Lab 14
DNS

Prof. Kredo

Due: Start of Final Exam, May 15

Name:	
Name:	

Introduction

In this lab you will accomplish several goals:

- Perform DNS queries to examine the Domain Name System
- Lookup management and contact information for domains

Work in pairs for this lab using the equipment at your desk. Distribute the work evenly to make sure both group members know the material, as you will be required to know the material for evaluation.

1 Preliminary

Configure and connect your hosts so they can access the external network. There are several possible methods you can use from previous labs, but none require you to use a router. Test your setup by browsing a website from your hosts. Close your browser when you have verified your setup.

2 Domain Name System [50 Points]

In class we discussed the use of DNS to map names to resources. You can perform DNS queries manually with the `dig` command. Try it out now by typing `dig <name>`, where `<name>` is the name you wish to lookup through DNS.

1. What name did you lookup and what response did you get? Be sure to include only `ANSWER`, `AUTHORITY`, and `ADDITIONAL` sections, *if they are present* in the response.

2. Do you think `dig` used a recursive or non-recursive DNS query? What makes you think so?

Query `www.google.com` using `dig`. Wait a few seconds and perform the query again. Do this a few times until you see a few different responses.

3. How do the responses change? Why do you think this is happening?

You can force a non-recursive query by using the `+norecurse` option to `dig`. You can additionally query an exact name server by supplying its name or address with the `@` argument. For example, the command `dig @ns3.google.com www.ecst.csuchico.edu +norecurse` will query the name server at `ns3.google.com` for the name `www.ecst.csuchico.edu` and request a non-recursive query. (This query actually fails for security reasons.)

Perform all the non-recursive queries necessary resolve `jaguar.ecst.csuchico.edu`. The root name servers are available at `a.ROOT-SERVERS.NET`.

4. List below all the queries you performed (all the `dig` commands) to resolve `jaguar.ecst.csuchico.edu` and answer the following questions.

Each response had up to three sections: `ANSWER`, `AUTHORITY`, and `ADDITIONAL`.

5. Explain the purpose for each section. (HINT: Think about our discussion of administrative control and zones.)

6. What section was missing from all responses except the last? What were these early responses telling you?

3 Reverse DNS Lookup [25 Points]

Often you want to find the name for a given IP address. DNS supports this through a reverse lookup by mapping every possible IP address to a standardized domain name. For the IP address `A.B.C.D`, you need to look for the name `D.C.B.A.in-addr.arpa`. However, you don't want an A record, which is the default record type `dig` uses. Reverse DNS lookup is supported by `PTR` records, which you can request through `dig` by using the `-t PTR` argument.

Use the information provided to find the DNS name for the IP address `132.241.154.23`.

1. What was the name?

Pick a random IP address and find the associated name using `dig`. If you receive an SOA record, pick a different IP address. You may need to try this a few times until you receive a valid PTR record.

2. What IP and name did you find?

3. What is the purpose of an SOA record in DNS?

4 DNS Management [25 Points]

Domains are purchased from Registrars, who perform the DNS updates and some management functions for their clients. You can query the info for a domain using the `whois` command. Start by querying the domain info for `csuchico.edu` by typing the command `whois csuchico.edu`. Note that you do not query `www.csuchico.edu` because CSU Chico has purchased the domain `csuchico.edu` from the Registrar, not the specific domain `www.csuchico.edu`.

1. What email or phone number would you use if you had questions about the `csuchico.edu` domain?

2. When does the `csuchico.edu` domain expire? (Expire means the client must renew the domain or the registrar can sell it to a new person.) When was `csuchico.edu` first registered?

Pick another domain and lookup the same details.

3. What domain did you lookup? What is the contact info, first registration date, and expiration date for that domain?

Submit your completed lab handout by the start of the Final Exam.