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welcome to

CSE 4001 - Internet and Web Programming

Unit 1

Introduction to Web System

Internet Overview- WWW - Web Protocols Web Browsers and Web Servers - Web System Architecture – URL - Domain Name – Client and Server-side Scripting.

Text Books:

- 1. Thomas Powell, HTML and CSS, Complete Reference, Fifth Edition, Mc Graw Hill, 2010
- 2. Thomas Powell, Fritz Schneider , JavaScript The complete reference, Mc Graw Hill, 2013
- 3. Tom Christiansen, Nathan Torkington, Perl Cookbook, O'Reilly, 2012
- 4. David Powers, PHP Solutions, Dynamic web page design made easy, Apress, 2010
- 5. Joe Fawcett, Danny Ayers, Liam R. E. Quin, Beginning XML, 5th Edition, Wrox, 2012

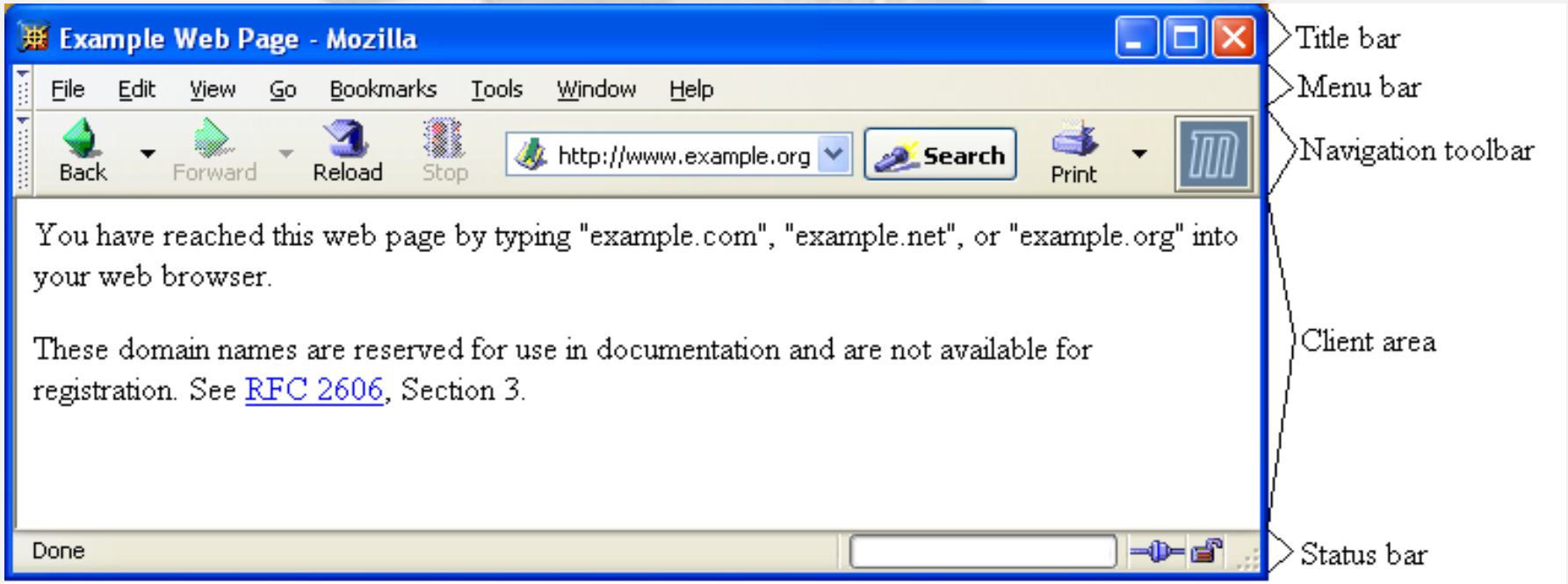
Reference Books:

- 1. Paul Dietel, Harvey Dietel and Abbey Dietel, Internet and World Wide Web How to program, 5th International Edition, Pearson, 2012

Web Browsers

- First graphical browser running on general-purpose platforms: Mosaic (1993)

Web Browsers



Web Browsers

- Primary tasks:
  - Convert web addresses (URL's) to HTTP requests
  - Communicate with web servers via HTTP
  - Render (appropriately display) documents returned by a server

What is server?

- ✓ A server is a **computer or device** on a network that manages network resources.

- ✓ Most servers are dedicated. This means that they perform only one task rather than multiple tasks on multiprocessing operating systems, however, a single computer can execute several programs at once.

What is web server?

A Web server is a **program** that generates and transmits responses to **client requests** for Webresources.

- Handling a client request consists of **several keysteps**:

- Parsing the request message.
- Checking that the request is authorized.
- Associating the URL in the request with a filename.
- Constructing the response message.
- Transmitting the response message to the requesting client.

- The server can generate the response message in a variety of ways:

1.The server simply retrieves the file associated with the URL and returns the contents to the client.

2. The server may invoke a script that communicates with other servers or a back-end database to construct the response message.

Web Site versus Web Server?

Web site and Web server are different:

- ✓ A ***Web site consists of a collection of Web pages associated with a particular hostname.***
- ✓ A ***Web server is a program to satisfy client requests for Web resources.***

The Web server and Application server

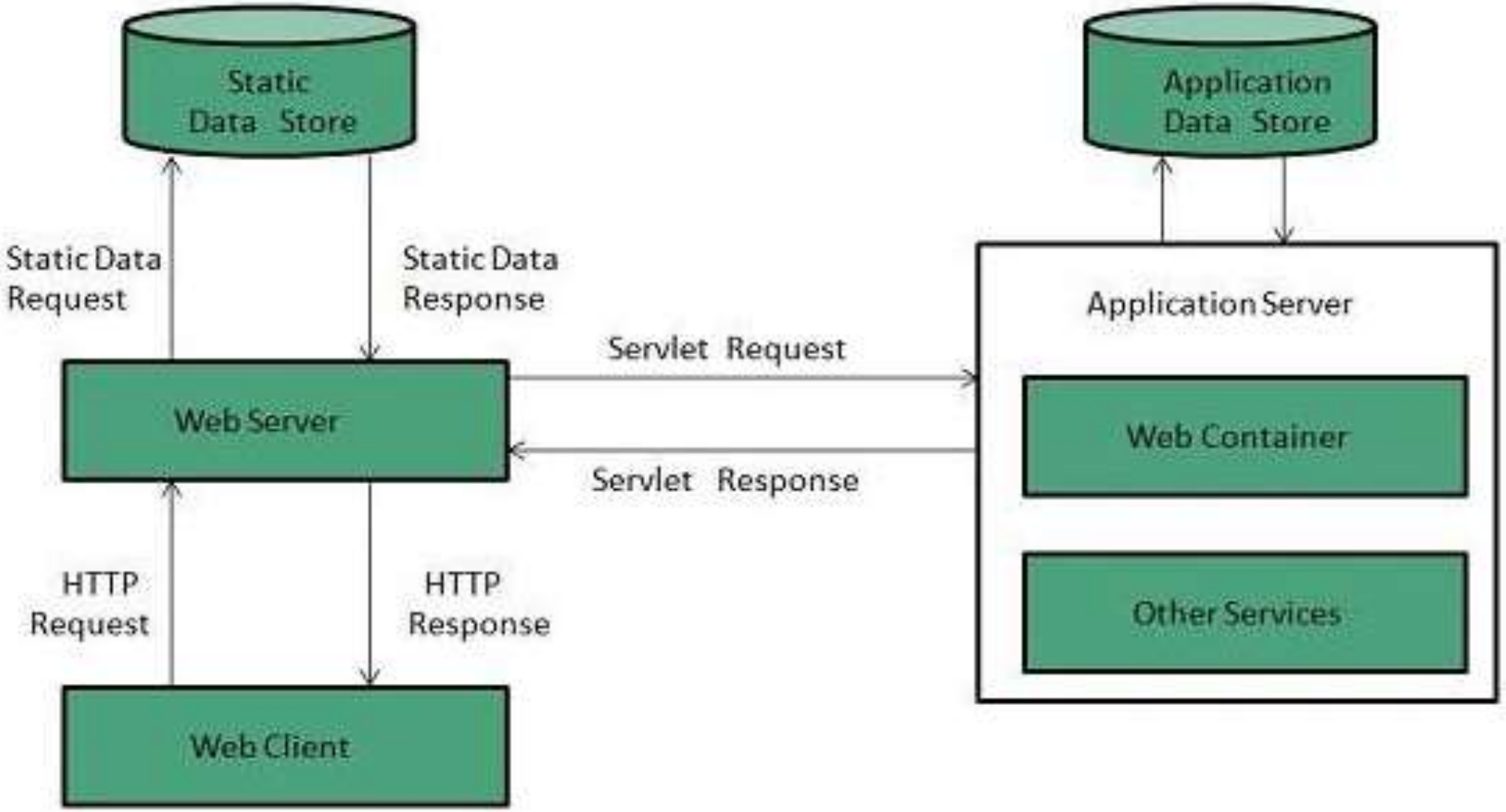
- A Web server exclusively handles HTTP requests, whereas
- An application server serves business logic to application programs through any number of protocols.

The Web server

- A Web server handles the HTTP protocol.
- When the Web server receives an HTTP request, it responds with an HTTP response, such as sending back an HTML page.
- To process a request, a Web server may respond with a static HTML page or image, send a redirect, or delegate the dynamic response generation to some other program such as CGI scripts, JSPs (JavaServer Pages), servlets, ASPs (Active Server Pages), server-side JavaScripts, or some other server-side technology.
- Whatever their purpose, such server-side programs generate a response, most often in HTML, for viewing in a Web browser.

Web Server Working

- It can respond to the client request in either of the following two possible ways:
- Generating response by using the script and communicating with database.
- Sending file to the client associated with the requested URL.

