Digital Planet: Tomorrow's Technology and You

Chapter 9

The Evolving Internet
الانترنت

Chapter 9 Objectives

✓ Explain how and why the Internet was created

✓ Describe the technology that's at the heart of the Internet

✓ Describe the technology that makes the Web work

كيف تطورت الانترنت واهم تقنياتها

Objectives (cont.)

✓ Discuss the evolving tools people use to build Web sites

✓ Discuss the trends that are changing the Internet and the way people use it

✓ Discuss important social and political issues raised by the growth of the Internet

التغييرات الاجتماعية واساليب العمل الجديدة المرافقة لتطور الانترنت

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ARPANET Pioneers Build a Reliable Network Out of Unreliable Parts

- The ARPANET (Advanced Research Projects Agency NETwork) is the predecessor to the Internet.

- Developed at the request of the Department of Defense in 1969.

- Peer-to-peer networking philosophy and protocols were copied in other networks.

- Disbanded in 1990.

تم تطوير آربانت عام 1969, اي قبل الانترنت، من قبل وزارة الدفاع الامريكية، وكانت الاجهزة فيها مشبوكة بطريقة ند لند (peer to peer)، ولكن تم توقيف آربانت عام 1990

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Inside the Internet

✓ The Internet: network of networks (شبكة الشبكات)

- Links academic, research, government, and commercial institutions

ربط الجامعات والحكومة وبعض المؤسسات التجارية ببعضها

- No one entity controls the Internet

لا يوجد احد يتحكم في شبكة الانترنت

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Counting Connections

✓ It's impossible to pin down the exact size of the Internet for several reasons:

- The Internet has billions (مليارات المتسخدمين) of new users every year.

- The Internet is decentralized. (لا مركزية)

- It doesn't have hard boundaries. (لا حدود)

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Internet Protocols

✓ ***TCP/IP (Transmission Control Protocol/Internet Protocol* برتوكول الانترنت ،):** specifications are open standard

- The language of the Internet

- Allows cross-network communication

- *Internetworking* **(مصطلح يستعمل عند ربط شبكات من انواع مختلفة):** connecting different types of networks and computer systems

Internet Protocols (cont.)

✓ TCP breaks messages into packets (حزم بيانات).

- Each *packet* has all the information needed to travel from network to network. (كل حزمة تحوي العناوين المطلوبة)

- *Packet switching:* flexible and robust

✓ IP (عنوان انترنت/رقم) is the address for the packets.

- Each Internet host computer has a unique IP address.

  كل جهاز يعطى رقم فريد خاص به يعتبر هو عنوانه، ما دام موصولا بلانترنت.

- Each address is comprised of four sets of numbers separated by periods, such as 123.23.168.22.

