

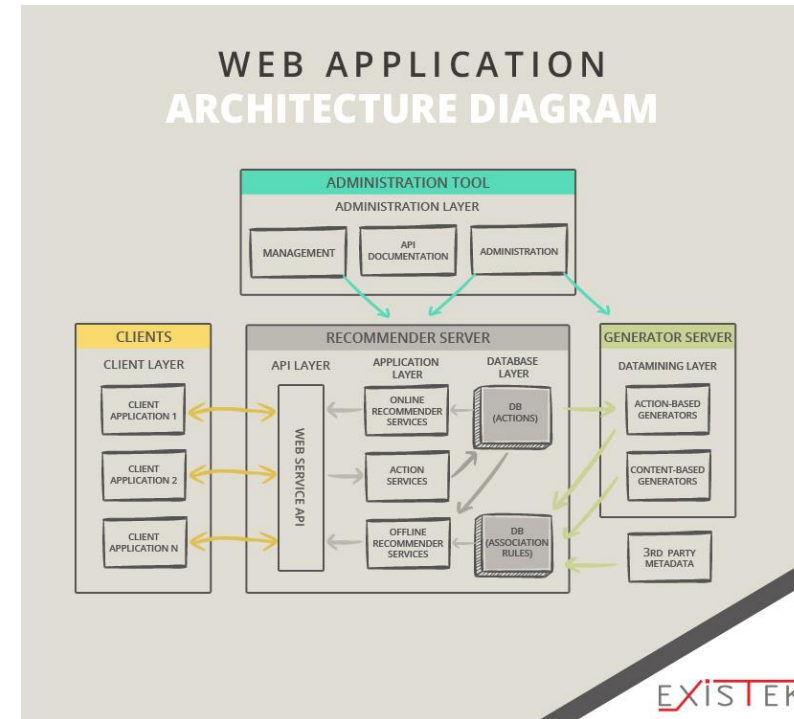
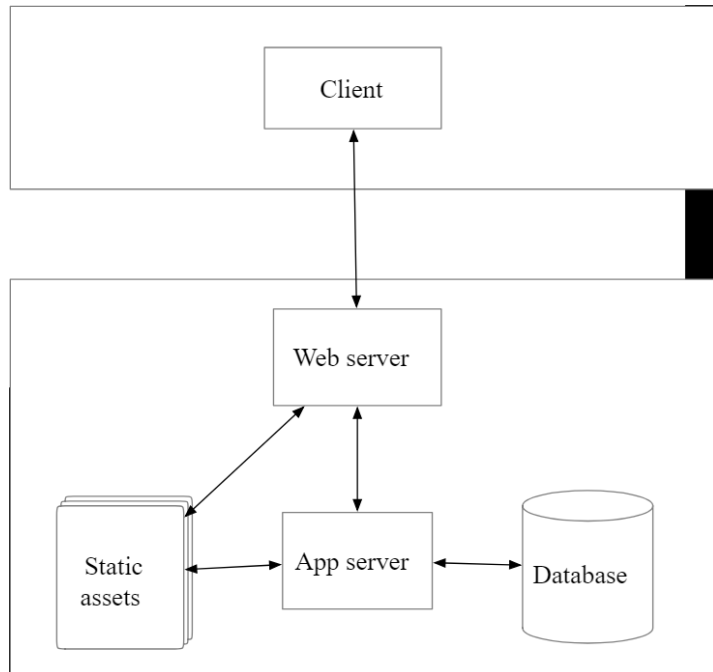
Web services guidebooks and presentation for junior staffs

By Nguyen Hoang Lan

Introduction

- I am the leader of our company's full-stack web team and we are about to have a big contract to develop an online shopping mall. Therefore, I will train you junior staffs on the basic web technologies and their impacts to web design, functionality and performance

Web application architecture



How websites work

- When you enter a request, it will go to one of many special computers on the servers called Domain Name Server and routed through many switches and routers.
- The browser will ask the DNS to translate the domain name into an IP address
- The server will return requested documents and resources such as images, videos, GIFs to the user and logs the activity

Requirements of the website

- Computers
- Website server
- Backup hard drive and USB sticks
- Video camera
- Mobile web device
- Website creation software
- Graphic editing software
- Database

How to search websites with search engines

- Step 1: Access the search engine homepage through a browser
- Step 2: Type the name of the websites or a part of it in the letter box. The search engine may auto complete it for you
- Step 3: Review your search result when the result list appeared
- Step 4: Preview the results by clicking on the magnifying glass next to the results
- Step 5: Refine your searches by narrowing them down to a type of category or a fixed date

