CSE 461

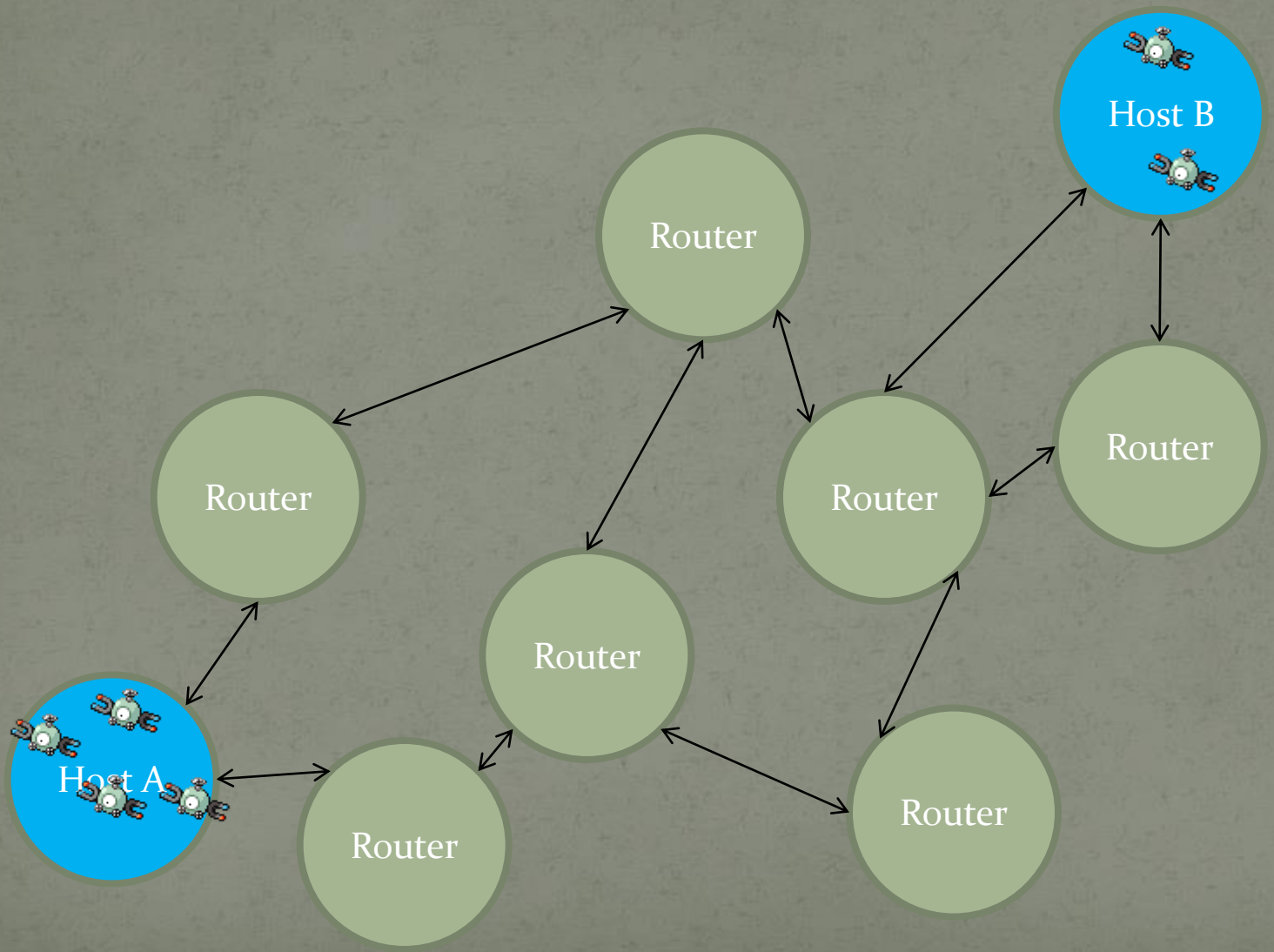
Section:

