

COMPUTER NETWORKS

Lab 3- Observe DNS Resolution

Solved by :

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Microsoft Windows [Version 10.0.26100.6899]
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C:\Users\HP> prompt \$P Ruba Aljuhani \$G

C:\Users\HP Ruba Aljuhani >ping www.icann.org **ipv6**

Pinging www.icann.org.cdn.cloudflare.net [2606:4700::6812:35d] with 32 bytes of data:

Request timed out.

Request timed out.

Request timed out.

Reply from 2606:4700::6812:35d: time=24ms

Ping statistics for 2606:4700::6812:35d:

 Packets: Sent = 4, Received = 1, Lost = 3 (75% loss),

Approximate round trip times in milli-seconds:

 Minimum = 24ms, Maximum = 24ms, Average = 24ms

C:\Users\HP Ruba Aljuhani >ping -4 www.icann.org **ipv4**

Pinging www.icann.org.cdn.cloudflare.net [104.18.2.93] with 32 bytes of data:

Reply from 104.18.2.93: bytes=32 time=66ms TTL=50

Reply from 104.18.2.93: bytes=32 time=38ms TTL=50

Reply from 104.18.2.93: bytes=32 time=42ms TTL=50

Reply from 104.18.2.93: bytes=32 time=33ms TTL=50

Ping statistics for 104.18.2.93:

 Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

 Minimum = 33ms, Maximum = 66ms, Average = 44ms

part1:

Observe the DNS Conversion of a URL to an IP Address



use ip instead of dns

A screenshot of a web browser window. The address bar at the top shows the URL <https://192.0.32.7>. Below the address bar, there is a button labeled "Ask Google about this page - 192.0.32.7". The main content area displays the ICANN homepage with the tagline "One World, One Internet". On the right side of the header, there are links for "SEARCH", "LOG IN", and "SIGN UP". A small circular graphic on the right edge of the slide contains the text "Español".

A screenshot of a web browser window, similar to the one above, showing the ICANN homepage at [https://\[2620:0:2d0:200::7\]](https://[2620:0:2d0:200::7]). The address bar shows the IPv6 address [2620:0:2d0:200::7]. Below the address bar, there is a button labeled "Ask Google about this page - [2620:0:2d0:200::7]". The main content area displays the ICANN homepage with the tagline "One World, One Internet". On the right side of the header, there are links for "SEARCH", "LOG IN", and "SIGN UP". A small circular graphic on the right edge of the slide contains the text "Español".

A screenshot of a web browser window, identical to the one above, showing the ICANN homepage at [https://\[2620:0:2d0:200::7\]](https://[2620:0:2d0:200::7]). The address bar shows the IPv6 address [2620:0:2d0:200::7]. Below the address bar, there is a button labeled "Ask Google about this page - [2620:0:2d0:200::7]". The main content area displays the ICANN homepage with the tagline "One World, One Internet". On the right side of the header, there are links for "SEARCH", "LOG IN", and "SIGN UP". A small circular graphic on the right edge of the slide contains the text "Español".

C:\Users\HP Ruba Aljuhani >ping www.cisco.com **ipv6**

Pinging e2867.dsca.akamaiedge.net [2600:1417:d000:191::b33] with 32 bytes of data:
Reply from 2600:1417:d000:191::b33: time=59ms
Reply from 2600:1417:d000:191::b33: time=26ms
Reply from 2600:1417:d000:191::b33: time=29ms
Reply from 2600:1417:d000:191::b33: time=43ms

Ping statistics for 2600:1417:d000:191::b33:

 Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
 Approximate round trip times in milli-seconds:
 Minimum = 26ms, Maximum = 59ms, Average = 39ms

C:\Users\HP Ruba Aljuhani >ping -4 www.cisco.com

Pinging e2867.dsca.akamaiedge.net [23.204.88.99] with 32 bytes of data:
Reply from 23.204.88.99: bytes=32 time=32ms TTL=53
Reply from 23.204.88.99: bytes=32 time=28ms TTL=53
Reply from 23.204.88.99: bytes=32 time=720ms TTL=53
Reply from 23.204.88.99: bytes=32 time=27ms TTL=53