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Inside the Internet

✓ *DNS (domain name system,* نظام أسماء النطاقات *):* translates
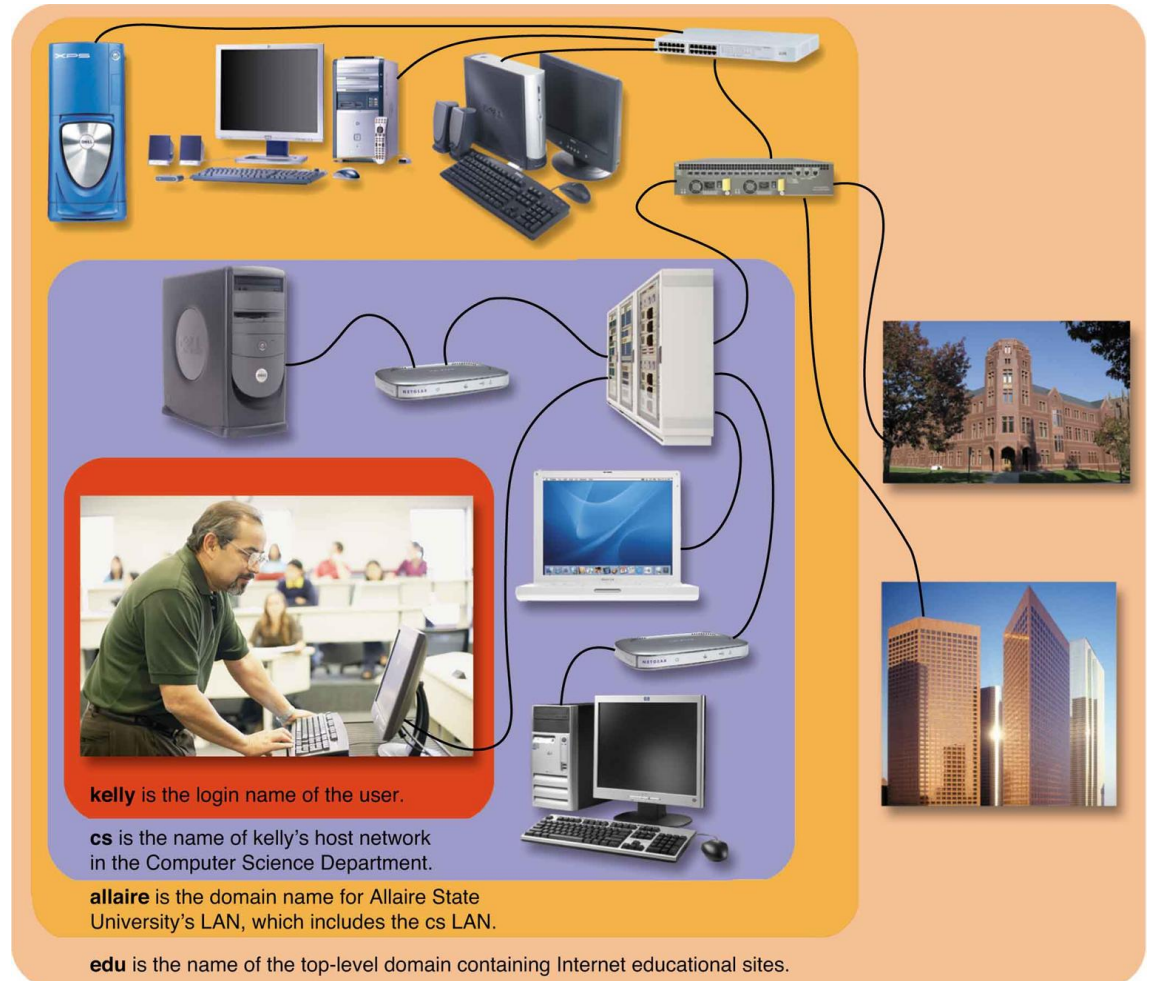IP addresses into a string of names, لتحويل رقم الانترنت الى اسماء

✓ Top-level domains include:

- .edu: educational sites

- .com: commercial sites

- .gov: government sites

- .org: nonprofit organization sites

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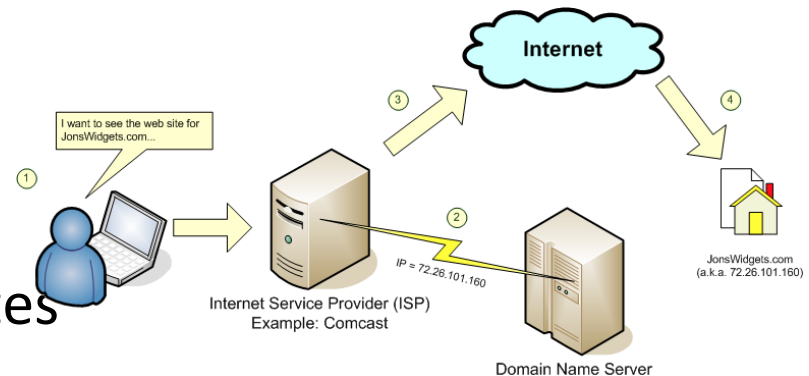
kelly@cs.allaire.edu

- **kelly**: login name

- **cs**: host network

- **allaire**: domain name for Allaire State University's LAN

- **edu**: top-level domain

kelly is the login name of the user.

cs is the name of kelly's host network in the Computer Science Department.

allaire is the domain name for Allaire State University's LAN, which includes the cs LAN.

edu is the name of the top-level domain containing Internet educational sites.

