RJ-48—Often installed by telcos as their end of a WAN link. Same size and shape as a RJ-45 and plugs directly into a CSU/DSU or WIC card that serves that purpose.

Integrated Services (Router)—does more than just route packets. May also handle IP telephony format conversion, etc.

SOHO (Small Office / Home Office)—may have a device called a "router" that combines a WAN modem, routing, wireless, and a switch in one box, unlike an enterprise "router."

INTERFACE CONFIGURATION

Line Status / Protocol Status (e.g. up/up)—Line status is generally OSI layer 1, protocol status L2.

- Down/down means that there's a layer one problem on an interface that isn't administratively shut down. Perhaps there's no cable or the other end *is* shut down.

- Up/down is an L2 problem. Perhaps the other end has a different encapsulation, e.g. PPP vs. HDLC.

By default, interfaces on a Cisco router are shutdown and have no IP address. If those two things are fixed and the interfaces are up/up, the router will automatically try to route packets out them.

```
interface fa0/0
 ip address 10.0.0.1 255.255.255.0
 no shutdown
```

Serial Interfaces—When simulating a WAN, you may need to provide a clocking signal

```
interface s0/0/0
 ip address 10.0.1.1 255.255.255.0
 clock rate 64000
```
> *Only on the DCE end of a back-to-back cable for prototyping and lab exercises*
```
 bandwidth 64
```
> *Not needed for the interface to fully function. Merely informs things like OSPF.*

Troubleshooting Commands

```
show interfaces fa0/0
show ip interface brief
show controllers s0/0/0
```
> *Can tell you if "this" end of the serial cable is DCE (and needs a clock defined).*
```
show protocols [fa0/0]
```
> *IP address, mask, line & protocol statuses*