

# **Web Hosting, Domain Names, Databases and Programming Languages**

# Introduction



Basic webmaster duties usually consist of maintaining a site's web pages by checking regularly the files on the server and the database. When tasked to do this a webmaster is expected to understand how a website functions, what web host services were being used (i.e. emailing, subdomains, etc.), and what are the requirements for running the site (i.e. Apache, MySQL and PHP). As a way of introducing you to webmastering, we start with the basics of web hosting, domain names, programming languages and databases.

# Definition of Terms

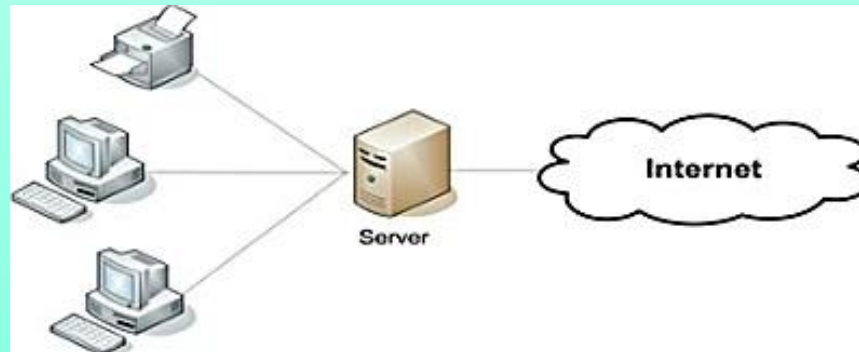
- **DNS – Domain Name System** is a hierarchical naming system that serves as the "phone book" for the Internet by translating human-friendly computer hostnames into IP addresses.
- **Domain Name** – provides a symbolic representation, such as recognizable names, to mostly numerically addressed Internet resources. Multiple IP addresses can be assigned to one domain name.
- **FTP – a File Transfer Protocol** for exchanging and manipulating files over a TCP computer network. An FTP client may connect to an FTP server to manipulate files on that server.
- **ISP – Internet Service Provider**; also called Internet Access Provider or **IAP**. It is a company that offers its customers access to the Internet.

# Definition of Terms

- **URL - Uniform Resource Locator** specifies where an identified resource is available and the mechanism for retrieving it. Also known as Web Address.
- **Web Server** – either a software that serves as platform on which web applications can run or a hardware from which web applications or files can be accessed by other computers in a network.
- **Web Host** - Web hosts are companies that provide space on a server they own for use by their clients as well as providing Internet connectivity, typically in a data center.
- **Server-Side Scripting Languages** – some common examples are ASP/ASP.NET (\*.asp/\*.aspx), ColdFusion Markup Language (\*.cfm), Java via JavaServer Pages (\*.jsp), PHP (\*.php)

# Web Servers

- At the most basic level, a server is a technology solution that “serves” files, data, print, fax resources, and more to multiple computers.
- The word “server” often refers to the specialized computer (or hardware) that the server software runs on. The server is optimized to perform services for other computers or “clients.” Clients can be computers as well as printers, faxes, or other devices that connect to the server.



# Web Hosting

- At its core, a Web server serves static content to a Web browser by loading a file from a disk and serving it across the network to a user's Web browser. This entire exchange is mediated by the browser and server talking to each other using HTTP.
- Some companies that own computers acting as web servers often offer web hosting services
- Web hosting is a service which allocates space for customers to showcase their websites on computer servers that are connected to the Internet 24/7.

# Major Types of Web Hosting

- **Free web hosting service:** Free, (sometimes) advertisement-supported web hosting, and is often limited when compared to paid hosting.
  - **Good:** Low cost. It's free. Good for family, hobby or personal sites. Free email is often an option.
  - **Bad:** No domain names. Few, limited, or no software options. Limited security options. Limited or no database support. Limited technical support.

