Diploma in

Web Development

Introduction to the Web

- Internet and the World Wide Web
- Networking
- Web server basics
- Markup languages

Objectives

DID YOU KNOW?

The average user forms an opinion of a website in just 0.9 seconds - Finoit

Overview

The internet consists of multiple computers over a network that communicate with one another using a specific set of rules. The internet originated from ARPANET.

New uses for the internet

As the internet evolved, the potential for various other activities have also come about in earlier days:

E-mailing

Browsing

Blogs

Newsgroups

E-commerce

Cloud computing

The internet of things (IoT)

A subset of the Internet that includes computers and sensors connected to each other for communication and automatic transaction processing.

Characteristics of IoT

Autonomous devices connected to each other

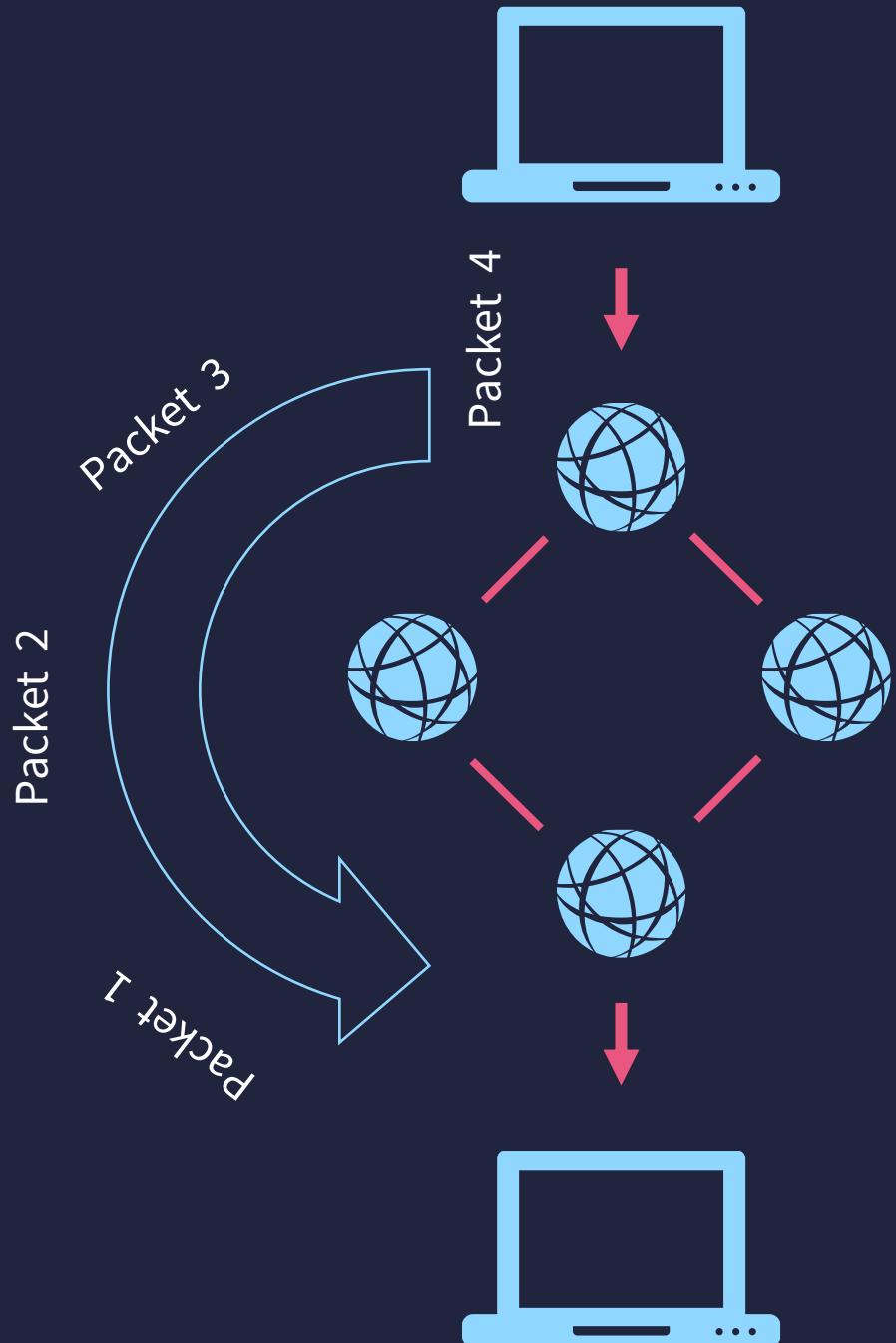Includes the use of sensors and scanners

Often located in houses or offices

