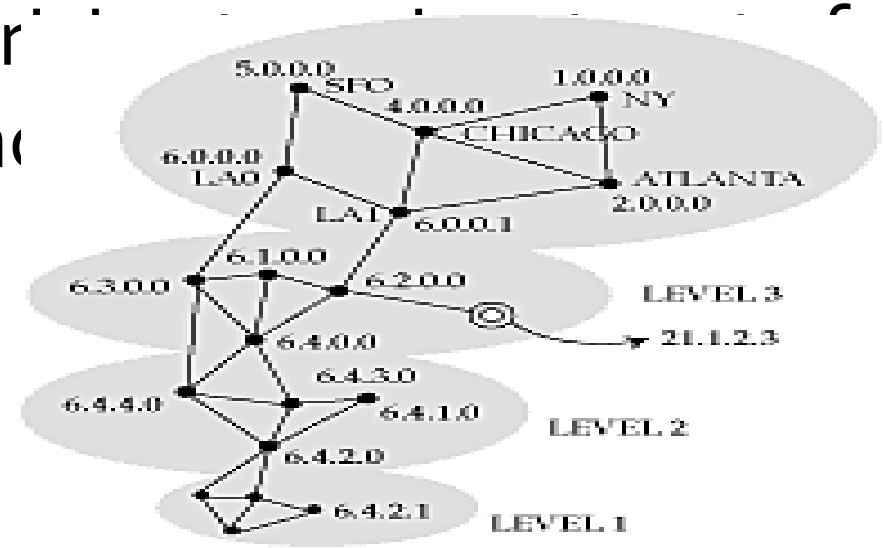
TSN: Lecture 1
Switch and Router Architectures

Topics Covered

- Internet
- Routing
- Points of Presence (POPs)
- Basic Architectural Components of an IP Router

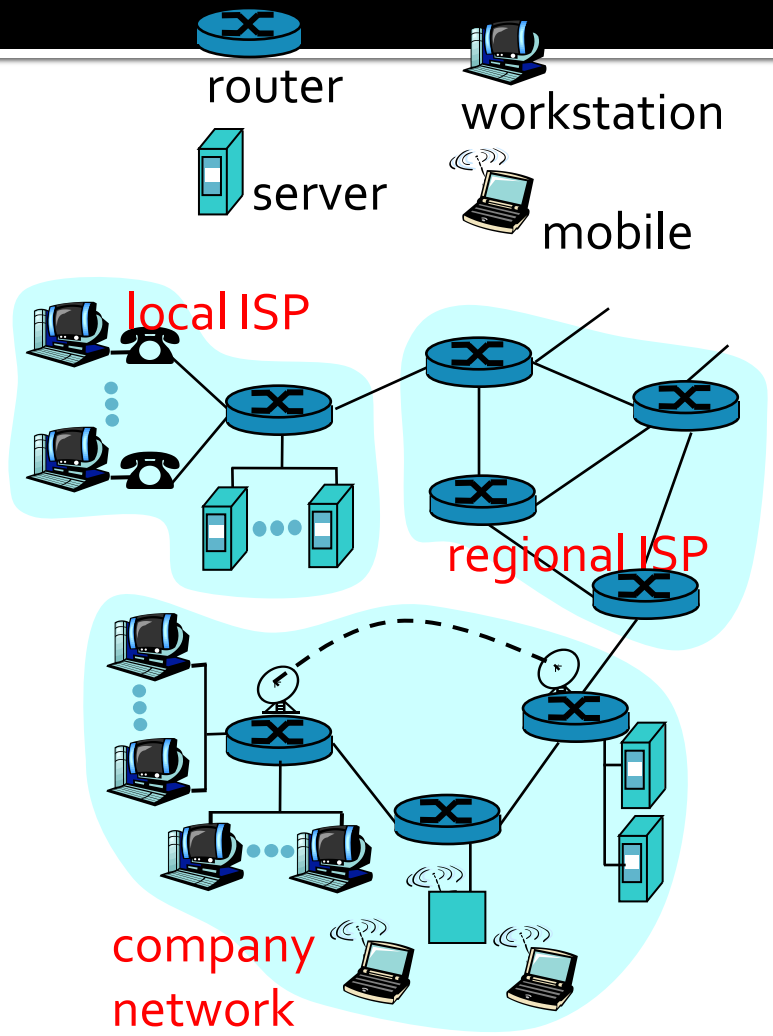
What is it all about?