# Major Types of Web Hosting

- **Shared web hosting service:** One's website is placed on the same server as many other sites, ranging from a few to hundreds or thousands. Typically, all domains may share a common pool of server resources, such as RAM and the CPU. The features available with this type of service can be quite extensive. A shared website may be hosted with a reseller.
  - **Good:** Low cost. Cost is shared with others. Good for small business and average traffic. Multiple software options. Own domain name. Good support.
  - **Bad:** Reduced security due to many sites on one server. Restrictions on traffic volume. Restricted database support. Restricted software support.



# Major Types of Web Hosting

- **Virtual Dedicated Server:** Dividing a server into virtual servers, where each user feels like they're on their own dedicated server, but they're actually sharing a server with many other users. The users may have root access to their own virtual space. This is also known as a *virtual private server* or **VPS**. Customers are sometimes responsible for patching and maintaining the server.
  - **Good:** Low cost. Cost is shared with others. Good for small business and average traffic. Multiple software options. Own domain name. Good support.
  - **Bad:** Reduced security due to many sites on one server. Restrictions on traffic volume. Restricted database support. Restricted software support.

# Major Types of Web Hosting

- **Dedicated hosting service:** the user gets his or her own Web server and gains full control over it (root access for Linux/administrator access for Windows); however, the user typically does not own the server. Another type of Dedicated hosting is Self-Managed or Unmanaged. This is usually the least expensive for Dedicated plans. The user has full administrative access to the box, which means the client is responsible for the security and maintenance of his own dedicated box.
  - **Good:** Good for large business. Good for high traffic. Multiple domain names. Powerful email solutions. Powerful database support. Strong (unlimited) software support.
  - **Bad:** Expensive. Requires higher skills.

# Major Types of Web Hosting

- **Colocation web hosting service:** Similar to the dedicated web hosting service, but the user owns the server; the hosting company provides physical space that the server takes up and takes care of the server. This is the most powerful and expensive type of web hosting service. In most cases, the colocation provider may provide little to no support directly for their client's machine, providing only the electrical, Internet access, and storage facilities for the server. In most cases, the client would have his own administrator visit the data center on-site to do any hardware upgrades or changes.
  - **Good:** High bandwidth. High up-time. High security. Unlimited software options.
  - **Bad:** Expensive. Requires higher skills. Harder to configure and debug.

# Other Types of Web Hosting

- **Reseller web hosting:** allows clients to become web hosts themselves. Resellers could function, for individual domains, under any combination of these listed types of hosting, depending on who they are affiliated with as a provider. Resellers' accounts may vary tremendously in size: they may have their own virtual dedicated server to a colocated server. Many resellers provide a nearly identical service to their provider's shared hosting plan and provide the technical support themselves.

# Other Types of Web Hosting

- **Managed hosting service:** The user gets his or her own Web server but is not allowed full control over it (root access for Linux/administrator access for Windows); however, they are allowed to manage their data via FTP or other remote management tools. The user is disallowed full control so that the provider can guarantee quality of service by not allowing the user to modify the server or potentially create configuration problems. The user typically does not own the server. The server is leased to the client.

# Other Types of Web Hosting

- **Clustered hosting:** having multiple servers hosting the same content for better resource utilization. Clustered Servers are a perfect solution for high-availability dedicated hosting, or creating a scalable web hosting solution.
- **Grid hosting:** this form of distributed hosting is when a server cluster acts like a grid and is composed of multiple nodes.
- **Home server:** usually a single machine placed in a private residence can be used to host one or more web sites from a usually consumer-grade broadband connection. These can be purpose-built machines or more commonly old PCs. Some ISPs actively attempt to block home servers by disallowing incoming requests to TCP port 80 of the user's connection and by refusing to provide static IP addresses. A common way to attain a reliable DNS hostname is by creating an account with a dynamic DNS service. A dynamic DNS service will automatically change the IP address that a URL points to when the IP address changes.