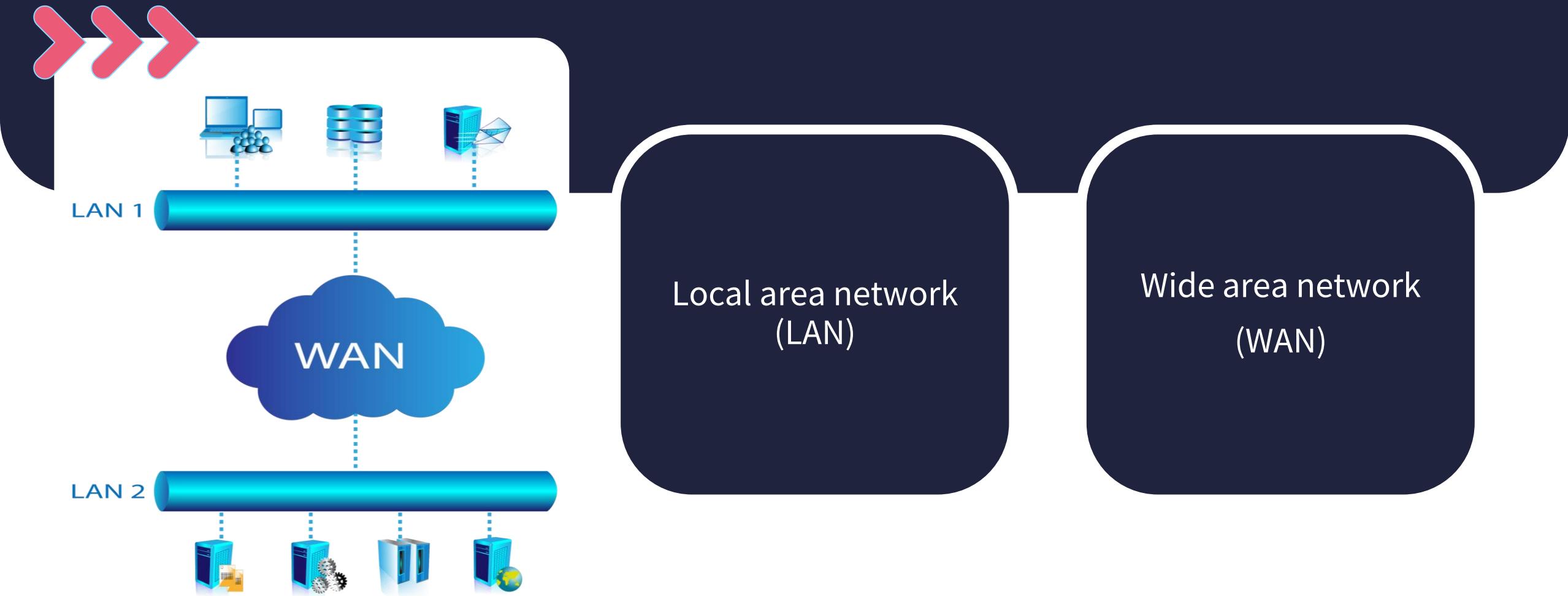Requires little to no human intervention

Packet-switched networks

In a packet switched network, files are broken down into smaller pieces called packets, that are labelled electronically with their origins, sequences and destination addresses.
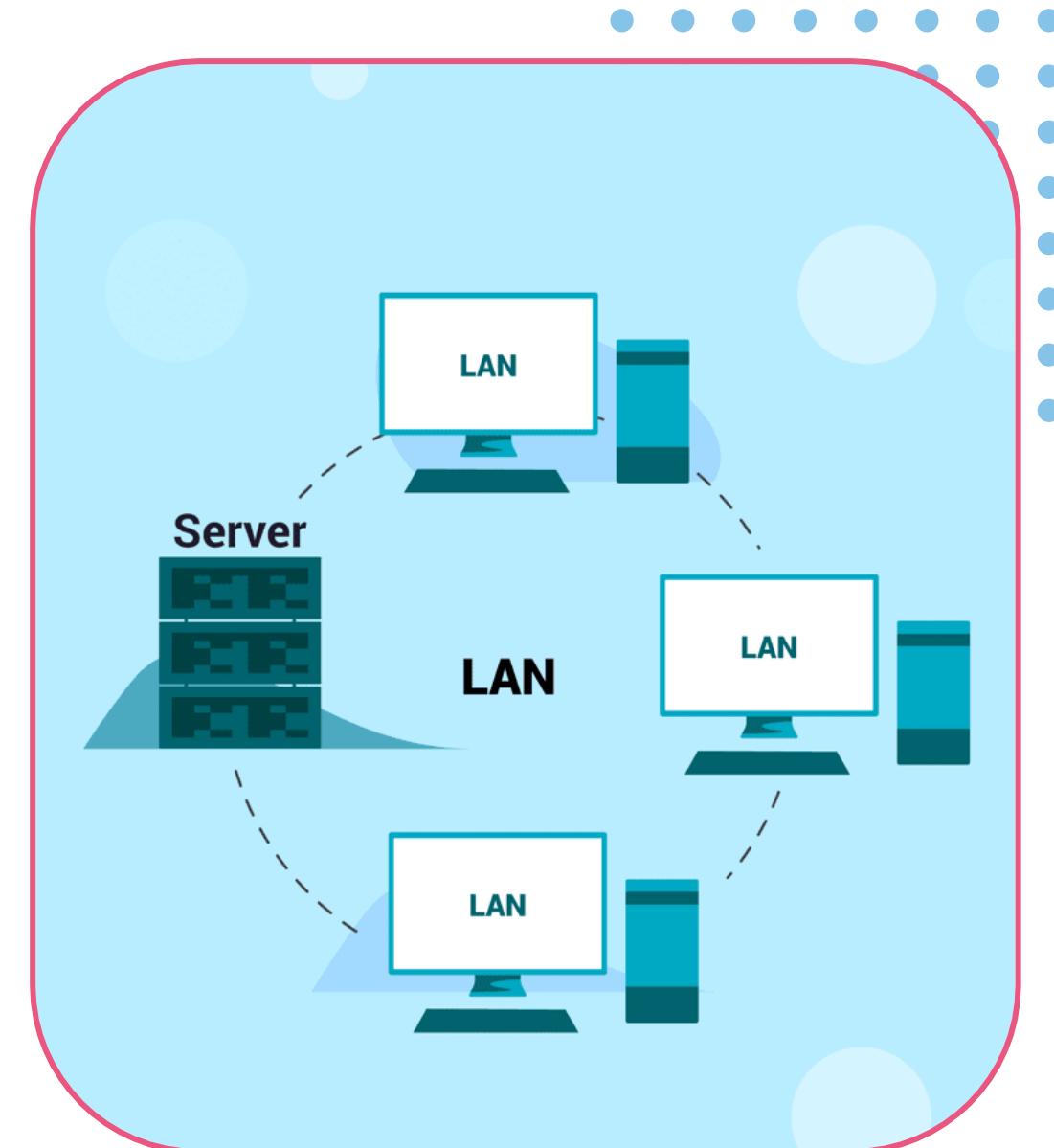
Packet 4

Packet 3

Packet 2

Packet 1

Common network types

LAN 1

WAN

LAN 2

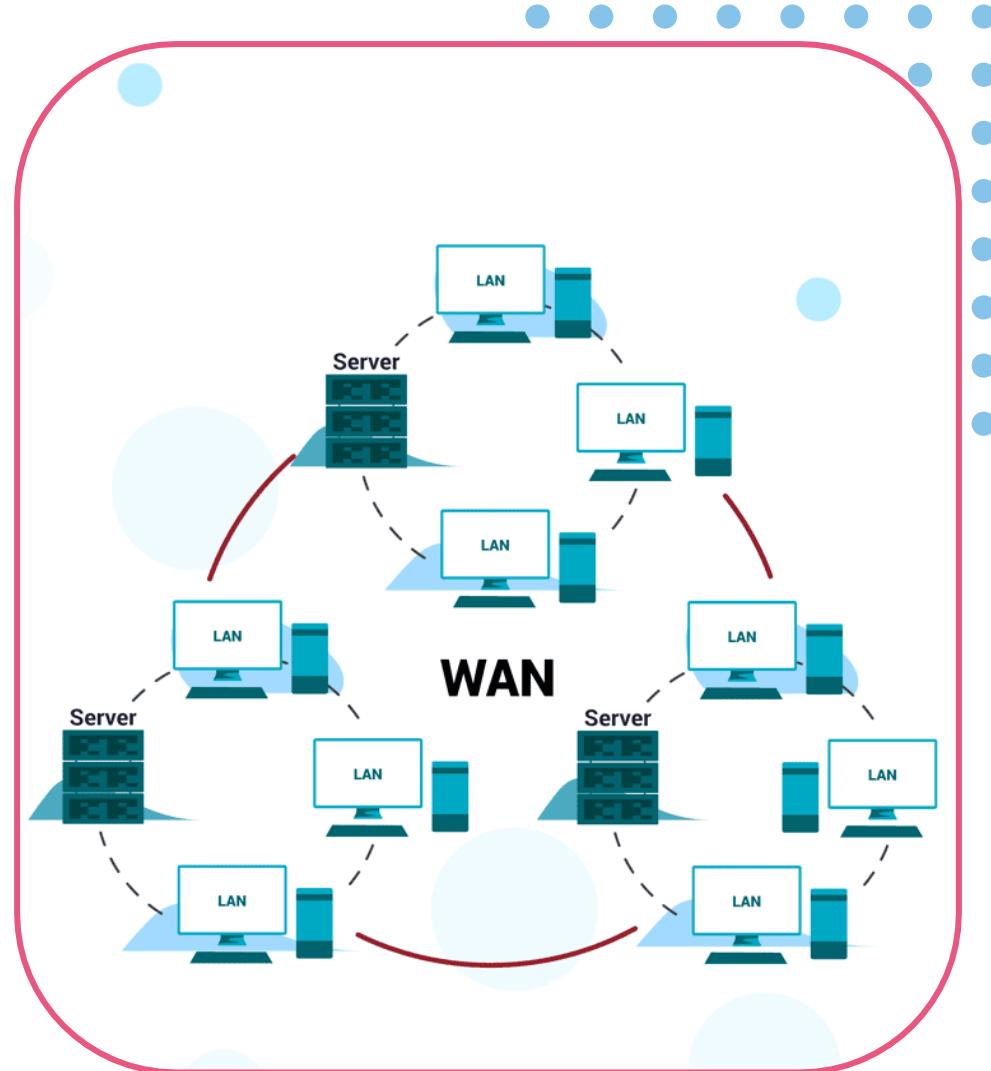Local area network
(LAN)

