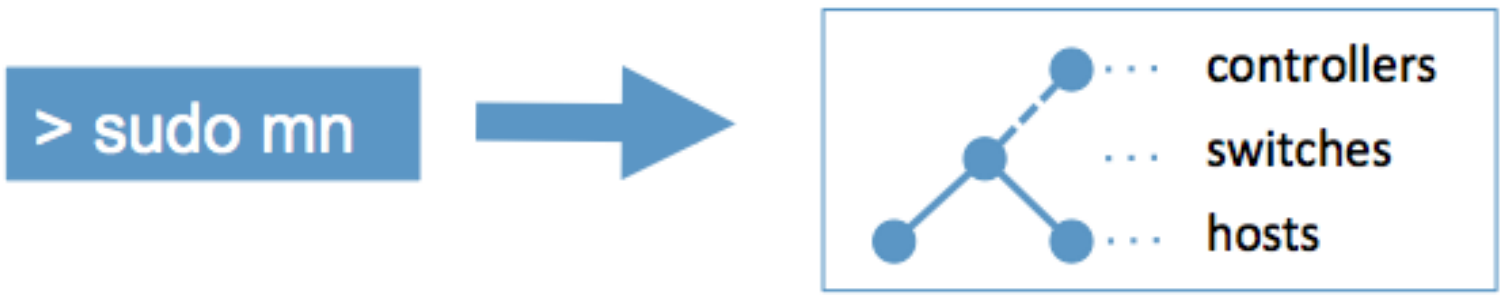
Mininet



Session 2

Basic Mininet Command Line

- **--topo** – defines a topology via command line upon mininet start-up.
- **--link** - defines the link type via command line mininet startup

