

5.7: Study Questions

? Study Question 5.7.1

Identify the first four locations hooked up to the ARPANET.

Answer

The first four locations connected on the ARPANET were UCLA, Stanford Research Institute, UC Santa Barbara, and the University of Utah.

? Study Question 5.7.2

Describe the difference between the Internet and the World Wide Web

Answer

The Internet is the physical interconnected network of networks. The World Wide Web is the system of hyperlinked documents accessed via the Internet.

? Study Question 5.7.3

List three of your favorite Web 2.0 apps or websites.

Answer

Web 2.0 apps: Facebook, Instagram, X (Twitter,) YouTube

? Study Question 5.7.4

Identify the killer app for the Internet.

Answer

Email was the killer app that drove early Internet adoption.

? Study Question 5.7.5

List a few home internet connections.

Answer

Home connections: cable, DSL, cellular, satellite.

? Study Question 5.7.6

List a few business internet connections.

Answer

Business connections: leased lines, Metro Ethernet, business DSL, satellite.

? Study Question 5.7.7

Describe the difference between a LAN and a WAN.

Answer

A LAN connects local devices; a WAN connects devices across a large geographic area.

? Study Question 5.7.8

Describe the difference between an intranet and an extranet.

Answer

An intranet is private to an organization; an extranet extends outside the organization to partners/vendors.

? Study Question 5.7.9

Explain what a network topology is.

Answer

Network topology illustrates how network components connect physically and logically.

? Study Question 5.7.10

What was the original motivation and purpose behind the creation of ARPANET?

Answer

The ARPANET was created by ARPA in the late 1960s to connect computers at academic and military research sites in order to share information and computing resources. It was meant to improve communication and decentralize the computer network to avoid outages.

? Study Question 5.7.11

What major innovation allowed different networks running different protocols to communicate?

Answer

The development of TCP/IP as a common standard protocol enabled internetworking between disparate networks. This led to the interconnected network of networks that became the Internet.

? Study Question 5.7.12

What was the impact of the release of web browsers like Mosaic and Netscape Navigator?

Answer

Web browsers provided a graphical interface to the Internet, expanding its appeal beyond researchers to the general public. This drove rapid adoption in the mid 1990s.

? Exercise 5.7.13

What are the differences between Internet connections for homes vs. businesses?

Answer

Home connections like cable and DSL focus on affordability and simplicity. Businesses require higher bandwidth, dedicated connectivity, managed services, and support for multiple sites.

? Exercise 5.7.14

How does powerline networking work?

Answer

Powerline networking uses a building's existing electrical wiring to carry data signals, avoiding the need to install separate network cables.

? Exercise 5.7.15

What is a key benefit of mesh topology compared to bus topology?

Answer

Mesh networks have built-in redundancy so they can still operate if one node fails. Bus networks have a single point of failure.

5.7.1: Exercises

1. Give an example of each of the following terms:

- Wireless LAN (WLAN)
- Wide-area network (WAN)
- Intranet
- Local-area network (LAN)
- Extranet

2. Give an example for each of the following:

- Fault tolerance
- Scalability
- Quality of service (QoS)

- Security
- 3. Create a google account at - [google.com](https://www.google.com), create a new document using google docs, share the document with others and explore document sharing via your google account.
- 4. Find the IP address of your computer. Explain the steps how you find it.
- 5. Identify your or your school's Internet service provider.
- 6. Pretend you are planning a trip to three foreign countries in the next month. Consult your wireless carrier to determine if your mobile phone would work properly in those countries. Identify if there are costs and other alternatives to have your phone work properly.

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