

# Introduction to Web Development

## Chapter 1

Randy Connolly and Ricardo Hoar

Fundamentals of Web Development

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## Chapter 1

**1** A Complicated  
Ecosystem

**2** Definitions and  
History

**3** The Client-  
Server Model

**4** Where is the  
Internet?

**5** Working in Web  
Development

**6** Summary

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## A Complicated Ecosystem



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## Definitions and History

A Short History of the Internet

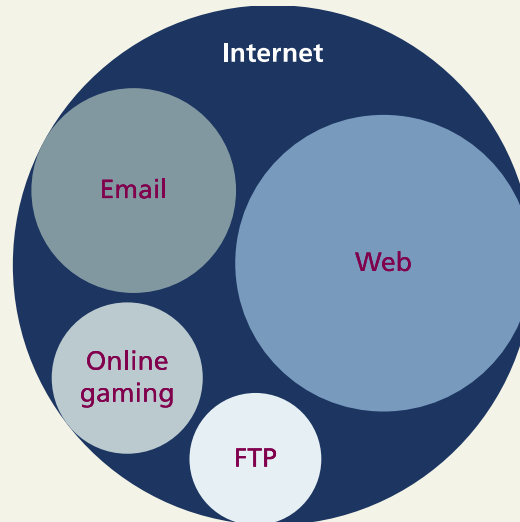
- Telephone Network
- Packet Networks
  - ARPANET (1969)
  - X.25 (1974)
  - USENET (1979)
  - TCP/IP (1983) ← INTERNET

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# Definitions and History

The Internet and WWW are different (but related) things



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# Definitions and History

The Birth of the Web (1990)

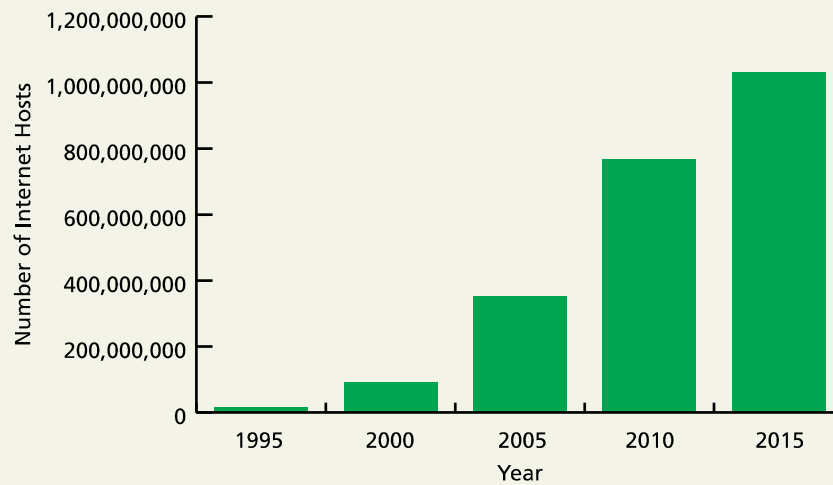
1. URLS
2. HTTP
3. SERVERS
4. BROWSERS
5. HTML

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## Definitions and History

The Growth of the Internet



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## Definitions and History

Web Applications in Comparison to Desktop Applications

Advantages:

- Accessible from any Internet-enabled computer.
- Usable with different operating systems and browser applications.
- Easier to roll out program updates
- Fewer security concerns about local
- Storage.

