



# COMPUTER NETWORKS

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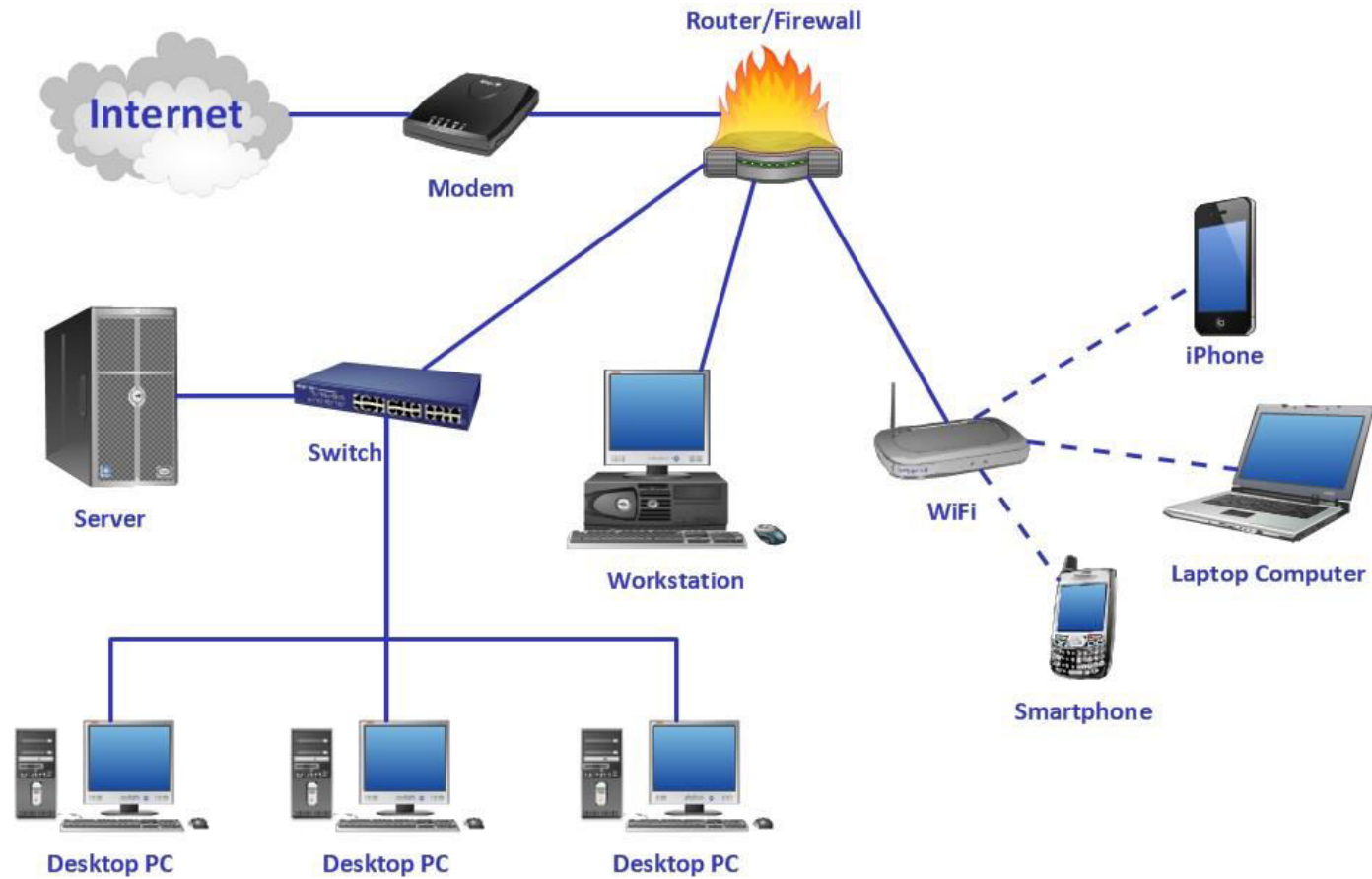
## Computer Networks and the Internet

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# COMPUTER NETWORKS

## Introduction to Computer Networks



- Two or more devices connected together.
- Communicate with each other, share data or resources

