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The network structure for this assignment was as follows -

h1 (.0 subnet)<--> r1(.1 subnet) <--> r2 (.2 subnet) <--> h2

Here h1,h2 are two hosts and r1,r2 are two routers. We divide the whole structure in three subnets. “h1” belongs to (10.0.0)subnet , routers belongs to(10.0.1) subnet and “h2” belongs to (10.0.2)subnet.

Router r1 has two interfaces r1-eth0 and r1-eth1.
r1-eth0 has a IP of (10.0.0.2/24) to cater packets in (.0)subnet.
r1-eth1 has an IP of (10.0.1.1/24) to cater packets in (.1).

Similarly, router r2 has two interfaces r2-eth0 to cater packets in subnet(.1) and r2-eth1 to cater packets in (.2) subnet.

We are using the following command in “r1” to update the forwarding table. If any packet with destination to(.2) subnet arrives at router then route it via r1-eth1 interface.

```
ip route add to 10.0.2.0/24 via 10.0.1.2 dev r1-eth1
```

Similarly with router “r2”.If any packet is destined to (.0) subnet then route it via r2-eth0

```
ip route add to 10.0.0.0/24 via 10.0.1.1 dev r2-eth0
```

Following was the output of the overall setup. We can see that h2 is pingable from h1. Hence the setup was correct.

```
mininet> pingall
*** Ping: testing ping reachability
h1 -> h2 r1 r2
h2 -> h1 r1 r2
r1 -> h1 h2 r2
r2 -> h1 h2 r1
*** Results: 0% dropped (12/12 received)
```

Important Snippets

```
h1 = self.addHost('h1', ip="10.0.0.10/24", mac="00:00:00:00:00:01",
defaultRoute = 'via 10.0.0.2')
```

- Use ‘ip’ to assign ip address to host
- Use ‘mac’ to assign mac address to host.
- To use deafult route use defaultRoute

```
r1.setIP('10.0.0.2/24',intf = 'r1-eth0')
```

- For interfacing of ip use intf
- To set the ip of a router use setIP command.
- To start the net with controller use the following command

```
net = Mininet(topo = ctopo, switch = OVSKernelSwitch, controller =
DefaultController, link = TCLink, autoSetMacs = True)
```