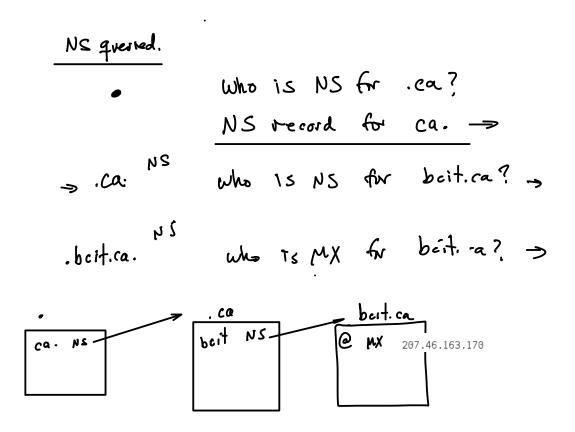# Lecture 13 - DNS

Exercise 1: Compare the file (path) name `/usr/local/src/bind/hosts.txt` and the domain name `red.sf.isc.com`. In each case what is the most specific portion of the name? What is the least-specific? What characters are used to separate different parts of the names? What would be the (null) name of the top level of the hierarchy?

file: most specific is   rightmost | LM

domain: "   "   leftmost. | RM

file: /   "/"

domain: '.'   .

`example.com.  A    192.0.2.1`

bcit.ca.

Exercise 2: Based on these records, what is the IP address of ns.example.com? What is the IP address of example.com? What IP addresses would you connect to in order to send e-mail addressed to mail.example.com?

```
   ns            A      192.0.2.2
```
example.com A   192.0.2.1

mail to MX

    first try   mail.ea---   @192.0.2.3

else try   mail 2

    mail 3

Exercise 3: Explain the sequence of servers queried *queried* — by a recursive NS and the records retrieved to find the MX record for bcit.ca.

NS queried.

$\bullet$ Who is NS for .ca?

NS record for ca. →

→ .ca: ^{NS}   who is NS for bcit.ca? →

.bcit.ca. ^{NS}   who is MX for bcit.ca? →

```
  .                          .ca                    bcit.ca
┌─────────┐      →     ┌──────────────┐      ┌──────────────────────┐
│ ca. NS ─│─────────   │ bcit NS ─────│───── │ @ MX   207.46.163.170 │
│         │            │              │      │                      │
└─────────┘            └──────────────┘      └──────────────────────┘
```

Exercise 4: If you were updating the RR for a domain, what type(s) of DNS server(s) would you have to update?

— update the primary (authoritative NS)

Exercise 5: How would you look up the NS RR for the .ca domain? What type of DNS server is the server at 8.8.8.8?

nslookup -type=NS .ca _____

8.8.8.8 is a recursive nameserver

www.bcit.ca   A   142.232.77.1

```
C:\Users\Ed>nslookup -type=a www.bcit.ca  ns1.p08.dynect.net
Server:    UnKnown
Address:   208.78.70.8

Name:      www.bcit.ca
Address:   142.232.77.1
```

Exercise 6: Look up the IP address for google.com. What is returned by the reverse DNS lookup?

```
C:\>nslookup google.com
Server:    ns1.tis.bcit.ca
Address:   142.232.76.200

Non-authoritative answer:
Name:      google.com
Addresses:   2607:f8b0:400a:807::200e
             216.58.216.174


C:\>nslookup -type=ptr 174.216.58.216.in-addr.arpa
Server:    ns1.tis.bcit.ca
Address:   142.232.76.200

Non-authoritative answer:
174.216.58.216.in-addr.arpa        name = sea15s02-in-f14.1e100.net
```