

Fundamental of Internet Programming

Fundamentals of Internet

- Many use the Internet and the World Wide Web daily.
- **What do you use with Internet and WWW?**
- **What is the downsides of Internet?**
- In recent years, social networking has been used effectively to organize social and political demonstrations, and even revolutions.
- Constructing the software and data that provide access to all this information requires knowledge of several different technologies, such as markup languages and meta-markup languages

Origins of Internet

- 1960s, the U.S. Department of Defense (DoD) became interested in developing a new large-scale computer network.
- Why? Communications, program sharing, and remote computer access for researchers working on defense-related contracts.
- One fundamental requirement was that the network be sufficiently robust.
- The DoD's Advanced Research Projects Agency (ARPA) funded the construction of the first such network, which connected about a dozen ARPA funded research laboratories and universities. The first node of this network was established at UCLA in 1969.
- The network was named ARPAnet.

Origins of Internet

- Early use of **ARPAnet** was simple text-based communications through electronic mail.
- During the late 1970s and early 1980s, with BITNET and CSNET among them.
- **BITNET**, which is an acronym for *Because It's Time Network*, began at the City University of New York.
- **CSNET**, which is an acronym for *Computer Science Network*, connected the University of Delaware, Purdue University, the University of Wisconsin, the RAND Corporation, and Bolt, Beranek, and Newman (a research company in Cambridge, Massachusetts).

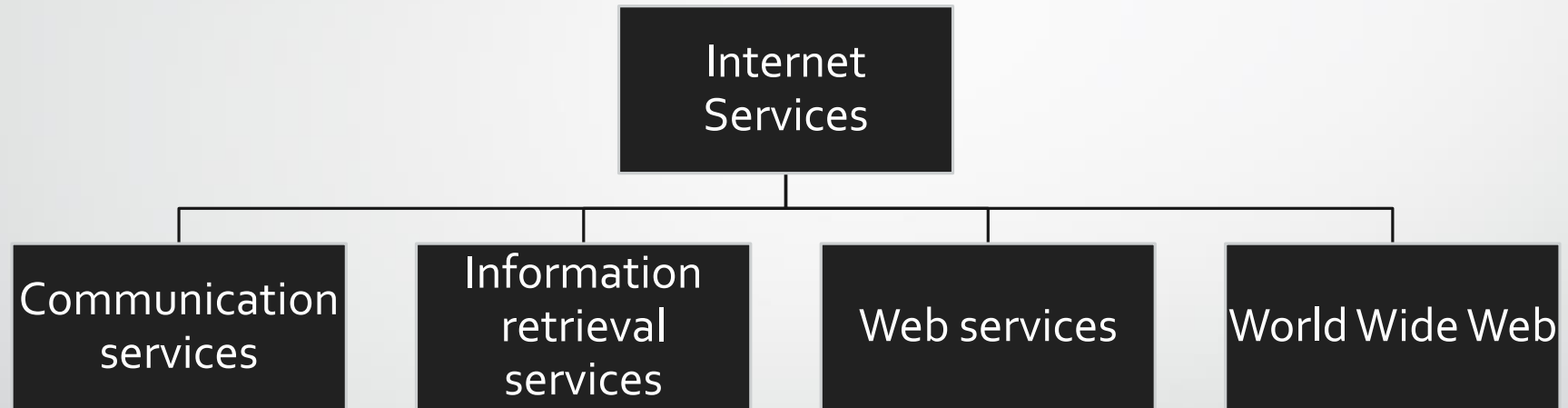
Origins of Internet

- NSFnet, was created in 1986. It was sponsored by the National Science Foundation (NSF).
- NSFnet initially connected the NSF-funded supercomputer centers that were at five universities. Soon after being established, it became available to other academic institutions and research laboratories.
- By 1990, NSFnet had replaced ARPAnet for most nonmilitary uses, and a wide variety of organizations had established nodes on the new network— by 1992, NSFnet connected more than one million computers around the world.
- In 1995, a small part of NSFnet returned to being a research network. The rest became known as the Internet,

Introducing the Internet

- The Internet is a huge collection of computers/devices connected in a communications network. These computers are of every imaginable size, configuration, and manufacturer.
- A computer or other device that requests services from a server is called a **client**
- One of the most common network structures is the **client-server network**
- If the computers that make up a network are close together (within a single department or building), then the network is referred to as a **local area network (LAN)**

What are Internet Services?



- Allows us to access huge amount of information such as text, graphics, sound and software over the internet.

What are Internet Services?

- Communication Services - available that offer exchange of information with individuals or groups.
- Information retrieval services - offering easy access to information present on the internet.
- Web services - allow exchange of information between applications on the web.
- WWW - It offers a way to access documents spread over the several servers over the internet.

Can you name each example of above service?