Purpose of DNS

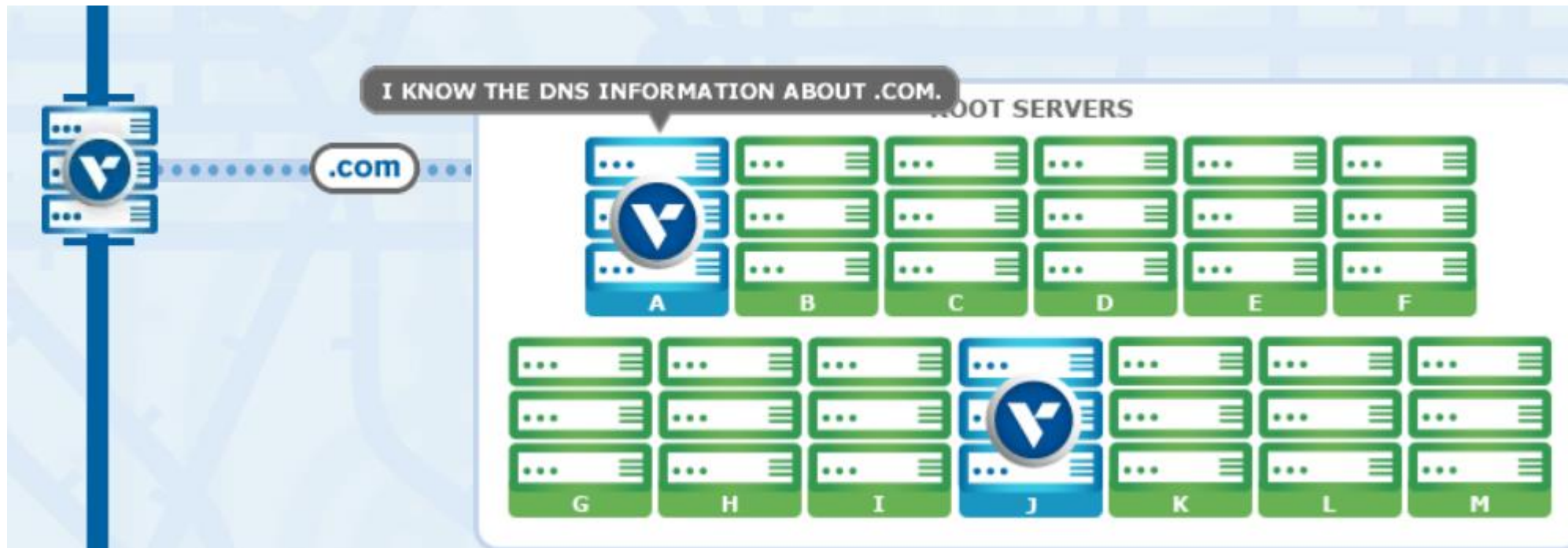
- DNS or domain name system maintains a directory of domain names and translates them into IP address
- It is necessary because computers and machines access websites through IP address
- When you type a domain name, the Internet Service Provider will look through the DNS for the domain and translate it into a machine-friendly IP address
- When you register or update your domain name in the DNS, it takes 36 hours for the DNS world-wide to update and access the information

How DNS work



- Step 1: When you type a domain name such as best domainnameever.com, the browser will send a query to search for the domain name in DNS database. The first server the query interact with is the recursive resolver, which can be operated by ISP. The recursive resolver knows which DNS it should ask to get the answer

- Step 2: The first server contacted is root server, which holds information about top level domain server such as .com



- Step 3: When the query reaches the TLD server, it answers with the IP address of the DNS. The TLD server contains address information for second level domain(bestdomainnameever.com) within the top level domain server



- Step 4: the query will be sent to the DNS to search for the domain. The DNS will return the IP address of the domain to the recursive resolver



- Step 5: When the recursive resolver knows the IP address, the address will be informed to the browser so the webpage can be displayed on the browser



- The process may be complicated but only takes one tenth of a second



URL forming

- URL or Uniform Resource Locator is a reference to web resources' location on the Internet and methods to obtain it
- The URL comprises of these components :
 - A non-empty scheme followed by a colon such as http, file, https, ftp, mailto, irc
 - An optional authority contains three optional subcomponents: userinfo placed between a colon and @ and follows the format username:password; host consists of the host name and the IP address; port preceded by a colon
 - Path consisting a sequence of paths separated by a slash
 - An optional query preceded by a question mark contain a query string of non-hierachial data
 - An optional data fragment preceded by a hash. The fragment contains a fragment identifier which leads to a second resource