Wide area network
(WAN)

Local area network

- Devices are usually located close together.
- Ideal for office setup.
- Restricted by geographical location.

(Source: www.lifewire.com)

Wide area network

- Connects multiple LANs.
- Extends beyond the boundaries of an office.
- Ideal for enterprise scale network.
- Extends to larger geographical areas, including the globe.

(Source: www.lifewire.com)

Public and private networks

Public

- A computer network available to the public.
- Often less secure than private networks.

Public and private networks
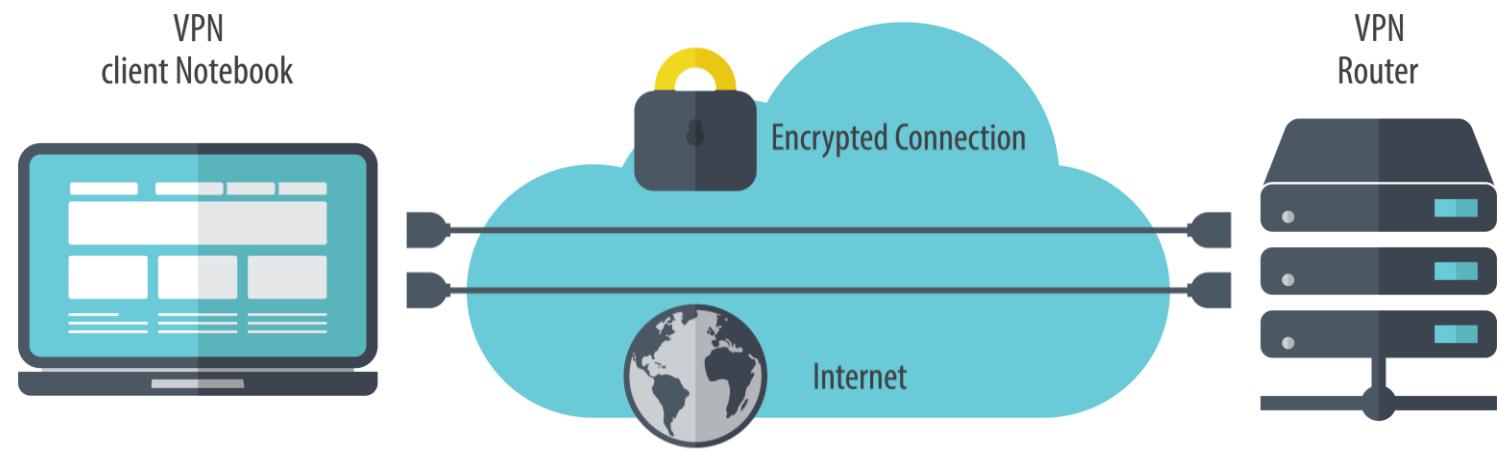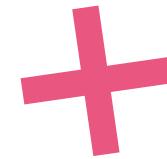
Private

- A connection between two companies which connects networks together.
- Can be quite expensive.
- More secure than a public network.
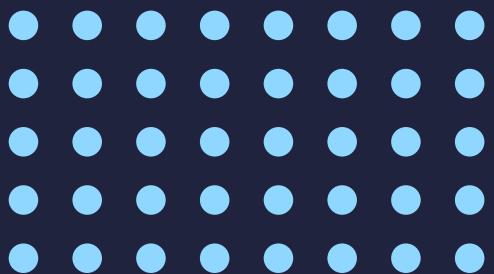
Virtual private networks (VPNs)

A connection that uses public networks and their protocols to send data in a way that protects the data much like that of a private network.