# COMPUTER NETWORKS

## What is the Internet?

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- A massive network of networks.
- A computer network that interconnects billions of computing devices throughout the world.
- Traditional devices – PCs, Workstations, Servers – web pages, emails, etc.
- Internet “things” – laptops, PDAs, TVs, gaming consoles, home security systems, home appliances, watches, cars, traffic control systems, etc.,

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## The Internet: A “Nuts and Bolts” View



Billions of connected computing *mobile network* **devices:**

- *hosts* = end systems
- running *network apps* at Internet's “edge”



**Packet switches:** forward packets (chunks of data)

- *routers, switches*



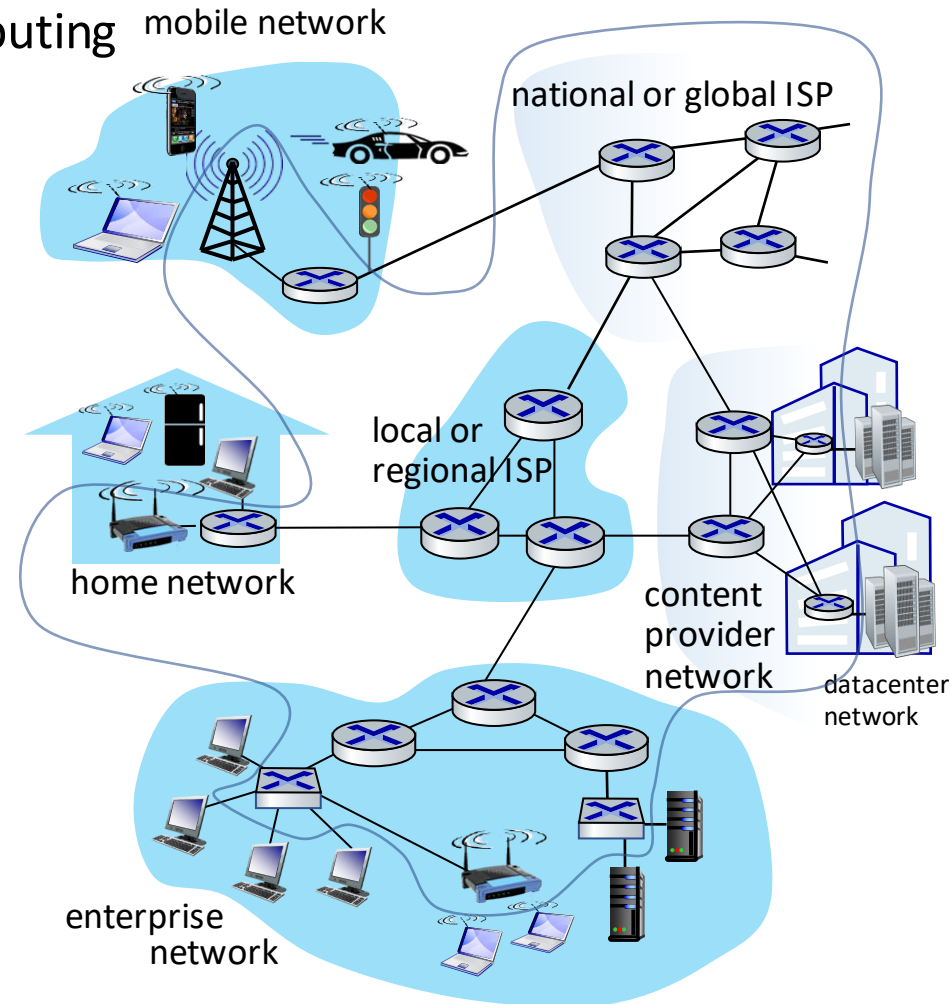
**Communication links**

- fiber, copper, radio, satellite
- transmission rate: *bandwidth*



**Networks**

- collection of devices, routers, links: managed by an organization