Connecting to the Internet

- The type of Internet service you choose will largely depend on which Internet service providers (ISPs) serve your area, along with the types of service they offer.
- Types of Internet Services:-
 - DIAL-UP → Dial-up Internet uses your phone line, so unless you have multiple phone lines you will not be able to use your landline and the Internet at the same time.
 - DSL → DSL connects to the Internet via a phone line but does not require you to have a landline at home. And unlike dial-up, you'll be able to use the Internet and your phone line at the same time.

Connecting to the Internet

- Cable → Cable service connects to the Internet via cable TV. It uses a broadband connection and can be faster than both dial-up and DSL service; however, it is only available where cable TV is available.
- Satellite → It connects to the Internet through satellites orbiting the Earth. As a result, it can be used almost anywhere in the world, but the connection may be affected by weather patterns.
- 3G and 4G → 3G and 4G service is most commonly used with mobile phones, and it connects wirelessly through your ISP's network. They will also limit the amount of data you can use each month, which isn't the case with most broadband plans.

Choosing an Internet service provider

- Most ISPs offer several tiers of service with different Internet speeds, usually measured in Mbps (short for megabits per second).
- If you mainly want to use the Internet for email and social networking, a slower connection (around 2 to 5 Mbps).
- However, if you want to download music or stream videos, you'll want a faster connection (at least 5 Mbps or higher).
- You'll also want to consider the cost of the service, including installation charges and monthly fees.
- Generally, the faster the connection, the more expensive it will be per month.
- Although dial-up has traditionally been the least expensive option, many ISPs have raised dial-up prices to be the same as broadband.



Connecting to the Internet

What devices do you need to
connect to the internet?

Modem



- The type of Internet access you choose will determine the type of modem you need.
- Dial-up access uses a telephone modem, DSL service uses a DSL modem, cable access uses a cable modem, and satellite service uses a satellite adapter.
- Your ISP may give you a modem—often for a fee—when you sign a contract, which helps ensure that you have the right type of modem.
- However, if you would prefer to shop for a better or less expensive modem, you can choose to buy one separately.

Router



- A router is a hardware device that allows you to connect several computers and other devices to a single Internet connection, which is known as a home network.
- Many routers are wireless, which allows you to create a home wireless network, commonly known as a Wi-Fi network.
- You don't necessarily need to buy a router to connect to the Internet. It's possible to connect your computer directly to your modem using an Ethernet cable. Also, many modems include a built-in router



Home networking

- In a home network, all of your devices connect to your router, which is connected to the modem. This means everyone in your family can use the Internet at the same time.
- Your ISP technician may be able to set up a home Wi-Fi network when installing your Internet service.
- If you want to connect a computer that does not have built-in Wi-Fi connectivity, you can purchase a Wi-Fi adapter that plugs into your computer's USB port.



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5 Predictions of How the Internet Works in 15 years.

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PBS's, the Wall Street Journal's and the BBC's

The Future of the Internet

1. Internet connection will be permanent and automatic.

We've been "connecting" to the Internet in various ways, from the minutes-long process of dialing up to the seconds-long process of entering a Wi-Fi password once for a given location. Eventually, connectivity will be constant and streamlined to the point where no individual "connection" is really necessary. Universal Internet is slowly becoming a reality, and overlap between systems may establish a layer of redundancy that prevents worries of service outages or bad connections.



2. Augmented and virtual reality will play a major role.

Mobile devices let us access the Internet in the real world, but next -gen devices will project the Internet, or embed it, into the real world through a form of augmented reality. Google Glass pioneered this space, while Microsoft's HoloLens looks promising to carve the path forward. Though augmented reality has seen some unsuccessful fits and starts, its close cousin, virtual reality, is starting to see significant growth amid the launch of Oculus Rift, HTC Vive, and the upcoming PlayStation VR. The world wasn't ready for AR a few years ago, but a few years from now, it will be.



3. Machines might take over your job.

Already, machines are capable of many manual tasks, and they're starting to gain mastery over high-level and intellectual tasks, like writing. Combined with the ubiquity of the Internet, these apps will make it so that less work and more resources are directly available. The need for people to work will decrease along with job availability (at least, ideally), resulting in a system that's more or less balanced. As we struggle to find this balance, we'll undoubtedly encounter hurdles of joblessness and unbalanced resource distribution—but these are short-term drawbacks of a more connected, richer world.



4. Privacy will become commoditized.

With a constant (and possibly un-severable) connection to the Internet and more apps that run our lives, privacy will become an even bigger concern. It may even be commoditized to the point where only the rich can afford to be off the grid. As a result, I expect we'll see a number of independent organizations and companies striving to maintain some level of privacy for consumers; whether or not they'll be successful is another story.



5. The 'Internet of Things' will fully mature.

Already, the “Internet of Things” connects refrigerators, alarm clocks, and various other household appliances. In another 15 years, that connection will extend to vehicles, wallets, health monitors, and perhaps even our paper currency. The more freely information flows, the greater power and freedom we have; this truth will drive our desire to connect everything we can to the Internet.