Internet Access Options

طرق الاتصال بالانترنت

✓ Four types of broadband access:

- DSL: standard phone lines
- Cable modems: fast Internet connections
- Satellite dishes: radio waves and satellite relays
- High-speed wireless connections: radio waves

✓ *Internet service providers (ISPs):* provide connections to the Internet

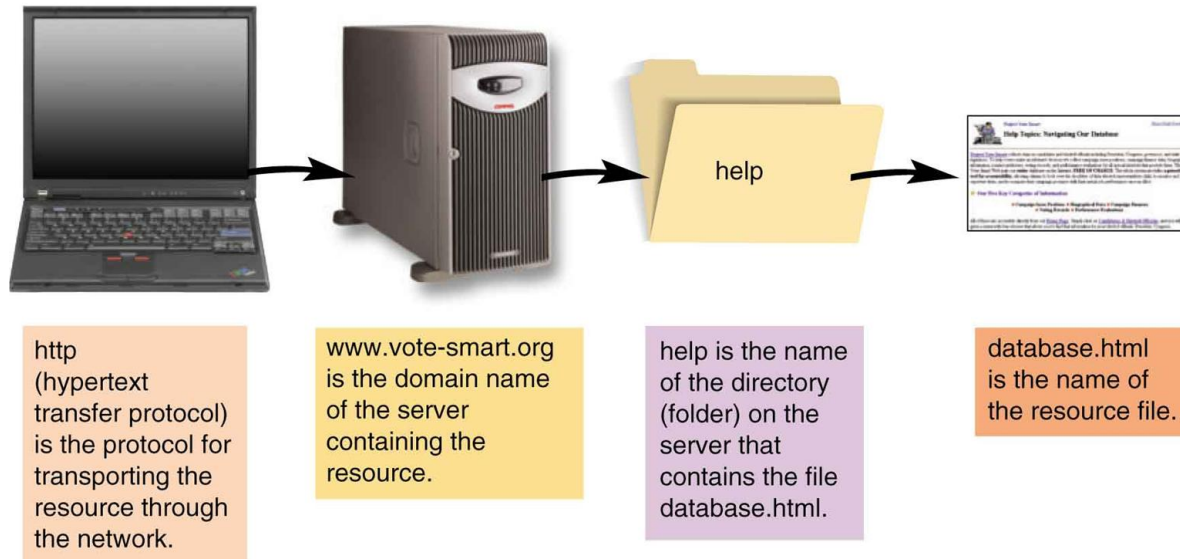✓ *Online services:* offer extra services such as news and chat rooms

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Internet Servers

✓ *Email servers:* act as a local post office for a particular Internet host—a business, an organization, or an ISP.

✓ *File servers:* distribute programs, media files, and other data across the Internet.

✓ *Application servers:* store applications and make them available on request.

✓ *Web servers:* store Web pages and send them to client programs when requested.

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Web Protocols and Web Publishing

URL: uniform resource locator

HTML: HyperText Markup Language

http://www.vote-smart.org/help/database.html

http (hypertext transfer protocol) is the protocol for transporting the resource through the network.

www.vote-smart.org is the domain name of the server containing the resource.

help is the name of the directory (folder) on the server that contains the file database.html.

database.html is the name of the resource file.

Web Protocols and Web Publishing (cont.)

✓ *HTML:* describes format, layout, and structure of a Web page.

✓ *Source document:* text files that includes codes that describe the format of a hypermedia document

✓ *Domain name registry:* company that sells server domain names.

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From Hypertext to Multimedia

✓ A Web site can contain many media types:

- Tables
- Frames
- Forms
- Animations
- Search engines
- Downloadable audio and video
- *Streaming audio and video*

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From Hypertext to Multimedia (cont.)

✓ Most popular free *plug-ins* include:

- *Portable Document Format (PDF):* documents looks the same on screen as on paper

- *Shockwave/Flash:* allows browsers to present compressed interactive multimedia documents

- *Windows Media Player:* plays streaming audio and video

- *Quick Time:* Apple's multipurpose multimedia framework

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Dynamic Web Sites

✓ Changeable content can provide personalization.

