ICT Communications Essentials

Lesson 1: Using the Internet and the World Wide Web

LESSON SKILLS

After completing this lesson, you will be able to:

- Explain how to access and connect to the Internet
- Identify an IP address
- Describe the communication between two computers using simple networks
- Translate Web addresses into IP addresses
- Describe the architecture of the Web, how it works, and the parts of a Web page

KEY TERMS

client	modem	URL
cloud	network	Web browser
DNS	packets	Web page
domain name	server	Web site
hyperlinks	TCP/IP	Wi-Fi
Internet	Top-Level Domain (TLD)	World Wide Web
IP address		

Points to Ponder

These Points to Ponder are designed to help you focus on key elements in this lesson. They are also suitable for use to spark discussions or individual research.

- How would you define "Internet"?

- What are your top five reasons for accessing the Internet?

- What type of Internet connection service is available in your area?

   o What type of service might better serve your needs, and why?

- Should your local city or town provide free Wi-Fi?

   o What are some pros and cons to providing free Wi-Fi for everyone? Explain your thinking.

- How do you think the Internet will change over the next 5 to 10 years? Explain your thinking.

Overview

This lesson introduces one of the most significant innovations of the past half-century: the Internet. You will discover how the Internet works, the role of Internet Service Providers (ISPs), how to connect to the Internet, how data travels the Internet, and how Internet addresses are formatted. You will also learn about the World Wide Web, Web browsers, Web addresses, and Web navigation.

What Is the Internet?

Objectives

2.1.1: Define "Internet," and explain how it uses protocols and data packets to enable computers to communicate.

2.1.6: Distinguish the Internet from the World Wide Web.

The **Internet** has become an integral part of our daily lives, so most of us never think about how it works or what prompted its creation.

The Internet was born in 1969 when the U.S. Advanced Research Projects Agency (ARPA) created a way to connect four universities so they could share information more easily. What started as a simple way for researchers to share information efficiently eventually became a household technology used every day by people of every age, all over the world.

> **Link to Learn More**
>
> Read more about the beginnings of the Internet and ARPA:
>
> - ARPA (*http://searchnetworking.techtarget.com/definition/ARPANET*)

The Internet vs. the World Wide Web

People tend to use the terms "Internet" and "World Wide Web" interchangeably, but they are not the same thing. The Internet is older than the World Wide Web.

Essentially, the Internet is a very large network of networks. **Networks** consist of **servers** that store information accessed by various clients. Therefore, the Internet is essentially hardware machines and data.

By contrast, the World Wide Web is a system of tools and services that enable us to access the information on the Internet. These tools include clients — particularly Web browsers — that retrieve the information for end-users. A key part of the Web is hyperlinks, which connect data resources together, enabling users to "browse" from page to page. The Web is the technology that brings data from the Internet to us.

You can think of the Internet as being an enormous series of filing cabinets filled with information and the Web as a group of robots that search the filing cabinets and bring us the information we are looking for.

- When you access a Web page in your browser, you are accessing the Internet.

- You also use the Internet and its networks to access your e-mail.

- If you have ever transferred large files using FTP (File Transfer Protocol), you were using the Internet.

- If you ever sent or received a text message, or shared a picture with your friends on a social media site, then that information also traveled the Internet.

Links to Learn More

Read more about the networks and communications media that compose the Internet:

- Internet (*www.techterms.com/definition/internet*)

- Networks (*www.gcflearnfree.org/internet101/1.3*)

- Communications media (*www.warriorsofthe.net*)

"The Cloud"

You may have heard of "the **cloud**" and perhaps you wondered where that cloud was located and how it relates to the Internet. When people say that they are storing their data in "the cloud", they mean that the server storing their data is not in their physical location.

Data that is stored in "the cloud" is actually stored on servers accessed by people from any location that has an Internet connection. Users simply need access rights to the server and a browser. This arrangement enables people spread out around the world to collaborate on projects without having to travel at all. All their files are in a central location, accessible regardless of their current Internet connection.

