

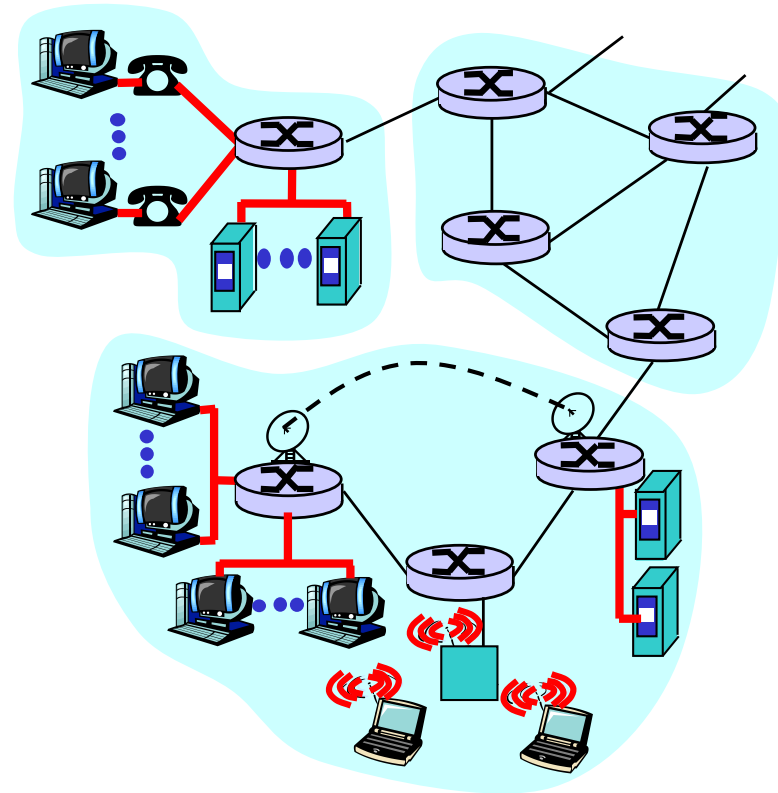
COMP 3331/9331:
Computer Networks and
Applications

Recap
T3, 2021

Recap from Week 1: A top-down approach

We've covered networking using a top-down

- ❑ **end-system** applications, end-end transport
- ❑ **network core:** routing, hooking nets together
- ❑ **link-level** protocols, e.g., Ethernet
- ❑ **other stuff:** security, wireless networks



What you have accomplished

- Comprehensive overview of the entire protocol stack with a particular focus on the Internet
- Key principles
 - Layering, scale, hierarchy, etc.
- Key design issues
 - Application architectures, reliability, congestion control, routing, medium access, etc.
- Hands-on practical laboratory experiments using several diagnostic tools, Wireshark and ns-2
- A “real-world” assignment
 - Chatting application

Key topics (1)

- Organisation principles
 - Layering, hierarchy, encapsulation
- Application layer
 - Protocol design, P2P, socket programming
- Transport layer
 - Error detection, reliable data transfer, flow control, congestion control
 - TCP and UDP

Key topics (2)

- Network layer
 - Network addressing, scalability, hierarchical addressing
 - Fragmentation as an example to deal with heterogeneous link layer technologies
 - Routing protocols and algorithms: link state, distance vector
- Link layer
 - Addressing, ARP
 - Medium access control, especially random access
 - Interaction between link and network layers

Key topics (3)

- Wireless Networks
 - 802.11
- Security
 - Symmetric key and public key cryptography
 - Confidentiality, message integrity, authentication
 - The role of encryption in these

What next?

- COMP 9333: Advanced Computer Networks
- COMP 9334: System Capacity and Planning
- COMP 4336/9336: Mobile Data Networks
- COMP 6441/9441: Security Engineering and Cybersecurity (+ other security courses)
- COMP4337/9337: Wireless Network Security
- COMP6337: IoT Experimental Design Studio
- Undergraduate/Postgraduate Projects and Thesis

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