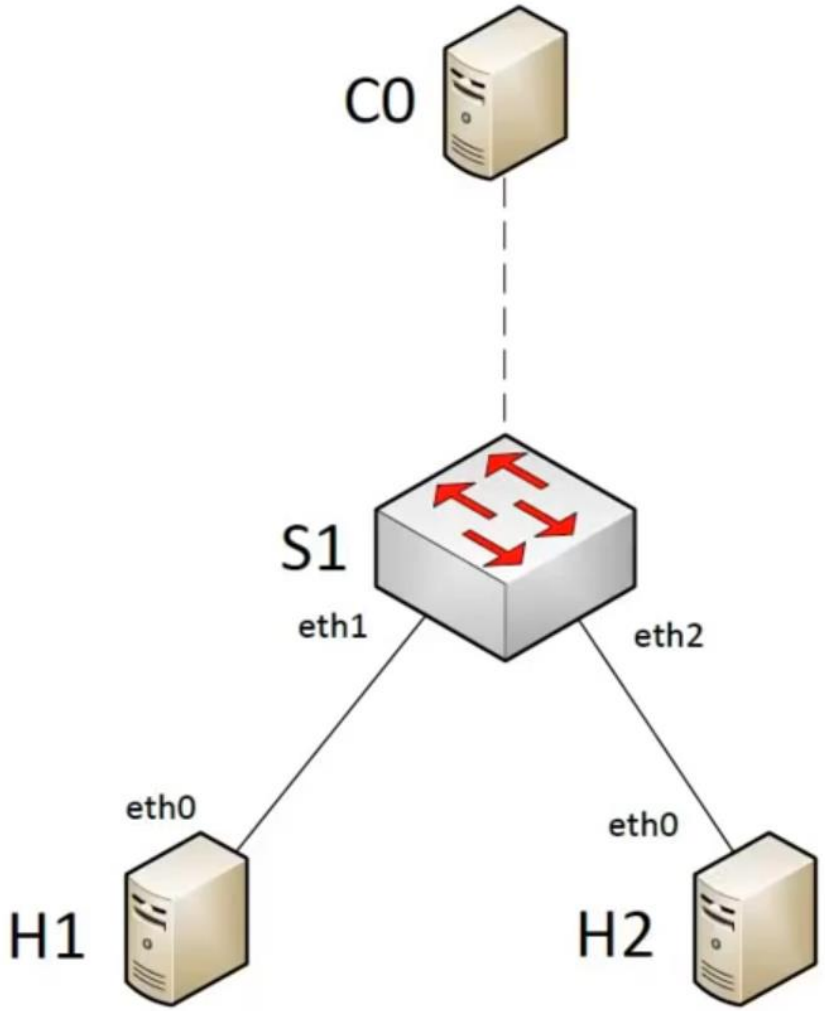
Trying Out Different Mininet Topologies

- Minimal network with two hosts, one (1) switch
  - sudo mn –topo minimal
- Example with 4 hosts and 4 switches
  - sudo mn --topo linear,4
- Example with 4 hosts all connected to one switch.
  - sudo mn --topo single,4
- Tree topology with defined depth and fan-out.
  - sudo mn --topo tree,depth=2,fanout=2

Minimal network with two hosts, one (1) switch