- How do we move traffic from one part of the network to another?
- Connect end-systems to switches, and switches to each other by links
- Data arri ch have to be m tput ports

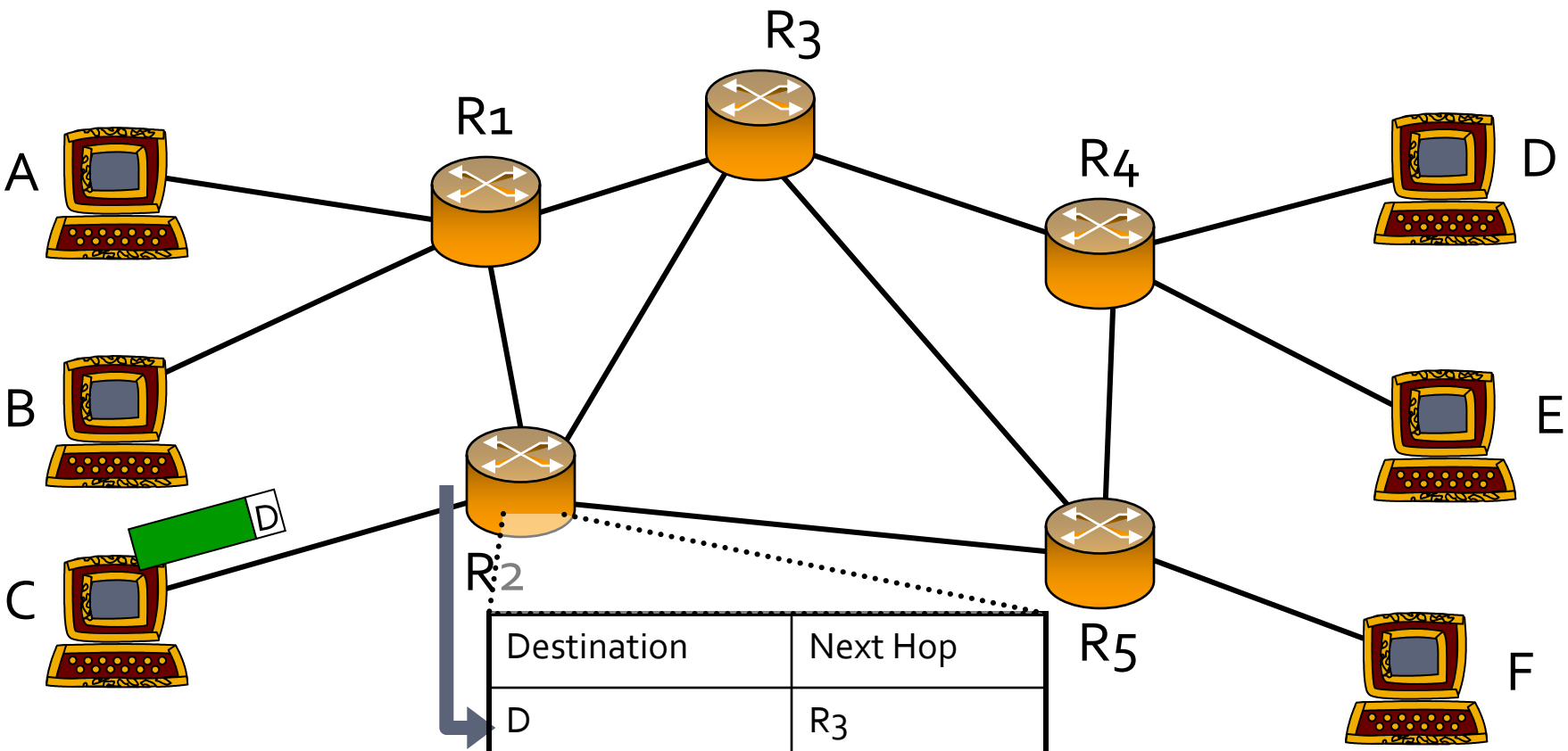


What's the Internet: "nuts and bolts" view

- *Internet:* "network of networks"
  - Any to any reachability
  - but loosely hierarchical
  - Routing protocols populate routing tables in the routers
- Traffic Aggregation
  - Through multiplexing and switching
  - Access Networks
  - Edge
  - Core

