
Internet Technology

Recitation Section 03

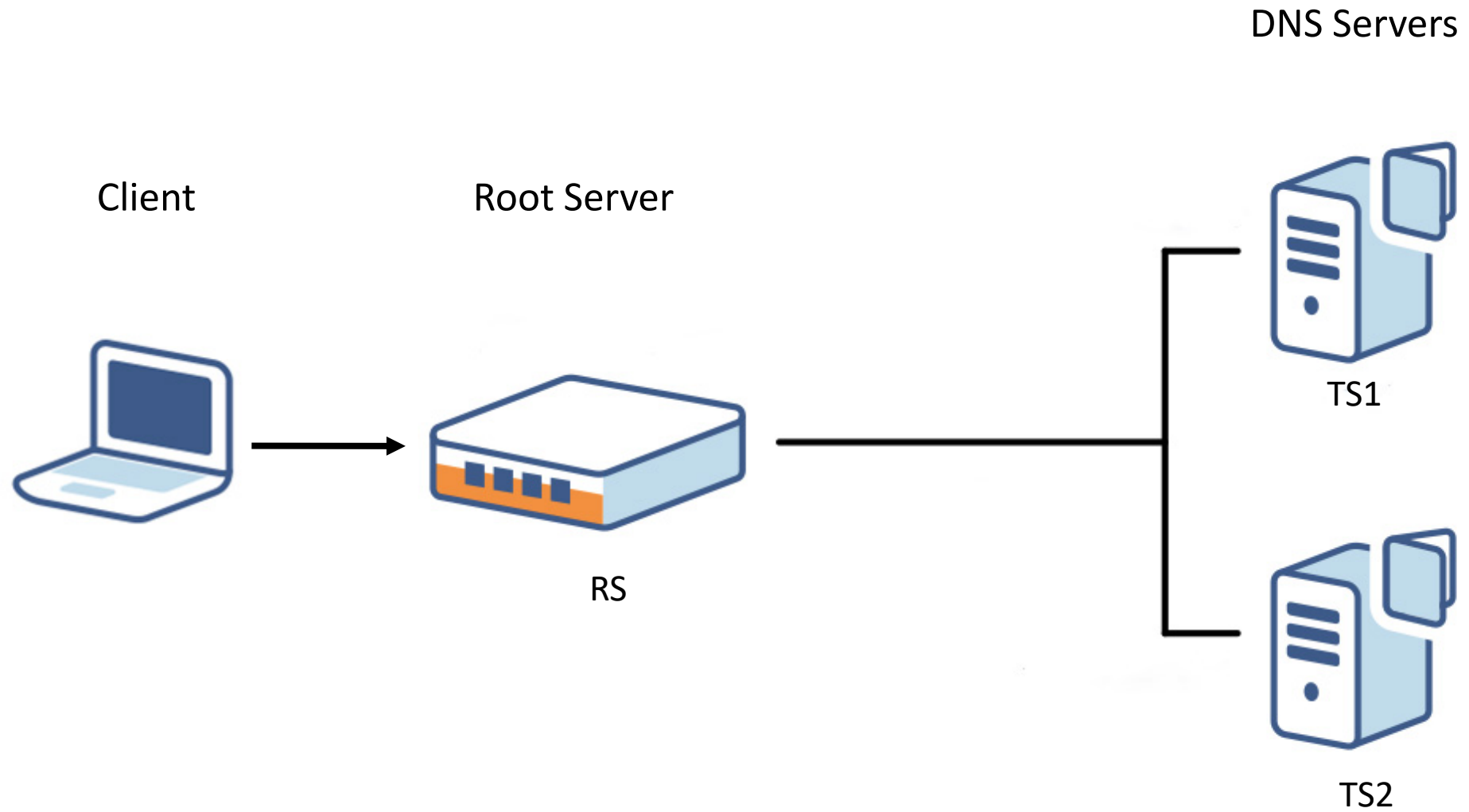
Negin Dehghanchaleshtori



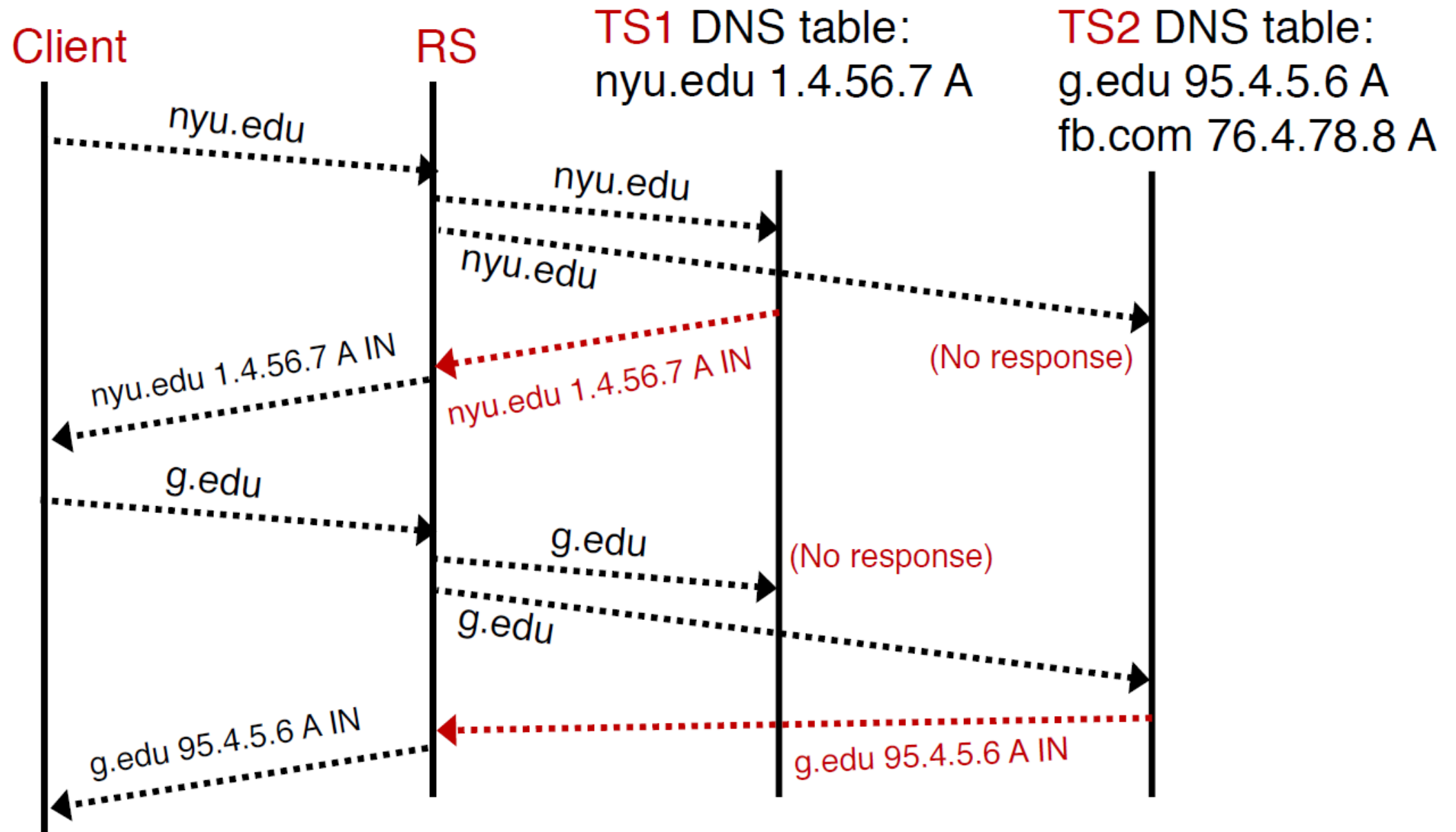
Computer Science Department

Spring 2022

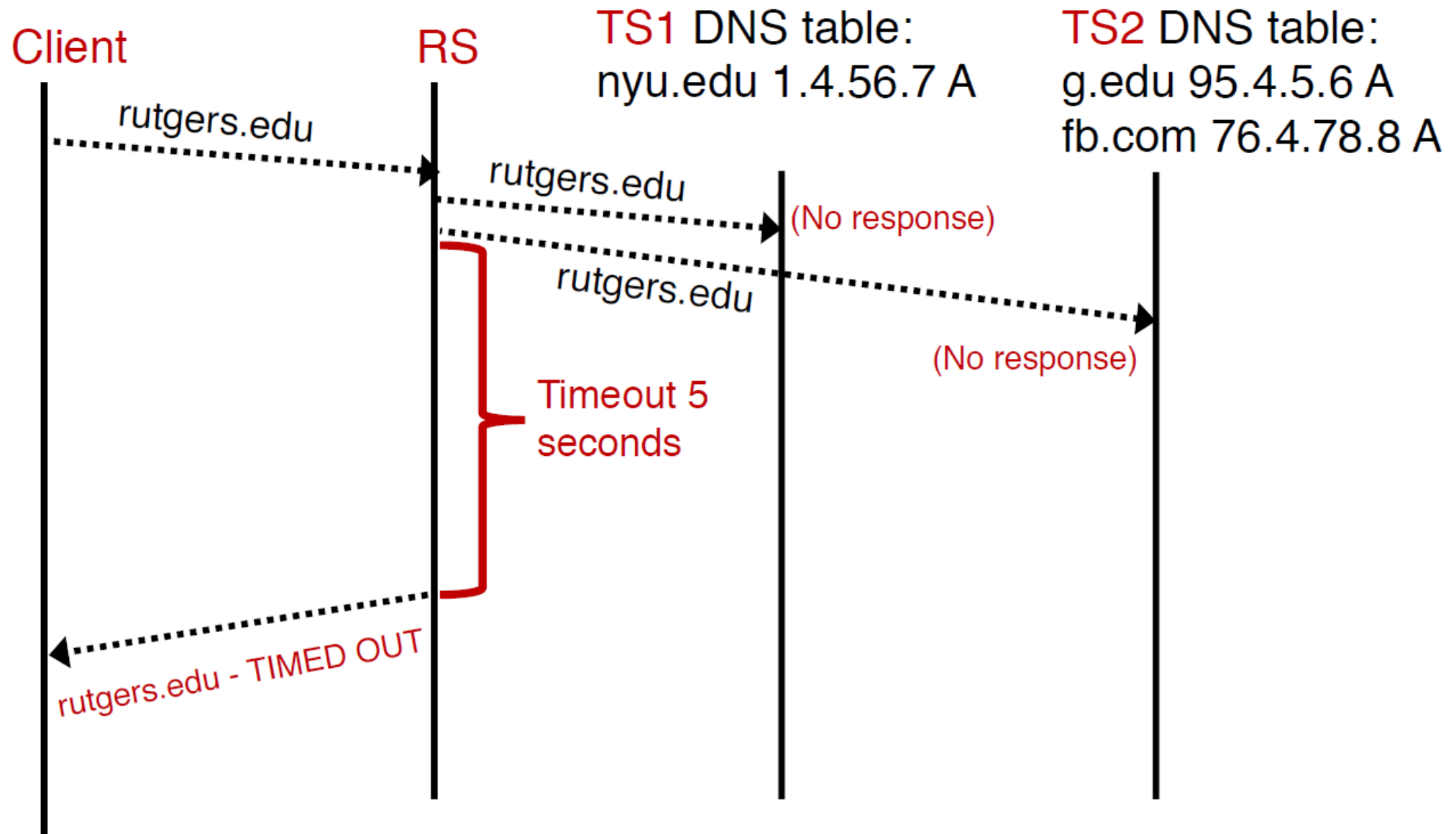
Load Balancing across DNS Server



Load Balancing across DNS Server



Load Balancing across DNS Server



What you must submit

rs.py

ts1.py

ts2.py

client.py

report.pdf

What you must submit

Names and netids

Resources and references

RS functionality that tracks which TS responded to a given query or timing out

Does not work

Difficulties

What did you learn
