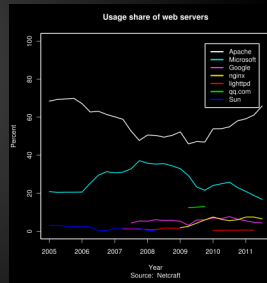
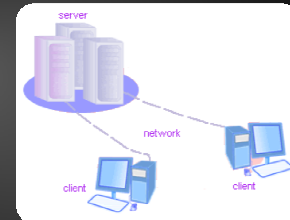


Web Servers Market Share 2011

- ♦ Apache
 - ♦ 60.31%
- ♦ IIS (by Microsoft)
 - ♦ 19.34%
- ♦ nginx (by Igor Sysoev)
 - ♦ 7.65%
- ♦ GWS (by Google)
 - ♦ 5.09%
- ♦ lighttpd
 - ♦ 0.60%



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Client-Server Architecture

The Classical Client-Server Model

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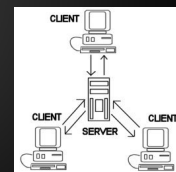
Client-Server Architecture

- ♦ The client-server model consists of:
 - ♦ Server – a single machine or cluster of machines that provides web applications (or services) to multiple clients
 - ♦ Examples:
 - ♦ Web server running PHP scripts or ASP.NET pages
 - ♦ IIS based Web server
 - ♦ WCF based service
 - ♦ Services in the cloud

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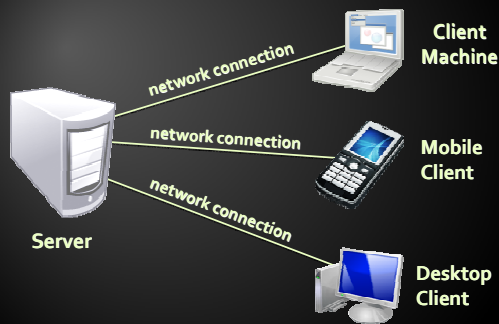
Client-Server Architecture

- ♦ The client-server model consists of:
 - ♦ Clients –software applications that provide UI (front-end) to access the services at the server
 - ♦ Examples:
 - ♦ Web browsers
 - ♦ WPF applications
 - ♦ HTML5 applications
 - ♦ Silverlight applications
 - ♦ ASP.NET consuming services



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The Client-Server Model



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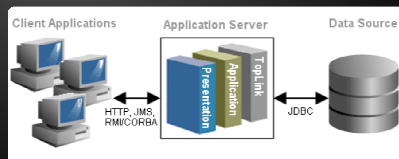
Client-Server Model – Examples

- ♦ Web server (Apache, IIS) – Web browser
- ♦ FTP server (ftpd) – FTP client (FileZilla)
- ♦ EMail server (qmail) – email client (Outlook)
- ♦ SQL Server – SQL Server Management Studio
- ♦ BitTorrent Tracker – Torrent client (µTorrent)
- ♦ DNS server (bind) – DNS client (resolver)
- ♦ DHCP server (wireless router firmware) – DHCP client (mobile phone /Android DHCP client/)
- ♦ SMB server (Windows) – SMB client (Windows)

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3-Tier / Multi-Tier Architectures

Classical Layered Structure of Software Systems

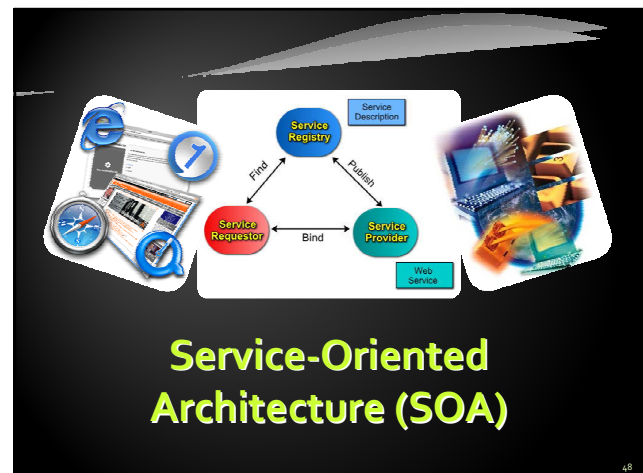
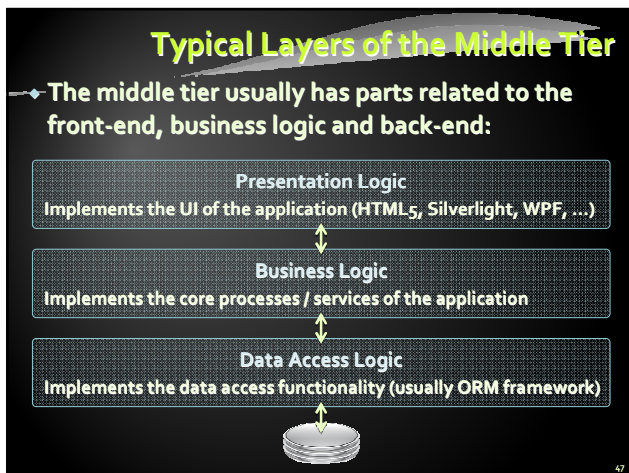
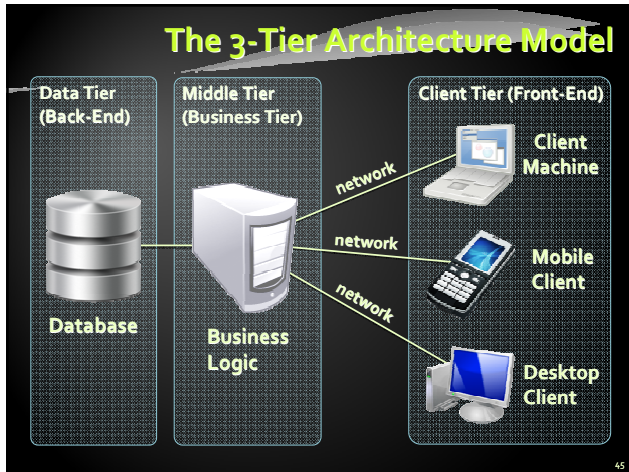