# Specific Types of Web Hosting

- File hosting service: hosts files, not web pages e.g. RapidShare, Megaupload
- Image hosting service: hosts images e.g. Flickr, Photobucket, Picasa
- Video hosting service – hosts videos e.g. YouTube, Vimeo
- Blog hosting service – hosts blogs using blog CMS e.g. Blogger, Wordpress.com, Xanga, LiveJournal
- One-click hosting – allows upload of large files and sends a URL of the file to other users for download e.g. YouSendIt, DropBox
- Shopping cart software – software is hosted and application use is rented out as a service; no installation needed, e.g. Basket2go.net

Up Next...

## DOMAIN NAMES

- Types and Issues
- How To Register



# Domain Names

- Domain names are often referred to simply as *domains* and domain name registrants are frequently referred to as *domain owners*, although domain name registration with a registrar does not confer any legal ownership of the name, only an exclusive right of use.
- Simply registering a domain name does not protect you if another company files a trademark infringement claim — if they hold a legal trademark, you can lose your domain name and even find yourself liable for the owner's legal costs.
- Domain names are restricted to the ASCII letters a through z (case-insensitive), the digits 0 through 9, and the hyphen, with some other restrictions in terms of name length and position of hyphens.

# Differences Between

- URL: `http://www.example.net/index.html`
- Domain name: `www.example.net`
- Registered domain name: `example.net`

The hypertext transfer protocol (HTTP) specifies that the client tells the server which name is being used. This way, one server with one IP address can provide different sites for different domain names (virtual hosting). For example, the server at IP address 208.77.188.166 handles all of the following sites: `example.com`, [www.example.com](http://www.example.com), `example.net`, [www.example.net](http://www.example.net), `example.org`, [www.example.org](http://www.example.org)

# Parts of a Domain Name

- A domain name usually consists of two or more parts (technically a *label*), which is conventionally written separated by dots, such as example.com.
- The *rightmost label* conveys the *top-level domain* (for example, the address www.example.com has the top-level domain com).
- Each label to the left specifies a subdivision, or subdomain of the domain above it. *Note*: “subdomain” expresses relative dependence, not absolute dependence. For example: example.com is a subdomain of the com domain, and www.example.com is a subdomain of the domain example.com.
- A hostname refers to a domain name that has one or more associated IP addresses; ie: the 'www.example.com' and 'example.com' domains are both hostnames, however, the 'com' domain is not.

# Types of Domain Names

- Generic Top-level domains (gTLD):
  - Generic: .com, .net and .org, .info, .biz, .name, .pro
  - Sponsored: .gov, .edu, .asia, .mobi
- Country-Code Top Level Domains (ccTLD):
  - e.g.: .co.uk, .ph, .us
- Second-Level Domain Names – to the left of TLDs
- Domain Hacks – unconventional use of TLDs to make it part of the website's title
  - e.g.: del.icio.us, ma.gnolia.com

# Domain Name Registration Info

**Administrative contact** - has the highest level of control over a domain

- *Functions* : management of all business information, such as name of record, postal address, and contact information of the official registrant of the domain and the obligation to conform to the requirements of the domain registry in order to retain the right to use a domain name, and installs additional contact information for technical and billing functions.

**Technical contact** - manages the name servers of a domain name.

- *Functions* : assuring conformance of the configurations of the domain name with the requirements of the domain registry, maintaining the domain zone records, and providing continuous functionality of the name servers (that leads to the accessibility of the domain name).

# Domain Name Registration Info

**Billing contact** - responsible for receiving billing invoices from the domain name registrar and paying applicable fees.

**Name servers** - Domains usually need at least two authoritative name servers that perform name resolution for the domain. If they are not automatically provided by the registrar, the domain holder must specify domain names and IP addresses for these servers.

## What is a Subdomain?

- This is what other people refer to as “third-level domain.” No need to register.
- Also used to identify two different IP addresses on the same server (*machine names*). It is also used to point to different computers with the same information (*load balancing*).
- Scalability of a domain allows for multiple subdomains to be created. It helps in organizing information. Subdomains allow better hosting options as compared to subdirectories.

