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This document tracks the time I spent to learn the Online Course "**Introduction to DNS**", course number **B125.02** taken at **http://www.eclasses.org/** from reading the text book, reading online lectures and resources, and homeworks.

These online classes are primarily conducted via the web board interface - called Web Crossing. You can take a Virtual Tour of an Online Classroom at ***http://www.eclasses.org/Demo/***

(note: the ".02" in B125.02 refers to the number of times the course has been given).

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Total number of hours I spent (details below) = 43.75 ***hrs***

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**********Course Description**********

Introduction to DNS, - course number **B125.02**

Start Date: 27-October-2008; **Duration:** 4 weeks; **CEUs:** 2.0; **Course Number:** B125.02; **Instructor:** Rene' Garcia

How eClasses Work

The classroom environment is based on Lundeen & Associates Web Crossing technology, a threaded messaging system. Instructors post lectures, reading selections, and hands-on assignments once a week in the online classroom. Students can discuss the assignments with the instructor and amongst themselves in the classroom area. **This format has no set meeting time**, which allows students to attend class at a time most convenient to them, yet still provides logically organized communication between class participants. Students can apply for the completion certificate after finishing the class. Web Study certificate is also available. Click on the Certificates link on the top navigation bar for more information.

About eClasses.Org - Affordable Web Technology Learning

Since 1998 eClasses.Org has provided the very best in online training to 45,000 Web developers and other professionals. It offers a catalog of 40 online courses covering the breadth of Web work, from HTML to Flash; from CSS to XML. All classes are taught by fellow experts and working professionals in the field.

- Online, instructor-led web technology classes
- Affordable and flexible learning solution
- 4 Web certificate programs

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Course Outline: Introduction to DNS

DNS is an integral part of working with the Internet, but what if you don't understand how it works? This course will give you all the insight you need to have a basic understanding of DNS and how it translates http://64.233.167.99 into

http://google.com! The class is designed for web professionals and almost anyone looking for a walkthrough on general DNS concepts. We will begin with an introduction to the Domain naming system then move on to how the client computers translate DNS information. Lastly, we will look at the major components of a DNS server and clear up how to work with DNS zones and subdomains.

Outline

Week 1: An Introduction to DNS

- Brief explanation of the translation of an IP address to a domain name
- What is DNS? (the DNS hierarchy and root, domain names, subdomains, FQDN, and Nameservers)
- Brief history of BIND DNS
- Summary of other naming services HOSTS.TXT, WINS, NIS

Week 2: DNS Clients

- The local domain
- Windows clients
- Mac OS X/UNIX/Linux
- Defining nameservers or configuring by way of DHCP
- Using basic tools: ping, nslookup, dig, host, and WHOIS

Week 3: DNS Servers

- BIND DNS
- Zones and records
- Resource Records
- Master Servers and Slave Servers
- Caching
- Forwarding

Week 4: Working with DNS

- Using subdomains
- DNS Security
- Dynamic DNS - On the LAN and the Internet
- Configuring DNS settings available through major web hosting vendors

Prerequisites This class does not require any advanced knowledge of networking, only the overall familiarity with the internet.

Requirements Students will only need access to a computer with a recent version of Firefox, Safari, or Internet Explorer.

Books

Required Book: DNS For Dummies [by Blair Rampling, David Dalan, Paperback, 340 pages, **ISBN**: 0764516833, **Publisher**: For Dummies, **Pub.Date**: January 2003

Suggested Book: DNS & BIND] by Cricket Liu, 640 pages, 5th edition, **ISBN**: 0596100574, **Publisher**: O'Reilly Media, Inc, **Pub.Date**: May 26 2006

Instructor: Rene' Garcia

Rene is an IT Manager with over 8 years of experience in information technologies, administration and consulting. He is currently working with a small consulting firm helping companies integrate open source technologies and is responsible for multiple networks and computing environments running Linux, FreeBSD, OSX and MS Windows. Rene has a Bachelor's degree in Computer Information Technology and holds current certifications from Apple, CompTIA, and ICCP.