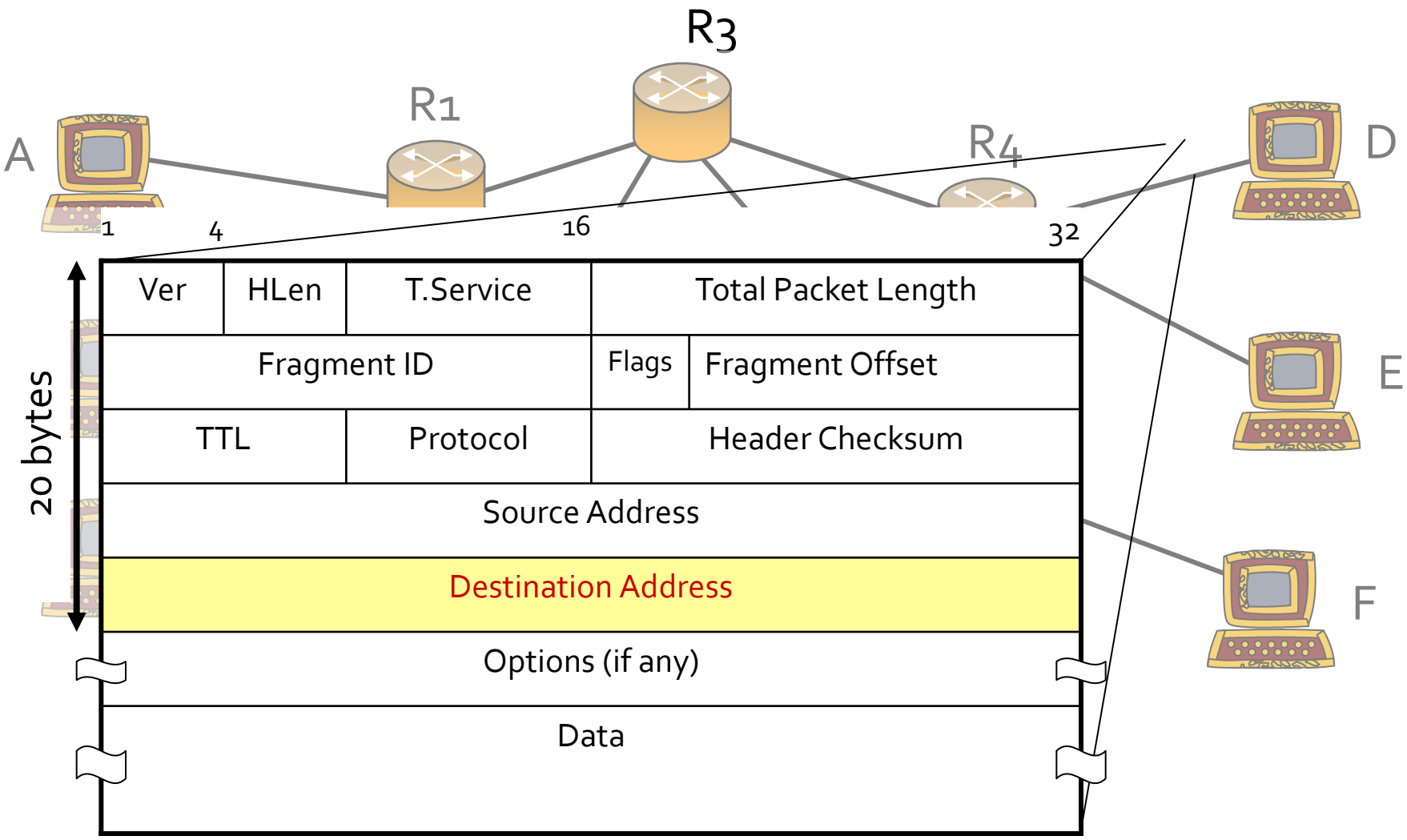


What is Routing?