VPN
client Notebook

Encrypted Connection

Internet

VPN
Router

Advantages of using a VPN

Uses software to encrypt data transmission

IP Tunneling creates private pathway over public Internet
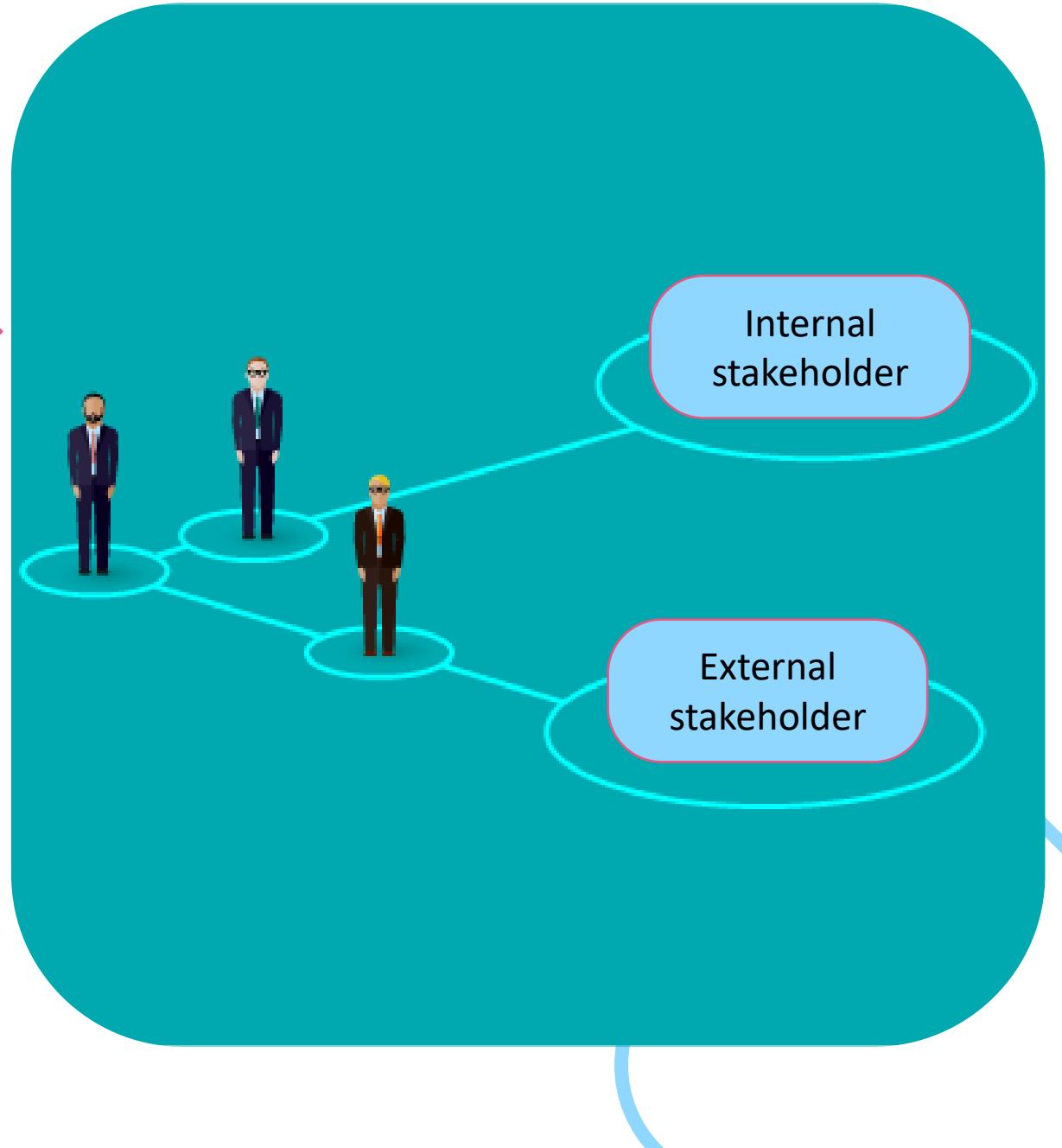
Less expensive than private network

Hides internet activity from entities such as ISP's

Intranets and extranets

As networking technologies became less expensive and easier to deploy, organisations started building more and more interconnected networks.

Internal stakeholder

External stakeholder

Intranets and extranets

Intranet

- Does not extend beyond the organization that created it.
- Forums within organisations to foster new ideas.
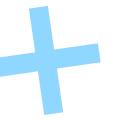
Intranets and extranets

Extranet

- Much like intranet, but also extended to entities outside the boundaries of an organisation.
- Such as business partners, customers and suppliers.

