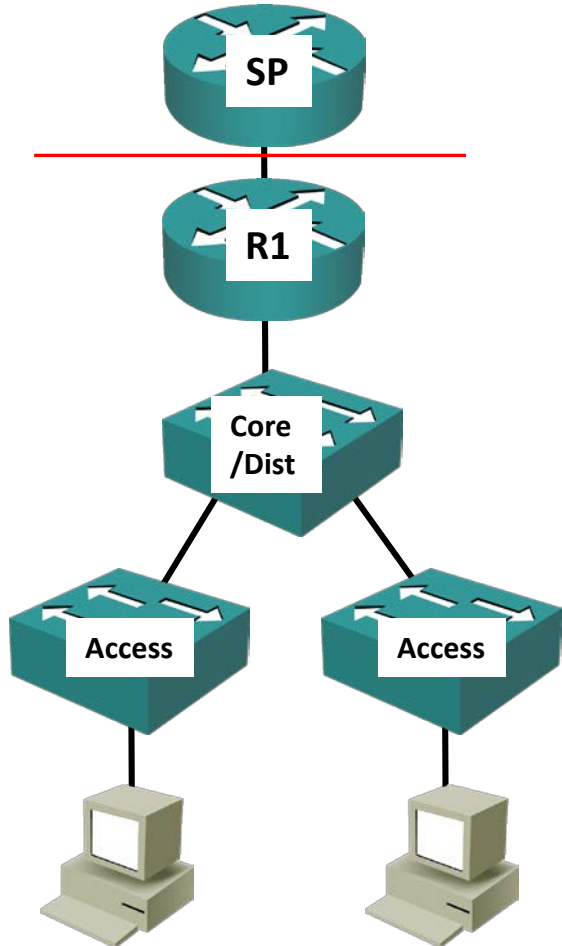
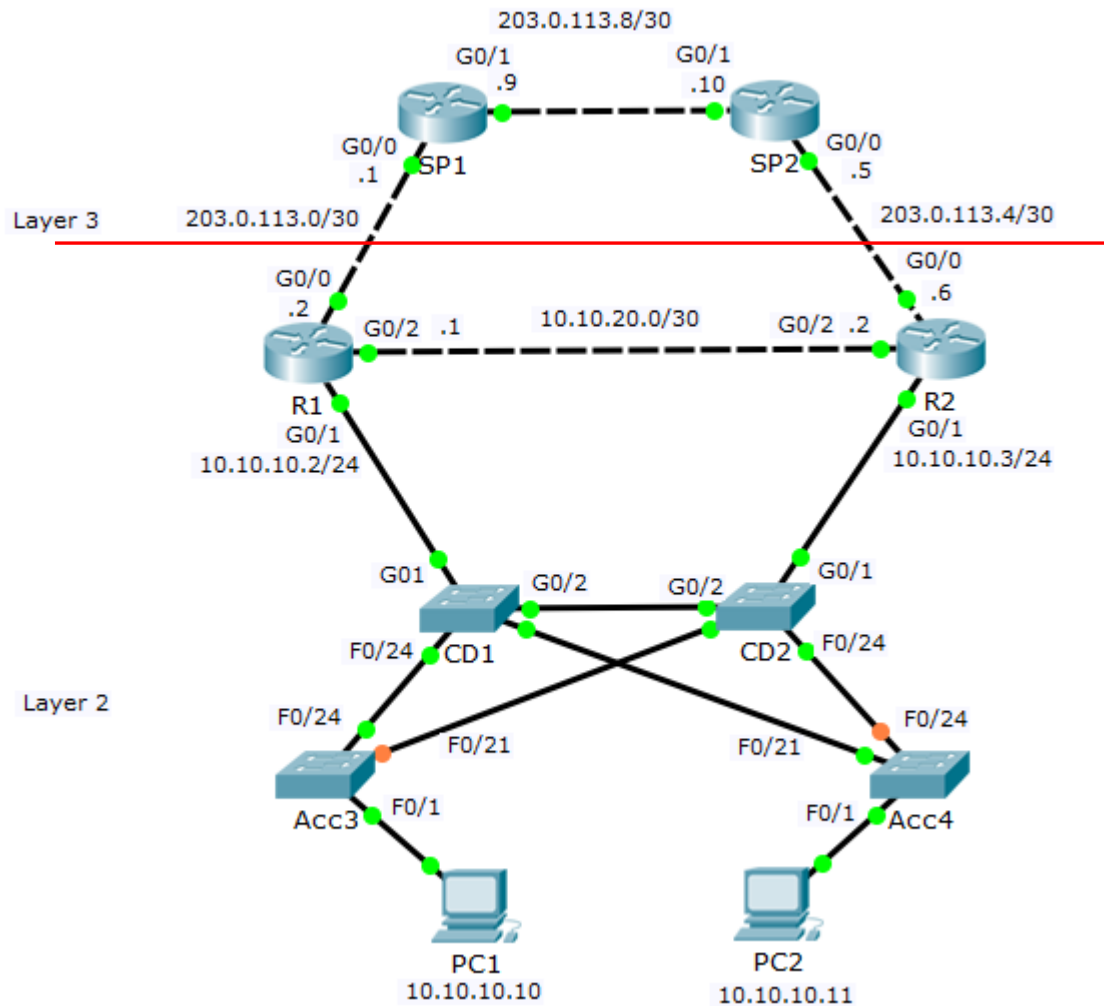