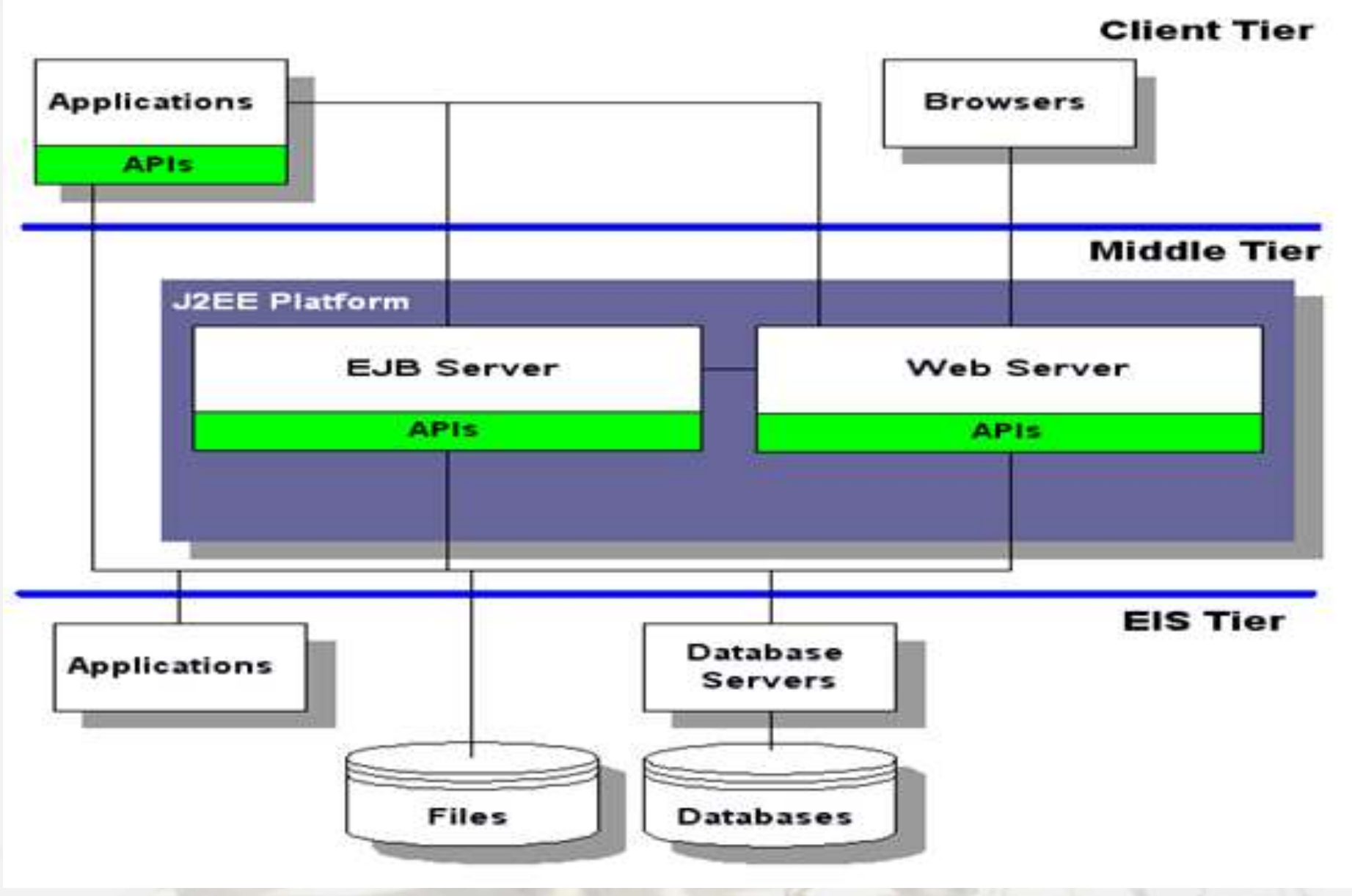

Static
Data Store
Application
Data Store
Static Data
Request
Static Data
Response
Application Server
Servlet Request
Web Server
Web Container
Servlet Response
HTTP
Request
HTTP
Response
Other Services
Web Client

Important points

- If the requested web page at the client side is not found, then web server will sends the HTTP response: Error 404 Not found.
- When the web server searching the requested page if requested page is found then it will send to the client with an HTTP response.
- If the client requests some other resources then web server will contact to application server and data is store for constructing the HTTP response.

The application server

- An application server exposes business logic to client applications through various protocols, possibly including HTTP.
- While a Web server mainly deals with sending HTML for display in a Web browser, an application server provides access to business logic for use by client application programs.
- The application program can use this logic just as it would call a method on an object (or a function in the procedural world).


Client Tier
Applications
APIs
Browsers
Middle Tier
J2EE Platform
EJB Server
APIs
Web Server
APIs
EIS Tier
Applications
Database Servers
Files
Databases

Application Server Definition:

An application server is a component-based product that resides in the middle-tier of a server centric architecture. It provides middleware services for security and state maintenance, along with data access and persistence.

1.Java application servers are based on the Java™ 2 Platform, Enterprise Edition (J2EE™).

2.J2EE uses a multi-tier distributed model. This model generally includes a Client Tier, a Middle Tier, and an EIS Tier.

3. The Client Tier can be one or more applications or browsers. The J2EE Platform is in the Middle Tier and consists of a Web Server and an EJB Server. (These servers are also called "containers.") There can be additional sub-tiers in the middle tier.

4.The Enterprise Information System (EIS) tier has the existing applications, files, and databases.

When to Use an Application Server

You should consider an application server when you have a need for:

1.Integration with existing systems and databases

2.Website support

Secondary reasons to use application servers derive from the primary reasons.

A few secondary reasons are:

1.E-Commerce

2.Web-integrated collaboration

3.Component re-use

J2EE EJB Server or Container

- The EJB server provides an environment that supports the execution of applications developed using Enterprise JavaBeans™ (EJB) components.
- It manages and coordinates the allocation of resources to the applications. Enterprise beans typically contain the business logic for a J2EE application.
- The EJB server must provide one or more EJB containers.
- An EJB container manages the enterprise beans contained within it. For each enterprise bean, the container is responsible for registering the object, providing a remote interface for the object, creating and destroying object instances, checking security for the object, managing the active state for the object, and coordinating distributed transactions.
- Optionally, the container can also manage all persistent data within the object.

- Enterprise JavaBeans technology supports both transient and persistent objects.
- A transient object is called a *session bean*, and a persistent object is called an *entity bean*.
- A session bean exists only for the duration of a single client/server session.
- A session bean performs operations such as accessing a database or performing calculations. Session beans can be transactional, but normally are not recoverable following a system crash. Session beans can be stateless, or they can maintain conversational state across methods and transactions. A session bean must manage its own persistent data.
- An entity bean is an object representation of persistent data maintained in a permanent data store, such as a database.
- An entity object can manage its own persistence, or it can delegate its persistence to its container.

- The Example of Application Servers are:
- **JBoss:** Open-source server from JBoss community.
- **Glassfish:** Provided by Sun Microsystem. Now acquired by Oracle.
- **Weblogic:** Provided by Oracle. It more secured.
- **Websphere:** Provided by IBM.

An example

- As an example, consider an online store that provides real-time pricing and availability information. Most likely, the site will provide a form with which you can choose a product. When you submit your query, the site performs a lookup and returns the results embedded within an HTML page.

Scenario 1: Web server without an application server

- In the first scenario, a Web server alone provides the online store's functionality.
- The Web server takes your request, then passes it to a server-side program able to handle the request.
- The server-side program looks up the pricing information from a database or a flat file.
- Once retrieved, the server-side program uses the information to formulate the HTML response, then the Web server sends it back to your Web browser.

Scenario 2: Web server with an application server

- The Web server still delegates the response generation to a script.
- However, you can now put the business logic for the pricing lookup onto an application server.
- With that change, instead of the script knowing how to look up the data and formulate a response, the script can simply call the application server's lookup service. The script can then use the service's result when the script generates its HTML response.

Types of Web Servers:

1. Apache Web Server
2. IIS Server
3. Xampp Server
4. WAMP Server
5. Tomcat Server

Apache Web Server:

Introduction:

❖Apache Web server is the most commonly used http server today. About 80% of all websites and Intranets use Apache web server to deliver their content to requesting Browsers.

❖ Server side programming languages such as PHP, Perl, Python, Java and many others

❖ The name **"Apache" derives from the word "patchy" that the Apache developers used to describe early versions of their software.**

❖ The Apache Web server provides a full range of Web server features, including CGI, SSL, and virtual domains. Apache also supports plug-in modules for extensibility. Apache is reliable, free, and relatively easy to configure.