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How eClasses Work

About the Classroom

The classroom environment is based on Web Crossing technology, a threaded messaging system (message board). Instructors post lectures, reading assignment, and hands-on assignment once a week. Classes start on a certain date but this format has no set meeting time, which allows students to attend class at a time most convenient to them. Students only need to complete the assignment within one week and continue with another assignment in the following week.

The main benefit of our classes is the interaction among you, your instructor and other students in classroom (online message board). Students can post comments or questions to the instructor or other students, share ideas, communicate about your learning experience, or discuss topics of the course with other interested students.

How to Access Your Classroom

After you register for a class, you will get a receipt email and an instructional email. Simply follow the instructions to add yourself to the classroom (or grant yourself access to the classroom). After that, you can access your classroom at http://interact.eclasses.org/cgi-bin/WebX?15@@

How to Use the Classroom

The classroom is organized by folders and discussion. A folder is like a folder or directory on your hard disk. It contains discussions or other sub-folders. Every folder has a title and a heading which describe the folder. On top of each page, there is the path of the current folder, so you can see where you are. If you click on any folder or you will go to that page. Take a look at our DEMO to see how the classrooms look like.

A discussion has a title and heading that describe its purpose. Discussions are not 'chat-rooms', they are more like organized electronic mail. You can browse a discussion and post a message at any time. To post a message, just scroll down to the message form at the end of each discussion. Fill in the form, and then click on the 'Post Message' button following the form.

Someone else will see your post later, when they are browsing or when they check for new messages. You can always read the whole discussion from beginning to end, so you never have to wonder what people are talking about. Because a discussion may have many of messages posted to it, long discussions are split into smaller pieces. In a long discussion, you'll see buttons at the top and/or bottom that let you go back and forth.

The system automatically keeps track of messages as you view them. When you see a discussion in a folder, the listing includes how many messages are in the discussion, and how many are new messages. There is another way to check for new messages, through your 'Subscription List'. After you subscribe to a discussion or folder, you can later check your subscription list at any time. You'll then be shown the first new message, discussion, or folder that has been added since you last checked.

What are CEUs?

One Continuing Education Unit (CEU) is generally defined as ten contact hours of participation in an organized continuing education experience under responsible sponsorship and qualified instruction. For instructor-led online learning, each course is assigned a number of CEUs for that course which may not relate to the total number of hours an individual takes to complete the course. The number of CEUs awarded is the average number of hours required to complete a course.

Class Schedule

Almost every week, a group of classes is open for registration. A class is open about 1-2 months prior to its start date. Click on the Open Classes link to see the list of classes that are open for registration now. The same class is offered every 2-3 months.

If you are interested in a class but it's not on the Open Classes list, you can click on Class Catalog link and go to the description page for the class. Then click on Register Now button and put in your email address. We will send you an email when the class is open.

Registration Deadline Effective Jan 1, 2005: The last day to register for a class is the start date of that class.

Student Center Student Center is another online system which requires a different password (which students selected when they first register.) Below is the list of what you can do in the Student Center:

- Grant yourself access to your registered courses
- Register for new eClasses
- Get the list of your previous and current courses
- Get your payment history
- Check your final grades
- Apply for class completion certificates
- Apply for Web Study certificates
- Check your Web Study certificate application status
- Retake courses at special prices
- Update your email and mailing address

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Documentations: The documents - **file names** - that I wrote/created are:

1. TimeSpentToLearnIntroductionDNS.doc
2. Most Documents are in *.html format.

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What is DNS?

The **Domain Name System**, or **DNS**, is a core function of the Internet. DNS is used to **resolve** human-readable hostnames into IP addresses, such as resolving *www.dyndns.com* to *63.208.196.66*, and also stores other information about domains, such as the location of mailservers. DNS is used whenever you resolve a hostname, whether you are visiting a website, accessing an FTP server, sending email, or any other Internet service.

Why is DNS important?