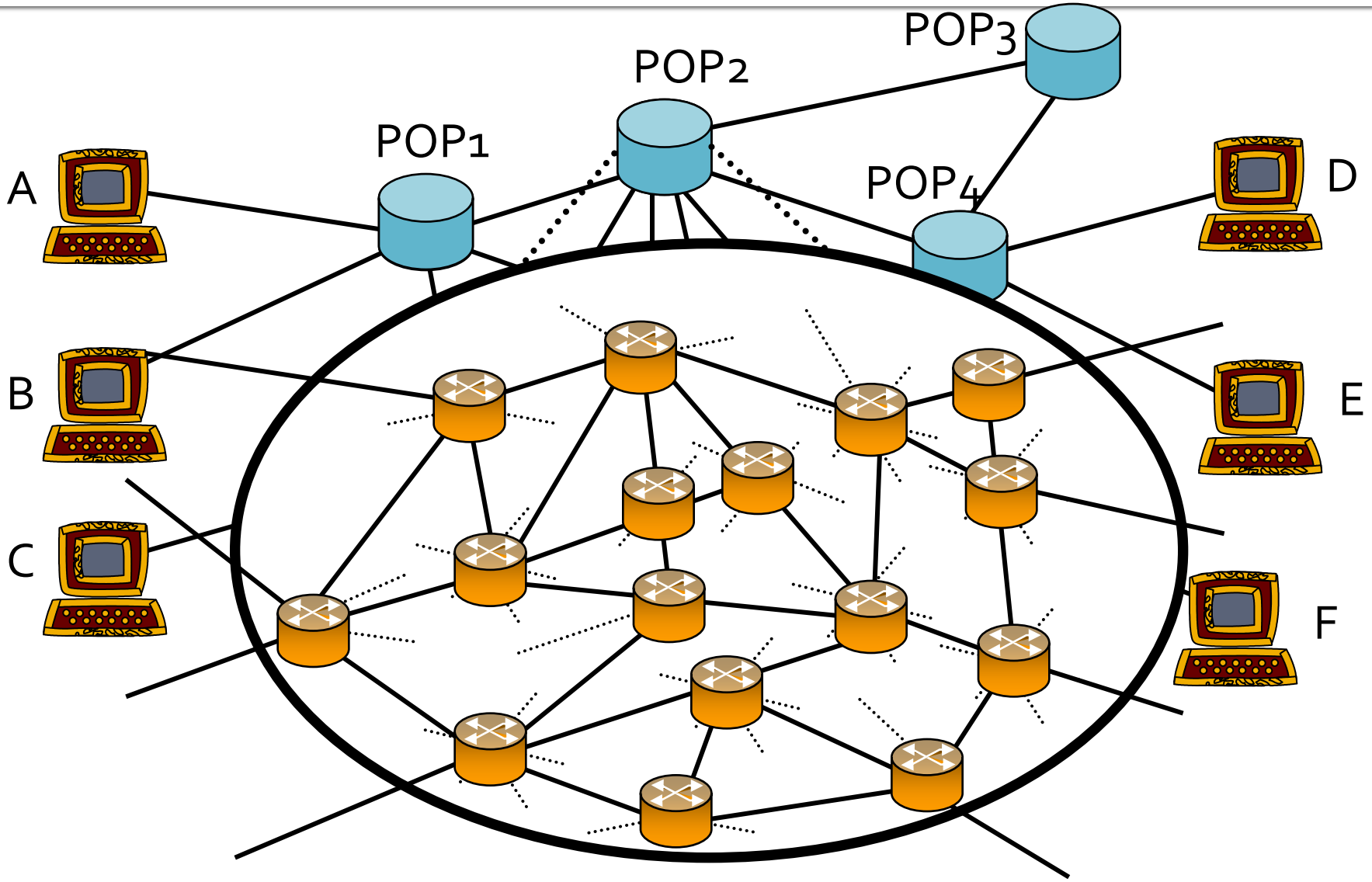


Destination	Next Hop
D	R3
E	R3
F	R5