Reference Edwin's Course
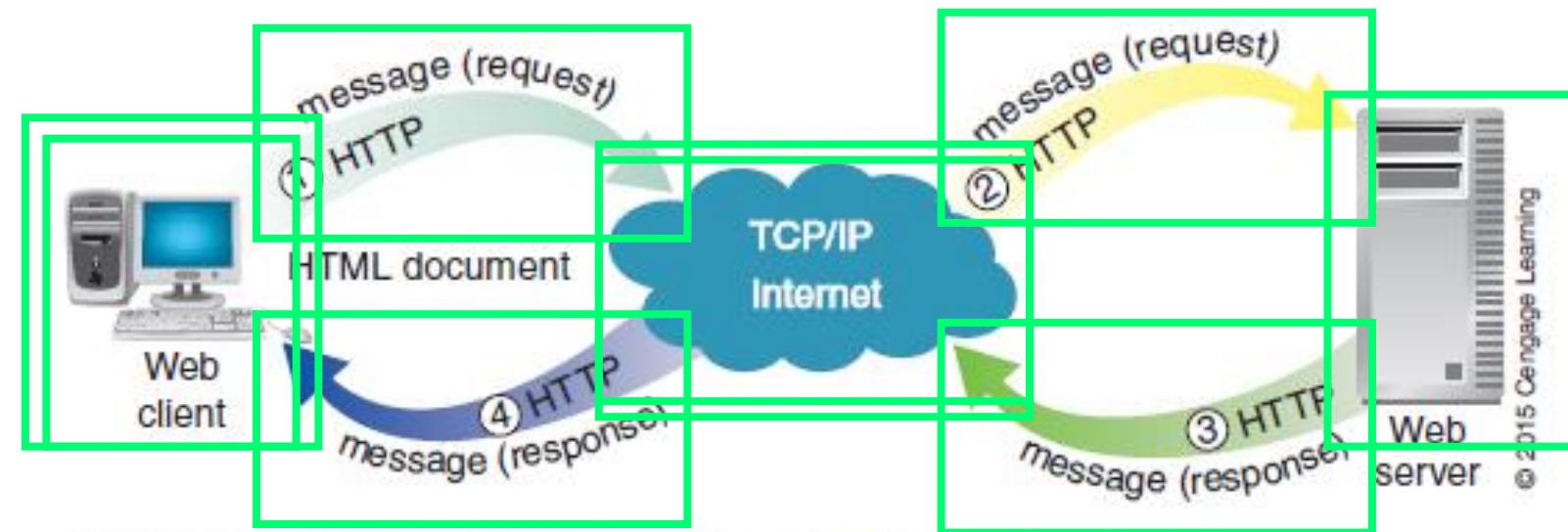
Web servers

Responds to client requests by:

- Transferring files and scripts to the web client (browser).

- Generating a response by invoking scripts and querying a database

Two-tier client/server architecture

FIGURE 8-2   Message flows in a two-tier client/server network

(Source: Schneider, 2015)

Three-tier client/server architecture
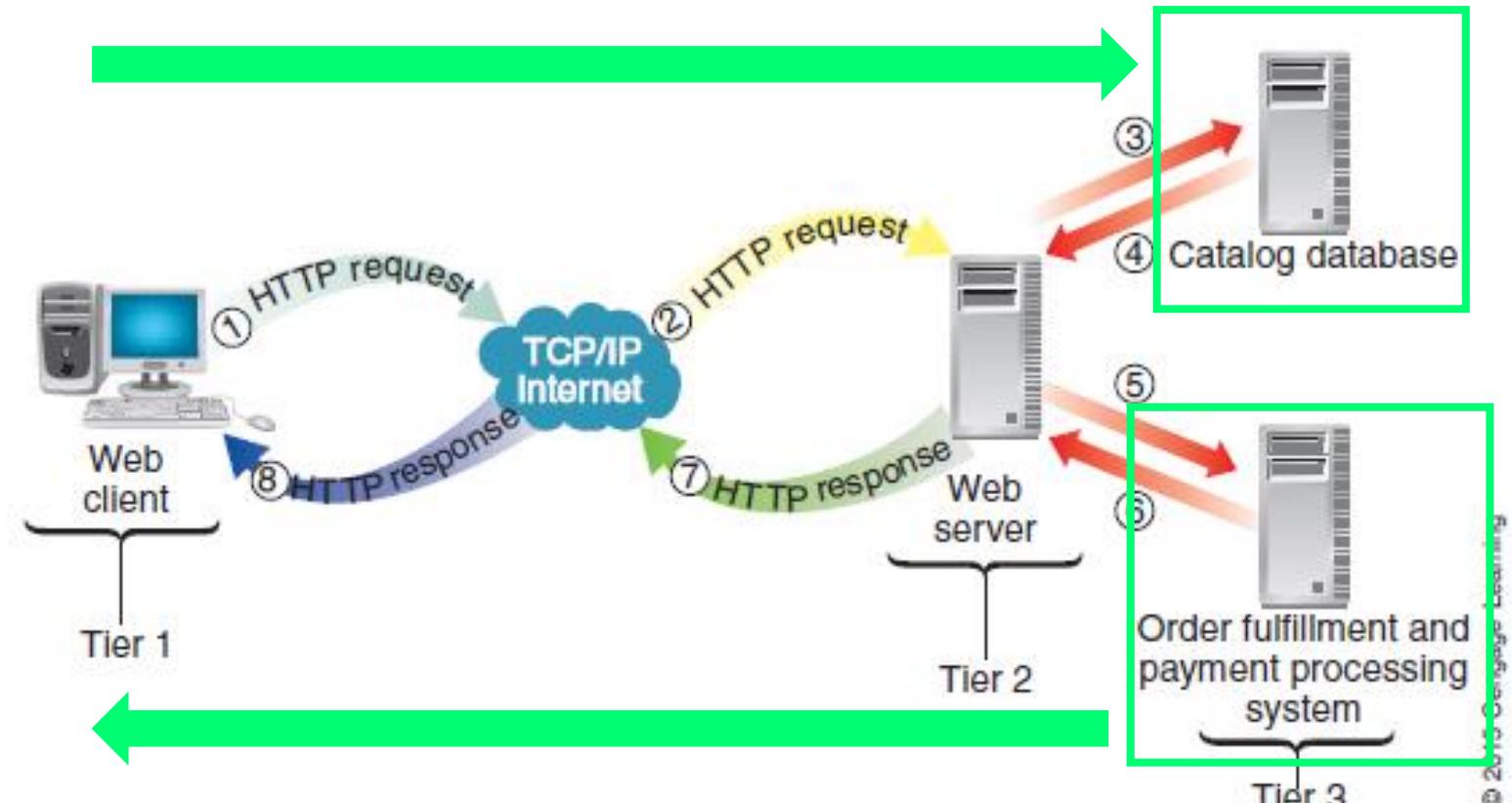
FIGURE 8-3 Message flows in a three-tier client/server network

