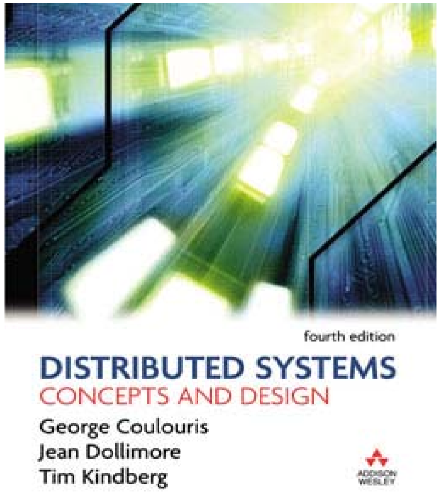
Slides for Chapter 1

Characterization of Distributed Systems



From Coulouris, Dollimore and Kindberg

Distributed Systems:
Concepts and Design

Edition 4, © Pearson Education 2005

Figure 1.1
A typical portion of the Internet

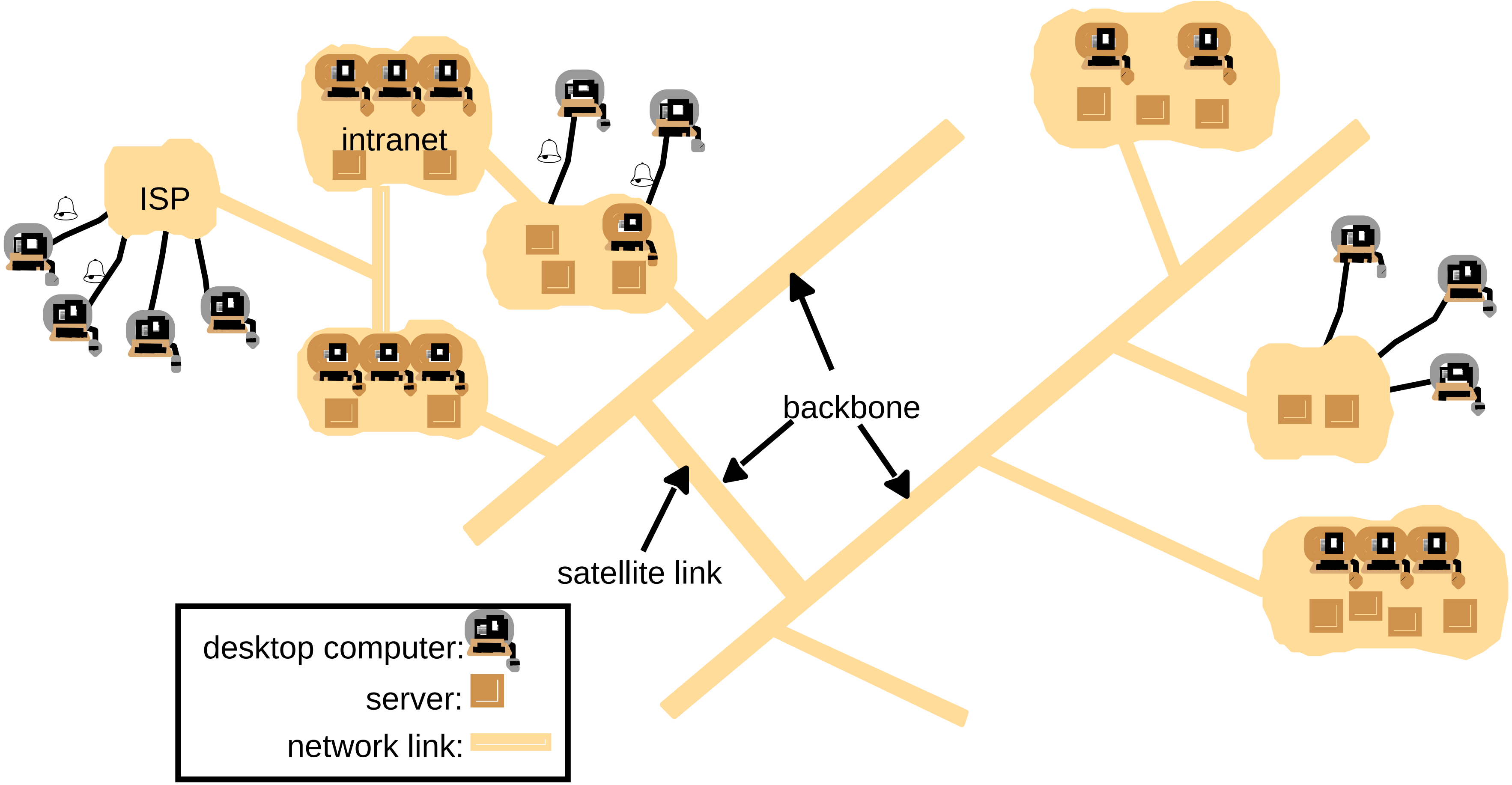


Figure 1.2
A typical intranet

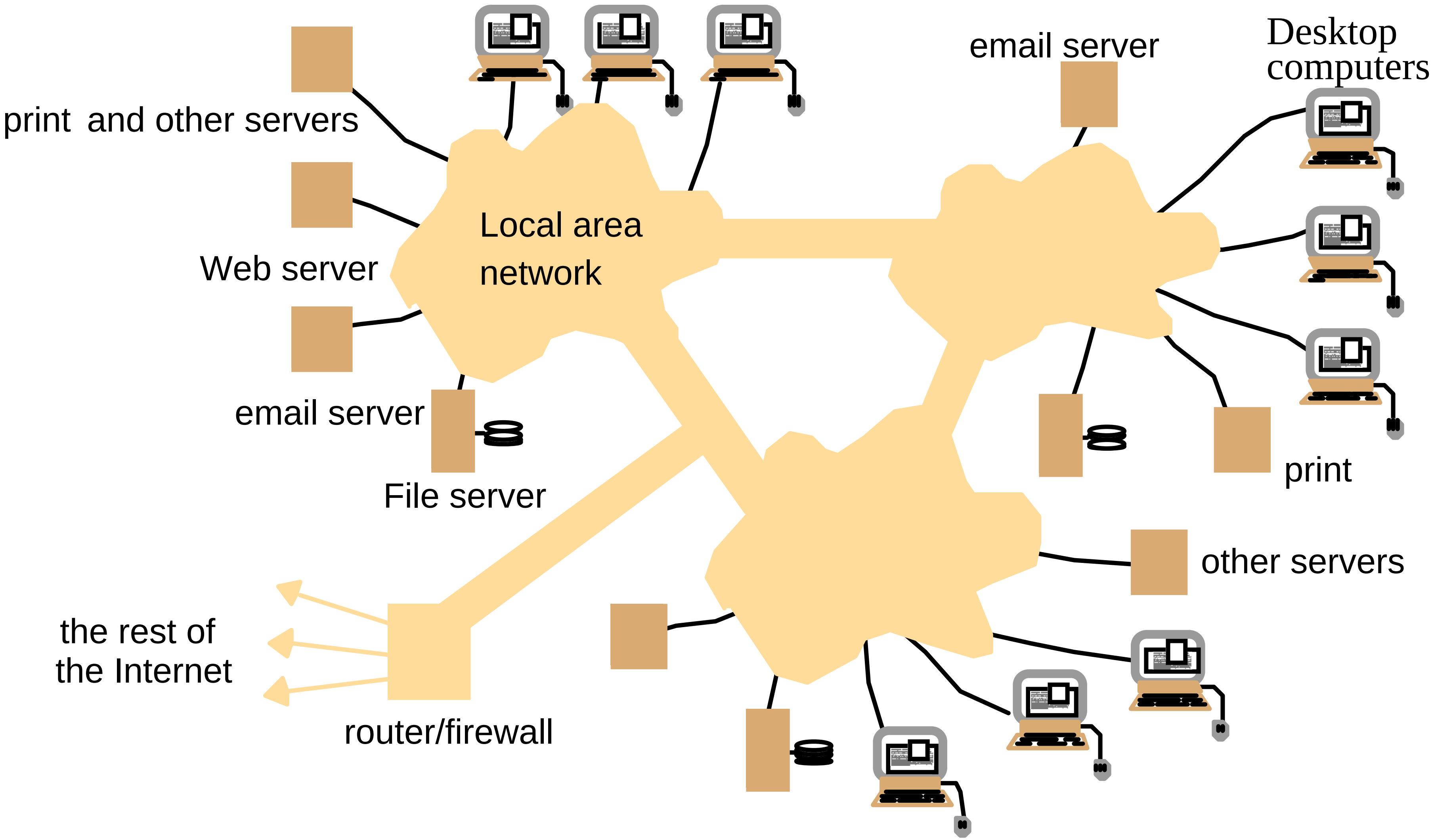


Figure 1.3
Portable and handheld devices in a distributed system

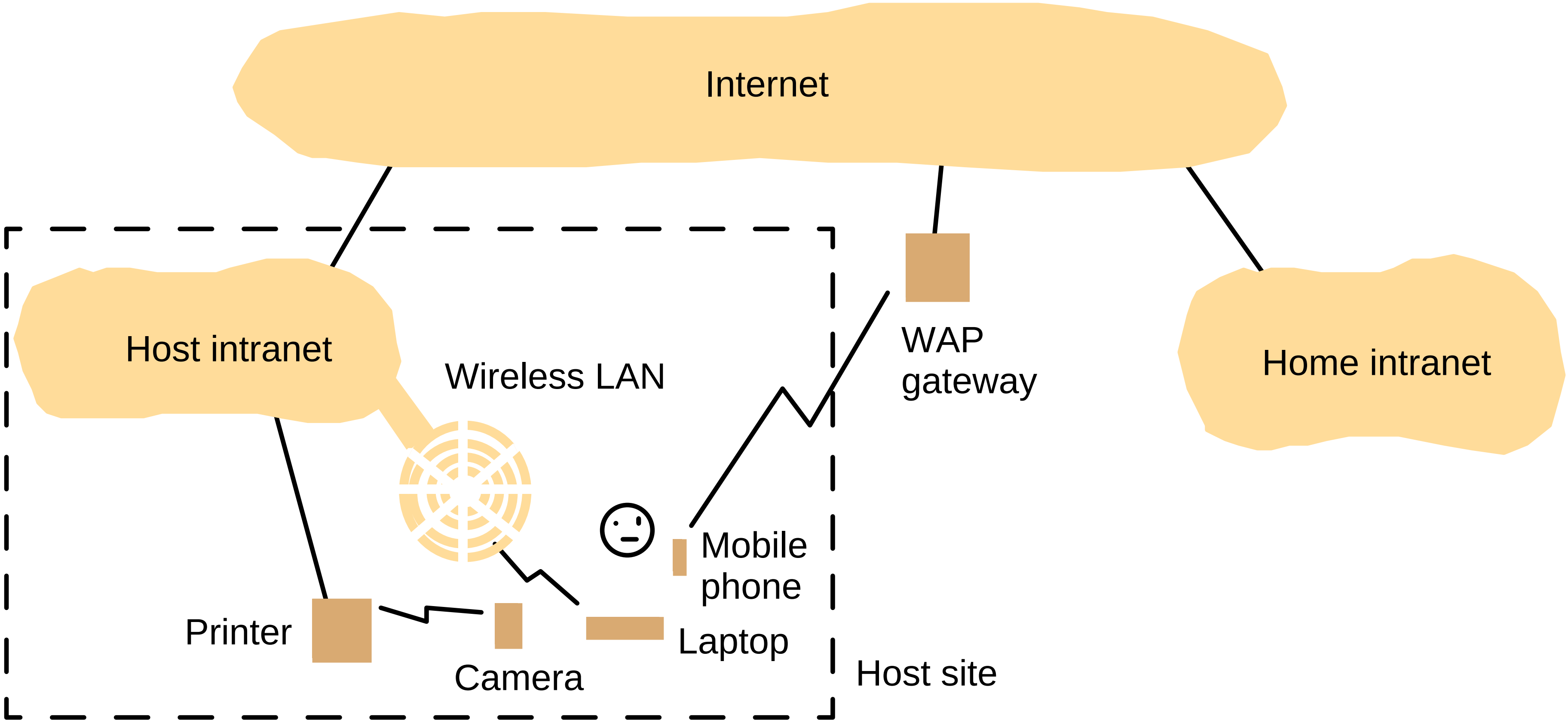


Figure 1.4
Web servers and web browsers