- sudo mn –topo minimal

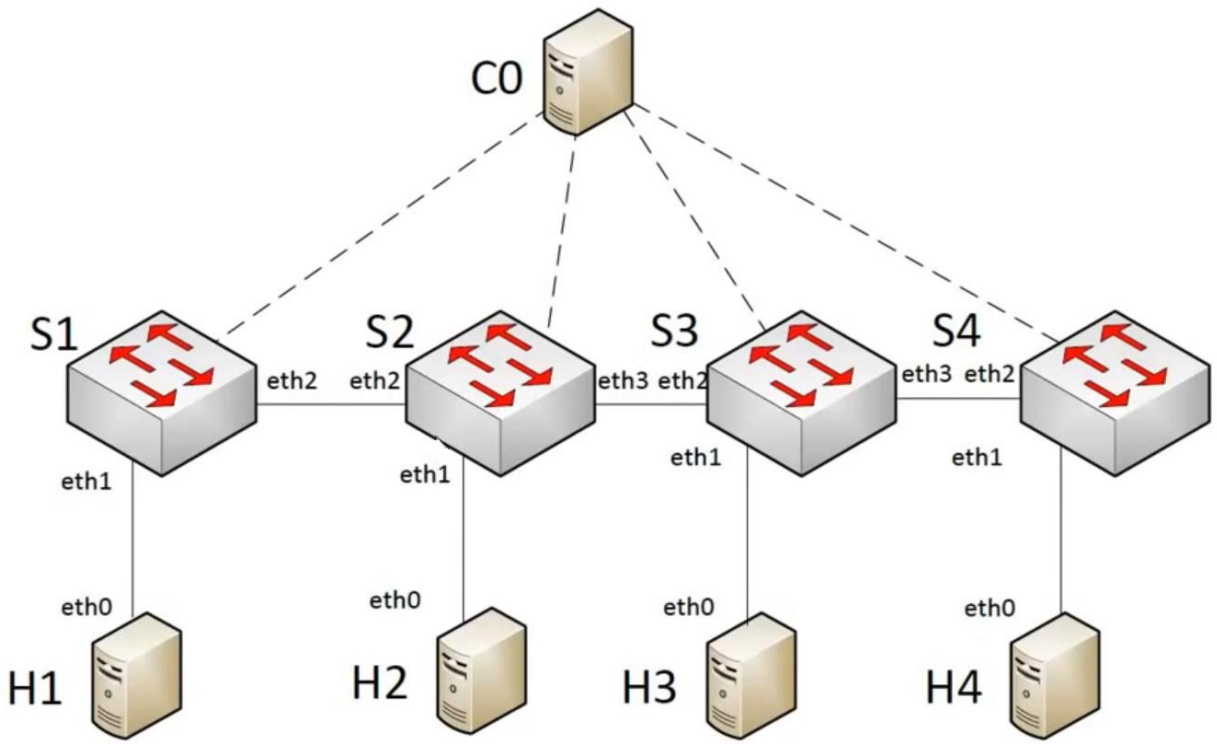
```
mininet@mininet-vm:~$ sudo mn --topo minimal
*** Creating network
*** Adding controller
*** Adding hosts:
h1 h2
*** Adding switches:
s1
*** Adding links:
(h1, s1) (h2, s1)
*** Configuring hosts
h1 h2
*** Starting controller
c0
*** Starting 1 switches
s1 ...
*** Starting CLI:
mininet> net
h1 h1-eth0:s1-eth1
h2 h2-eth0:s1-eth2
s1 lo:  s1-eth1:h1-eth0 s1-eth2:h2-eth0
c0
```