✓ *Cookies:* small files deposited on visitor's hard disk

- Most browsers don't tell you when they leave a cookie

✓ *Content-management systems (CMS):* allow sites to be updated without coding in HTML

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Dynamic Web Programming Tools

✓ *Scripts:* short programs that can add dynamic features

- Scripts are typically written in *JavaScript*

✓ *Java:* full-featured, cross-platform programming language

- *Applets* are small Java programs.

✓ *eXtensible Markup Language (XML):* used for defining data formats

- *AJAX* stands for Asynchronous JavaScript and XML.

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Dynamic Web Programming Tools (cont.)

✓ Search engines are designed to make it easier to find information on the Web.

✓ *Web crawlers* or *spiders:* software robots that systematically explore the Web, retrieve information and index it in a database

✓ *Boolean logic:* refines queries using keywords

✓ Many sites have their own built-in search engines.

Building a Web Site

✓ Make a plan.

✓ Collect and prepare the source documents.

✓ Prepare a logo and banner graphic.

✓ Use software, such as Dreamweaver, to define CSS styles and add tags.

✓ Preview the pages.

✓ Duplicate the unifying elements throughout the site.

✓ Test the site with different Web browsers.

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Portals

✓ *Web portals*: Web entry stations that offer access to a variety of links

✓ *Corporate portals:* on intranets serve the employees
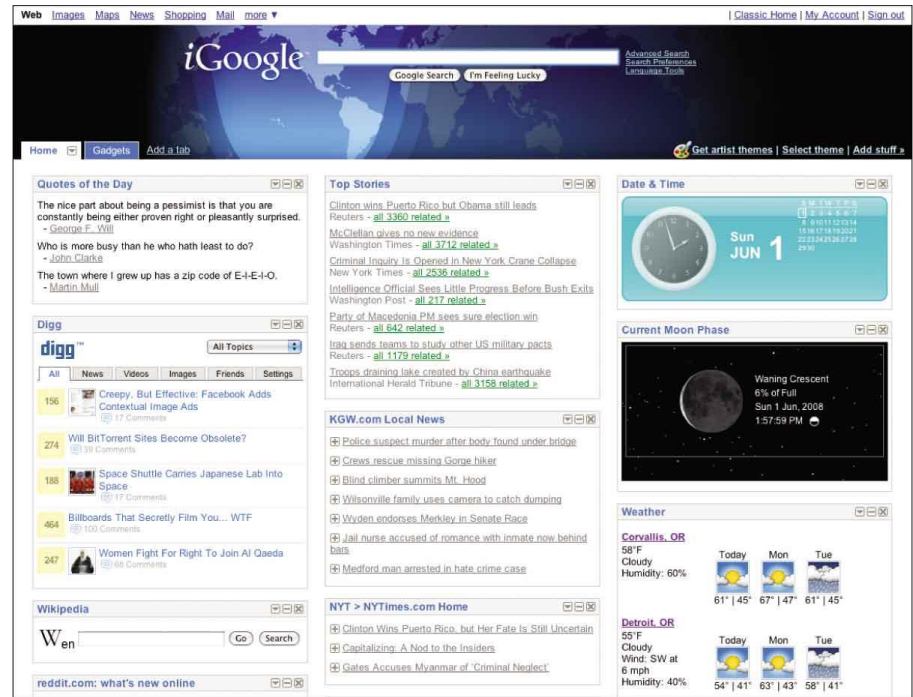
Push Technology and RSS

✓ *Pull technology:* browsers on client computers pull information form server machines

✓ *Push technology:* server automatically sends information to the client

✓ *Really Simple Syndication (RSS):* XML-based family of formats used to publish frequently updated documents

Web 2.0 and You

✓ In Web 2.0 anyone can create an online publication

- Blogs

- Forums

- YouTube

- Flickr

✓ *Mashup:* combination of Web content such as a Web page, song, video, or image

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