any interesting observations

Notes

Teams of two

Discuss on Piazza

Do not copy, Do not post project

Be clear

Include people and resources

Due 17 Feb

Internet Access

- IP Address
192.168.1.100
- Netmask
255.255.255.0
- Gateway to reach the router
192.168.1.1
- DNS1
8.8.8.8
- DNS2 (Backup)
8.8.4.4

DNS (Domain Name System)

Translate hostnames to IP address

Reason → a lot more easier

Google.com

Amazon.com

142.251.32.46

DNS Client

- Runs in Background
- http, ftp, telnet, smtp

http protocol request the client go and get resolution

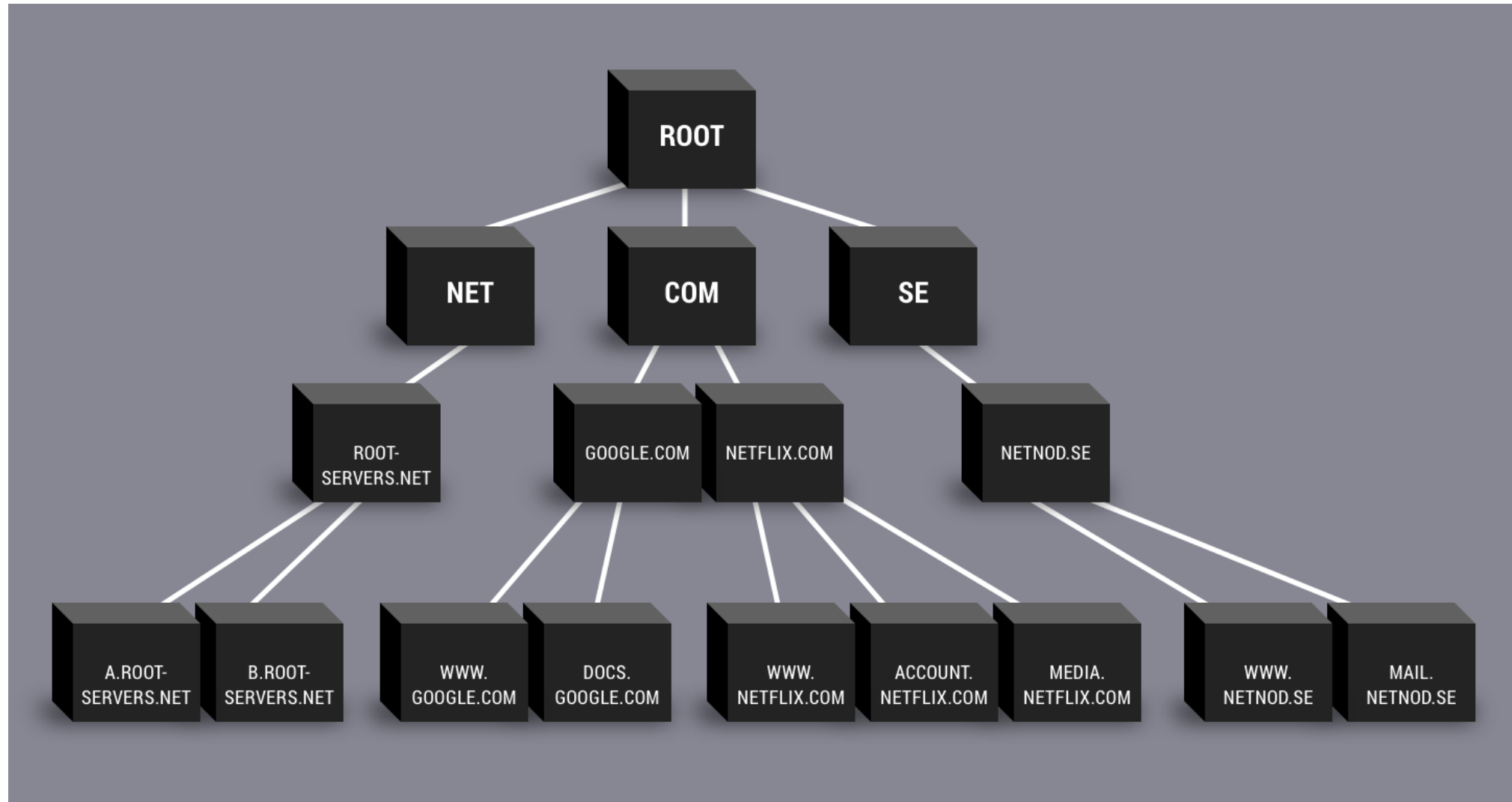
- Application layer protocol
- UDP port 53 for transport

Hierarchy of DNS Servers

Use distributed database

Distribute the load

Hierarchy of DNS Servers



DNS Queries

- Address
Need the IP address

hostname= google.com
Ip address= 216.58.217.36

- Canonical name (actual name of the host)
Need the actual hostname

alias= www.google.com
Canonical name= google.com

DNS Queries

- Mailserver

You need the IP address of the mail server

hostname= google.com

Canonical name= aspmx.l.google.com

- Nameserver

You need the IP address of the name server

hostname= google.com

Canonical name= ns1.google.com

DNS record

(name, value, type, TTL)