❖ Apache is free software distributed by the **Apache Software Foundation. The Apache Software Foundation promotes various free and open source advanced Web technologies.**

✓It can be downloaded and used completely free of cost. The first version of **Apache web server, based on the NCSA httpd Web server, was developed in 1995.**

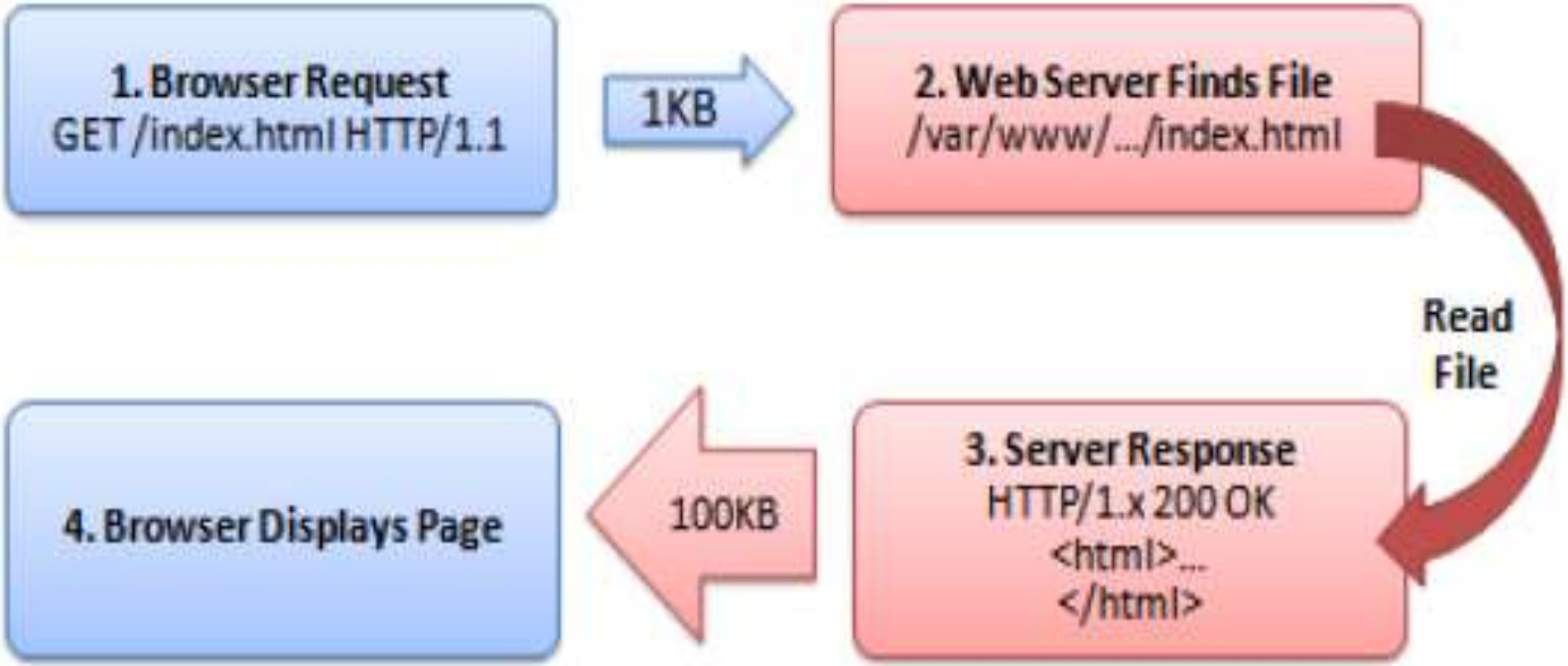
✓Apache is developed and maintained by an open community of developers under the auspices of the **Apache Software Foundation.**

The Internet's Request / Response Way Of Working

- Here's the **Internet's Request / Response paradigm works.**
- Whenever a Browser makes an http request such as**:http://www.google.com/index.html the following happens:**

http	This is the protocol used for communication between the Browser and the Web server. Since the Browser initiated the communication it has the privilege of setting the communication protocol.
://	This is a separator that separates the protocol from the URL.
www.google.com	This will be translated into a **name:value** pair i.e. ip:URL by DNS servers. Hence this will translate to an **ip74.86.170.172:www.google.com**

HTTP Request and Response



Download Apache Web Server:

- ✓ The latest stable build of **Apache http server** can be downloaded from URL http://httpd.apache.org/download.cgi

Downloading the Apache web server

- Unix Source: httpd-2.0.59.tar.gz [PGP] [MD5]
- Unix Source: httpd-2.0.59.tar.bz2 [PGP] [MD5]
- Win32 Source: httpd-2.0.59-win32-src.zip [PGP] [MD5]
- Win32 Binary (MSI Installer): apache_2.0.59-win32-x86-no_ssl.msi [PGP] [MD5]
- Other files

- ✓ Open a browser window and enter **http://www.google.com** in the address bar and hit GO.

apache download

Advanced Search
Language Tools

Google Search | I'm Feeling Lucky

Search: the web pages from India

Google.co.in offered in: Hindi Bengali Telugu Marathi Tamil Gujarati Kannada Malayalam Punjabi

Web Images Maps News Orkut Books Gmail more ▾

Google apache download Search Advanced Search

Search: the web pages from India

Web Show options... Results 1 - 10 of about 20,

Download - The **Apache** HTTP Server Project

Use the links below to **download** the **Apache** HTTP Server from one of our mirrors. You must verify the integrity of the downloaded files using signatures ...

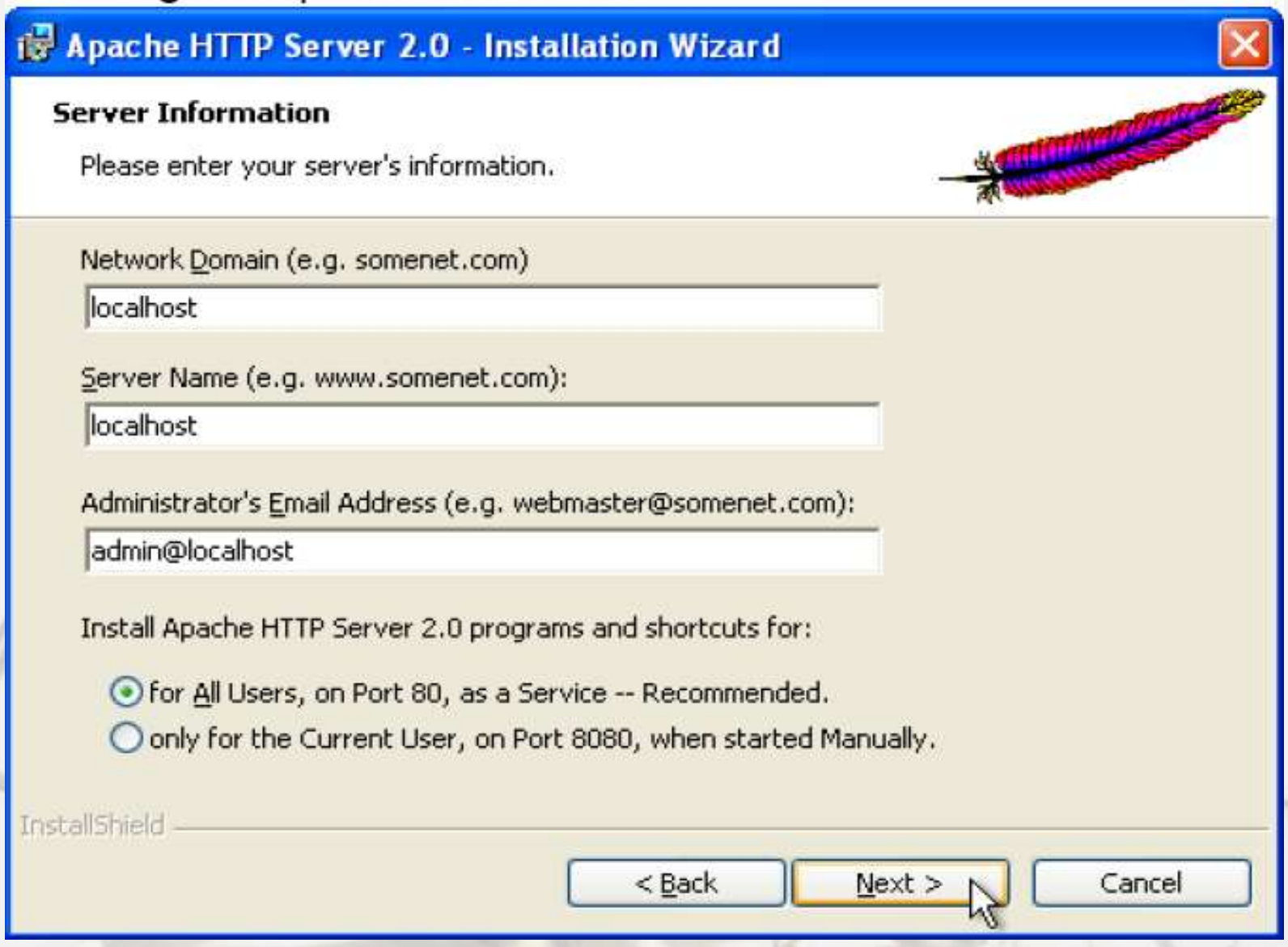
httpd.**apache**.org/**download**.cgi - 7 hours ago - Cached - Similar

Apache Tomcat - **Apache** Tomcat 5 Downloads

Welcome to the Tomcat 5.x **download** page. This page provides **download** links for obtaining the latest versions of Tomcat 5.5.x, as well as links to the ...