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# Definitions and History

## Web Applications in Comparison to Desktop Applications

### Disadvantages:

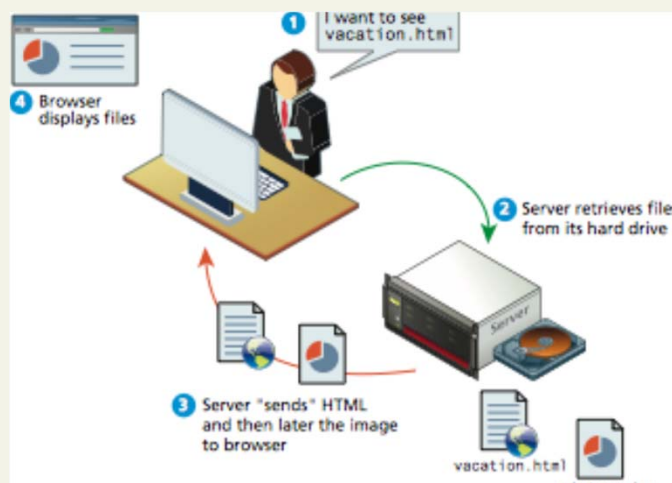
- Requirement to have an active Internet connection
- Security concerns about sensitive private data being transmitted over the Internet.
- Concerns over the storage, licensing, and use of uploaded data.
- Problems with certain websites not having an identical appearance across all browsers.
- Restrictions on access to operating system resources
- Clients or their IT staff may have additional plugins added to their browsers

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# Definitions and History

## Static Websites versus Dynamic Websites

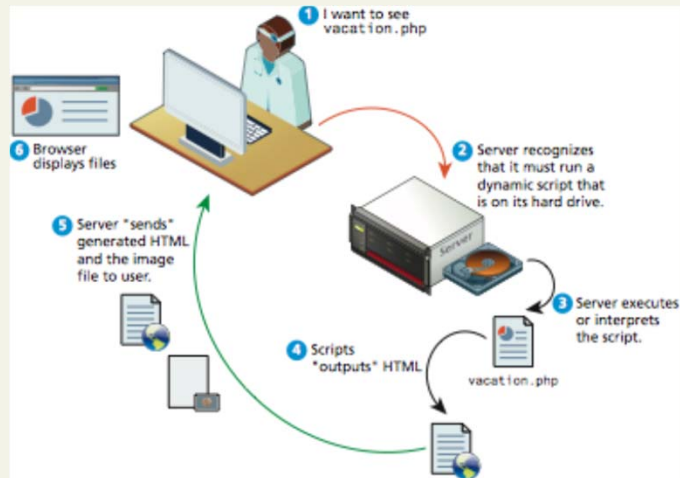


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# Definitions and History

Static Websites versus Dynamic Websites

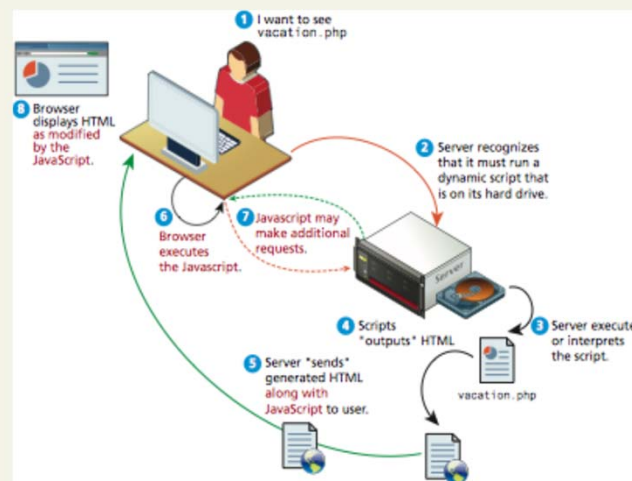


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# Definitions and History

Static Websites versus Dynamic Websites



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# Definitions and History

Web 2.0 and Beyond

- Web 2.0 Dynamic
- Web 3.0 Semantic
- Web Science
- ...

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# Definitions and History

Sociotechnological Integration—Web Science

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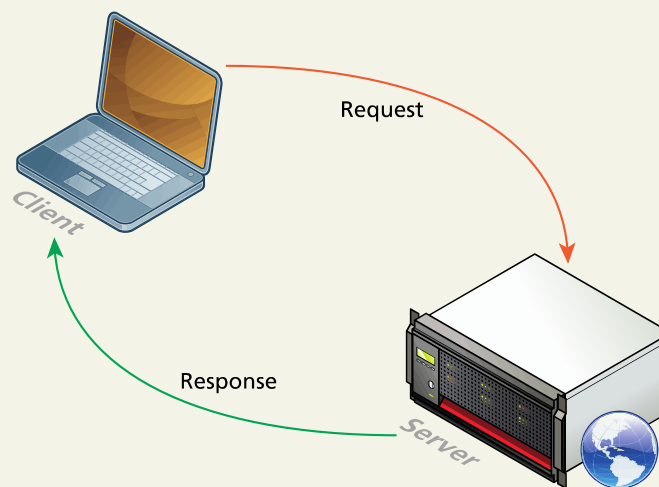
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## The Client-Server Model