- Type
 - A
 - CNAME (canonical name)
 - MX (mail server)
 - NS (name server)
 - AAAA (IPv6 address of a host)
 - PTR (reverse lookup)
 - hostname of an IP address

DNS Name Resolution

DNS server created a hierarchical namespace

- Root (.)
- Top Level Domain (.edu, .gov, .ca)
- Second Level Domain (pbcc, google, military)
- Local DNS Server (ISP, no zone, **caching**)
- Local DNS Forwarder (local network, no zone, just forward request)

Top Level Domain Server

- Any changes to the DNS domain must made here
- Read/Write copy of DNS Database

Second Level Domain Server

- Server as backup for TLD servers
- Used for load balancing
- Read only copy of DNS Database

Local DNS Server

- Cache name resolution queries
- Network traffic significantly reduced

DNS Client request → Local DNS Server (forwarder)

→ ISP DNS Server (Resolver)

→ Root DNS Server

←

→ TLD DNS Server

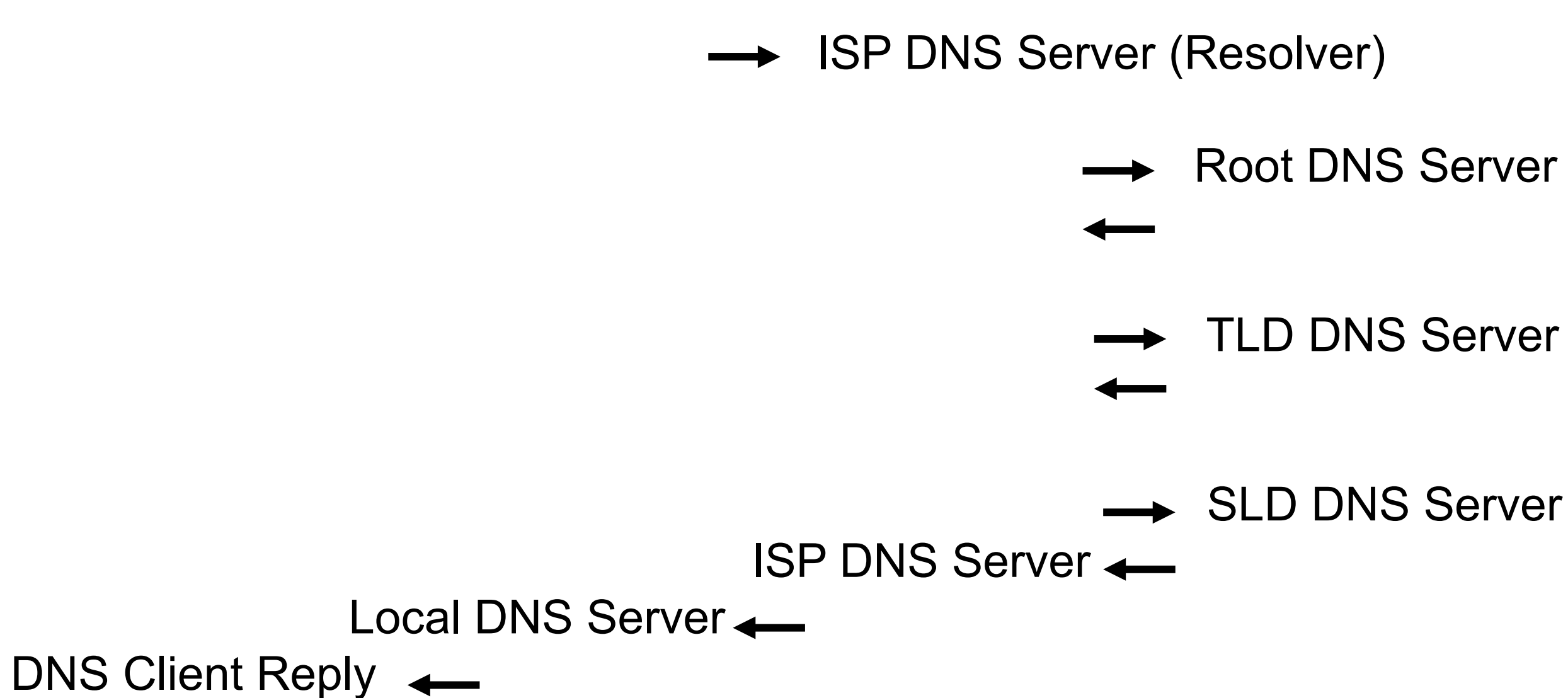
←

→ SLD DNS Server

ISP DNS Server ←

Local DNS Server ←

DNS Client Reply ←



*Wi-Fi

FileEditViewGoCaptureAnalyzeStatisticsTelephonyWirelessToolsHelp

dns

No.	Time	Source	Destination	Protocol	Length	Info
7	2.400440	192.168.142.203	192.168.142.13	DNS	89	Standard query 0xb44c A pagead2.googlesyndication.com
9	2.452837	192.168.142.13	192.168.142.203	DNS	105	Standard query response 0xb44c A pagead2.googlesyndication.com A 142.250.65.194
54	3.479244	192.168.142.203	192.168.142.13	DNS	74	Standard query 0x0202 A px.moatads.com
55	3.534418	192.168.142.13	192.168.142.203	DNS	170	Standard query response 0x0202 A px.moatads.com CNAME wildcard.moatads.com.edgekey.net
168	4.701024	192.168.142.203	192.168.142.13	DNS	77	Standard query 0x311f A fonts.gstatic.com
171	4.752818	192.168.142.13	192.168.142.203	DNS	129	Standard query response 0x311f A fonts.gstatic.com CNAME gstaticadssl.l.google.com A 1
1026	8.892912	192.168.142.203	192.168.142.13	DNS	87	Standard query 0x9d5e A 3.client-channel.google.com
1097	8.985403	192.168.142.13	192.168.142.203	DNS	103	Standard query response 0x9d5e A 3.client-channel.google.com A 74.125.142.189
2312	25.335254	192.168.142.203	192.168.142.13	DNS	70	Standard query 0xb4bf A google.com
2314	25.394215	192.168.142.13	192.168.142.203	DNS	86	Standard query response 0xb4bf A google.com A 142.251.32.46
2323	25.429952	192.168.142.203	192.168.142.13	DNS	91	Standard query 0x6865 A signaler-pa.clients6.google.com
2324	25.466261	192.168.142.13	192.168.142.203	DNS	107	Standard query response 0x6865 A signaler-pa.clients6.google.com A 142.251.46.170
3146	26.899337	192.168.142.203	192.168.142.13	DNS	91	Standard query 0xb47f A content-autofill.googleapis.com
3157	26.969205	192.168.142.13	192.168.142.203	DNS	107	Standard query response 0xb47f A content-autofill.googleapis.com A 142.251.46.170
3291	27.231413	192.168.142.203	192.168.142.13	DNS	80	Standard query 0x74be A adservice.google.com

