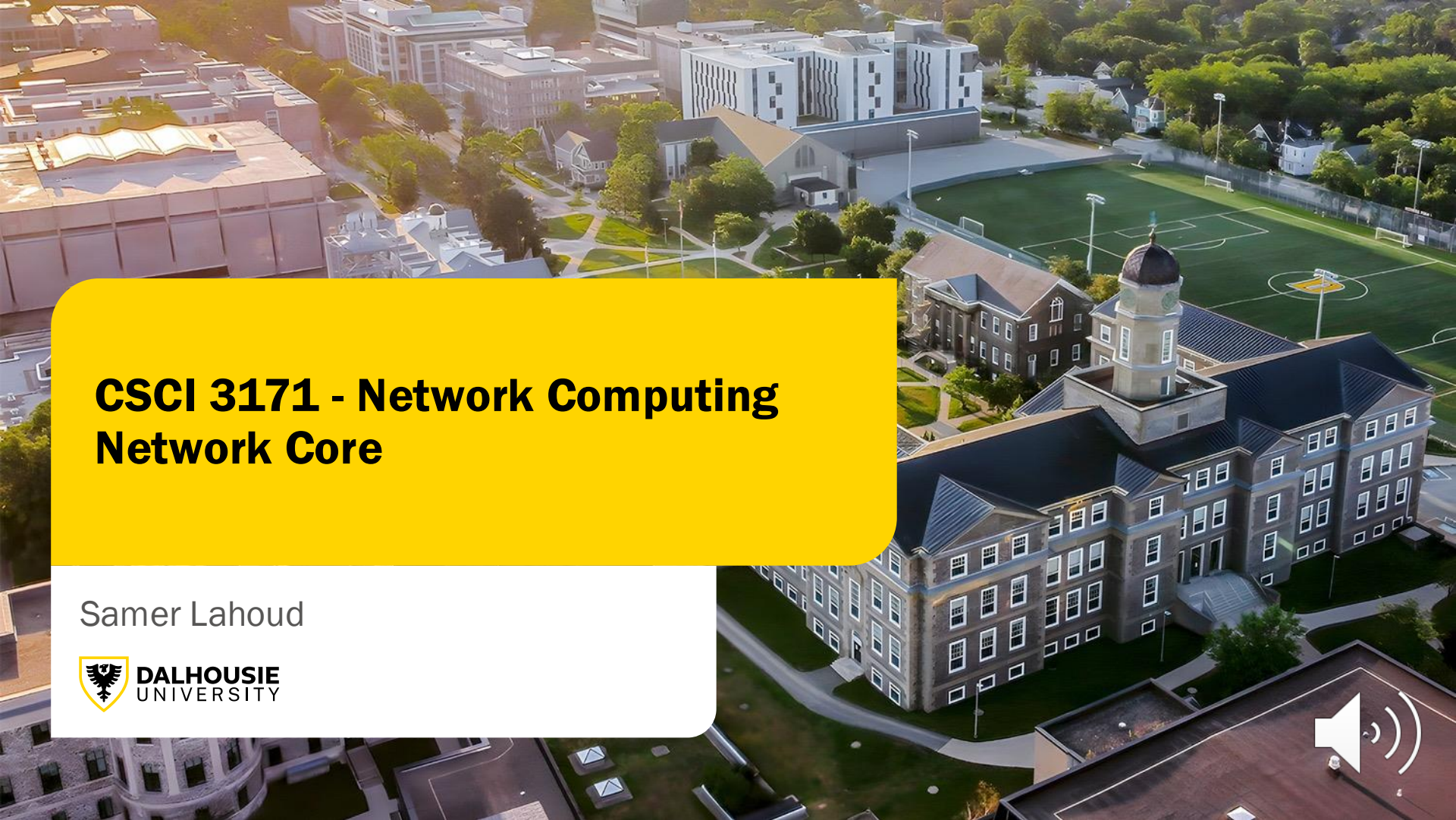

CSCI 3171 - Network Computing
Network Core

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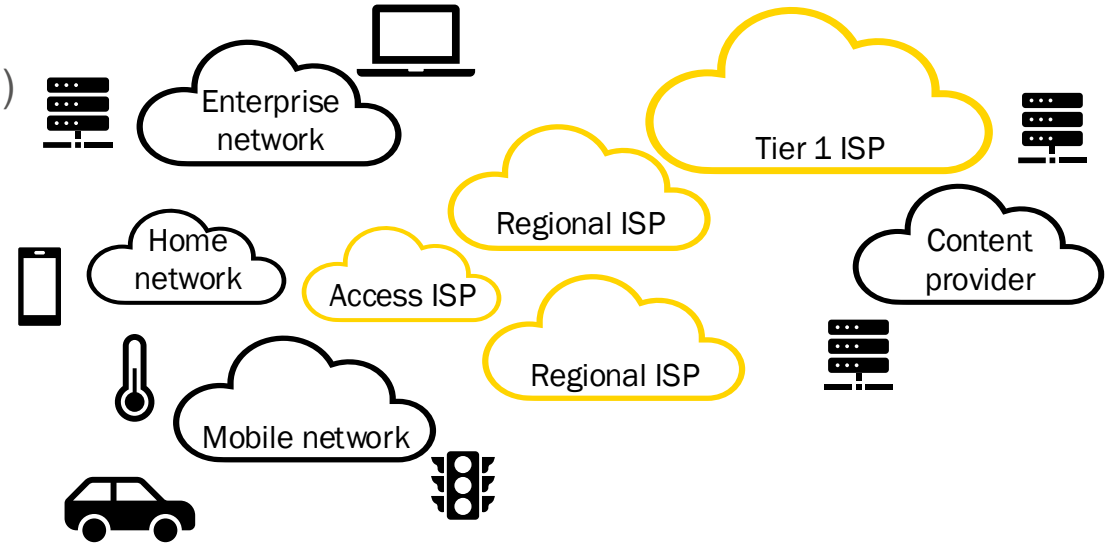
Goal and Roadmap

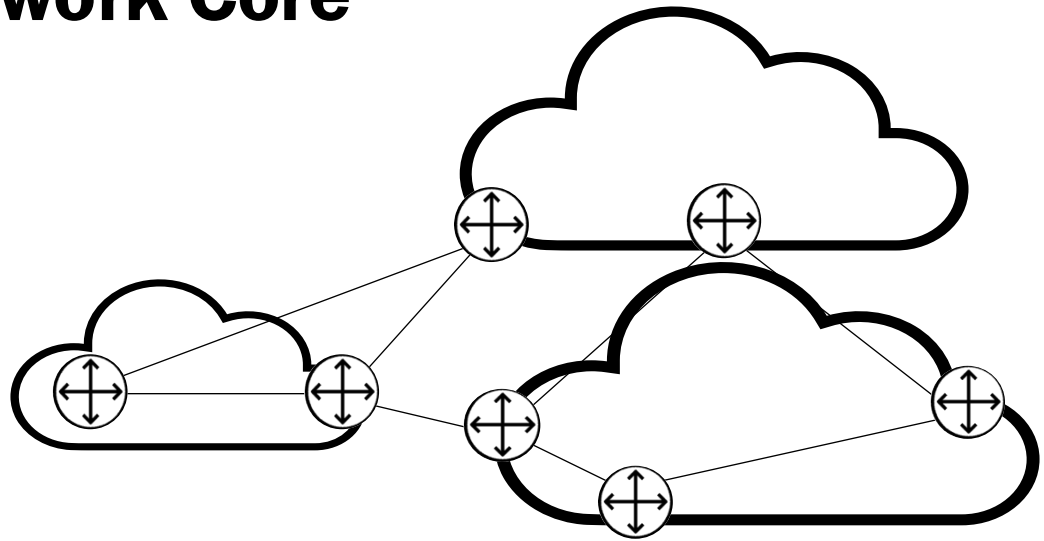
- Goal:
  - *Big picture* of the Internet
  - Introduction to terminology
- Overview and roadmap
  - What is the Internet? What is a protocol?
  - Network edge: hosts, access network, physical media
  - Network core: packet switching
  - Performance: loss, delay, throughput
  - Packet and circuit switching
  - Protocol layers, service models
  - Internet structure and challenges

A Closer Look at the Internet Structure

- Network edge
  - Devices (hosts and servers)
- Network core
  - Interconnected routers
  - Network of networks