# Network Redundancy



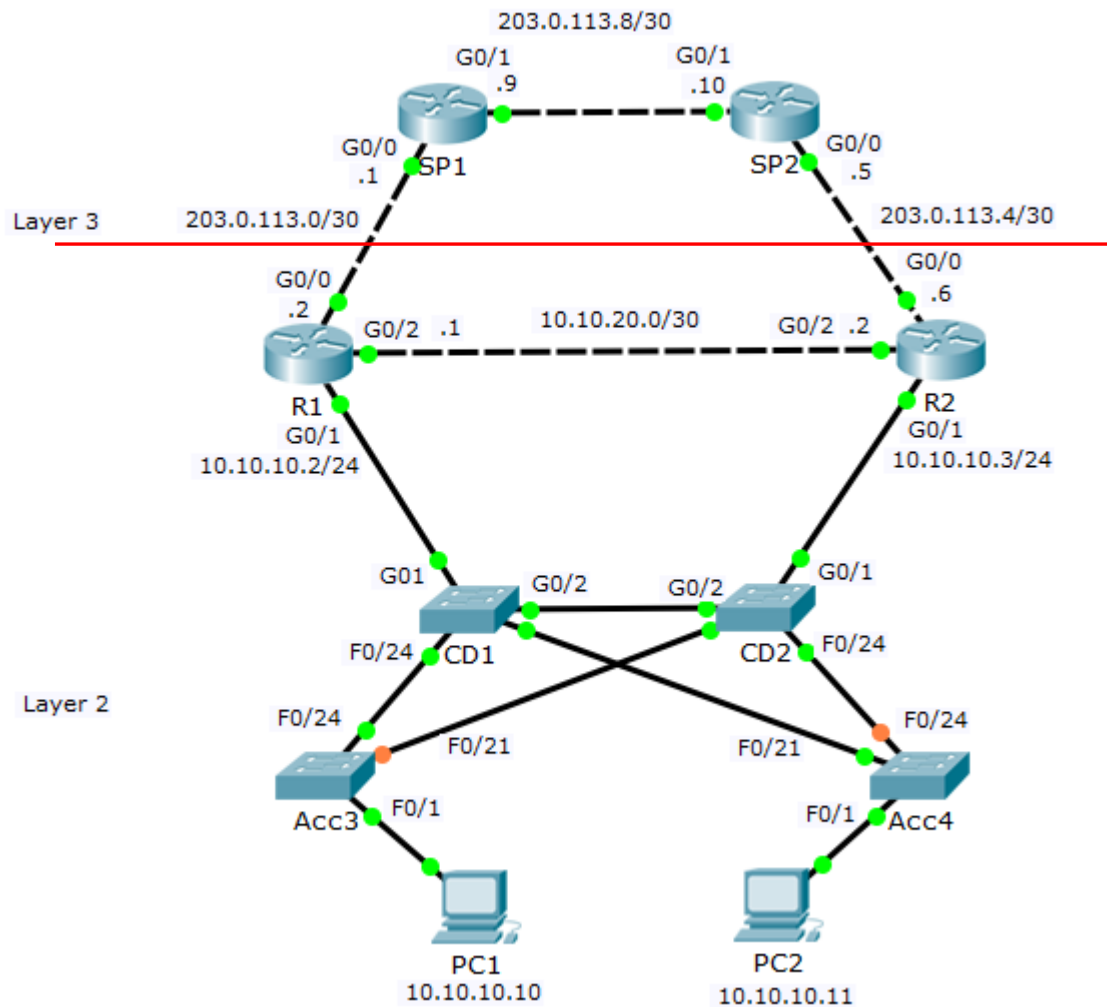
- In this example, all the network infrastructure devices are a single point of failure
- If any switch or router goes down, the PCs will lose their Internet access
- This is common for small branch offices where the cost of adding redundant devices cannot be justified

