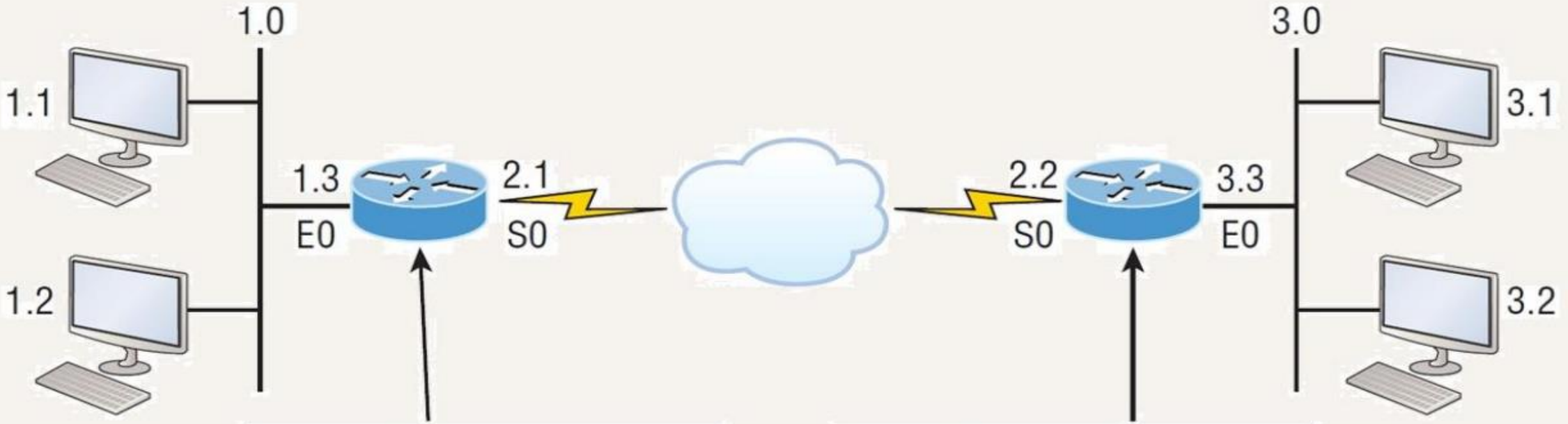
Static Routing

MM

Static vs. Dynamic Routing

Static: someone (an administrator) must manually enter all networks in a domain into the routing tables. If a change occurs within that domain, the administrator must manually update the tables.

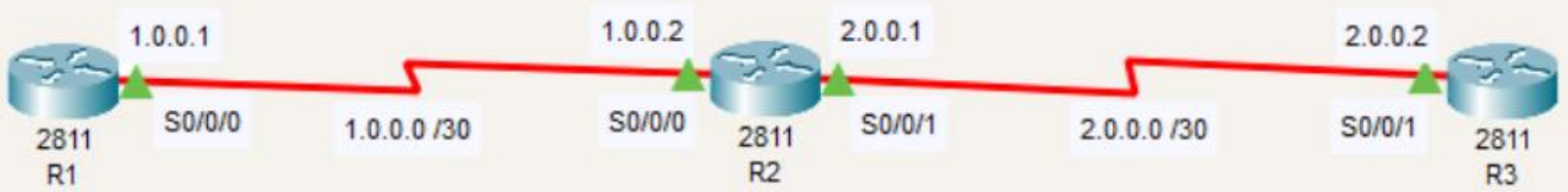
Dynamic: a protocol on a router communicates to that same protocol on neighboring and other, adjacent routers in that domain. If a change occurs, the routers, using that protocol, inform each other of the change, and as a result, update their tables automatically.