Some common cloud storage services include Google Docs, Dropbox, Microsoft Cloud, and Apple iCloud.

Link to Learn More

Read more about the cloud:

- The cloud (*http://www.gcflearnfree.org/computerbasics/understanding-the-cloud/1/*)

How Data Travels

You may be wondering how all this information travels from your computer to someone else's computer. It is not quite the same as placing a letter into an envelope and sending it through the post office.

The early creators of the Internet discovered that if they divided the data into smaller piece it could travel faster. The smaller pieces of data are reassembled on the receiving side. These data pieces are known as **packets**. Packets have special information added to them to ensure they are reassembled correctly.

How do computers communicate with each other to transfer information?

Consider that people speak many different languages and each language has its own syntax rules for constructing words. In the same way, computers use different protocols to share information with each other. The syntax and protocols used depend on the type of information exchanged as well as the types of tools used to exchange it.
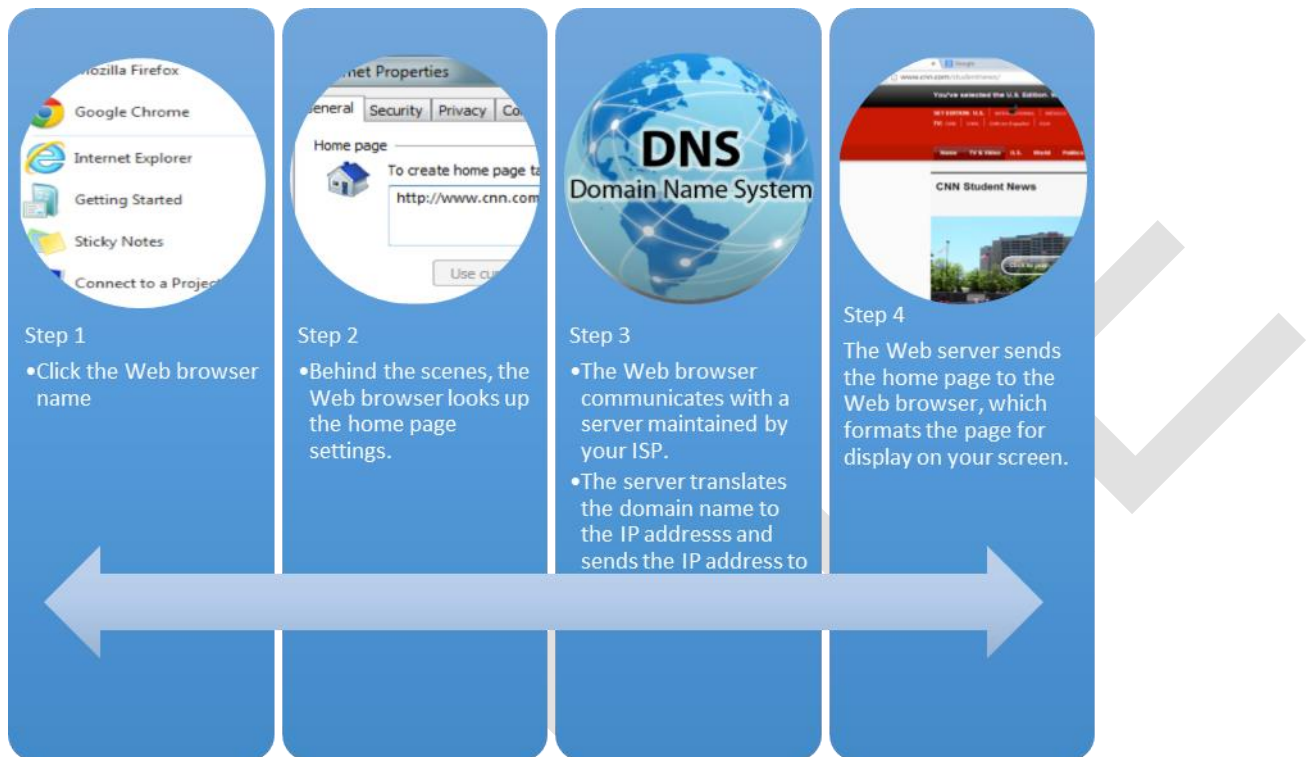
Figure 1-2: Steps for retrieving information with a Web browser