> Frame 2312: 70 bytes on wire (560 bits), 70 bytes captured (560 bits) on interface \Device\NPF_{1F09A365-29BF-49E4-A85B-917644423F59}, id 0

> Ethernet II, Src: IntelCor_8d:4e:01 (20:16:b9:8d:4e:01), Dst: 42:4e:bd:f7:0e:77 (42:4e:bd:f7:0e:77)

> Internet Protocol Version 4, Src: 192.168.142.203, Dst: 192.168.142.13

> User Datagram Protocol, Src Port: 65218, Dst Port: 53

> Domain Name System (query)

000042 4e bd f7 0e 77 20 16 b9 8d 4e 01 08 00 45 00BN--w - -N--E-

001000 38 37 38 00 00 80 11 00 00 c0 a8 8e cb c0 a8-878- - - - -

00208e 0d fe c2 00 35 00 24 9e 5f b4 bf 01 00 00 01-----5-\$ _-.....

003000 00 00 00 00 00 00 06 67 6f 6f 67 6c 65 03 63 6f.....g oogle.co

00406d 00 00 01 00 01m.....

Domain Name System (dns), 28 bytes

Packets: 3442 · Displayed: 16 (0.5%) · Dropped: 0 (0.0%)

Profile: Default

*Wi-Fi

FileEditViewGoCaptureAnalyzeStatisticsTelephonyWirelessToolsHelp

dns

No.	Time	Source	Destination	Protocol	Length	Info
7	2.400440	192.168.142.203	192.168.142.13	DNS	89	Standard query 0xb44c A pagead2.googlesyndication.com
9	2.452837	192.168.142.13	192.168.142.203	DNS	105	Standard query response 0xb44c A pagead2.googlesyndication.com A 142.250.65.194
54	3.479244	192.168.142.203	192.168.142.13	DNS	74	Standard query 0x0202 A px.moatads.com
55	3.534418	192.168.142.13	192.168.142.203	DNS	170	Standard query response 0x0202 A px.moatads.com CNAME wildcard.moatads.com.edgekey.net
168	4.701024	192.168.142.203	192.168.142.13	DNS	77	Standard query 0x311f A fonts.gstatic.com
171	4.752818	192.168.142.13	192.168.142.203	DNS	129	Standard query response 0x311f A fonts.gstatic.com CNAME gstaticadssl.l.google.com A 1
1026	8.892912	192.168.142.203	192.168.142.13	DNS	87	Standard query 0x9d5e A 3.client-channel.google.com
1097	8.985403	192.168.142.13	192.168.142.203	DNS	103	Standard query response 0x9d5e A 3.client-channel.google.com A 74.125.142.189
2312	25.335254	192.168.142.203	192.168.142.13	DNS	70	Standard query 0xb4bf A google.com
2314	25.394215	192.168.142.13	192.168.142.203	DNS	86	Standard query response 0xb4bf A google.com A 142.251.32.46
2323	25.429952	192.168.142.203	192.168.142.13	DNS	91	Standard query 0x6865 A signaler-pa.clients6.google.com
2324	25.466261	192.168.142.13	192.168.142.203	DNS	107	Standard query response 0x6865 A signaler-pa.clients6.google.com A 142.251.46.170
3146	26.899337	192.168.142.203	192.168.142.13	DNS	91	Standard query 0xb47f A content-autofill.googleapis.com
3157	26.969205	192.168.142.13	192.168.142.203	DNS	107	Standard query response 0xb47f A content-autofill.googleapis.com A 142.251.46.170
3291	27.231413	192.168.142.203	192.168.142.13	DNS	80	Standard query 0x74be A adservice.google.com

> Frame 2312: 70 bytes on wire (560 bits), 70 bytes captured (560 bits) on interface \Device\NPF_{1F09A365-29BF-49E4-A85B-917644423F59}, id 0

> Ethernet II, Src: IntelCor_8d:4e:01 (20:16:b9:8d:4e:01), Dst: 42:4e:bd:f7:0e:77 (42:4e:bd:f7:0e:77)

> Internet Protocol Version 4, Src: 192.168.142.203, Dst: 192.168.142.13

> User Datagram Protocol, Src Port: 65218, Dst Port: 53

> Domain Name System (query)

Transaction ID: 0xb4bf

> Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

> Queries

[Response In: 2314]

000042 4e bd f7 0e 77 20 16 b9 8d 4e 01 08 00 45 00BN--w - -N--E-

001000 38 37 38 00 00 80 11 00 00 c0 a8 8e cb c0 a8-878-... ..

00208e 0d fe c2 00 35 00 24 9e 5f b4 bf 01 00 00 01----5-\$ _.....