URL example

- This URL has https as scheme, en.Wikipedia.org as host name and URL as a path `https://en.wikipedia.org/wiki/URL`
- This URL has
q=+Draw+diagrams+to+demonstrate+architecture+of+web+application as query component

`https://www.google.com/search?q=-+Draw+diagrams+to+demonstrate+architecture+of+web+application.`

Communication protocols

- Communication protocols is a system of rules that allow two or more entities to transfer information over a communication systems
- There are many types of communication protocols:
 - TCP and UDP based protocols: establish host-to-host connectivity
 - Automation: finish the process with minimal human assistance
 - Bluetooth: establish connection between fixed and mobile devices
 - Electronic trading: a website or software with user interface to trade financial assets via a network
 - File transfer: the transfer of a fil through a system

- Instant messaging: transmit real-time messages through Internet
- Internet protocol: relaying datagrams across the network boundary
- Link aggregation: combine multiple network connections in parallel to increase the throughput and act as a backup
- OSI protocols: a family of information exchange standards
- Protocol stack: an implementation of a computer networking protocol family
- Routing: choosing a path in a network or across multiple networks
- Web services: a service offered by an electronic device to communicate through World Wide Web

HTTP protocol

- It is an application protocol for distributed, collaborative, hypermedia information systems that allow the user to communicate through world wide web
- HTTP was invented alongside HTML to create the first interactive, text-based web
- HTTP gives users a way to make interact with web resources by transmitting hypertext files

Server operating system

- A server operating system or OS is a system that is designed to run on servers to serve the requests of clients in the network
- It is the software layer which enable other software to run on the hardware and facilitate typical server roles such as web server, mail server, file server, database server and print server

Web servers

- Web server is a server software or hardware dedicated to run the said software
- Web server can contain more than one website and handle the client's request through HTTP and other related protocols
- The primary function of web server is to store, process and deliver webpages to clients through HTTP protocol
- Many web servers support server-side scripting meaning that the behavior of the server can be scripted into different files while the server software remain unchanged

Database server

- It is a server which houses a database application which provide database services to computers
- Users access the database server through a front end which displays data or back end which runs on the server and do tasks such as data analysis and storage
- Most database application responds to a certain query language

Domain registration domain and host

- For a website to be recognized by the IPS and the world, you need to register your domain with a hosting service.
- To demonstrate, I will use a free hosting service call InfinityFree



Hosting account creation

- After signing up, you can create a hosting account using the free subdomain or your own domain. Click create account to start hosting web


Use a Free Subdomain
No configuration necessary. You can add more (sub)domains later.
Enter a free subdomain...
 .epizy.com

OR use your Own Domain
The domain needs to point to the nameservers: ns1.epizy.com and ns2.epizy.com.
[Learn more.](#)
Enter your own domain...

Account Username
(generated automatically)

Account Password
(generated automatically)

