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Exercise 3 Answer:

Question 1. What is the IP address of www.eecs.berkeley.edu . What type of DNS query is sent to get this answer?

Answer: IP address is 23.185.0.1 and the type is A.

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Question 2. What is the canonical name for the eecs.berkeley web server (i.e. www.eecs.berkeley.edu )? Suggest a reason for having an alias for this server.

Answer: the canonical names are live-eecs.pantheonsite.io. and fe1.edge.pantheon.io.

Unlike the alia name, canonical is more difficult to remember and alias can coexist with another records name.

Question 3. What can you make of the rest of the response (i.e. the details available in the Authority and Additional sections)?

Answer: the authority section contains all the authoritative name servers for edge.pantheon.io.

There are four names which are ns-233.awsdns-29.com., ns-2013.awsdns-59.co.uk., ns-1213.awsdns-23.org. and ns-644.awsdns-16.net.

The additional section contains all the IP addresses for the authoritative name servers.

Question 4. What is the IP address of the local nameserver for your machine?

Answer: 129.94.242.2

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Question 5. What are the DNS nameservers for the “eecs.berkeley.edu.” domain (note: the domain name is eecs.berkeley.edu and not www.eecs.berkeley.edu . This is an example of what is referred to as the apex/naked domain)? Find out their IP addresses? What type of DNS query is sent to obtain this information?

Answer: DNS nameservers IP addresses type

ns.CS.berkeley.edu. 169.229.60.61 IPV4

ns.eecs.berkeley.edu. 169.229.60.153 IPV4

adns1.berkeley.edu. 128.32.136.3 IPV4

adns2.berkeley.edu. 128.32.136.14 IPV4

adns3.berkeley.edu. 192.107.102.142 IPV4

adns1.berkeley.edu. 2607:f140:ffff:fffe::3 IPV6

adns2.berkeley.edu. 2607:f140:ffff:fffe::e IPV6

adns3.berkeley.edu. 2607:f140:a000:d::abc IPV6

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The type of DNS query sent is NS query.

Question 6. What is the DNS name associated with the IP address 111.68.101.54? What type of DNS query is sent to obtain this information?

Answer: DNS name is webserver.seecs.nust.edu.pk.

The type of DNS query sent is PTR.

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Question 7. Run dig and query the CSE nameserver (129.94.242.33) for the mail servers for Yahoo! Mail (again the domain name is yahoo.com, not www.yahoo.com ). Did you get an authoritative answer? Why? (HINT: Just because a response contains information in the authoritative part of the DNS response message does not mean it came from an authoritative name server. You should examine the flags in the response to determine the answer)

Answer: There is no authoritative answer because the flags field doesn’t contain aa which stands for authoritative answer. The reason why is CSE nameserver doesn’t have authority over yahoo domain.

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Question 8. Repeat the above (i.e. Question 7) but use one of the nameservers obtained in Question 5. What is the result?

There is no response at total because the status is REFUSED.

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Question 9. Obtain the authoritative answer for the mail servers for Yahoo! mail. What type of DNS query is sent to obtain this information?

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Answer: using one of the nameservers from authority section in Q7 to send query to yahoo.

The type of DNS query sent is MX

Question 10. In this exercise you simulate the iterative DNS query process to find the IP address of your machine (e.g. lyre00.cse.unsw.edu.au). If you are using VLAB Then find the IP address of one of the following: lyre00.cse.unsw.edu.au, lyre01.cse.unsw.edu.au, drum00.cse.unsw.edu.au or drum01.cse.unsw.edu.au. First, find the name server (query type NS) of the "." domain (root domain). Query this nameserver to find the authoritative name server for the "au." domain. Query this second server to find the authoritative nameserver for the "edu.au." domain. Now query this nameserver to find the authoritative nameserver for "unsw.edu.au". Next query the nameserver of unsw.edu.au to find the authoritative name server of cse.unsw.edu.au. Now query the nameserver of cse.unsw.edu.au to find the IP address of your host. How many DNS servers do you have to query to get the authoritative answer?

Answer: we send NS DNS query to our root

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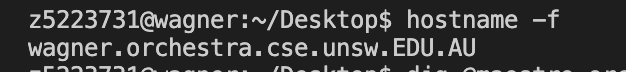
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There are 5 DNS servers: a.root-servers.net. m.au. q.au. ns1.unsw.edu.au maestro.orchestra.cse.unsw.edu.au.

The IP of our own is 129.94.242.19

The IP of lyre00.cse.unsw.edu.au is 129.94.210.20

Question 11. Can one physical machine have several names and/or IP addresses associated with it?

Answer: definitely yes. One physical machine can have several names and/or IP addresses associated with it and one IP address can have several aliases but associated with one canonical name.