tomcat.**apache**.org/**download**-55.cgi - Cached - Similar

Installing the Apache web server



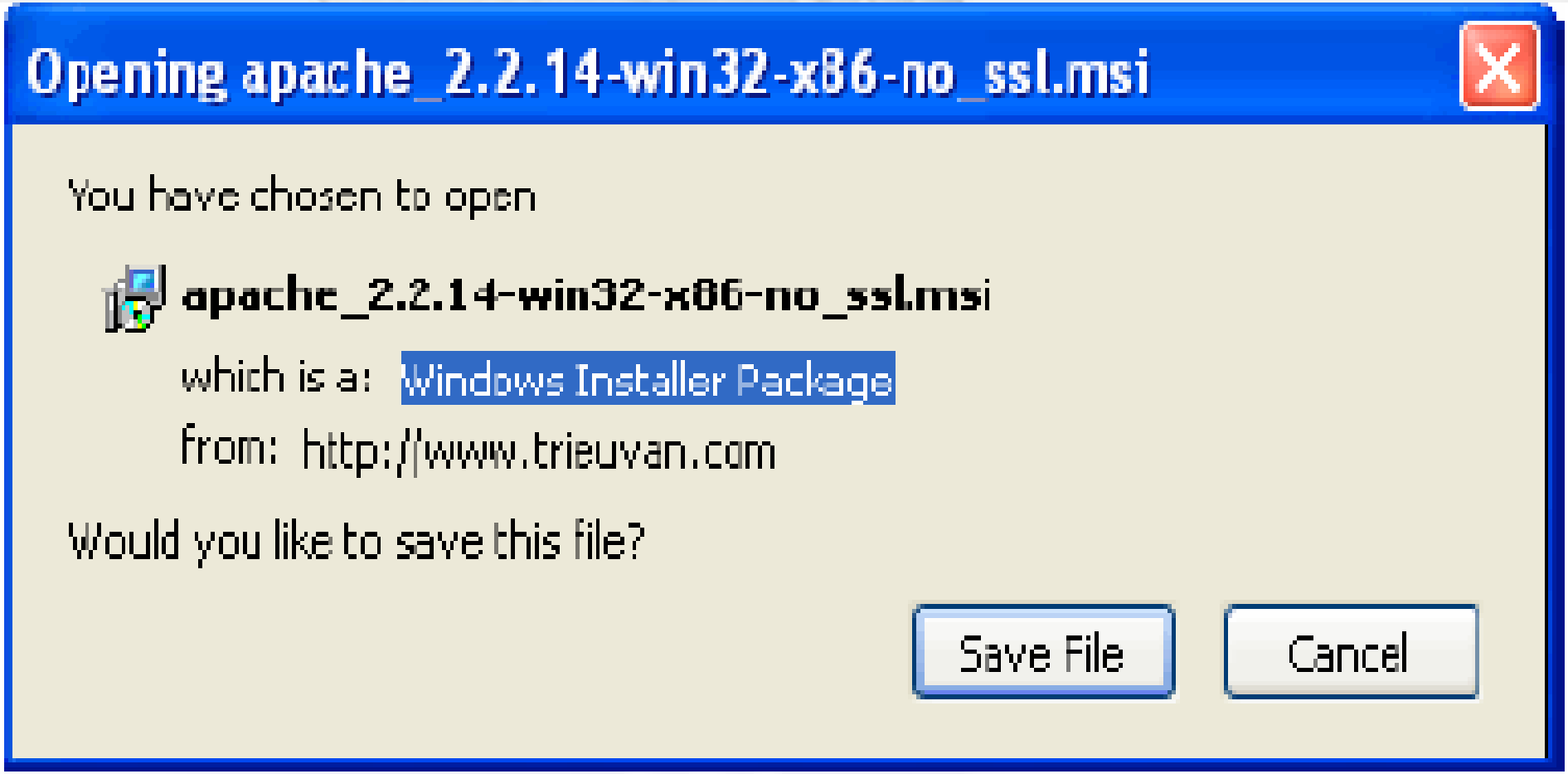
Apache HTTP Server 2.2.14 is the best available version — 2009-10-05

The Apache HTTP Server Project is pleased to announce the release of Apache HTTP Server, version 2.2.14. This release represents ten years of innovation by the project, and is recommended over all previous releases!

For details see the Official Announcement and the CHANGES_2.2 and CHANGES_2.2.14 lists.

Add-in modules for Apache 1.3 or 2.0 are not compatible with Apache 2.2. If you are running third-party add-in modules, you must obtain modules compiled or updated for Apache 2.2 from that third party, before you attempt to upgrade from these previous versions. Modules compiled for Apache 2.2 should continue to work for all 2.2.x releases.

- Unix Source: httpd-2.2.14.tar.gz [PGP] [MD5] [SHA1]
- Unix Source: httpd-2.2.14.tar.bz2 [PGP] [MD5] [SHA1]
- Win32 Source: [illegible]
- Win32 Binary without crypto (no mod_ssl) (MSI Installer): apache_2.2.14-win32-x86-no_ssl.msi [PGP] [MD5] [SHA1]
- Win32 Binary including OpenSSL 0.9.8k (MSI Installer): apache_2.2.14-win32-x86-openssl-0.9.8k.msi [PGP] [MD5] [SHA1]
- Other files


Opening apache_2.2.14-win32-x86-no_ssl.msi
You have chosen to open
apache_2.2.14-win32-x86-no_ssl.msi
which is a: Windows Installer Package
from: http://www.trieuvan.com
Would you like to save this file?
Save File
Cancel

✓I recommend to run the Apache HTTP server as a service. This way it is always running and you don't need to start it manually. If you consider manually start and stop because of security issues, then reconsider and use a firewall, preferable one running on an external device like a router.

✓ The next step allows you to select the install type of the Apache web server. The default (Typical program features) is probably right for your situation, so press Next.

✓ Next, you can select the destination folder of the installation. Unless you prefer to use a different folder for some or all of the software you install, I recommend to use the default setting:

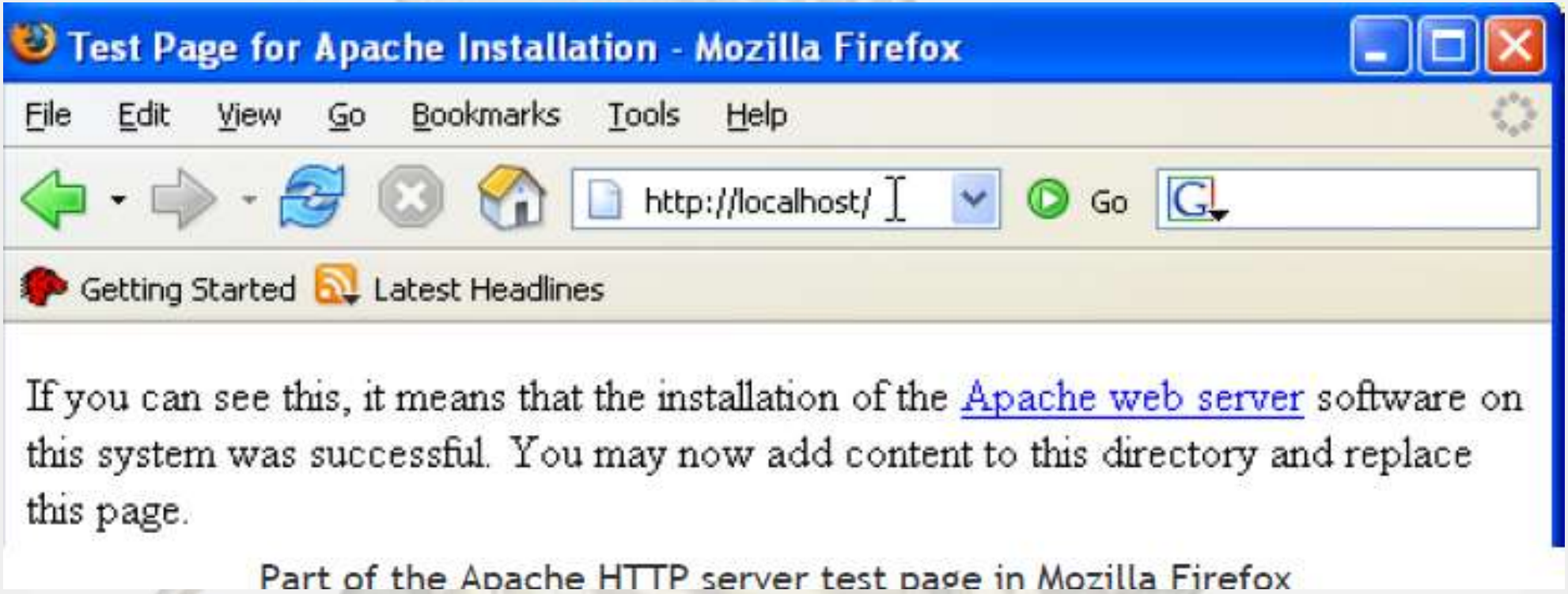
C:\Program Files\Apache Group

✓ Finally, after clicking on the Next button you can start the actual installation by pressing the Install button. A few windows pop up and go automatically, and then a Windows Security Alert window appears asking if you want to keep blocking this (Apache HTTP server) program.

- ✓ Windows Security Alert for the Apache HTTP server.
- ✓ The download process of the Apache Web Server setup file is successfully finished.