# COMPUTER NETWORKS

## "Fun" Inter-connected Devices



Amazon Echo



Internet  
refrigerator



IP picture frame



Tweet-a-watt:  
monitor energy use



Web-enabled toaster +  
weather forecaster



Security Camera



Slingbox: remote  
control cable TV



AR devices

Internet phones



sensorized,  
bed  
mattress



Fitbit

*Others?*

**There will be 41 Billion  
IoT devices by 2027\***

\* <https://www.businessinsider.com/internet-of-things-report?IR=T>

# COMPUTER NETWORKS

## The Internet: A “Nuts and Bolts” View

- *Internet: “network of networks”*

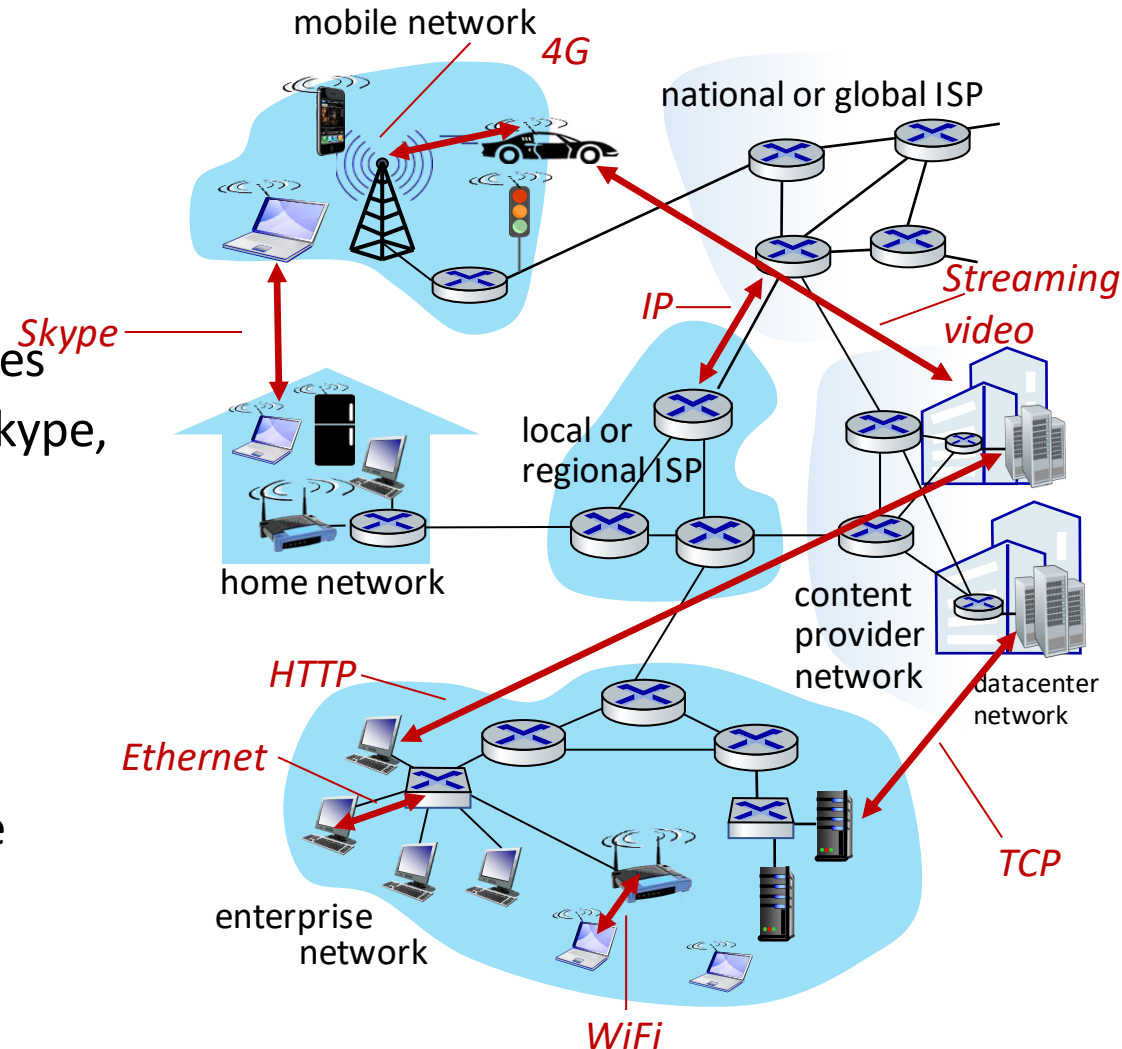
- Interconnected ISPs

- *Protocols are everywhere*

- control sending, receiving of messages
- e.g., HTTP (Web), streaming video, Skype, TCP, IP, WiFi, 4G, Ethernet

- *Internet standards*

- RFC: Request for Comments
- IETF: Internet Engineering Task Force





Thank You  
For Your Attention





# THANK YOU

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