Ping statistics for 23.204.88.99: **ipv4**

 Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
 Approximate round trip times in milli-seconds:
 Minimum = 27ms, Maximum = 720ms, Average = 201ms

**Observe the DNS
Conversion of a URL
to an IP Address**

2 numbers is 11000000.00000000.00100000.00000111. What happens if you cut and paste these Base 2 numbers into a browser?

nothing happens

- e. At a command prompt, **ping www.cisco.com**.

Note: If the domain name is resolved to an IPv6 address, use the command **ping -4 www.cisco.com** to translate into an IPv4 address if desired.

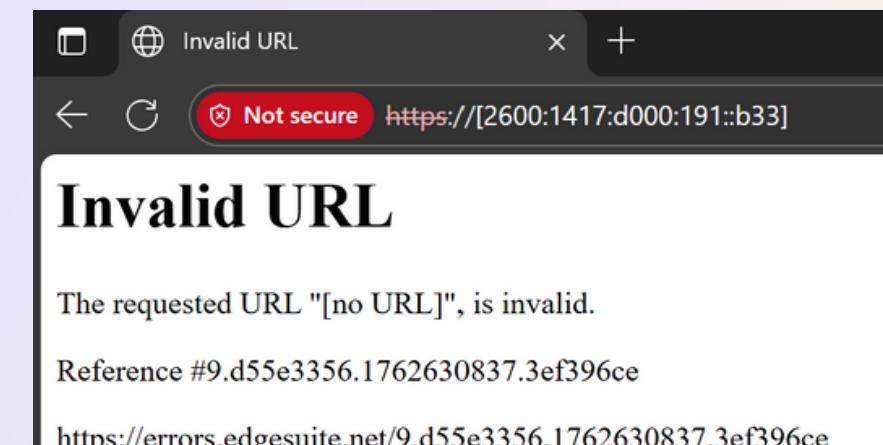
```
C:\> ping www.cisco.com  
C:\> ping -4 www.cisco.com
```

When you ping www.cisco.com, do you get the same IP address as the example? Explain.

No, I did not get the same IP address this happens because large websites like Cisco use multiple servers around the world, and the IP address depends on my location and DNS server

Type the IP address that you obtained when you pinged www.cisco.com into a browser. Does the website display? Explain.

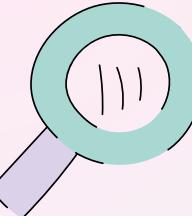
When I typed the IP address into the browser, the website did not display properly this is because many websites use virtual hosting, which requires the domain name (www.cisco.com) to load the correct page



part2 Observe DNS Lookup Using the nslookup Command on a Web Site:

```
C:\Users\HP Ruba Aljuhani >nslookup
Default Server: homerouter.cpe
Address: fe80::68b:4521:5ccb:83cf

> ?
Commands:  (identifiers are shown in uppercase, [] means optional)
NAME          - print info about the host/domain NAME using default server
NAME1 NAME2   - as above, but use NAME2 as server
help or ?     - print info on common commands
set OPTION    - set an option
all           - print options, current server and host
[no]debug     - print debugging information
[no]d2         - print exhaustive debugging information
[no]defname   - append domain name to each query
[no]recurse   - ask for recursive answer to query
[no]search    - use domain search list
[no]vc         - always use a virtual circuit
domain=NAME   - set default domain name to NAME
srchlist=N1[/N2/.../N6] - set domain to N1 and search list to N1,N2, etc.
root=NAME     - set root server to NAME
retry=X       - set number of retries to X
timeout=X     - set initial time-out interval to X seconds
type=X        - set query type (ex. A,AAAA,A+AAAA,ANY,CNAME,MX,NS,PTR,SOA,SRV)
querytype=X   - same as type
class=X       - set query class (ex. IN (Internet), ANY)
[no]msxfr     - use MS fast zone transfer
ixfrver=X     - current version to use in IXFR transfer request
server NAME   - set default server to NAME, using current default server
lserver NAME  - set default server to NAME, using initial server
root          - set current default server to the root
ls [opt] DOMAIN [> FILE] - list addresses in DOMAIN (optional: output to FILE)
  -a           - list canonical names and aliases
  -d           - list all records
  -t TYPE     - list records of the given RFC record type (ex. A,CNAME,MX,NS,PTR etc.)
view FILE    - sort an 'ls' output file and view it with pg
exit          - exit the program
```