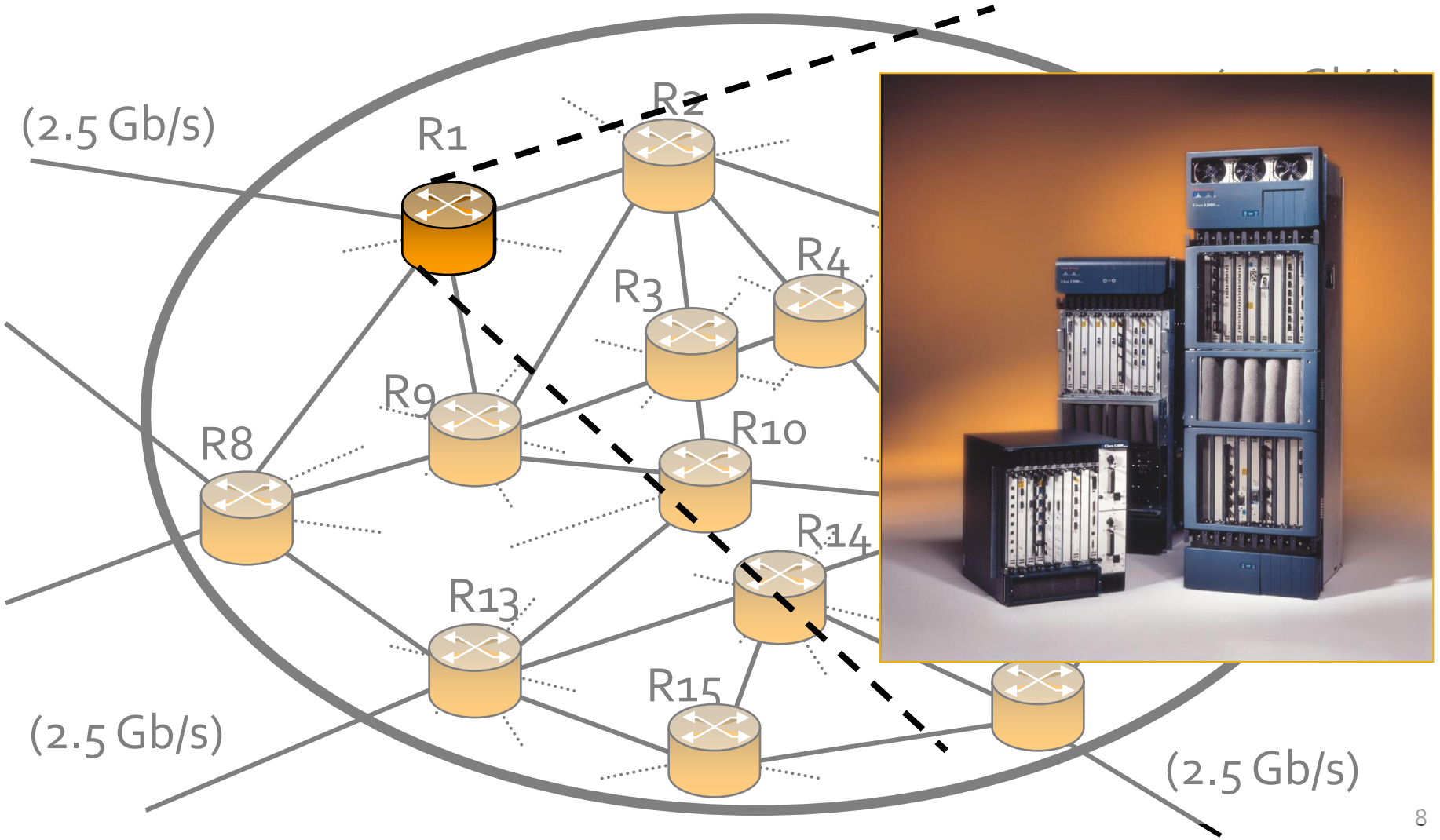
What is Routing?



Points of Presence (POPs)