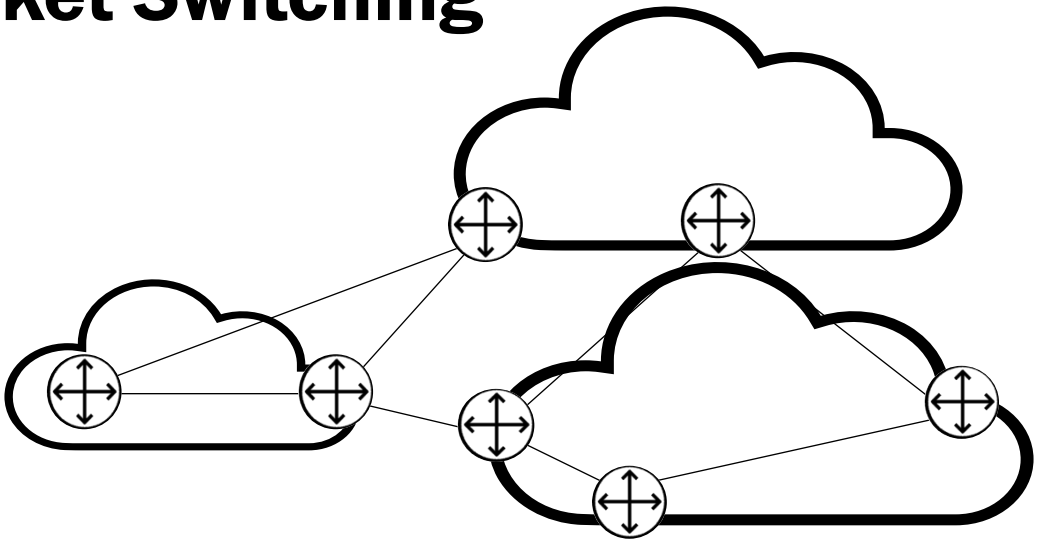
Network Core



Mesh of interconnected routers

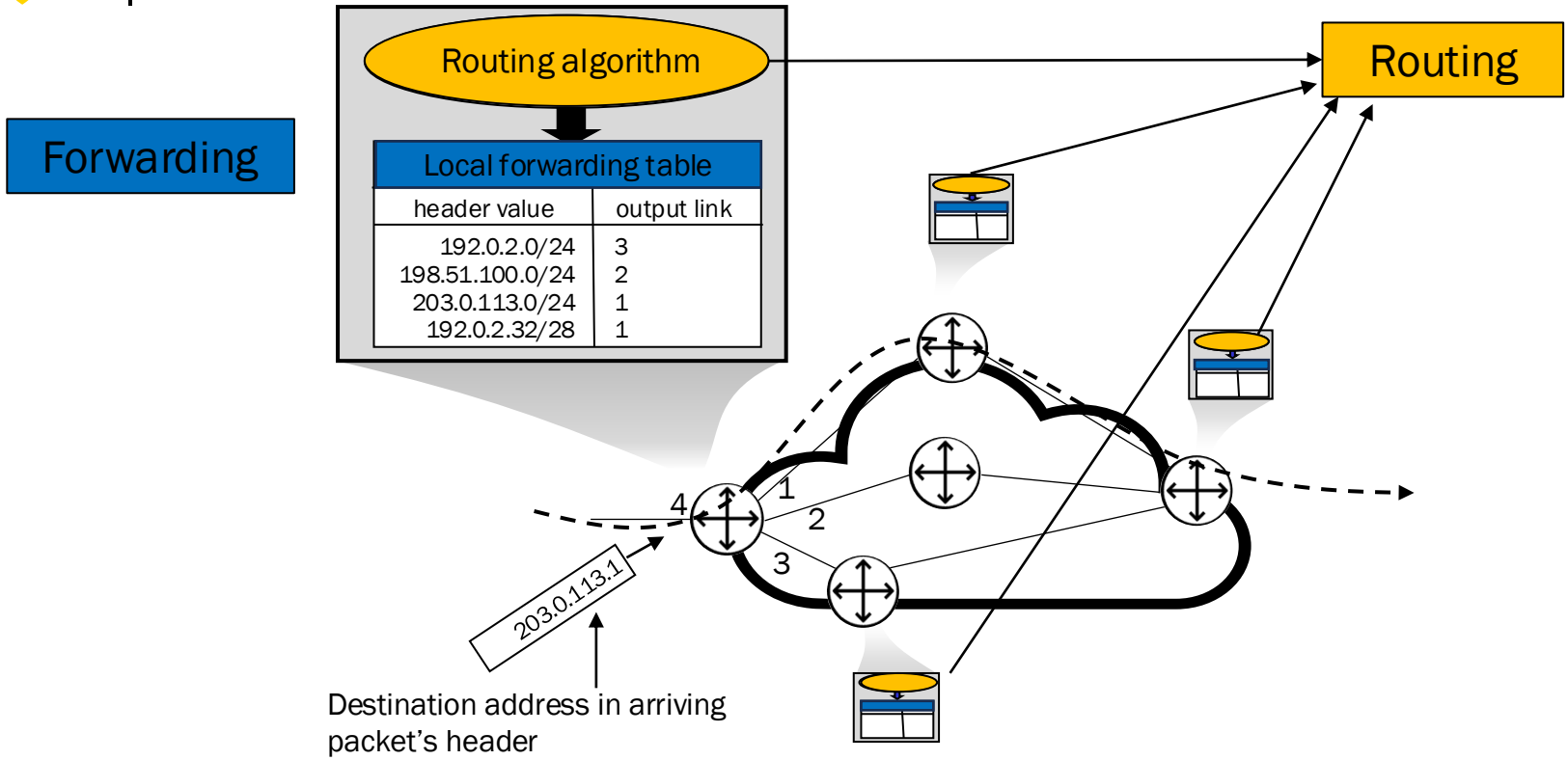
- How to deliver packets to the destination?

Packet Switching



- Packet-switching: hosts break application-layer messages into packets
- Network forwards packets from one router to the next, across links on path from source to destination

Two Key Network Core Functions



Routing vs Forwarding

- Routing
  - Global action to compute end-to-end paths taken by packets
  - Involves routing protocols and algorithms
- Forwarding (or packet switching)
  - Local action to move arriving packets from router's input link to appropriate router output link

Routing Analogy

Routing Analogy