Think of DNS as a kind of phone book for the Internet. If you have a person's name, but do not know their telephone number, you can look it up in a phone book. DNS provides this same type of service to the Internet. When you visit *http://www.dyndns.com* in a web browser, DNS retrieves the site's IP address, *63.208.196.66*, which the browser then uses to connect to the webserver.

Without phone books, you would not be able to learn someone's telephone number unless they previously gave it to you. Likewise, without DNS, you would only be able to reach sites via their IP addresses; instead of *www.dyndns.com* or *www.google.com*, you would have to type *http://63.208.196.66* or *http://72.14.207.99* every time you wanted to view the sites.

How does DNS work when you type www.dyndns.com into a web browser?

When you type a domain such as *http://www.dyndns.com* into a web browser, your computer follows a series of steps to turn that human-readable web address into a machine-readable IP address.

Step 1: Request a record

You begin by asking your computer to resolve a hostname, such as visiting *http://www.dyndns.com* in a web browser. The first place your computer looks is its local DNS cache**, which stores DNS information that the computer has recently retrieved. (You can learn more about DNS caching here.) [**

DNS Caching

All records in DNS have a Time to Live (TTL**) value. This value dictates how long a record should be stored locally before a new copy of the record must be retrieved from DNS. The record storage is known as the** DNS cache**, and the act of storing records is called** caching**.**

There are many different places where DNS caches exist: on your local computer, with your ISP's recursive DNS servers, and even the root servers at the core of the Domain Name System. These caches reduce the number of queries that need to be resolved by nameservers.

Sometimes the information in DNS changes, but the old information is still stored in the DNS caches at varying levels. When the cached record is different from the newest information in DNS, it is called a **caching error**.

Step 2: Ask the Recursive DNS servers

If the records are not stored locally, your computer **queries** (or contacts) your ISP's **recursive DNS servers**. These machines perform the legwork of DNS queries on behalf of their customers. The recursive DNS servers have their own caches, which they check before continuing with the query.

Step 3: Ask the Root DNS servers

If the recursive DNS servers do not have the record cached, they contact the **root nameservers**. These thirteen nameservers contain pointers for all of the **Top-Level Domains (TLDs)**, such as *.com*, *.net* and *.org*. If you are looking for *www.dyndns.com.*, the root

nameservers look at the TLD for the domain — *www.dyndns.com* — and direct the query to the **TLD DNS nameservers** responsible for all *.com* pointers.

Step 4: Ask the TLD DNS servers

The TLD DNS servers do not store the DNS records for individual domains; instead, they keep track of the **authoritative nameservers** for all the domains within their TLD. The TLD DNS servers look at the next part of the query from right to left — *www.dyndns.com* — then direct the query to the authoritative nameservers for *dyndns.com*.

Step 5: Ask the Authoritative DNS servers

Authoritative nameservers contain all of the DNS records for a given domain, such as **host records** (which store IP addresses), **MX records** (which identify nameservers for a domain), and so on. Since you are looking for the IP address of *www.dyndns.com*, the recursive server queries the authoritative nameservers and asks for the host record for *www.dyndns.com*.

Step 6: Retrieving the record

The recursive DNS server receives the host record for *www.dyndns.com* from the authoritative nameservers, and stores the record in its local cache. If anyone else requests the host record for *www.dyndns.com*, the recursive servers will already have the answer, and will not need to go through the lookup process again until the record expires from cache.

Step 7: The Answer!

Finally, the recursive server gives the host record back to your computer. Your computer stores the record in its cache, reads the IP address from the record, then passes this information to the web browser. Your browser then opens a connection to the IP address *63.208.196.66* on port 80 (for HTTP), and our webserver passes the web page to your browser, which displays our site.