Every Web page you access is retrieved in the same way:

- You specify the information you want, either by searching a search engine such as Google with keywords and choosing a site from the results, or by directly entering the domain name of a specific site.

- Your browser sends a request for the Web page you specify to the server that hosts that page.

- The host server responds to your browser by sending the page you requested.

- Your browser displays the page content using the formatting instructions in the page's HTML code.

This page retrieval process works the same way regardless of the browser software you are using.

Links to Learn More

Read more about browsers and servers:

- Web server (*http://computer.howstuffworks.com/web-server1.htm*)

- Web browser (*www.techterms.com/definition/web_browser*)

- What is a browser? (*https://www.youtube.com/watch?v=n8neFZwd9eE*)

- Browser basics (*https://www.youtube.com/watch?v=0Yp_ltUjoPo%23t=15*)

- Browser speed (*https://www.youtube.com/watch?v=N5LQhuD1FPY*)

- Clients and servers (*http://computer.howstuffworks.com/web-server4.htm*)

Internet Connections – Find-the-Fib Game

In this activity, you will review terms relating to Internet connections by playing a game. You should complete the Internet Connections Terms activity before beginning this activity.

1. Form teams of two to four people each.

2. Use the terms and definitions in the completed Internet Connection Terms activity to create a Find-the-Fib Game.

3. To play Find-the-Fib, each team creates a set of three statements to report to the class. Each set must include two true facts and one fib.

4. Allow 5 to 10 minutes for the teams to brainstorm.

5. Teams will take turns announcing their three statements to the class, trying to fool them.

6. Each guessing team must agree about which statement they believe is the fib, without consulting other teams.

7. The team that finds the most fibs wins!

Internet Connections Terms

In this activity, you will review terms related to Internet connections.

Write the letter of the correct definition in the spaces provided next to the terms.

Term	Definition
_____ 1. Dial-up access	a) Protocol software used to communicate with the Internet and built into all major operating systems
_____ 2. Cable	b) Connecting to the Internet via satellite
_____ 3. DSL	c) Internet service provided by a cable company
_____ 4. Broadband satellite	d) Connecting to the Internet using a modem and a standard telephone line
_____ 5. 3G/4G	e) A network that uses radio signals to provide Internet connections to wireless computers and devices
_____ 6. Wi-Fi	
_____ 7. Computer	f) A desktop computer, mobile phone or tablet
_____ 8. Operating system	g) A technology that provides high-speed Internet connections using regular copper telephone lines
_____ 9. TCP/IP	h) A number that uniquely identifies each computer
_____ 10. Client software	i) Software that communicates with a computer's hardware (for example, Windows, Macintosh, Linux)
_____ 11. Internet connection	j) A Web browser or other application used to access and display Web sites on a computer (for example, Chrome, Internet Explorer)
_____ 12. Internet address	k) Directly connecting to an Internet Service Provider (ISP)
_____ 13. FiOS broadband	l) High-speed wireless connection for smartphones and other devices
	m) Connecting to the Internet using light pulses over a fiber-optic cable network

What is Required to Connect to the Internet?

In this activity, you will identify the components required to connect to the Internet.

Six elements are required for a computer to connect to the Internet. The user generally acquires the first three by obtaining a computer. Fill in the missing elements.

1 Computer

2 Operating System

3 TCP/IP

4

5

6

Choose the correct term to fill in the blanks 4, 5, and 6

Client Software

Printer

Internet Connection

Digital Camera

Internet Address