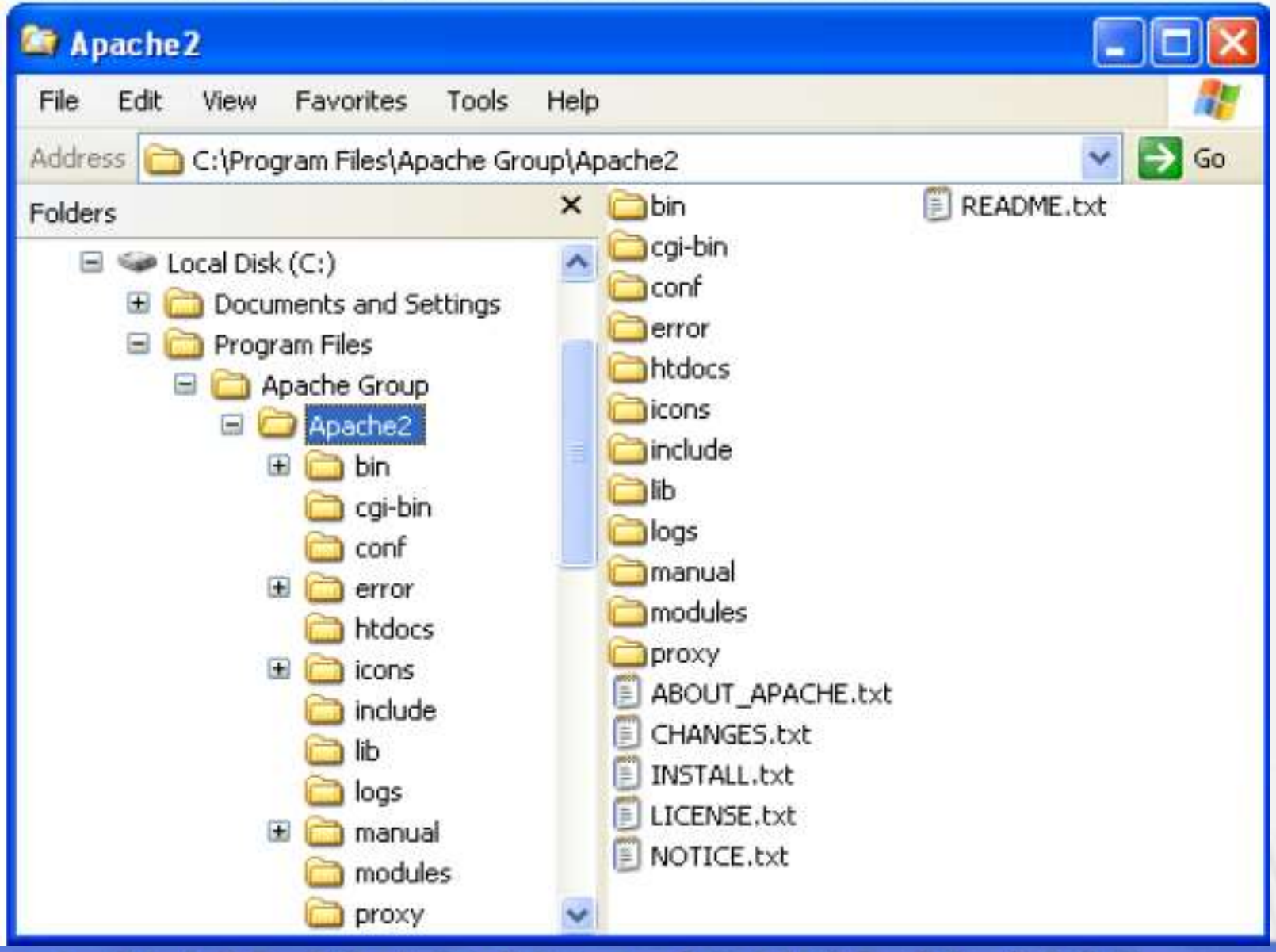
Testing the Apache HTTP server installation

- In order to test your Apache web server installation, open a browser and enter http://localhost/ into the address bar (unless you used a different value then localhost in the Apache server information step).
- The Test Page for Apache installation should be displayed into your browser.



Part of the Apache HTTP server test page in Mozilla Firefox

Understanding the Apache server folder structure



The bin folder

- The bin folder contains amongst other files the server executable: Apache.exe and a program to control the Apache HTTP server when ran as service: ApacheMonitor.exe.
- Also contained in this folder are htpasswd.exe and htdigest.exe for making parts of your site(s) restricted.

The cgi-bin folder

- The cgi-bin folder has one CGI program written in Perl, printenv.pl, which you can use to test if your Perl installation is working in combination with the Apache HTTP server.
- If you get a"500 Internal Server Error" when you enter http://localhost/cgi-bin/printenv.pl in the address bar of your browser, you either have Perl not installed, or the configuration of the web server is not right.
- You might want to check the error.log file in the logs folder in the latter case.

The conf folder

- This folder holds the configuration files used by the Apache web server. Of each file used by the server there is a copy which has .default in its name, e.g. httpd.default.conf. The access.conf and srm.conf files are empty (except for comments) by default, and I recommend to not use those files for configuring the server.
- The httpd.conf file has already been updated by the installation process.

htdocs

- This folder contains the default HTML page you see when you visit http://localhost/ with your web browser. Don't start adding your HTML documents and related files to this folder, but read on.

manual

- This folder contains the Apache HTTP server documentation, available as http://localhost/manual/. Note that this folder shows up under the document root thanks to the AliasMatch directive in the httpd.conf server configuration file (line 491).

logs

- This folder contains (amongst others) the access.log and error.log files. If anything goes wrong, for example the notorious 500 Internal Server Error, make sure that you check the error.log file. With virtual hosting you can give each site its own log file (discussed below), so be sure to check the right file(s).

The Apache Directory Structure

The Apache software is typically distributed into the following subdirectories:

cgi-bin	This is where many, if not all, of the interactive programs that you write will reside. These will be programs written with Perl, Java, or other programming languages.
conf	This directory will contain your configuration files.
htdocs	This directory will contain your actual hypertext documents. This directory will typically have many subdirectories.This directory is known as the DocumentRoot.
icons	This directory contains the icons (small images) that Apache will use when displaying information or error messages.
images	This directory will contain the image files (GIF or JPG) that you will use on your web site.
logs	This directory will contain your log files - the access_log and error_log files.
sbin	Use nogroup

The Apache Configuration Files

1.The Apache software is configured by changing settings in several text files in the Apache conf (configuration) directory.

2.There are four configuration files used by Apache:

access.conf	The security configuration file. Contains instructions about which users should be able to access what information.
httpd.conf	The server configuration file. Typically contains directives that affect how the server runs, such as user and group ID's it should use when running, the location of other files, etc.
srm.conf	The resource configuration file. Contains directives that define where documents are found, how to change addresses to filenames, etc.
mime.types	A configuration file that relates filename extensions to file types.

Samples of these four files are included in the Appendices.

Setting up virtual Hosting

- To make the configuration of virtual hosts as easy as possible I decided to store the configuration settings into a separate file instead of adding those settings to the Apache server configuration file httpd.conf.

Adding the domains to the hosts file

- For each website you want to have running locally you have to think up a domain name with great care. I use the same domain name as the real site with lc. added to the front (hence a subdomain) since I am very sure that this subdomain isn't used on the Internet in my case.
- Add each domain name to the hosts file used by Windows XP, which is located in the C:\WINDOWS\system32\drivers\etc folder for a default installation. An example configuration might be (comments on top not included for brevity):

- 127.0.0.1 localhost
- 127.0.0.1 lc.johnbokma.com # my personal site
- 127.0.0.1 lc.castleamber.com # my company's site

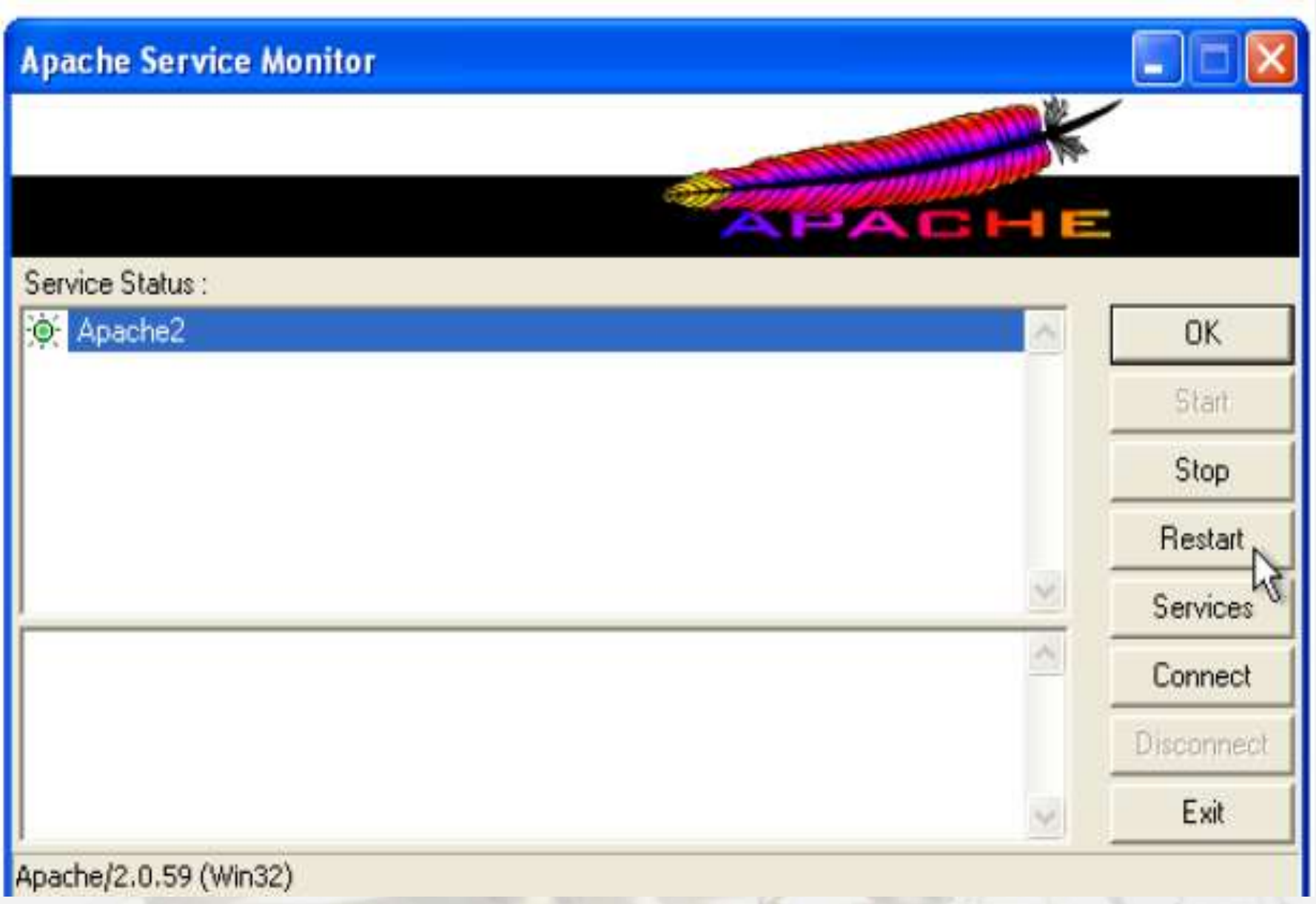
Including the virtual-hosts.conf file

- Add the following line to the end of the httpd.conf file in the C:\Program Files\Apache Group\Apache2\conf folder in order to include the virtual-hosts.conf file and make it part of the configuration of the web server:
- Include conf/virtual-hosts.conf

- Since the ServerRoot in the default install is set to the folder that contains the conf folder we can use the short relative notation as given above. Note: where filenames are specified, you must use forward slashes instead of backslashes (e.g. conf/virtual-hosts.confinstead of conf\virtual-hosts.conf).