Example with 4 hosts and 4 switches

- sudo mn --topo linear,4

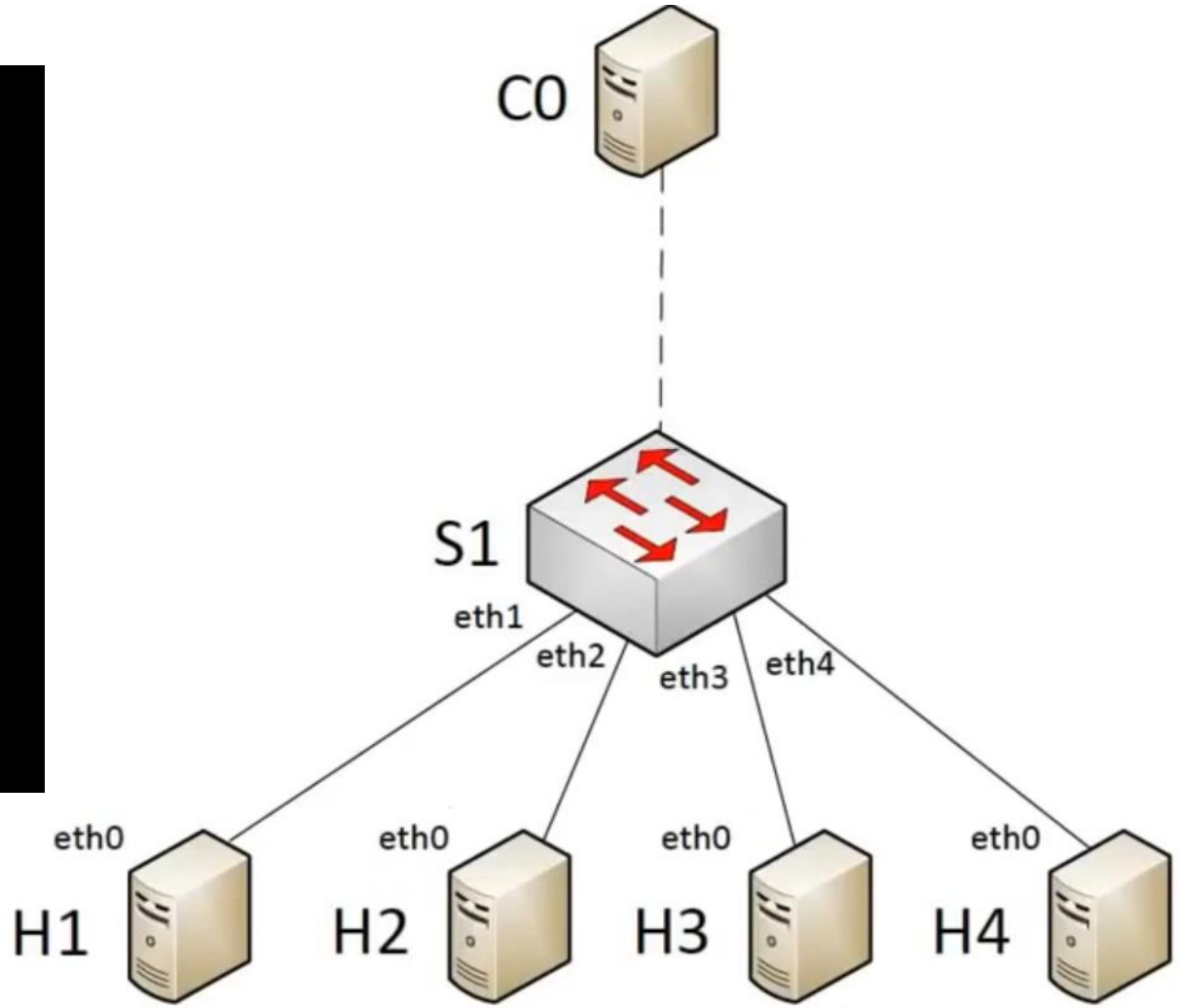
```
mininet@mininet-vm:~$ sudo mn --topo linear,4
*** Creating network
*** Adding controller
*** Adding hosts:
h1 h2 h3 h4
*** Adding switches:
s1 s2 s3 s4
*** Adding links:
(h1, s1) (h2, s2) (h3, s3) (h4, s4) (s2, s1) (s3, s2) (s4, s3)
*** Configuring hosts
h1 h2 h3 h4
*** Starting controller
c0
*** Starting 4 switches
s1 s2 s3 s4 ...
*** Starting CLI:
mininet> net
h1 h1-eth0:s1-eth1
h2 h2-eth0:s2-eth1
h3 h3-eth0:s3-eth1
h4 h4-eth0:s4-eth1
s1 lo:  s1-eth1:h1-eth0 s1-eth2:s2-eth2
s2 lo:  s2-eth1:h2-eth0 s2-eth2:s1-eth2 s2-eth3:s3-eth2
s3 lo:  s3-eth1:h3-eth0 s3-eth2:s2-eth3 s3-eth3:s4-eth2
s4 lo:  s4-eth1:h4-eth0 s4-eth2:s3-eth3
c0
```