The Request-Response Loop

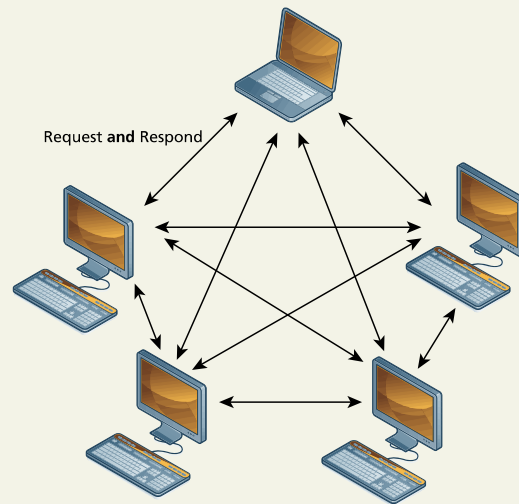


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# The Client-Server Model

The Peer-to-Peer Alternative



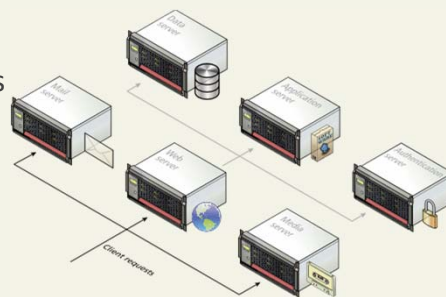
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# The Client-Server Model

Server Types

- Web Servers
- Application Servers
- Database Servers
- Mail Servers
- Media Servers
- Authentication Servers
- ...



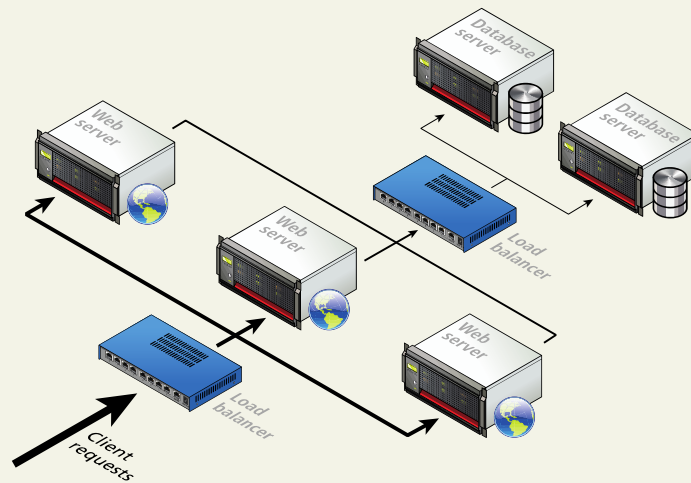
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# The Client-Server Model