Stopping and starting Apache

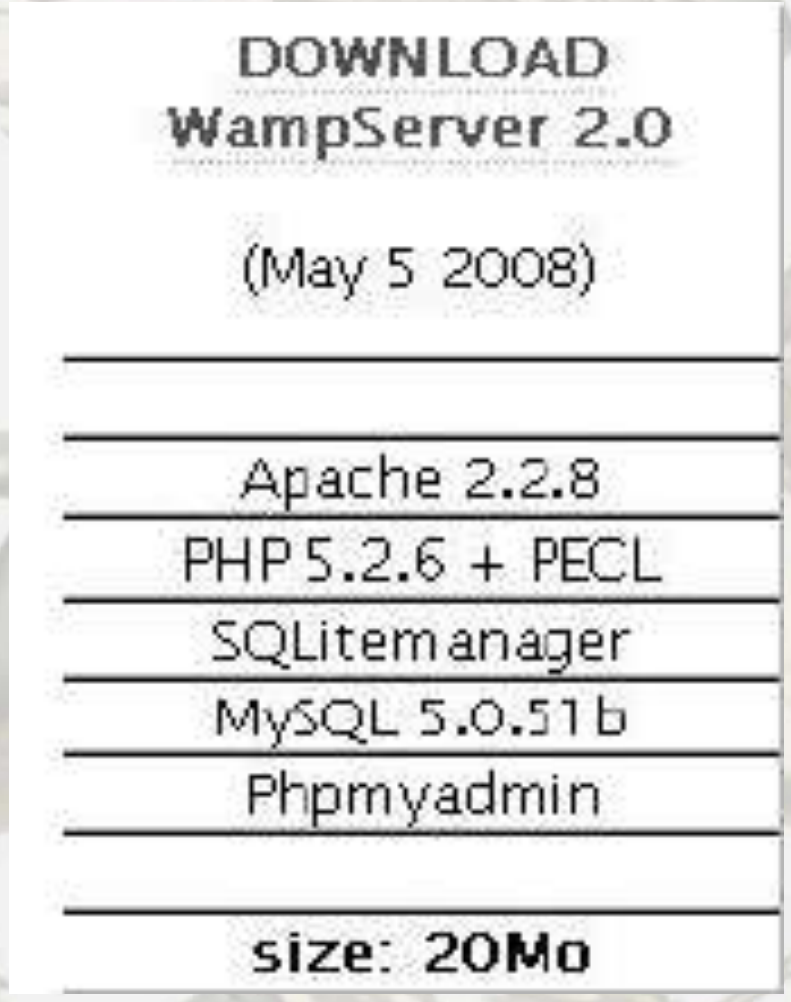
- After changes have been made to the httpd.conf file and/or the virtual-hosts file, Apache has to be restarted. If you are logged in with Administrator rights the easiest way to do this is by using the Apache monitor which is started when you log in and available via the system tray. Click the right mouse (context menu) button on the red feather icon in the system tray and select the Open Apache Monitor menu entry. You can restart the Apache HTTP server with a single mouse click on the Restart button.


Apache Service Monitor
APACHE
Service Status :
Apache2
OK
Start
Stop
Restart
Services
Connect
Disconnect
Exit
Apache/2.0.59 (Win32)

Wamp server

- **Setting Up a WAMP Server**
- A WAMP Server is a Windows Machine that has Apache, MySQL, and PHP on it (WAMP – Windows, Apache, MySQL, PHP) To install these before you would have to get the installs and binaries and configure them yourself and set everything up which can be a tedious task as well as very time consuming.

- Let's get started. First we need to download our software from wampserver.com.



Once on that site look for the above box to appear and click on Download WAMP Server 2.0

Save the file somewhere that you will be able to get to once it is finished completing. It is approximately 20 Megabytes, so depending on your connection; it may take a few minutes.

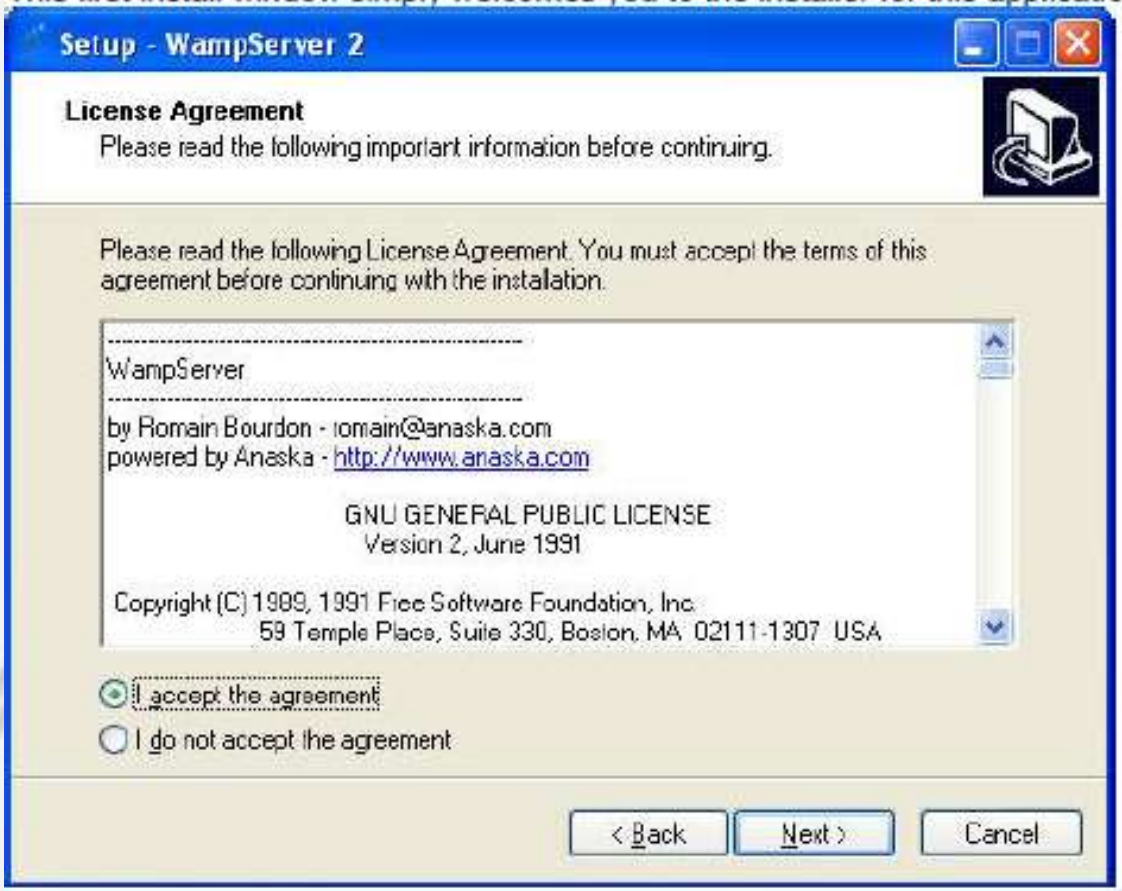
You should now see this icon wherever you chose to save the file. Double-click on it to start the installation.

Select to run the file if you are prompted to do so.