Example with 4 hosts all connected to one switch.

- sudo mn --topo single,4

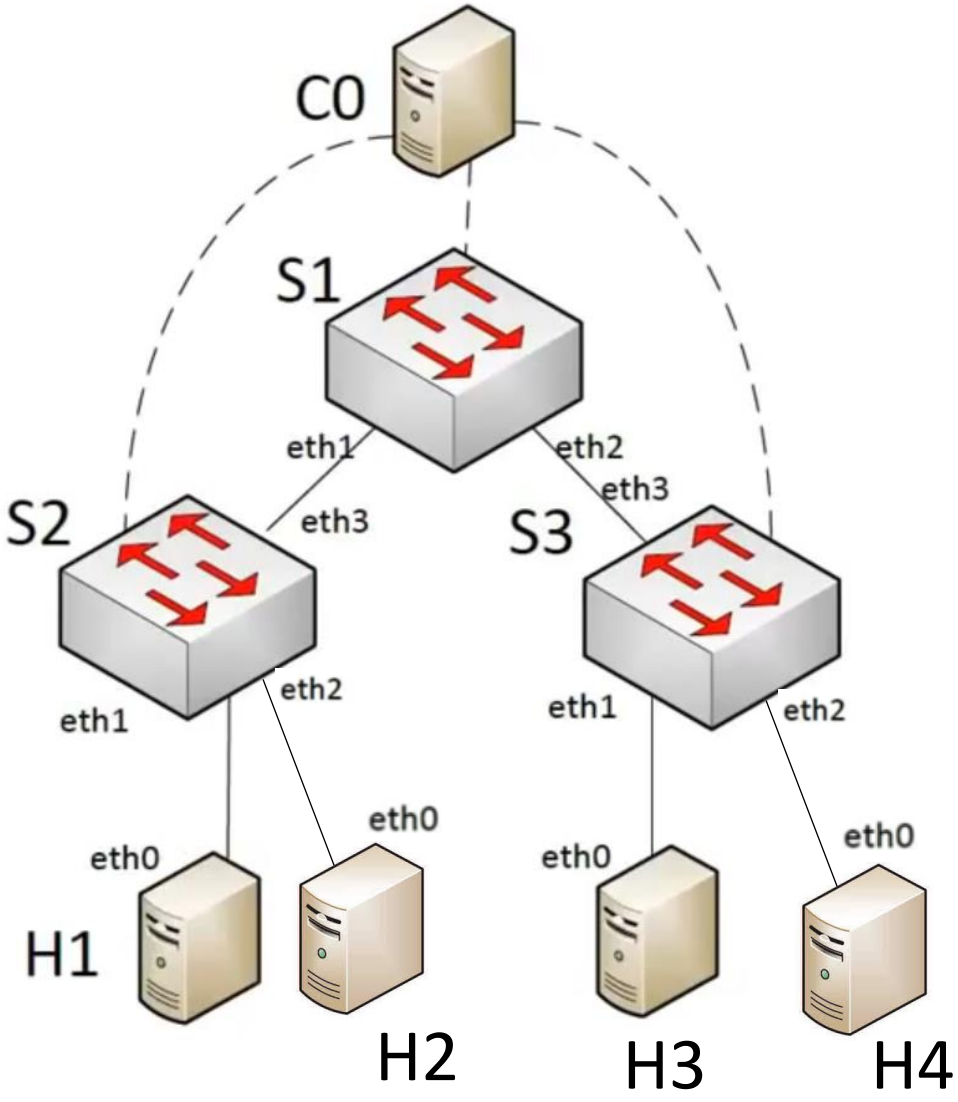
```
mininet@mininet-vm:~$ sudo mn --topo single,4
*** Creating network
*** Adding controller
*** Adding hosts:
h1 h2 h3 h4
*** Adding switches:
s1
*** Adding links:
(h1, s1) (h2, s1) (h3, s1) (h4, s1)
*** Configuring hosts
h1 h2 h3 h4
*** Starting controller
c0
*** Starting 1 switches
s1 ...
*** Starting CLI:
mininet> net
h1 h1-eth0:s1-eth1
h2 h2-eth0:s1-eth2
h3 h3-eth0:s1-eth3
h4 h4-eth0:s1-eth4
s1 lo:  s1-eth1:h1-eth0 s1-eth2:h2-eth0 s1-eth3:h3-eth0 s1-eth4:h4-eth0
c0
```



Tree topology with defined depth and fan-out.

- sudo mn --topo tree,depth=2,fanout=2

```
mininet@mininet-vm:~$ sudo mn --topo tree,depth=2,fanout=2
*** Creating network
*** Adding controller
*** Adding hosts:
h1 h2 h3 h4
*** Adding switches:
s1 s2 s3
*** Adding links:
(s1, s2) (s1, s3) (s2, h1) (s2, h2) (s3, h3) (s3, h4)
*** Configuring hosts
h1 h2 h3 h4
*** Starting controller
c0
*** Starting 3 switches
s1 s2 s3 ...
*** Starting CLI:
mininet> net
h1 h1-eth0:s2-eth1
h2 h2-eth0:s2-eth2
h3 h3-eth0:s3-eth1
h4 h4-eth0:s3-eth2
s1 lo:  s1-eth1:s2-eth3 s1-eth2:s3-eth3
s2 lo:  s2-eth1:h1-eth0 s2-eth2:h2-eth0 s2-eth3:s1-eth1
s3 lo:  s3-eth1:h3-eth0 s3-eth2:h4-eth0 s3-eth3:s1-eth2
c0
```