Routing table		
NET	INT	Metric
1	E0	0
2	S0	0
3	S0	1

Routing table		
NET	INT	Metric
1	S0	1
2	S0	0
3	E0	0

Static Routing - Example




```
Router1(config)#ip route  2.0.0.0  255.255.255.252  1.0.0.2

Router3(config)#ip route  1.0.0.0  255.255.255.252  2.0.0.1

Router#show ip route
```

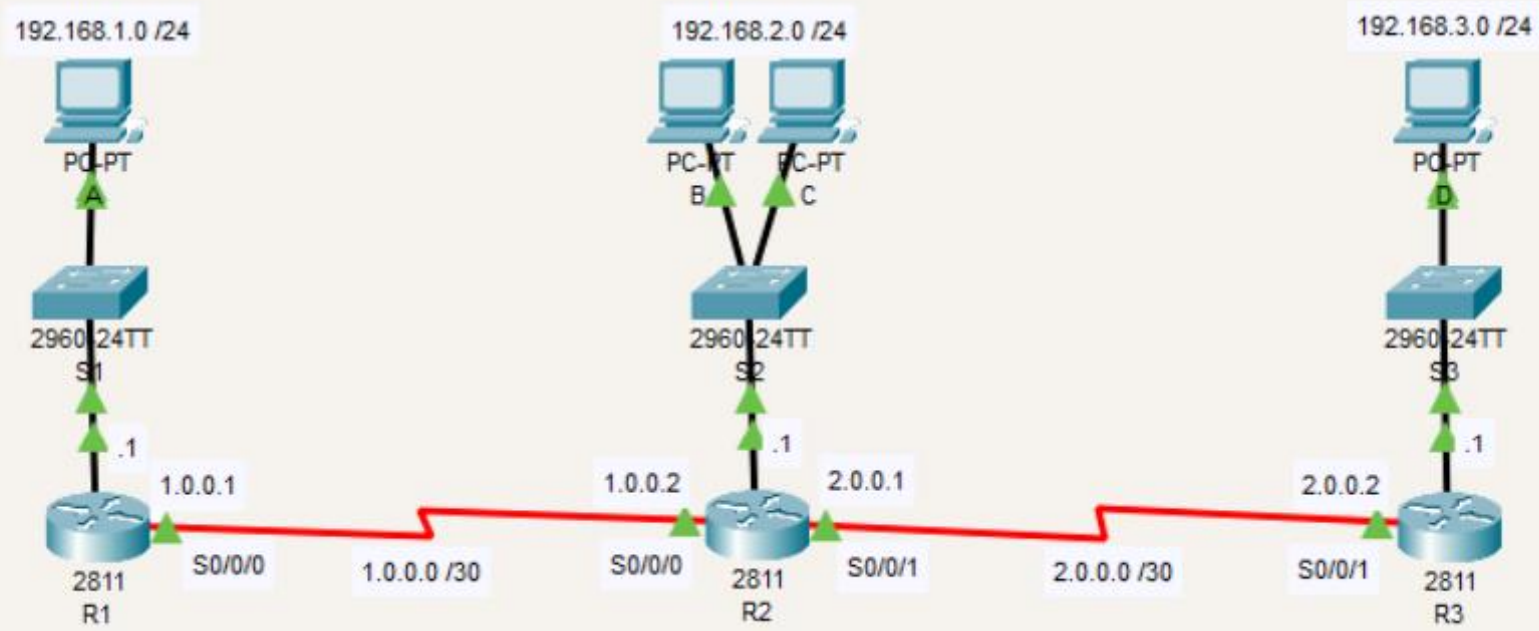
Static Routing — The *Default* Route

Default routes can be set only for stub networks – in those networks which only have one exit path.

```
R1(config)# ip route  0.0.0.0  0.0.0.0  exit_int
```

`exit_int` is the interface on R1 which leads to the network(s) to which all packets will be forwarded. In stead of an interface, the next hop IP address can be used.

Static Routing — Example



Challenge: list all of the static routes needed for all-to-all connectivity.

Which of the routers can use the default route?

Static Routing — The AD Parameter

AD is short for “Administrative Distance”, and it is value used to mark route preference / rank the routes available in the routing table.

```
R1(config)# ip route 2.0.0.0 255.255.255.252 S0/0/0 150
```

150 is an AD for network 2.0.0.0 through this ↑ route

A static route will by default get an AD of 0 or 1 (exit interface = 0, next hop IP = 1), where 0 is the best route, and 255 is the worst.

The default AD values for the routing protocols are:

- EIGRP AD: 90
- OSPF AD: 110
- RIP AD: 120

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