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Date	**Time Spent (hrs)**	**Description (mainly)**
Monday October 27, **2008**	2.0	**Start of Introduction to DNS -** course number **B125.02** **Read** and **Documented** course materials at eClasses.org at http://www.eclasses.org/ Documents **created** are located at: C:\Users\boutros\Documents\MyPrograms\eClasses.Org\Course_IntroductionToDNS_B125.02\ **Documented** Week1 Online Lectures of Introduction to DNS-Introduction - at **http://www.eclasses.org/**
Thursday October 30, 2008	0.75	**Book:** DNS for Dummies by Blair Rampling and David Dalan **Read**: Introduction; Chapter 1: [pages 7 - 10].
Friday October 31, 2008	3.75	**Book:** DNS for Dummies by Blair Rampling and David Dalan **Read**: Chapter 1: [pages 11 - 20]; Chapter 2: [pages 21 - 34]; Chapter 3: [pages 35 - 39].

Saturday November 1, 2008	3.5	**Book:** DNS for Dummies by Blair Rampling and David Dalan **Read**: Chapter 3: [pages 40 - 44]. **Read** week1 Online references at: http://www.register.com/titan/index.rcmx http://www.opensource.org/ http://www.iana.org/domains/root/db/ http://www.openldap.org/software/ http://www.novell.com/info/primer/prim05.html http://www.internic.net/faqs/authoritative-dns.html http://freeopensourcesoftware.org/index.php?title=BIND http://www.root-servers.org/ http://en.wikipedia.org/wiki/Hosts_file ftp://ftp.is.co.za/rfc/rfc2535.txt
Sunday November 2, 2008	3.0	**Read** week1 Online references at: http://en.wikipedia.org/wiki/IPv6 http://en.wikipedia.org/wiki/A_record#A http://en.wikipedia.org/wiki/Hostname http://en.wikipedia.org/wiki/Domain_Name_System http://en.wikipedia.org/wiki/Domain_names http://en.wikipedia.org/wiki/Root_nameserver http://en.wikipedia.org/wiki/DNS_root_zone http://en.wikipedia.org/wiki/TCP/IP http://en.wikipedia.org/wiki/Fully_qualified_domain_name **Read** Week1 Online Lectures of Introduction to DNS course- Introduction - at **http://www.eclasses.org/**
Monday November 3, 2008	2.75	**Finished First Homework** of Introduction to DNS class Posted it online at: http://bacsoftwareconsulting.com/DNS/homework1.pdf
Wednesday November 5, 2008	0.75	**Documented** Week2 Online Lectures of Introduction to DNS- at **http://www.eclasses.org/**
Saturday November 8, 2008	1.75	**Finished Second week Lab** of Introduction to DNS class. Posted it online at: http://bacsoftwareconsulting.com/DNS/Lab2.pdf
Sunday November 9, 2008	0.5	**Read** Week2 Online Lectures of Introduction to DNS- at **http://www.eclasses.org/**
Monday November 10, 2008	1.0	**Finished Second week Homework** of Introduction to DNS class Posted it online at: http://bacsoftwareconsulting.com/DNS/ homework2.pdf
Wednesday November 12, 2008	0.75	**Documented** Week3 Online Lectures of Introduction to DNS- at **http://www.eclasses.org/** **Read** week3 Online references at: http://www.isc.org/index.pl http://www.faqs.org/rfcs/
Thursday November 13, 2008	2.0	**Read** week2 Online references at: http://www.yourdictionary.com/start-of-authority