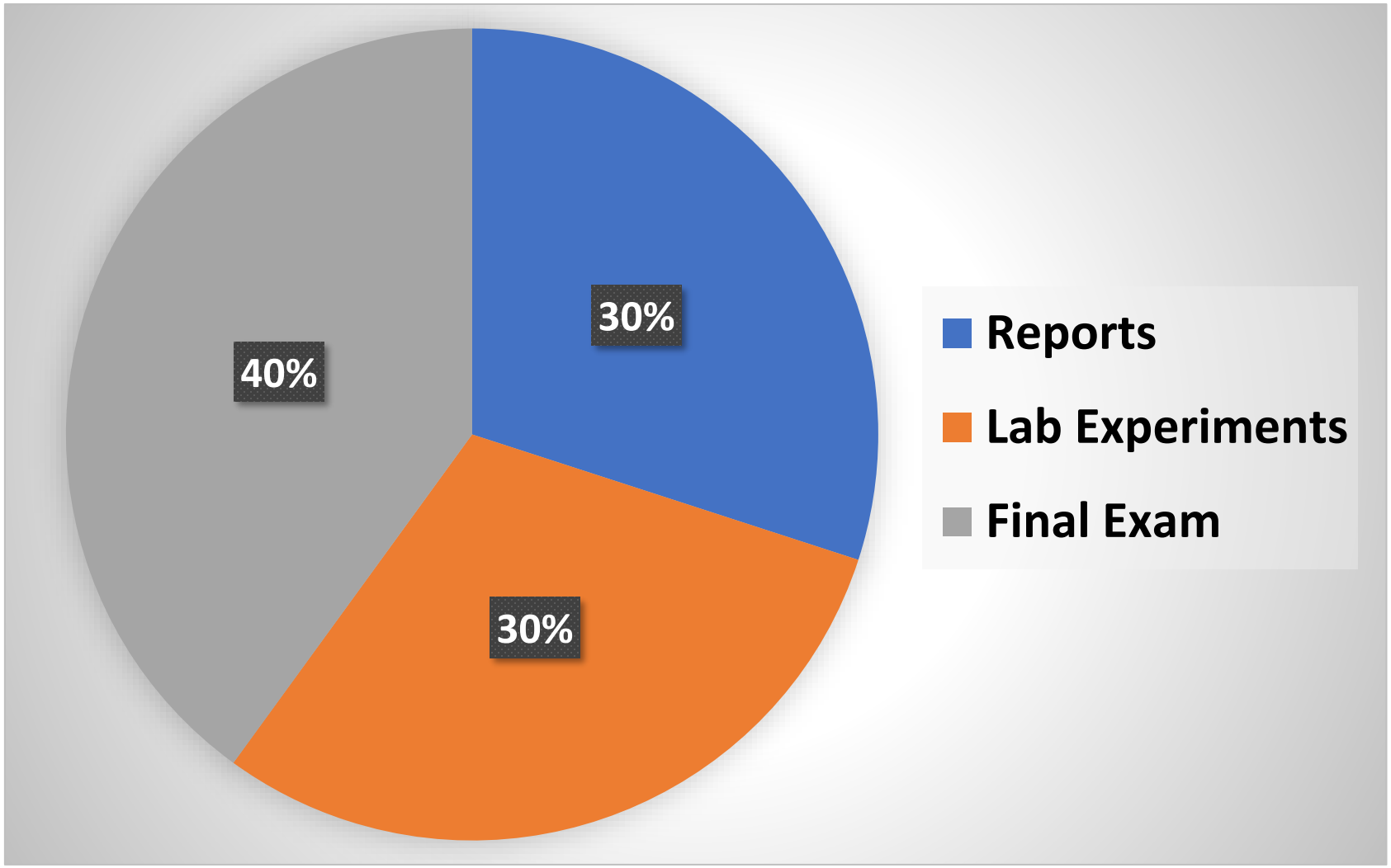


- **--link** - defines the link type via command line mininet startup

```
--link=LINK           default|ovs|tc|tcu[,param=value...] default=Link
                      tc=TCLink tcu=TCULink ovs=OVSLink
```

- ✓ iPerf is a tool for active measurements of the maximum achievable bandwidth on IP networks.
- ✓ The ping command sends packets of data to a specific IP address on a network, and then lets you know how long it took to transmit that data and get a response.

Grading Scheme



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