# How To Register A Domain Name

- Select a unique easy-to-remember name. Underscores are okay as well as dashes. It must be at least two characters long and no more than 63 characters maximum, excluding the top level domain. The first and last character cannot be a hyphen. Domain names are not case-sensitive.
- Check with Whois.net whether it's available or not. There are other free whois tools online that can help you find an available domain name. Some good domain names are often taken and you might want to consider buying these from the owner if they are for sale, or you can buy expired domains which the owners didn't renew after a year.

# How To Register A Domain Name

- If it's available, then choose your domain name extension. The most popular top-level domains may cost higher than the less used ones.
- Go to checkout and pay for your domain name. You can use either PayPal or a Credit Card.
- Edit your account at the domain registrar site to reflect the domain name servers (at least 2) to point your domain to. These domain name servers (DNS) are provided by your web host and are needed to help translate numerical IP addresses to human-readable domain names.



# What are Domain Name Servers?

## **Name servers do two things all day long:**

- They accept requests from programs to convert domain names into IP addresses.
- They accept requests from other name servers to convert domain names into IP addresses.

## **When a request comes in, the name server can do one of four things with it:**

- It can answer the request with an IP address because it already knows the IP address for the domain.
- It can contact another name server and try to find the IP address for the name requested. It may have to do this multiple times.
- It can say, "I don't know the IP address for the domain you requested, but here's the IP address for a name server that knows more than I do."
- It can return an error message because the requested domain name is invalid or does not exist.

# What are the server requirements?

- Server requirements will depend on the type of server platform to use and the languages it can handle
- The most common web server software is Apache for Unix and Linux servers, followed by Windows IIS.
- Most websites use PHP and HTML to serve web pages. For dynamic sites, you might need to create databases using MySQL to manage content all throughout your site.
- PHP and MySQL go hand-in-hand like peanut butter and jelly.

# Programming Languages and Databases

- The most common database for a web server is MySQL, which is a free open-source database system. MSSQL, PostgreSQL and GNU SQL are also popular SQL servers.
- Be sure that the PHP on the server is up to date, otherwise PHP scripts may not function properly. PHP 5.2 is the newest version.
- If you want to study PHP, you can read tutorials at [PHP.net](http://PHP.net)
- phpMyAdmin is a free software tool written in PHP intended to handle the administration of MySQL over the Web. Available for download at [phpmyadmin.net](http://phpmyadmin.net)
- CSS (Cascading Style Sheets) and AJAX ( Asynchronous Javascript And XML) are just web development techniques.

# Information Technology Skills Needed

- The most searched for and the most blogged among web programming languages are Java, PHP and Javascript. Java is used often for software and applications development. PHP and Javascript are used for web development projects.
- As of 2008, the top back end programming languages and frameworks used are PHP, Javascript, ASP.NET, Python, Ruby, Java, ASP and ColdFusion.
- Commonly used frameworks include Ruby on Rails (the single most used framework), Django, Python, Zend (the most commonly used PHP framework) and CakePHP. Other frameworks include Java Struts, CodeIgniter for PHP, and Java Spring.

# Web Host Management

- Web hosts provide graphical user interface (GUI) software for easy management of one's site. Examples of these GUI are cPanel ([www.cpanel.net](http://www.cpanel.net)) and Plesk.
- For easy website creation many companies have created content management software for blogs, forums and websites. Examples of CMS are Wordpress, Drupal, Joomla, phBB (for forums), BoonEx Dolphin (for social networking sites) and Blogger.
- For local installations, you can use XAMPP which you can download at [apachefriends.org](http://apachefriends.org)
- XAMPP can be installed in almost all types of OS (i.e. Windows, Linux, Solaris and Mac OS X)

# FINIS

Thank you for staying until the end.