Real-World Server Installations – Server Farm

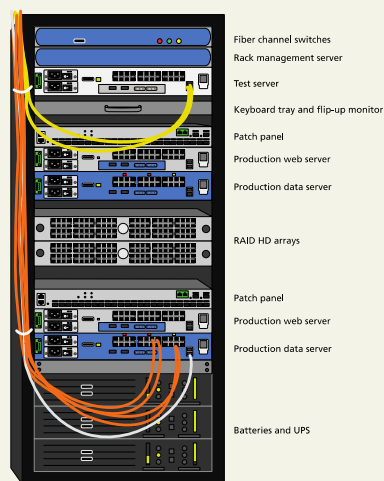


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# The Client-Server Model

Real-World Server Installations – Server Rack

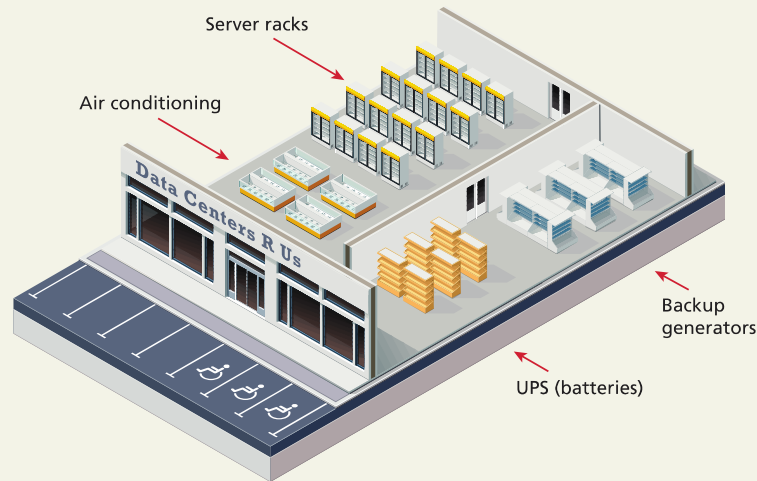


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# The Client-Server Model

Real-World Server Installations – Data Center



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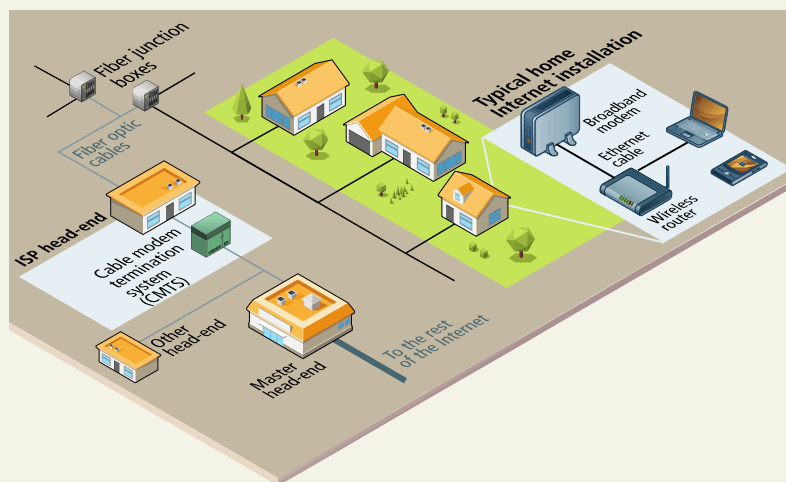
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# Where Is the Internet?

From the Computer to the Local Provider

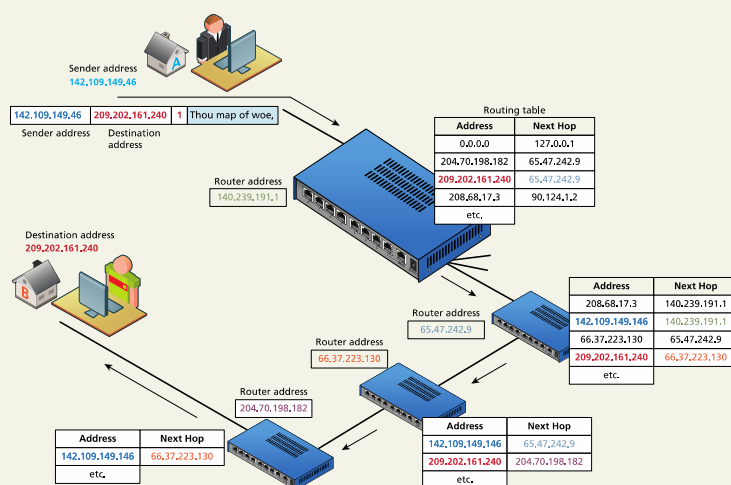


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# Where Is the Internet?

(Simplified) Routing Tables



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