# Network Redundancy



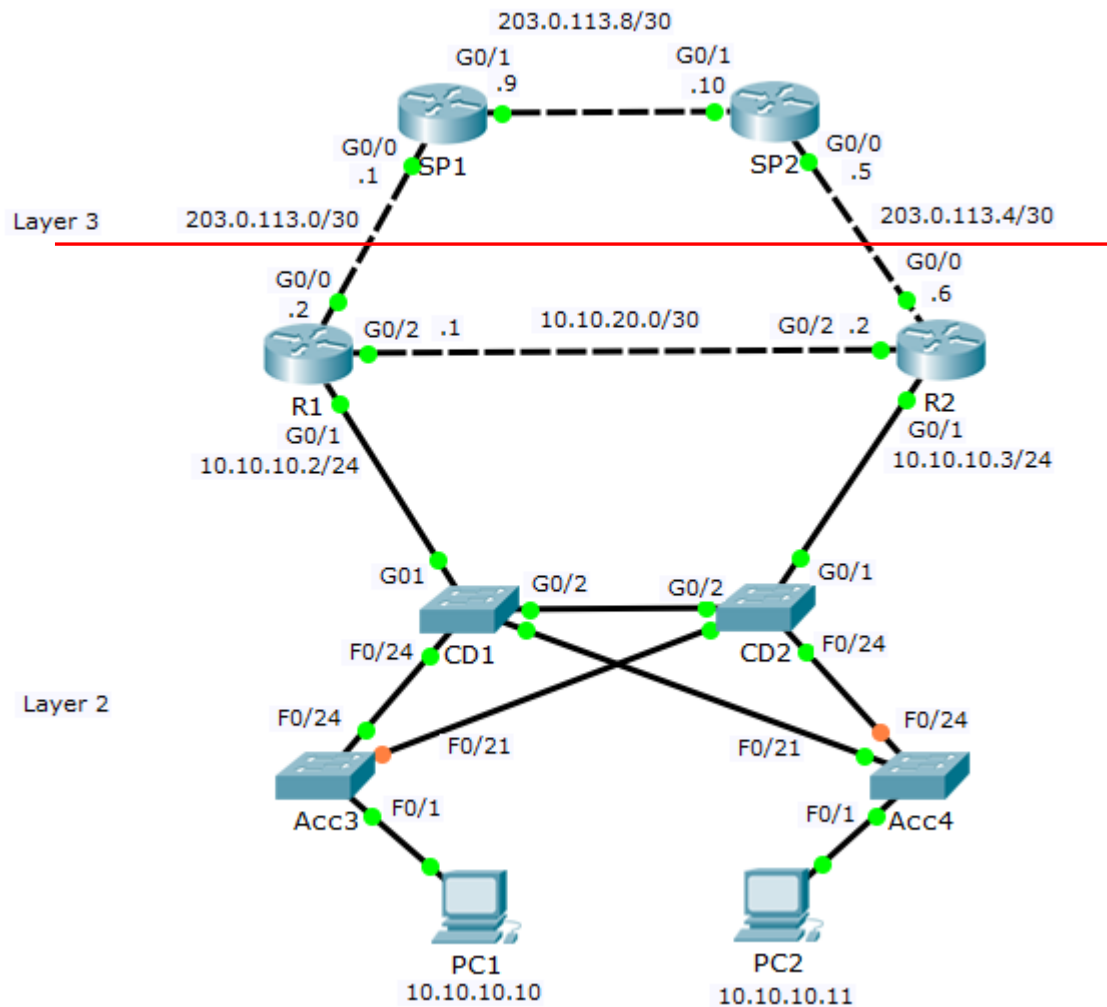
- The point of redundancy is to eliminate single points of failure
- Now we have added redundant switches, routers and Internet connections
- We can still reach the Internet if any core/distribution layer switch, router or link fails