Where High Performance Routers are Used

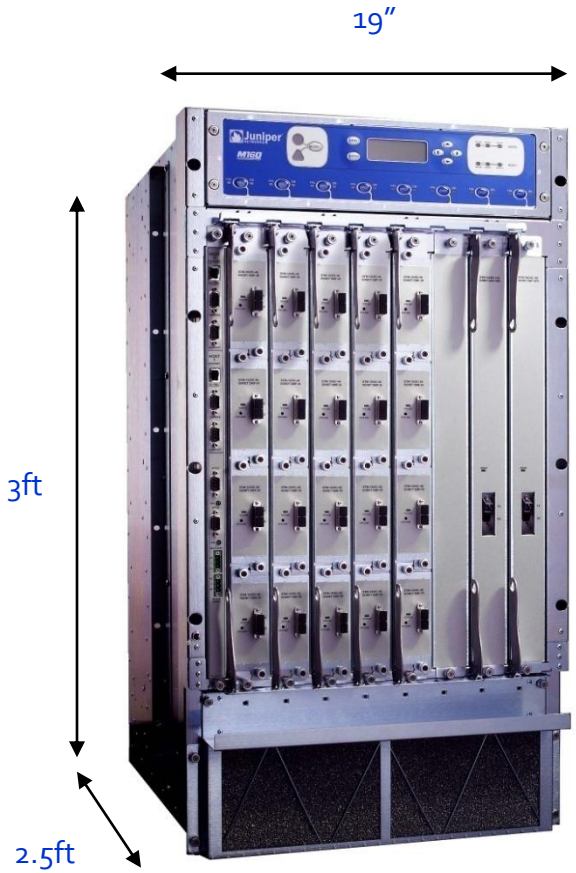


What a Router Looks Like

Cisco GSR 12416

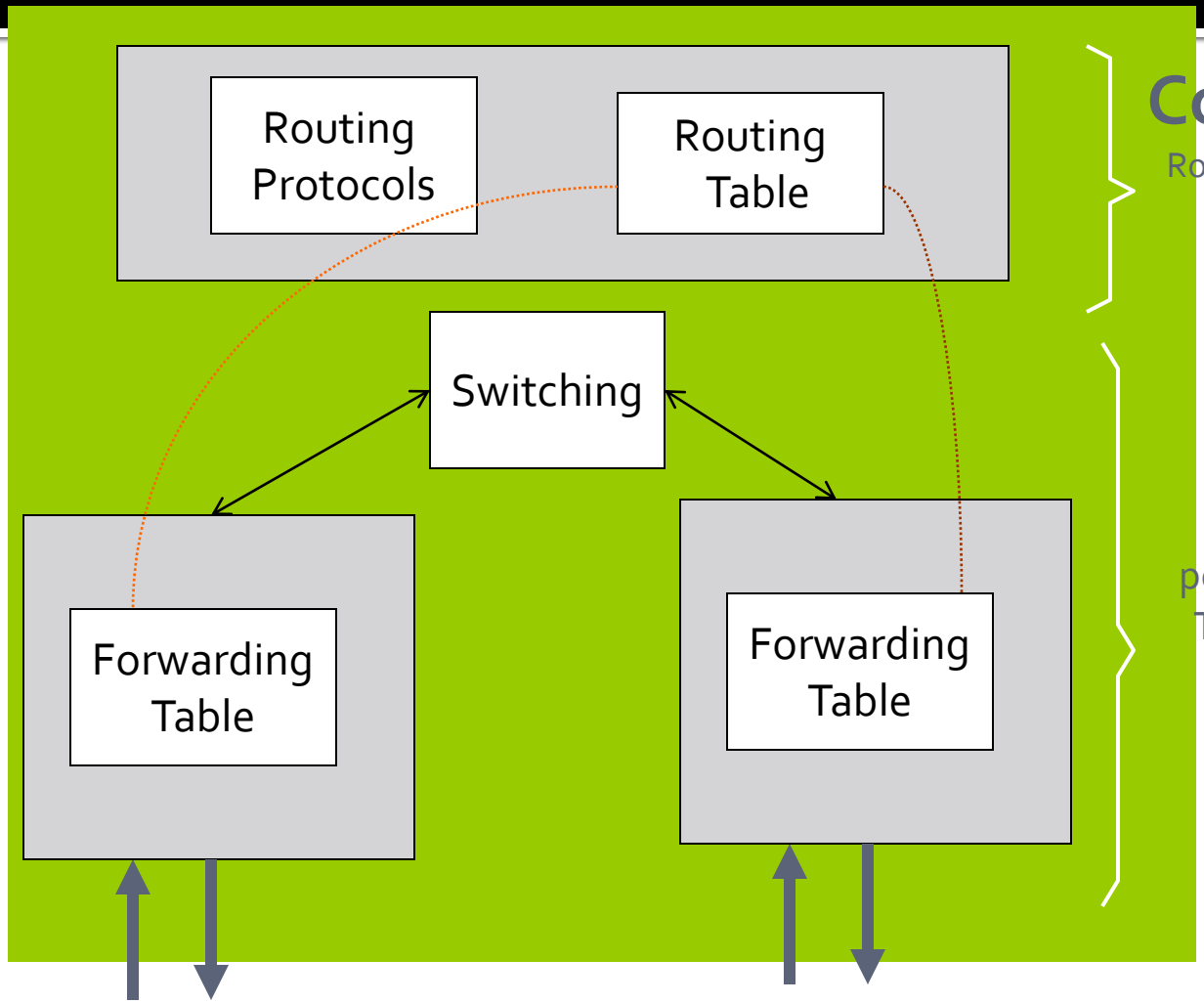
Capacity: 160Gb/s
Power: 4.2kW

Juniper M160



Capacity: 80Gb/s
Power: 2.6kW

Basic Architectural Components of an IP Router



Control Plane

Routing and other control Protocols Management

Datapath

per-packet processing
Traffic Management
Congestion Control
Switching