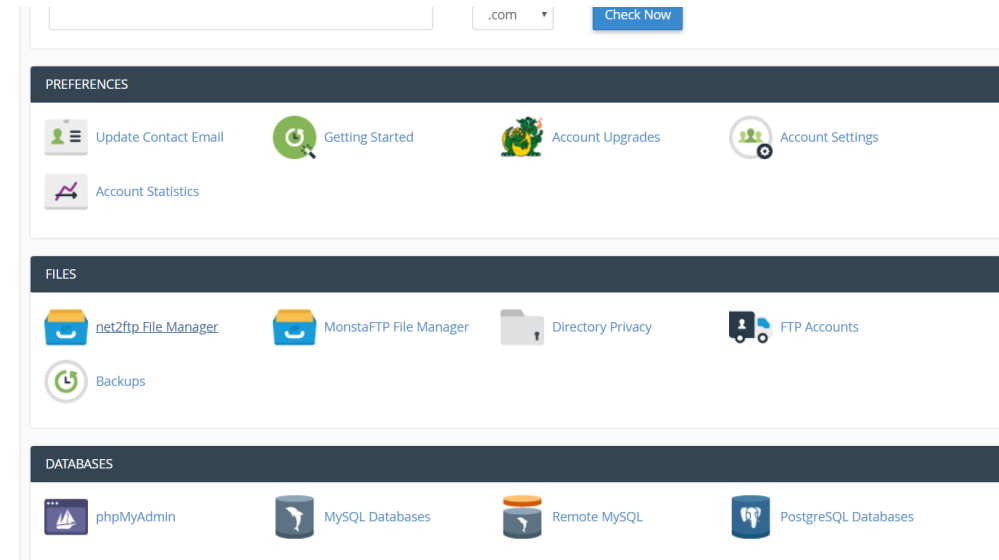
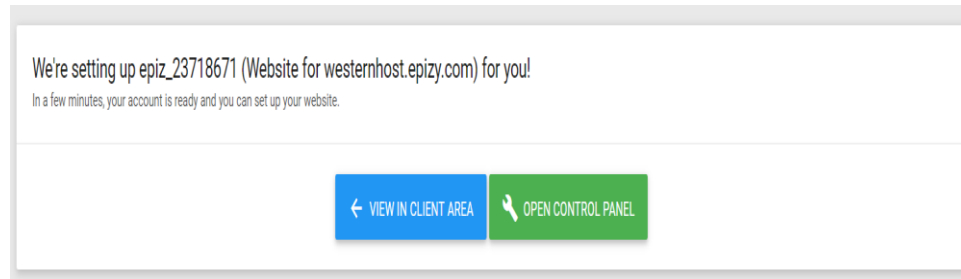
Verification expired. Check the checkbox again.
☐ I'm not a robot


reCAPTCHA
[Privacy](#) • [Terms](#)





CREATE ACCOUNT

Control Panel

- After finishing the domain registration, you can click the control panel to start hosting your website



- After that you will click net2ftp File Manager then click upload to upload the HTML file to a certain directory such as htdocs. In this situation, the file that will be uploaded is Dog.html

New dir New file Upload Java Upload				Transform selected entries: Copy Move Delete Rename Chmod				
All	Name	Type	Size	Owner	Group	Perms	Mod Time	Actions
	 Up ..							
<input type="checkbox"/>	 Dog.html	HTML file	9057	23718671	23718671	rw-r--r--	Apr 4 13:53	Edit
<input type="checkbox"/>	 files for your website should be uploaded here!	FILES FOR YOUR WEBSITE SHOULD BE UPLOADED HERE! File	0	0	2	rw-r--r--	Apr 4 13:29	Edit
<input type="checkbox"/>	 index2.html	HTML file	5952	0	2	rw-r--r--	Apr 4 13:29	Edit

- Now that you have uploaded the file, you can type the domain name on the browser bar and the website will appear.

Dog D. Dog

About

Woof woof!
Hi. I'm Dog. I love [User Interface Design](#)



Courses

Here are some courses I've taken

Course Number	Course Title	Semester Taken
6813	User Interface Design	Spring 2014
For Credit		
6034	Artificial Intelligence	Fall 2013
6006	Introduction to Algorithms	Fall 2013
Listener		

Webpage publication

- The evidence that the web page publication through the internet is that when you type the domain name, which in this case <http://westernhost.epizy.com/Dog.html>, the website appears in the browser

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Impact of web technologies and framework

- Web technologies and framework is very important to web design, functionality and management.
- The impact of common web technologies:
 - HTML: help the developer identify page titles, images, text box and text
 - CSS: controls the font used, text sizes, color, the position and elements on the page
 - Javascript: allow your page to do things without contacting the main server

- Impact of frameworks:
 - Responsive design such as Twitter Bootstrap and Zurg Foundation allow your webpage to render well on a desktop, tablet or mobile phone.
 - Program actions and logics are separated so designers can edit and modify the interfaces without the help of a programmer
 - Builds are based on modules, libraries and tools so programmers can share libraries and implement complex functions fast and effectively

Search engine optimization

- Search engines are an important promotion method for e-Commerce website and represent an effective way new e-Commerce sites themselves
- To do that, the websites need to have search engine optimization to manage and improve the organizational performance
- Roles of SEO:
 - It impacts the number of people visit the website
 - It impacts the average time people spending on the website
 - It impacts the annual sales revenue

Evidence of improve search-ranking through SEO

- Link building



Content



Responsive Design



Google confirmed that mobile-friendly, responsive design is essential to good rankings



75% of all Internet users prefer mobile-friendly sites



60% of all Internet traffic comes from mobile devices



70% of mobile searches lead to an action within 1 hour



50% of all Internet users are irritated with sites that aren't compatible with mobile devices