(Source: Schneider, 2015)

Client-side scripting

Script is run by the client software (browser).

Code instructs the client to request the script from server.

Processing occurs on local machine (the users device).

Scripting languages include HTML, CSS, JavaScript.

Server-side scripting

- Script is run by the server software (backend).

- Server responds to the clients request.

- Server response is shaped based on client request.

- Ideal for hosting a database.

- Scripting languages include PHP, NodeJS, Python.

Platform neutrality

Client computers and other Internet-connected devices running Web browser software

Android, iOS, and Windows tablet devices

Windows PCs

Linux PCs

Macintosh PCs

Android, iOS, and Windows smartphones

Internet

Web server computers

Sun OS PCs and minicomputers

Windows PCs

Linux/UNIX PCs and minicomputers

IBM and other mainframe computers

Macintosh PCs

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FIGURE 8-1   Platform neutrality of the Web
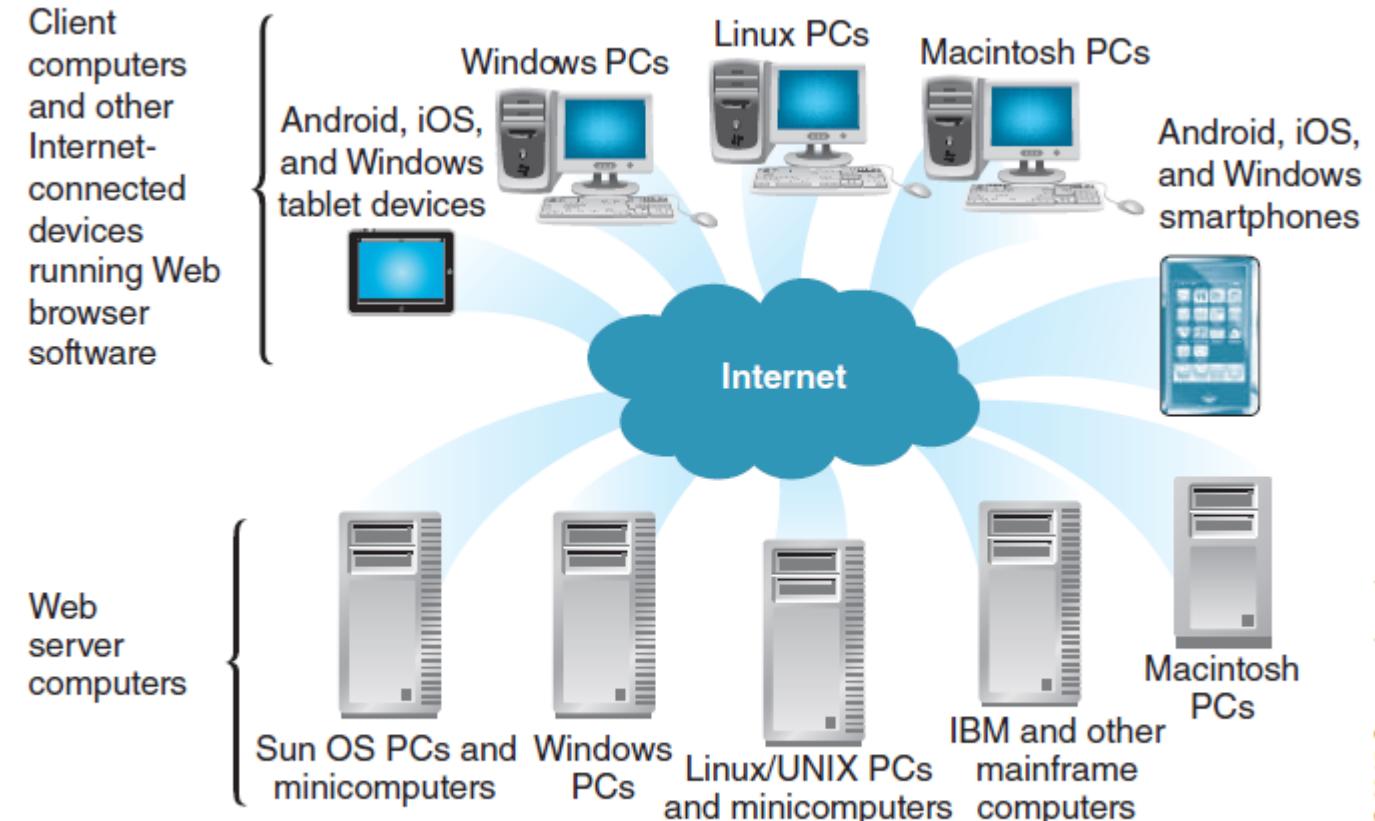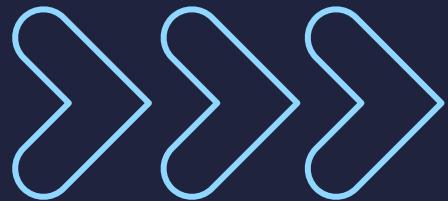
Key technologies of the web