		http://www.ubuntu.com/products/WhatIsUbuntu/desktopedition http://www.dhcp-handbook.com/dhcp_faq.html http://man.he.net/ http://en.wikipedia.org/wiki/Ping http://man.he.net/?topic=ping&section=all http://support.microsoft.com/kb/200525 http://centralops.net/co/ http://man.he.net/?topic=nslookup&section=all http://timarcher.com/?q=node/38 http://man.he.net/?topic=host&section=all http://member.dnsstuff.com/rc/index.php?option=com_content&task=view&id=19&Itemid=5 http://www.internic.net/whois.html http://member.dnsstuff.com/pages/tools.php?ptype=free http://chantc.blogspot.com/2008/04/copy-paste-in-xp-command-prompt.html
Friday November 14, 2008	6.25	**Read** Week3 Online Lectures of Introduction to DNS- at **http://www.eclasses.org/** **Read** week3 Online references at: http://www.zytrax.com/books/dns/ch8/soa.html http://www.zytrax.com/books/dns/ch8/ns.html http://www.zytrax.com/books/dns/ch8/a.html http://www.zytrax.com/books/dns/ch8/ptr.html http://www.zytrax.com/books/dns/ch8/cname.html http://www.zytrax.com/books/dns/ch8/mx.html http://www.zytrax.com/books/dns/ch4/ http://www.zytrax.com/books/dns/ch8/ http://www.isc.org/index.pl?/sw/bind/arm92/ http://en.wikipedia.org/wiki/Request_for_Comments **Working on Third week Homeworks** of Introduction to DNS class.
Saturday November 15, 2008	1.75	**Finished Third week Homeworks** of Introduction to DNS class. Posted them online at: http://bacsoftwareconsulting.com/DNS/ homework3.pdf http://bacsoftwareconsulting.com/DNS/ lab3.pdf
Monday November 17, 2008	0.75	**Documented** Week4 Online Lectures of Introduction to DNS- at **http://www.eclasses.org/**
Thursday November 20, 2008	3.5	**Read** Week4 Online Lectures of Introduction to DNS- at **http://www.eclasses.org/** **Working on Fourth week Homeworks** of Introduction to DNS class.
Friday November 21, 2008	3.0	**Finished Fourth week Homework** of Introduction to DNS class. Posted it online at: http://bacsoftwareconsulting.com/DNS/ homework4.pdf **Working on Fourth week Lab** of Introduction to DNS class. **Check** online Resource: http://en.wikipedia.org/wiki/Comparison_of_DNS_server_software
Saturday November 22, 2008	3.0	**Finished Fourth week Lab** of Introduction to DNS class. Posted it online at: http://bacsoftwareconsulting.com/DNS/ lab4.pdf

Wednesday November 26, 2008	0.75	**Review** and **Documented** Week 4 teacher's homework corrections to all students.
Wednesday December 31, 2008	2.25	**Read** week4 Online references at: http://www.zytrax.com/books/dns/ch13/ http://en.wikipedia.org/wiki/SRV_Records http://blog.lithiumblue.com/2007/07/understanding-dns-srv-records-and-sip.html http://www.askapache.com/ http://www.askapache.com/htaccess/apache-speed-subdomains.html http://www.freebsd.org/ http://www.openbsd.org/ http://en.wikipedia.org/wiki/LAMP_(software_bundle) http://www.sun.com/software/solaris/10/index.jsp http://www.webmin.com/demo.html http://www.dyndns.com/ http://www.dyndns.com/developers/specs/ http://www.dmoz.org/Computers/Internet/Protocols/DNS/DNS_Providers/Dynamic_DNS/ http://faq.1and1.com/domains/dns_settings/4.html http://faq.1and1.com/domains/dns_settings/10.html http://www.onlamp.com/pub/a/onlamp/2004/10/14/dnssec.html?page=1 http://www.mamp.info/en/mamp.html http://www.wampserver.com/en/ http://www.sun.com/software/solaris/amp/ http://en.wikipedia.org/wiki/Transmission_Control_Protocol http://docs.sun.com/app/docs/doc/816-4856/6mb1q0bhj?a=view http://en.wikipedia.org/wiki/DNSSEC http://en.wikipedia.org/wiki/DNS_cache_poisoning http://www.dyndns.com/services/dns/dyndns/ http://technet.microsoft.com/en-us/default.aspx http://www.aitechsolutions.net/dnsservertips.html http://en.wikipedia.org/wiki/TSIG http://www.unixwiz.net/techtips/bind9-chroot.html#jail http://en.wikipedia.org/wiki/Demilitarized_zone_(computing) http://en.wikipedia.org/wiki/Domain_Name_System https://www.isc.org/software/bind http://www.howtoforge.com/installing-a-freebsd7.0-dns-server-with-bind

Total = 43.75 hrs

From The Required Course Book Read:

Week2: Chapters 5, 6.
Week3: Chapters 8, 9.
Week4: Chapters 10, 11, 12, Appendix B

Document in Progress.

****** *End of* Introduction to DNS ******
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