# Network Redundancy – Access Layer



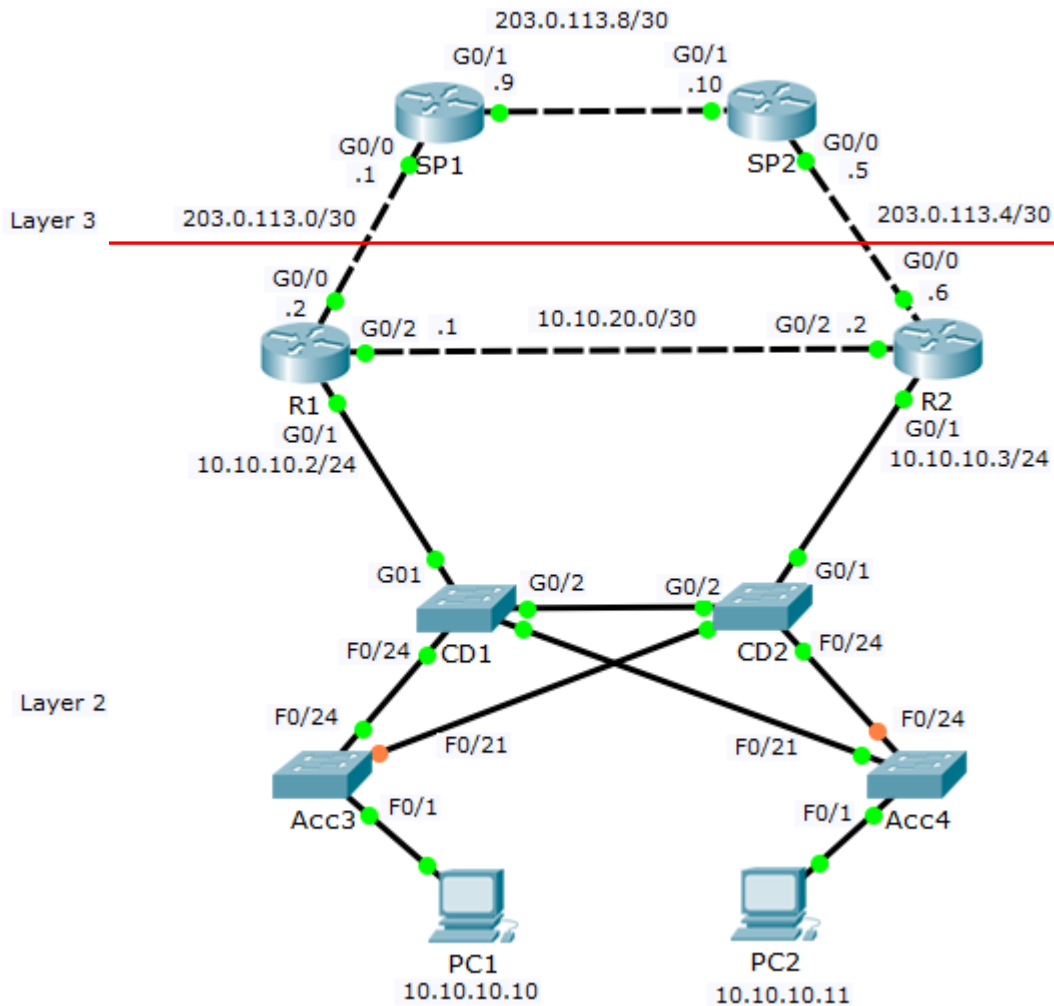
- We do not typically implement redundancy at the access layer because end hosts have only one network card
- Servers with redundant NICs are an exception

# Network Redundancy



- In a real world network the core/distribution layer switches would typically be Layer 3 switches
- I'm using Layer 2 switches in the example to aid learning

# Network Redundancy – Layer 3 Configuration



- Redundancy and failover are relatively easy to implement for Layer 3 routing
- Routes on R1:

Static route to SP1:

```
ip route 0.0.0.0 0.0.0.0 203.0.113.1
```

Backup default static route via R2 if link to SP1 goes down:

```
ip route 0.0.0.0 0.0.0.0 10.10.20.2 5
```

Backup route to inside via R2 if link to CD1 goes down:

```
ip route 10.10.10.0 255.255.255.0 10.10.20.2
```