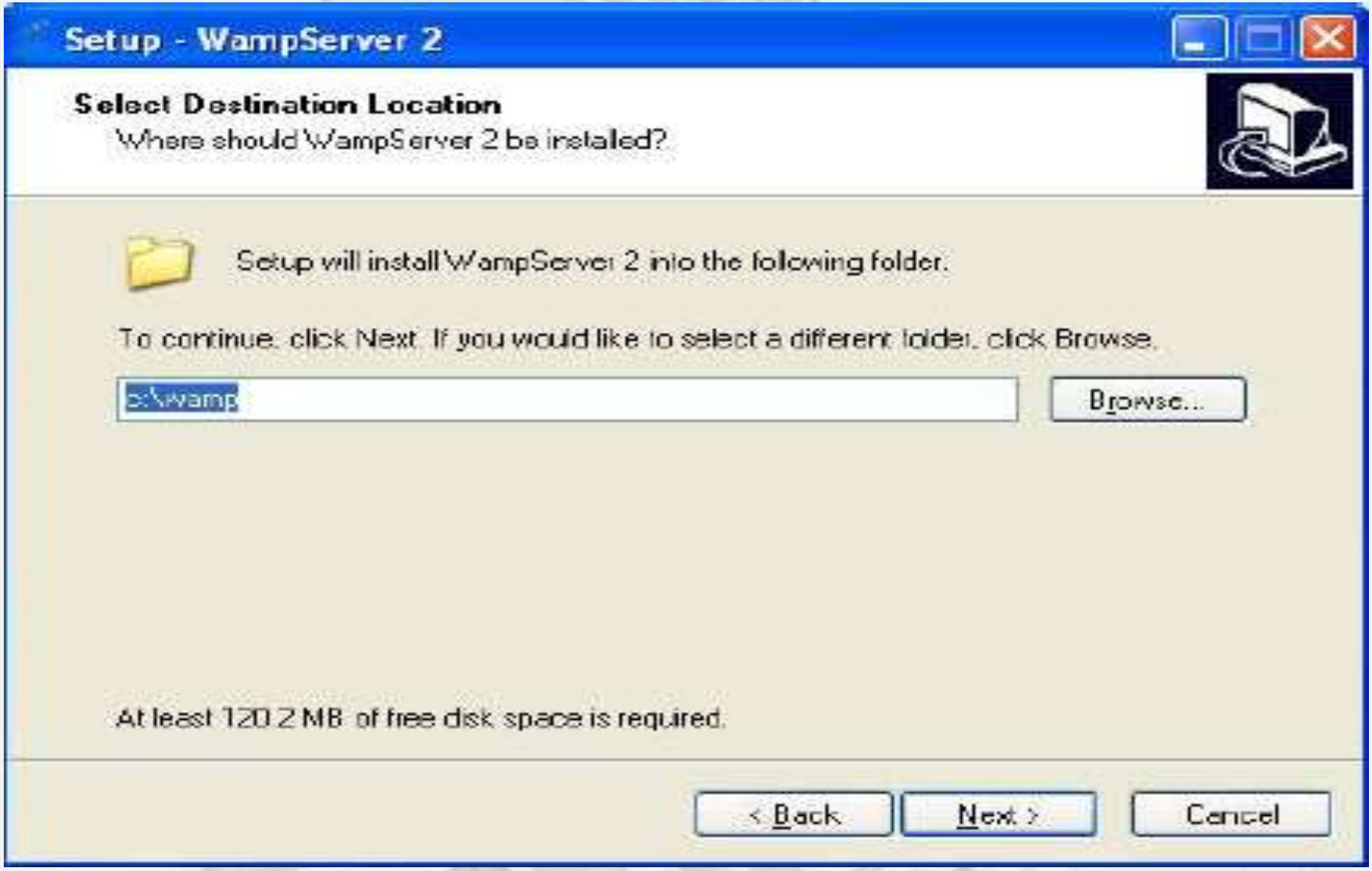
You will be prompted to not install this version over WAMP5 1.x. Click yes to continue with the installation.

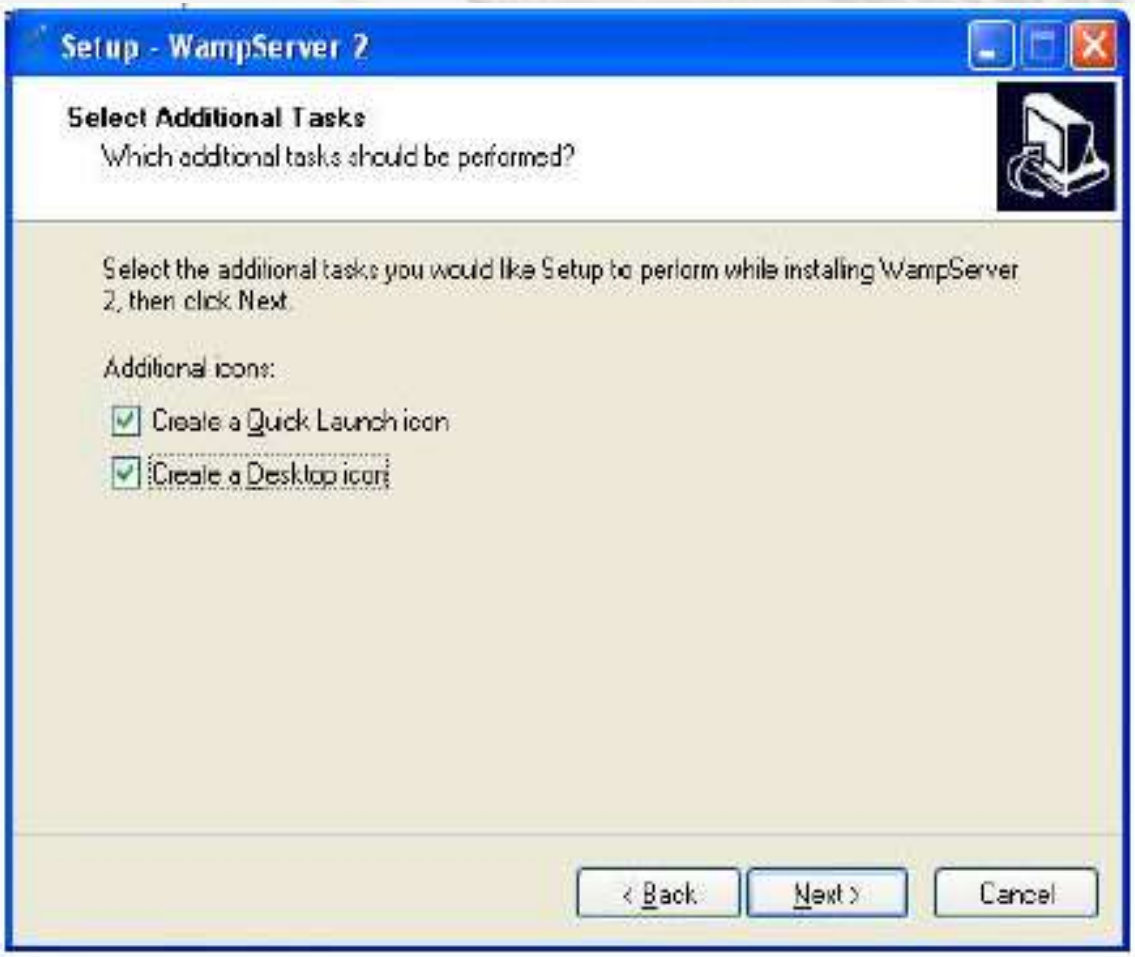

Setup - WampServer 2
Welcome to the WampServer 2 Setup Wizard
This will install WampServer 2.0 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
WampServer
Powered By Anaska
The French Open Source Training Center
http://www.anaska.com
Next >
Cancel

This first install window simply welcomes you to the installer for this application. Click next to continue.



This window contains the GNU GENERAL PUBLIC LICENSE that will allow you to use this software. Once you review this click the I Accepts radial button and click next to continue.


Setup - WampServer 2
Select Destination Location
Where should WampServer 2 be installed?
Setup will install WampServer 2 into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
c:\wamp
Browse...
At least 120.2 MB of free disk space is required.
< Back
Next >
Cancel

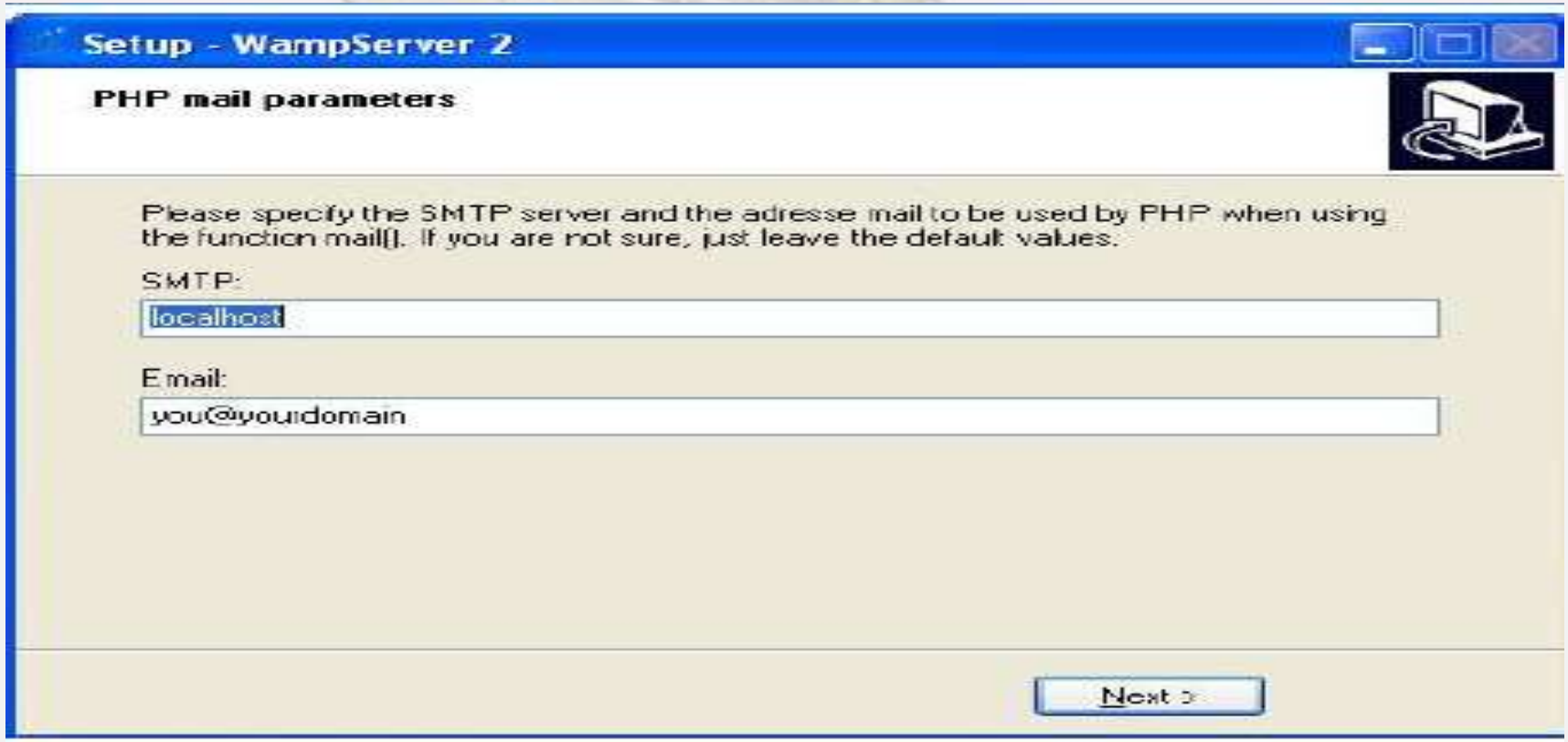


This window will allow you to create the desktop icon and the quick launch icon to start the server by the click of a button.