Getting Data from Point A to Point B

A Joke

- Bittorrent

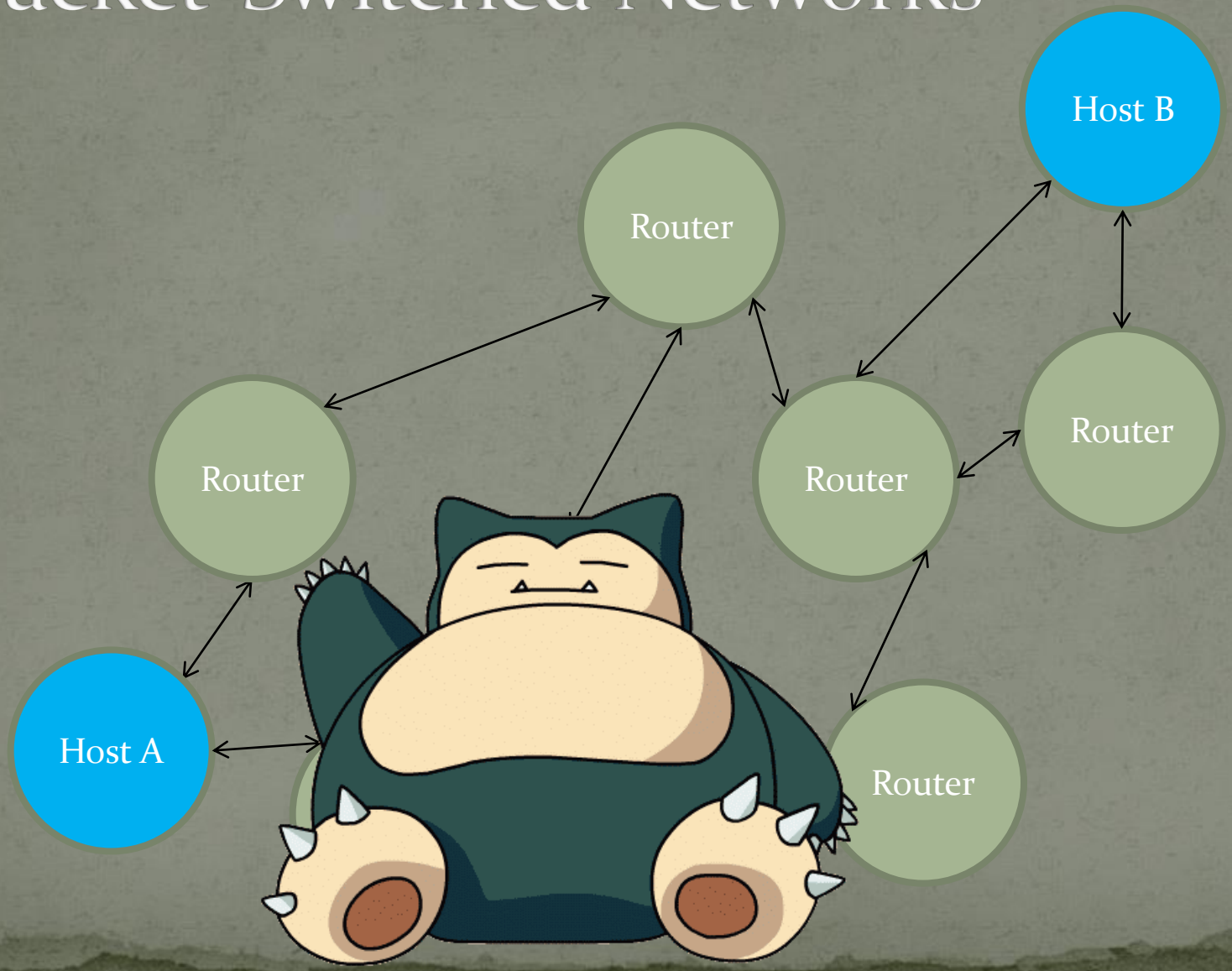
Packet-Switched Networks



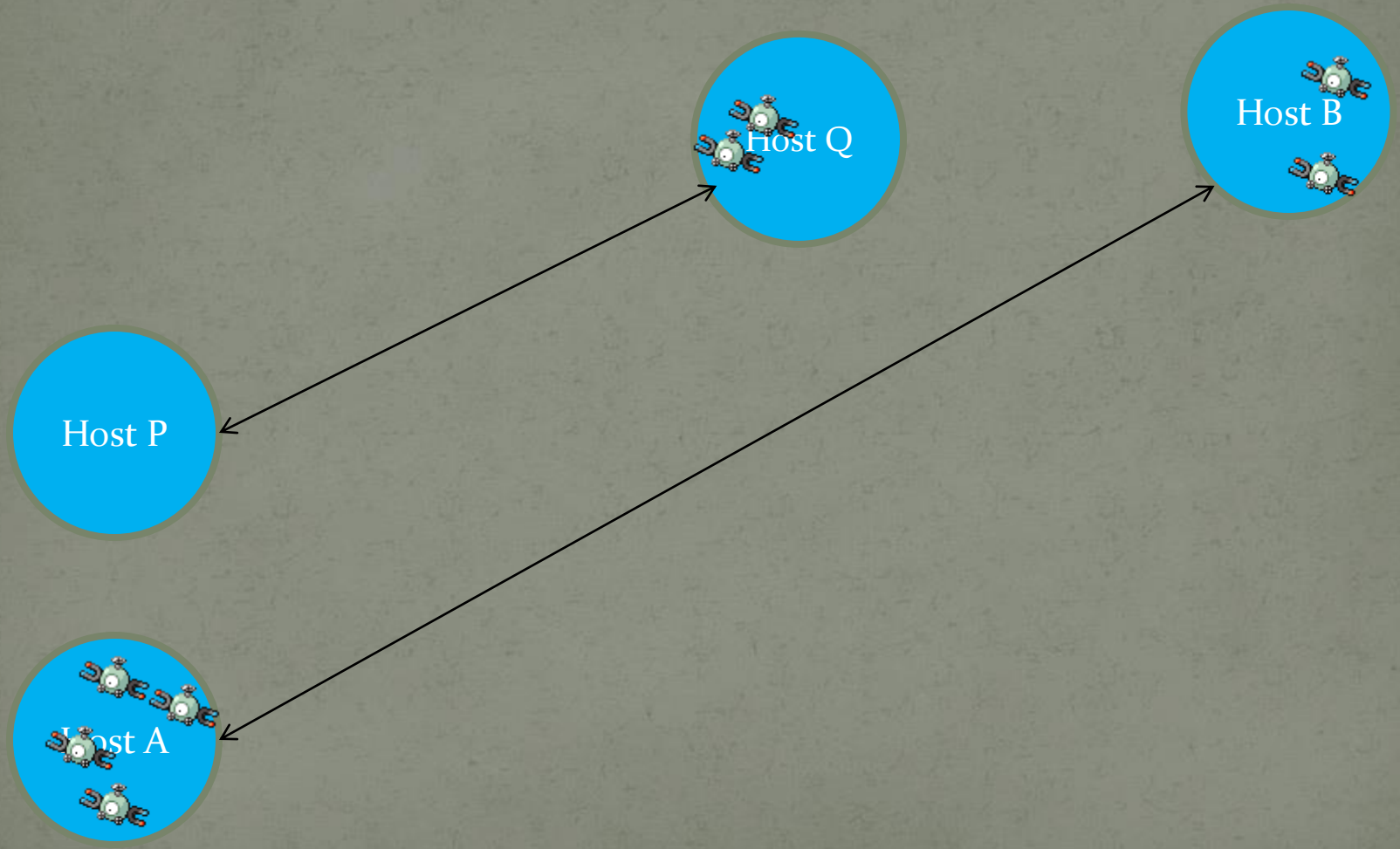
Packet-Switched Networks

- What are some advantages of this?
  - Easy to set up and add nodes
  - Scales well
  - Partitioned system means faults are localized
  - Many connections possible over the same line
- What are some disadvantages?
  - Less direct paths
  - Router processing power needed (or specialized hardware)

Packet-Switched Networks



Circuit-Switched Networks



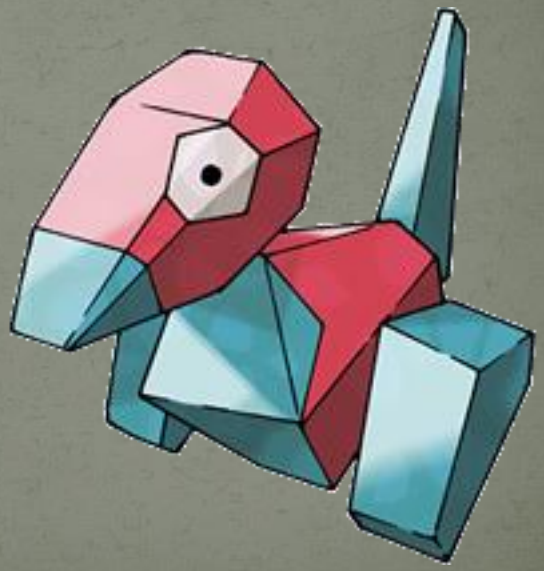
Circuit-Switched Networks

- What are some advantages of this?
  - Easy to keep networks separate and private
  - Consistent response time
  - Quality of Service
- What are some disadvantages of this?
  - Doesn't scale well
  - Takes work to set up new circuits
  - Unused network capacity common

Early Circuit-Switched Network

Circuits in packet-switched networks?

- Virtual circuits
  - Connection-oriented communication
  - Like circuits, but delivered over packets
  - Examples?
    - Tor
    - TCP
    - Multiprotocol Label Switching



Multiprotocol Label Switching (MPLS)

- Virtual circuit protocol
- Developed by Cisco
- For use inside networks
- Works on the link layer
- Labels added to link layer frames

MPLS Labels

- Routers very quickly look at, remove, and add labels
- Routing decisions using labels
- Traffic class field determines QoS priority
- Why do this instead of just using IP addresses?
- Why is this scheme problematic?

QoS (Quality of Service)

- Traffic can be routed according to priority
- Why might we want to prioritize traffic differently?
- Traffic can also be rerouted dynamically according to network conditions
- Examples?
- How could QoS be a problem?

Net Neutrality