003000 00 00 00 00 00 00 06 67 6f 6f 67 6c 65 03 63 6f-----g oogle.co

00406d 00 00 01 00 01m-----

Domain Name System (dns), 28 bytes

Packets: 3442 · Displayed: 16 (0.5%) · Dropped: 0 (0.0%)

Profile: Default

*Wi-Fi

FileEditViewGoCaptureAnalyzeStatisticsTelephonyWirelessToolsHelp

dns

No.	Time	Source	Destination	Protocol	Length	Info
7	2.400440	192.168.142.203	192.168.142.13	DNS	89	Standard query 0xb44c A pagead2.googlesyndication.com
9	2.452837	192.168.142.13	192.168.142.203	DNS	105	Standard query response 0xb44c A pagead2.googlesyndication.com A 142.250.65.194
54	3.479244	192.168.142.203	192.168.142.13	DNS	74	Standard query 0x0202 A px.moatads.com
55	3.534418	192.168.142.13	192.168.142.203	DNS	170	Standard query response 0x0202 A px.moatads.com CNAME wildcard.moatads.com.edgekey.net
168	4.701024	192.168.142.203	192.168.142.13	DNS	77	Standard query 0x311f A fonts.gstatic.com
171	4.752818	192.168.142.13	192.168.142.203	DNS	129	Standard query response 0x311f A fonts.gstatic.com CNAME gstaticadssl.l.google.com A 1
1026	8.892912	192.168.142.203	192.168.142.13	DNS	87	Standard query 0x9d5e A 3.client-channel.google.com
1097	8.985403	192.168.142.13	192.168.142.203	DNS	103	Standard query response 0x9d5e A 3.client-channel.google.com A 74.125.142.189
2312	25.335254	192.168.142.203	192.168.142.13	DNS	70	Standard query 0xb4bf A google.com
2314	25.394215	192.168.142.13	192.168.142.203	DNS	86	Standard query response 0xb4bf A google.com A 142.251.32.46
2323	25.429952	192.168.142.203	192.168.142.13	DNS	91	Standard query 0x6865 A signaler-pa.clients6.google.com
2324	25.466261	192.168.142.13	192.168.142.203	DNS	107	Standard query response 0x6865 A signaler-pa.clients6.google.com A 142.251.46.170
3146	26.899337	192.168.142.203	192.168.142.13	DNS	91	Standard query 0xb47f A content-autofill.googleapis.com
3157	26.969205	192.168.142.13	192.168.142.203	DNS	107	Standard query response 0xb47f A content-autofill.googleapis.com A 142.251.46.170
3291	27.231413	192.168.142.203	192.168.142.13	DNS	80	Standard query 0x74be A adservice.google.com

> Frame 2312: 70 bytes on wire (560 bits), 70 bytes captured (560 bits) on interface \Device\NPF_{1F09A365-29BF-49E4-A85B-917644423F59}, id 0

> Ethernet II, Src: IntelCor_8d:4e:01 (20:16:b9:8d:4e:01), Dst: 42:4e:bd:f7:0e:77 (42:4e:bd:f7:0e:77)

> Internet Protocol Version 4, Src: 192.168.142.203, Dst: 192.168.142.13

> User Datagram Protocol, Src Port: 65218, Dst Port: 53

Domain Name System (query)

Transaction ID: 0xb4bf

> Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

> google.com: type A, class IN

[Response In: 2314]

000042 4e bd f7 0e 77 20 16 b9 8d 4e 01 08 00 45 00BN...w - ..N...E-

001000 38 37 38 00 00 80 11 00 00 c0 a8 8e cb c0 a8-878-...

00208e 0d fe c2 00 35 00 24 9e 5f b4 bf 01 00 00 01.....5.\$ _.....

003000 00 00 00 00 00 00 06 67 6f 6f 67 6c 65 03 63 6f.....g oogle.co

00406d 00 00 01 00 01m.....

Domain Name System (dns), 28 bytes

Packets: 3442 · Displayed: 16 (0.5%) · Dropped: 0 (0.0%)

Profile: Default

Domain Name System (query)

Transaction ID: 0xb4bf

```
> Flags: 0x0100 Standard query
```

Questions: 1

Answer: RR: 0

Authority RRs: 0

Additional RRs: 0

- ▼ Queries

```

    ✓ google.com: type A, class IN

```

Name: google.com

```
[Name Length: 10]
```

```
Type: A (Host Address) (1)
```

```

Type: A (HOST Address) (1)
Class: IM (0x00001)

```

```
Class: IN (0x0001)
[Response In: 23141]
```

[\[response in: 2514\]](#)

```
0000 42 4e bd f7 0e 77 20 16 b9 8d 4e 01 08 00 45 00 BN - - w - - N - - E -
```

```
0010 00 38 37 38 00 00 80 11 00 00 c0 a8 8e cb c0 a8 -878....
```

```
0020 8e 0d fe c2 00 35 00 24 9e 5f b4 bf 01 00 00 01 .....5-$ _.....
```

```
0030 00 00 00 00 00 00 06 6/ 6+ 6+ 6/ 6c 65 03 63 6+ .....g oogle-co
```

0040	6d 00 00 01 00 01	m - - - -
------	-------------------	-----------

Domain Name System (response)

Transaction ID: 0xb4bf

Flags: 0x8180 Standard query response, No error

Answer RRs: 1

Additional RRs: 0

```
> google.com: type A, class IN
```

[Request In: 2312]

[Time: 0.058961000 seconds]

[Time: 0.058961000 seconds]

*Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

dns

No.	Time	Source	Destination	Protocol	Length	Info
7	2.400440	192.168.142.203	192.168.142.13	DNS	89	Standard query 0xb44c A pagead2.googlesyndication.com
9	2.452837	192.168.142.13	192.168.142.203	DNS	105	Standard query response 0xb44c A pagead2.googlesyndication.com A 142.250.65.194
54	3.479244	192.168.142.203	192.168.142.13	DNS	74	Standard query 0x0202 A px.moatads.com
55	3.534418	192.168.142.13	192.168.142.203	DNS	170	Standard query response 0x0202 A px.moatads.com CNAME wildcard.moatads.com.edgekey.net
168	4.701024	192.168.142.203	192.168.142.13	DNS	77	Standard query 0x311f A fonts.gstatic.com
171	4.752818	192.168.142.13	192.168.142.203	DNS	129	Standard query response 0x311f A fonts.gstatic.com CNAME gstaticadssl.l.google.com A 1
1026	8.892912	192.168.142.203	192.168.142.13	DNS	87	Standard query 0x9d5e A 3.client-channel.google.com
1097	8.985403	192.168.142.13	192.168.142.203	DNS	103	Standard query response 0x9d5e A 3.client-channel.google.com A 74.125.142.189
2312	25.335254	192.168.142.203	192.168.142.13	DNS	70	Standard query 0xb4bf A google.com
2314	25.394215	192.168.142.13	192.168.142.203	DNS	86	Standard query response 0xb4bf A google.com A 142.251.32.46
2323	25.429952	192.168.142.203	192.168.142.13	DNS	91	Standard query 0x6865 A signaler-pa.clients6.google.com
2324	25.466261	192.168.142.13	192.168.142.203	DNS	107	Standard query response 0x6865 A signaler-pa.clients6.google.com A 142.251.46.170
3146	26.899337	192.168.142.203	192.168.142.13	DNS	91	Standard query 0xb47f A content-autofill.googleapis.com
3157	26.969205	192.168.142.13	192.168.142.203	DNS	107	Standard query response 0xb47f A content-autofill.googleapis.com A 142.251.46.170
3291	27.231413	192.168.142.203	192.168.142.13	DNS	80	Standard query 0x74be A adservice.google.com

google.com: type A, class IN

Name: google.com

[Name Length: 10]

[Label Count: 2]

Type: A (Host Address) (1)

Class: IN (0x0001)

Answers

google.com: type A, class IN, addr 142.251.32.46

Name: google.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 114 (1 minute, 54 seconds)

Data length: 4

Address: 142.251.32.46

[Request In: 2312]

[Time: 0.058961000 seconds]

0000

20 16 b9 8d 4e 01 42 4e bd f7 0e 77 08 00 45 00

...N-BN ...w--E-

0010

00 48 68 53 40 00 40 11 34 28 c0 a8 8e 0d c0 a8

-HhS@-@- 4(-.....

0020

8e cb 00 35 fe c2 00 34 a9 bb b4 bf 81 80 00 01

...5...4

0030

00 01 00 00 00 00 06 67 6f 6f 67 6c 65 03 63 6f

.....g oogle-co

0040

6d 00 00 01 00 01 c0 0c 00 01 00 01 00 00 72

m-----..r

0050

00 04 8e fb 20 2e

....

Text item (text), 16 bytes

Packets: 3442 · Displayed: 16 (0.5%) · Dropped: 0 (0.0%)

Profile: Default


```
> Frame 149: 76 bytes on wire (608 bits), 76 bytes captured (608 bits) on interface \Device\NPF_{1F09A365-29BF-49E4-A85B-917644423F59}, id 0
> Ethernet II, Src: IntelCor_8d:4e:01 (20:16:b9:8d:4e:01), Dst: 42:4e:bd:f7:0e:77 (42:4e:bd:f7:0e:77)
> Internet Protocol Version 4, Src: 192.168.142.203, Dst: 192.168.142.13
> User Datagram Protocol, Src Port: 65228, Dst Port: 53
```

```

Domain Name System (query)
  Transaction ID: 0x86dd
  > Flags: 0x0100 Standard query
  Questions: 1
  Answer RRs: 0
  Authority RRs: 0
  Additional RRs: 0
  Queries
    > www.facebook.com: type A, class IN
    [Response In: 151]

```

0000	42 4e bd f7 0e 77 20 16 b9 8d 4e 01 08 00 45 00	BN--w- --N--E-
0010	00 3e 37 c1 00 00 80 11 00 00 c0 a8 8e cb c0 a8	->7-----
0020	8e 0d fe cc 00 35 00 2a 9e 65 86 dd 01 00 00 01	-----5-* -e-----
0030	00 00 00 00 00 00 03 77 77 77 08 66 61 63 65 62	-----w ww·faceb
0040	6f 6f 6b 03 63 6f 6d 00 00 01 00 01	ook-com- ----