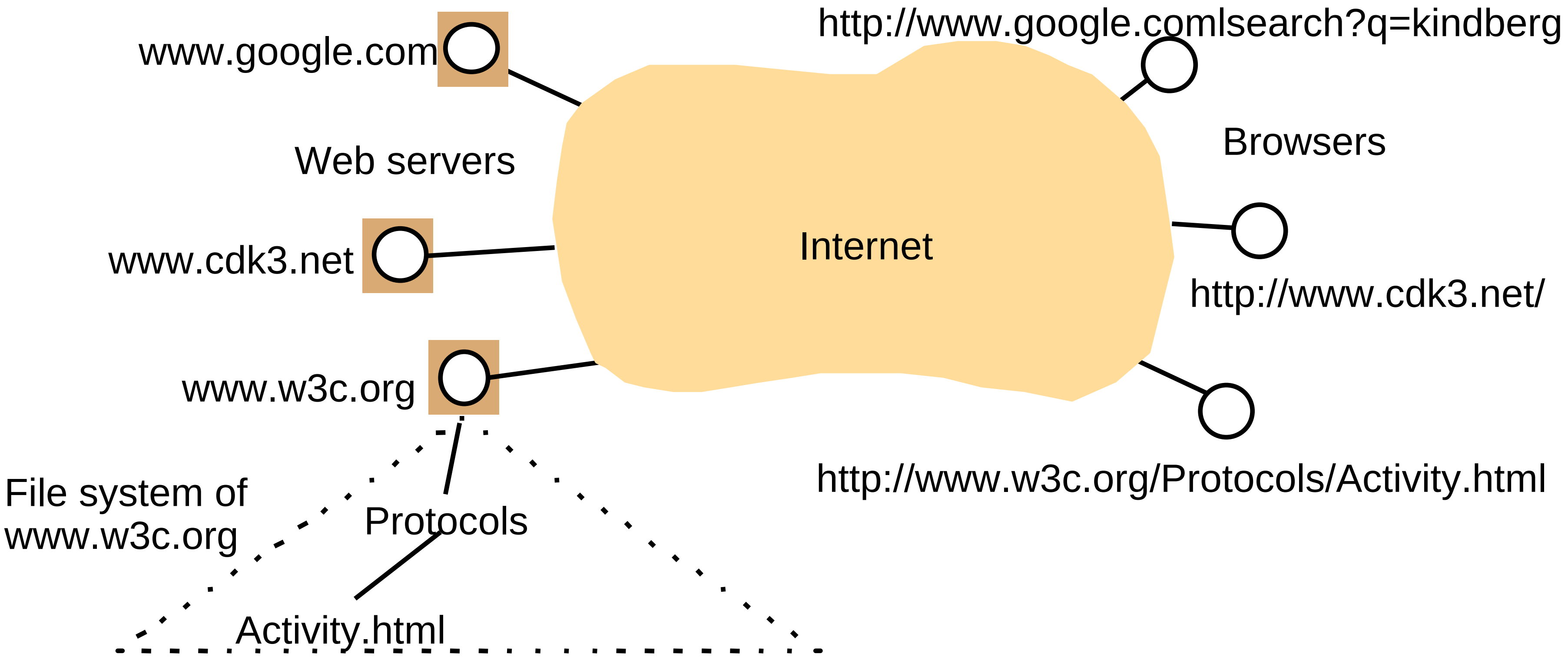


Figure 1.5
Computers in the Internet

Date	*Computers*	*Web servers*
1979, Dec.	188	0
1989, July	130,000	0
1999, July	56,218,000	5,560,866
2003, Jan.	171,638,297	35,424,956

Figure 1.6
Computers vs. Web servers in the Internet

Date	*Computers*	*Web servers*	*Percentage*
1993, July	1,776,000	130	0.008
1995, July	6,642,000	23,500	0.4
1997, July	19,540,000	1,203,096	6
1999, July	56,218,000	6,598,697	12
2001, July	125,888,197	31,299,592	25
		42,298,371	

Section 1.4.7
Transparencies

Access transparency: enables local and remote resources to be accessed using identical operations.

Location transparency: enables resources to be accessed without knowledge of their physical or network location (for example, which building or IP address).

Concurrency transparency: enables several processes to operate concurrently using shared resources without interference between them.

Replication transparency: enables multiple instances of resources to be used to increase reliability and performance without knowledge of the replicas by users or application programmers.

Failure transparency: enables the concealment of faults, allowing users and application programs to complete their tasks despite the failure of hardware or software components.

Mobility transparency: allows the movement of resources and clients within a system without affecting the operation of users or programs.

Performance transparency: allows the system to be reconfigured to improve performance as loads vary.

Scaling transparency: allows the system and applications to expand in scale without change to the system structure or the application algorithms.