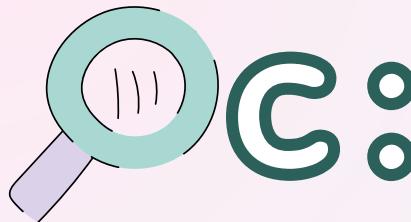


part2 Observe DNS Lookup Using the nslookup Command on a Web Site:

```
> www.cisco.com
Server: homerouter.cpe
Address: fe80::68b:4521:5ccb:83cf

Non-authoritative answer:
Name: e2867.dsca.akamaiedge.net
Addresses: 2600:1417:d000:193::b33
           2600:1417:d000:191::b33
           23.204.88.99
Aliases: www.cisco.com
         www.cisco.com.akadns.net
         wwwds.cisco.com.edgekey.net
         wwwds.cisco.com.edgekey.net.globalredir.akadns.net
```

>



What is the translated IPv4 address?

23.204.88.99

Note: The IP address from your location will most likely be different because Cisco uses mirrored servers in various locations around the world.

Is it the same as the IP address shown with the **ping** command?

yes it is

Under addresses, in addition to the 172.230.155.162 IP address, there are the following numbers:
2600:1404:a:395::b33 and 2600:1404:a:38e:::b33. What are these?

an ipv6 addresses and there is more then one configured

D:

> 23.204.88.99

Server: homerouter.cpe

Address: fe80::68b:4521:5ccb:83cf

Name: a23-204-88-99.deploy.static.akamaitechnologies.com

Address: 23.204.88.99

> 2600:1417:d000:193::b33

Server: homerouter.cpe

Address: fe80::68b:4521:5ccb:83cf

Name: g2600-1417-d000-0193-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com

Address: 2600:1417:d000:193::b33

> www.google.com

Server: homerouter.cpe

Address: fe80::68b:4521:5ccb:83cf

Non-authoritative answer:

Name: forcesafesearch.google.com

Addresses: 2001:4860:4802:32::78

216.239.38.120

Aliases: www.google.com



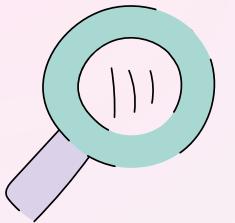
Part 3: Observe DNS Lookup Using the nslookup Command on Mail Servers

A > set type=mx
B > cisco.com
Server: homerouter.cpe
Address: fe80::68b:4521:5ccb:83cf

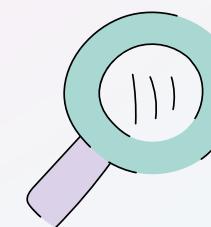
Non-authoritative answer:
cisco.com MX preference = 30, mail exchanger = aer-mx-01.cisco.com
cisco.com MX preference = 10, mail exchanger = alln-mx-01.cisco.com
cisco.com MX preference = 20, mail exchanger = rcdn-mx-01.cisco.com

C > exit

D DNS Servers : fe80::68b:4521:5ccb:83cf%11
192.168.8.1
fe80::68b:4521:5ccb:83cf%11
NetBIOS over Tcpip. : Enabled



Reflection Question



What is the fundamental purpose of DNS?

The fundamental purpose of DNS (Domain Name System) is to translate domain names into IP addresses so computers can locate and communicate with each other on the internet