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The 3-Tier Architecture

- ♦ The 3-tier architecture consists of the following tiers (layers):
 - ♦ Front-end (client layer)
 - ♦ Client software – provides the UI of the system
 - ♦ Middle tier (business layer)
 - ♦ Server software – provides the core system logic
 - ♦ Implements the business processes / services
 - ♦ Back-end (data layer)
 - ♦ Manages the data of the system (database / cloud)

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What is a Service?

- ♦ In the real world a "service" is:
 - ♦ A piece of work performed by a service provider
 - ♦ Provides a client (consumer) some desired result by some input parameters
 - ♦ The requirements and the result are known
 - ♦ Easy to use
 - ♦ Always available
 - ♦ Has quality characteristics (price, execution time, constraints, etc.)

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What is "Cloud"?

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What is Cloud?

- ♦ Cloud = multiple hardware machines combine their computing power and resources
 - ♦ Share them between multiple applications
 - ♦ To save costs and use resources more efficiently
- ♦ Public clouds
 - ♦ Provide computing resources on demand
 - ♦ Publicly in Internet
 - ♦ Paid or free of charge (to some limit)
 - ♦ Amazon AWS, Google App Engine, Microsoft Azure, Rackspace, PHPFog, Heroku, AppHarbor

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Cloud Computing Models

- ♦ Infrastructure as a Service (IaaS)
 - ♦ Virtual machines in the cloud on demand
 - ♦ Users install the OS and software they need
- ♦ Platform as a Service (PaaS)
 - ♦ Platform, services and APIs for developers
 - ♦ E.g. Java + JBoss + JSF + JPA + MongoDB or JavaScript + Node.js + MongoDB + RabbitMQ
- ♦ Software as a Service (SaaS)
 - ♦ Hosted application on demand (e.g. WordPress)

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Web Design Tools
The tools we need

This slide features a dark background with a spotlight effect. On the left, there is a vertical rectangular image showing colorful, swirling lines. At the top, there are two logos: 'WWW' in a blue box and 'WEB' in a blue box with a small airplane icon. At the bottom, there is a horizontal rectangular image showing four stylized figures in red, green, blue, and orange pushing large, 3D letters that spell out 'WWW'.



Coding Tools

This slide features a dark background with a spotlight effect. At the top, there is the Microsoft Visual Studio logo. Below it, there are two logos: 'aptana' with a gear icon and 'Dw' (Adobe Dreamweaver) with a green hexagonal icon.



IDEs

- ◆ MS Visual Studio
- ◆ MS Visual Web Developer
- ◆ MS Web Matrix
- ◆ Adobe DreamWeaver
- ◆ Eclipse
- ◆ Aptana
- ◆ JetBrains WebStorm

This slide features a dark background with a spotlight effect. On the right, there is a large, tilted image of the Eclipse IDE logo. At the bottom, there are two logos: 'WebStorm' and 'Microsoft WebMatrix'.



Lite tools

- ◆ Notepad++
- ◆ GEdit

This slide features a dark background with a spotlight effect. On the left, there is a logo for Notepad++ featuring a colorful parrot. On the right, there is a logo for GEdit featuring the word 'gedit' in a stylized font.

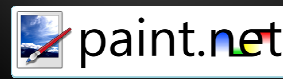
Browsers and Browser Tools

- ♦ Browsers
 - ♦ Internet Explorer
 - ♦ Google Chrome
 - ♦ Mozilla Firefox
 - ♦ Apple Safari
 - ♦ Opera
- ♦ Browser Tools
 - ♦ Firebug
 - ♦ WebInspector
 - ♦ WebDeveloper Toolbar
 - ♦ F12 (IE)
 - ♦ Inspect
 - ♦ Console
 - ♦ Bookmarklets

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Drawing and Slicing Tools

- ♦ Adobe Photoshop
- ♦ Adobe Fireworks
- ♦ Gimp
- ♦ Paint.NET



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Source control tools

Microsoft TFS, Microsoft VSS

Git
SVN



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Web Technologies Basics

Questions?



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