Hypertext

Styling

Graphical user interface (GUI)

Hypertext

Described as a page linking system in which text on one page links to text on another page.

Hypertext Markup Language (HTML)

Includes a set of tags which describe the relationships among text elements

Tags provide formatting instructions

Most tags have an opening and closing tag <> </>

HTML

```html
<html>
<head>
<title>Table of Contents</title>
<link href='style.css' rel='stylesheet' type='text/css' />
</head>
<body style='background-colour:#333333'>
<div id='container'>
<p><img src='header.png' width='602' height='78' /></p>
<h1 align=center>Fundamentals of Business Information Systems</h1>
<ol>
<li>An Overview</li>
<li>Information Technology Concepts</li>
<li>Business Information Systems</li>
<li>Systems Development</li>
<li>Information Systems in Business and Society</li>
</ol>
</div>
</body>
</html>
```
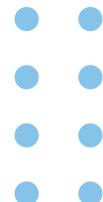
Styling

Style sheets are sets of instructions that give web developers more control over the format of displayed pages.

Cascading style sheet (CSS)

Can be included in HTML document

Single style sheet allows formatting to applied to across multiple web pages

Usually stored in a separate file

CSS

```html
<!DOCTYPE html>
<html>
    <head>
        <title>Arduino SD Card Web Page</title>
        <style type="text/css">
            h1 {
                font-family: courier, courier-new, serif;
                font-size: 20pt;
                color: blue;
                border-bottom: 2px solid blue;
            }
            p {
                font-family: arial, verdana, sans-serif;
                font-size: 12pt;
                color: #6B6BD7;
            }
            .red_txt {
                color: red;
            }
        </style>
    </head>
    <body>
        <h1>Arduino SD Card Page with CSS</h1>
        <p>Welcome to the Arduino web page with CSS styling.</p>
        <p class="red_txt">This text is red.</p>
        <p>This paragraph has one word that uses <span class="red_txt">red</span> text.</p>
    </body>
</html>
```
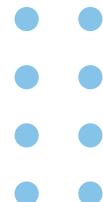
Arduino SD Card Page with CSS

Welcome to the Arduino web page with CSS styling.

This text is red.

This paragraph has one word that uses red text.

A Web Page Styled with CSS

Graphical user interface (GUI)

HTML

CSS

GUI

Shopping Cart

Vapor
Snowboard
157 (157)

$1,199.95

01

In Stock   Edit   Remove

Enter Promotion Code

APPLY

Sub Total: $1,199.95

Shipping:

Estimated Sales Tax
Why is this estimated?

Order Total: $1,199.95

SSL
COMODO
SECURED

Check Out

- OR -

CHECK OUT
with PayPal

Sign In

Email

Password   Forgot password?

Sign In

Create an Account

Checkout as a Guest

You don't have to have an account to buy
from us. Just click the "continue" button.

Haven't set up an account yet? You'll have
the chance to create an account as you're
checking out.

Continue To Checkout

Graphical user interface (GUI)

> Allows users to interface with system.

> Strong focus on UI/UX.

> Determines user acceptance.

> Uses pictures, icons and other graphical elements instead of plain text.