This window just reviews all installation options. Verify the settings are correct and click next to start installing the application.

This is installing the software.

You will get the above prompt to configure FireFox as your default browser for the WAMP Server if you would like, otherwise it will use Internet Explorer.



This window will allow you to configure your server to forward any e-mail that your php creates to a proper server and e-mail account so that they will go to the right person once you are using it. If you don't know these values or have the ability to use them, just leave them default.

This is the completion window. You have the ability to launch the server automatically after closing this window if you would like. Click Finish to start the application.

Once the server is running, you will see the above icon and the taskbar for the WAMP Server.


WAMPSERVER 2.0
Powered by Anaska
Localhost
phpMyAdmin
SQLiteManager
www directory
Apache
PHP
MySQL
Quick Admin
Start All Services
Stop All Services
Restart All Services
Put Online

XAMPP

- XAMPP stands for Cross-Platform (X), Apache (A), MySQL (M), PHP (P) and Perl (P).
- It is a simple, lightweight Apache distribution that makes it extremely easy for developers to create a local web server for testing purposes.
- Everything you need to set up a web server – server application (Apache), database (MySQL), and scripting language (PHP) – is included in a simple extractable file.
- XAMPP is also cross-platform, which means it works equally well on Linux, Mac and Windows. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server is extremely easy as well.

What's Included in XAMPP?

1. **Apache:** Apache is the actual web server application that processes and delivers web content to a computer. Apache is the most popular web server online, powering nearly 54% of all websites.

2. **MySQL:** Every web application, how so ever simple or complicated, requires a database for storing collected data. MySQL, which is open source, is the world's most popular database management system. It powers everything from hobbyist websites to professional platforms like WordPress.

- **3. PHP:** PHP stands for Hypertext Preprocessor. It is a server-side scripting language that powers some of the most popular websites in the world, including WordPress and Facebook. It is open source, relatively easy to learn, and works perfectly with MySQL, making it a popular choice for web developers.
- **4. Perl**: Perl is a high-level, dynamic programming language used extensively in network programming, system admin, etc. Although less popular for web development purposes, Perl has a lot of riche applications.

Downloading XAMPP

XAMPP is available in three file formats:

- .EXE – Self-executable file; easiest to install.
- .7z – 7zip file. Favored by purists, although it requires working with more complicated .bat files to install.
- .ZIP – Compressed zip file. Like .7z, installing through .ZIP files is considerably more difficult than using .EXE
- Since .EXE is the easiest to install, we will use this file format for this tutorial.
- You can download the XAMPP installer from Sourceforge here (102MB).

Testing Your XAMPP Installation

- Follow these steps to test your XAMPP installation by launching the Apache web server and creating a simple PHP file.
- **Step 1:** In the XAMPP control panel, click on ‘Start’ under ‘Actions’ for the Apache module. This instructs XAMPP to start the Apache webserver.
- **Step 2:** Open your web browser and type in: **http://localhost** or 127.0.0.1
- **Step 3:** Select your language from the splash screen.
- **Step 4:** You should see the following screen. This means you’ve successfully installed XAMPP on your computer.
- **Step 5:** We will now test whether XAMPP has installed PHP successfully. To do this, fire up Notepad and type the following into a new document:

- <?php
- echo ‘Hello world’;
- ?>
- Save this file as ‘test.php’ in c:\xampp\htdocs\ (or whichever directory you installed XAMPP in).
- **Step 6**: Navigate to localhost/test.php. You should see the “Hello World” message:

Congratulations! You have now successfully installed XAMPP

XAMPP

- **INSTALLING, CONFIGURING, AND DEVELOPING WITH XAMPP**
- About XAMPP and Installation Requirements XAMPP is a small and light Apache distribution containing the most common web development technologies in a single package.
- Its contents, small size, and portability make it the ideal tool for students developing and testing applications in PHP and MySQL. XAMPP is available as a free download in two specific packages: full and lite.
- While the full package download provides a wide array of development tools, this article will focus on using XAMPP Lite which contains the necessary technologies that meet the Ontario Skills Competition standards. As the name implies, the light version is a small package containing Apache HTTP Server, PHP, MySQL, phpMyAdmin, Openssl, and SQLite. For more details on the packaging and versions

Obtaining and Installing XAMPP

- As previously mentioned, XAMPP is a free package available for download and use for various web development tasks.
- All XAMPP packages and add-ons are distributed through the Apache Friends website at the address: http://www.apachefriends.org/. Once on the website, navigate and find the Windows version of XAMPP Lite and download the self-extracting ZIP archive.
- After downloading the archive, run and extract its contents into the root path of a hard disk or USB drive.

- For example, the extract path for a local Windows installation would simply be C:\. If extracted properly you will notice a new xampplite directory in the root of your installation disk. In order to test that everything has been installed correctly, first start the Apache HTTP Server by navigating to the xampplite directory and run the apache_start.bat batch file.


XAMPP - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost/xampp/splash.php
XAMPP
English / Deutsch / Français / Nederlands / Polski / Italiano / Norsk / Español / ?? / Português (Brasil) / ???
Done

Domain Name Service (DNS)

- DNS is the "phone book" for the Internet
  - Map between host names and IP addresses
  - DNS often uses UDP for communication
- Host names
  - Labels separated by dots, e.g., www.example.org
  - Final label is *top-level domain*
    - Generic: .com, .org, etc.
    - Country-code: .us, .il, etc.

DNS

- Domains are divided into second-level domains, which can be further divided into subdomains, etc.
  - E.g., in www.example.com, example is a second-level domain
- A host name plus domain name information is called the fully qualified domain name of the computer
  - Above, www is the host name, www.example.com is the FQDN

DNS

- nslookup program provides command-line access to DNS (on most systems)
- looking up a host name given an IP address is known as a reverse lookup
  - Recall that single host may have multiple IP addresses.
  - Address returned is the canonical IP address specified in the DNS system.

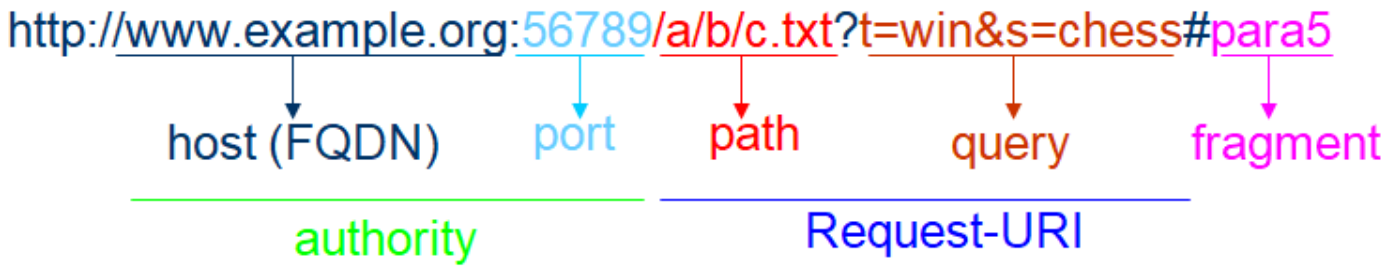
DNS

- ipconfig (on windows) can be used to find the IP address (addresses) of your machine
- *ipconfig /displaydns* displays the contents of the DNS Resolver Cache (*ipconfig /flushdns* to flush it)

Analogy to Telephone Network

- IP ~ the telephone network
- TCP ~ calling someone who answers, having a conversation, and hanging up
- UDP ~ calling someone and leaving a message
- DNS ~ directory assistance

HTTP URL's



- Browser uses authority to connect via TCP
- Request-URI included in start line (/ used for path if none supplied)
- Fragment identifier not sent to server (used to scroll browser client area)

Client side scripting :

- web browsers execute client side scripting. It is use when browsers has all code. Source code used to transfer from web server to user's computer over internet and run directly on browsers. It is also used for validations and functionality for user events.
- It allows for more interactivity. It usually performs several actions without going to user. It cannot be basically used to connect to databases on web server. These scripts cannot access file system that resides at web browser. Pages are altered on basis of users choice. It can also used to create "cookies" that store data on user's computer.

Server side scripting :

- Web servers are used to execute server side scripting. They are basically used to create dynamic pages. It can also access the file system residing at web server. Server-side environment that runs on a scripting language is a web-server.
- Scripts can be written in any of a number of server-side scripting language available. It is used to retrieve and generate content for dynamic pages. It is used to require to download plugins. In this load times are generally faster than client-side scripting. When you need to store and retrieve information a database will be used to contain data. It can use huge resources of server. It reduces client-side computation overhead. Server sends pages to request of user/client.

Client side scripting	Server side scripting
Source code is visible to user.	Source code is not visible to user because it's output of server side is a HTML page.
It usually depends on browser and it's version.	In this any server side technology can be use and it does not depend on client.
It runs on user's computer.	It runs on web server.

There are many advantages link with this like faster. response times, a more interactive application.	The primary advantage is it's ability to highly customize, response requirements, access rights based on user.

It does not provide security for data.	It provides more security for data.
It is a technique use in web development in which scripts runs on clients browser.	It is a technique that uses scripts on web server to produce a response that is customized for each clients request.
HTML, CSS and javascript are used.	PHP, Python, Java, Ruby are used.

Thank You