Click through rate



Studies show strong correlations between search engine rankings and CTR



The #1 search result in SERPs gets **33%** of clicks

3 BIGGEST FACTORS IN CTR:



Title tags

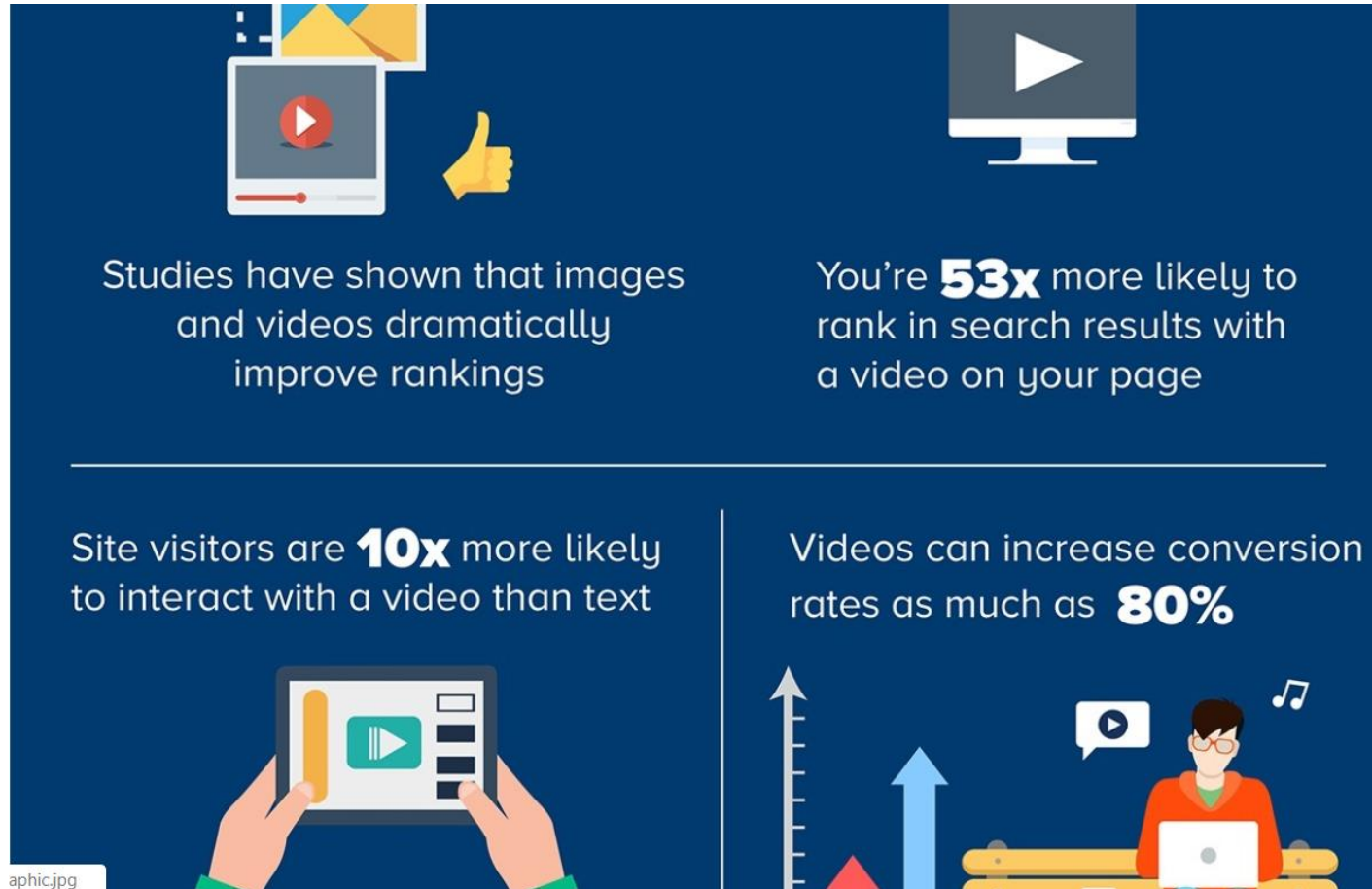


Meta descriptions



Schema markup

Multimedia



Conclusion

- This presentation provide you with basic web knowledge such as web architecture and its elements, the purpose of DNS and the process to register a domain name. The impact of web technologies and framework and search engines is also included
- Everything that was presented is basic to build a website. Therefore, it should be remembered.

Reference

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