No.	Time	Source	Destination	Protocol	Length	Info
29	5.637331	192.168.142.203	192.168.142.13	DNS	86	Standard query 0x2e54 A encrypted-tbn0.gstatic.com
31	5.687659	192.168.142.13	192.168.142.203	DNS	102	Standard query response 0x2e54 A encrypted-tbn0.gstatic.com A 216.58.194.206
113	14.266239	192.168.142.203	192.168.142.13	DNS	72	Standard query 0x2441 A facebook.com
114	14.436156	192.168.142.13	192.168.142.203	DNS	88	Standard query response 0x2441 A facebook.com A 157.240.2.35
149	14.746646	192.168.142.203	192.168.142.13	DNS	76	Standard query 0x86dd A www.facebook.com
151	14.870290	192.168.142.13	192.168.142.203	DNS	121	Standard query response 0x86dd A www.facebook.com CNAME star-mini.c10r.facebook.com A
170	15.320209	192.168.142.203	192.168.142.13	DNS	79	Standard query 0x2200 A static.xx.fbcdn.net
200	15.609788	192.168.142.13	192.168.142.203	DNS	118	Standard query response 0x2200 A static.xx.fbcdn.net CNAME scontent.xx.fbcdn.net A 157
541	16.083687	192.168.142.203	192.168.142.13	DNS	88	Standard query 0xf11e A scontent-lga3-2.xx.fbcdn.net
682	16.237058	192.168.142.13	192.168.142.203	DNS	104	Standard query response 0xf11e A scontent-lga3-2.xx.fbcdn.net A 157.240.241.1
2254	17.095550	192.168.142.203	192.168.142.13	DNS	81	Standard query 0x67a7 A scontent.xx.fbcdn.net
2329	17.109140	192.168.142.13	192.168.142.203	DNS	97	Standard query response 0x67a7 A scontent.xx.fbcdn.net A 157.240.2.25
2338	17.146569	192.168.142.203	192.168.142.13	DNS	91	Standard query 0xbed8 A content-autofill.googleapis.com
2377	17.180356	192.168.142.13	192.168.142.203	DNS	107	Standard query response 0xbed8 A content-autofill.googleapis.com A 142.251.46.170
2509	17.233702	192.168.142.203	192.168.142.13	DNS	82	Standard query 0x5939 A edge-chat.facebook.com

```
> Internet Protocol Version 4, Src: 192.168.142.13, Dst: 192.168.142.203
> User Datagram Protocol, Src Port: 53, Dst Port: 65228
√ Domain Name System (response)
    Transaction ID: 0x86dd
    > Flags: 0x8180 Standard query response, No error
    Questions: 1
    Answer RRs: 2
    Authority RRs: 0
    Additional RRs: 0
    √ Queries
        > www.facebook.com: type A, class IN
    √ Answers
        > www.facebook.com: type CNAME, class IN, cname star-mini.c10r.facebook.com
        > star-mini.c10r.facebook.com: type A, class IN, addr 157.240.2.35
    [Request In: 149]
    [Time: 0.123644000 seconds]
```

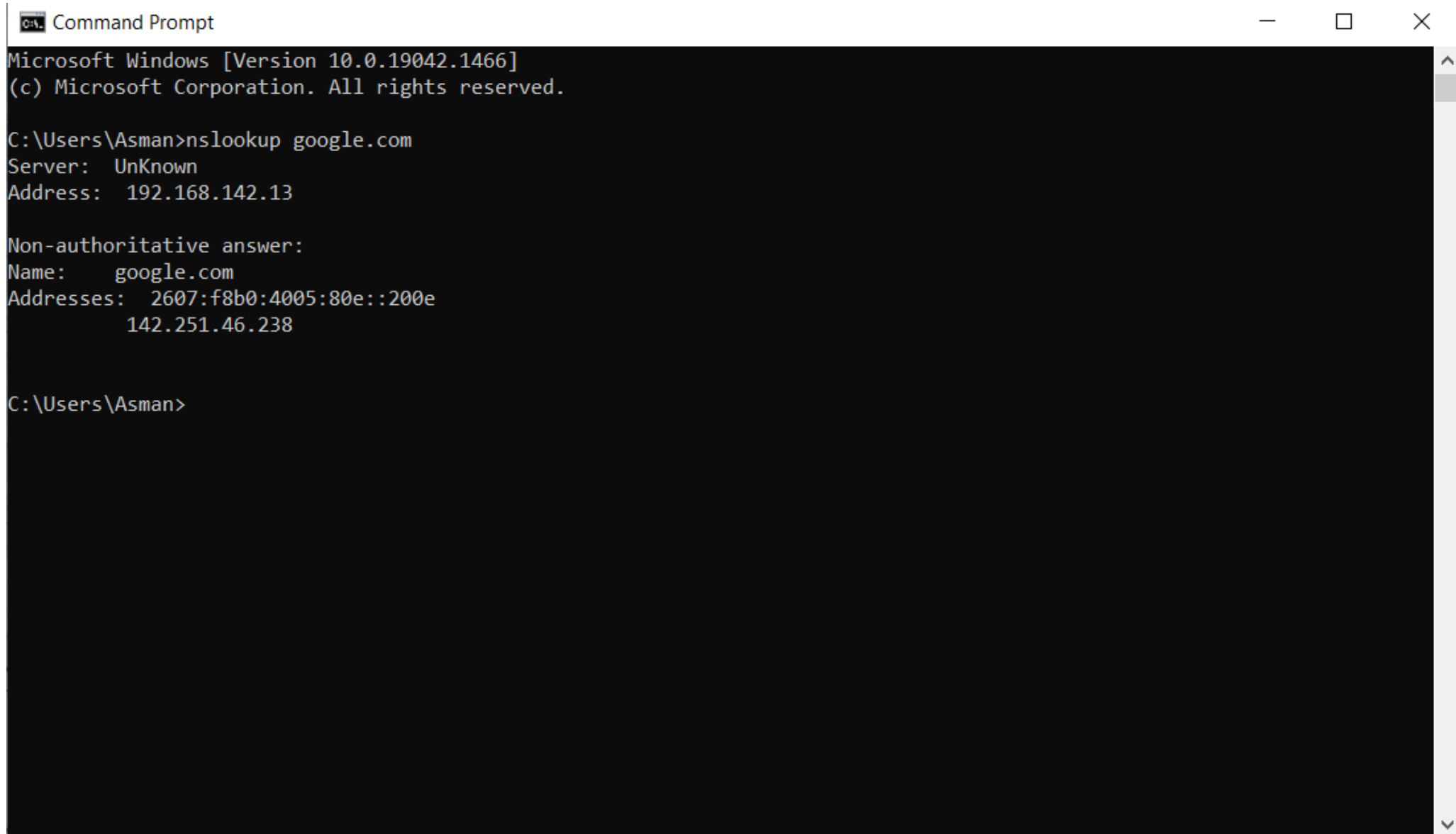
0000	20 16 b9 8d 4e 01 42 4e bd f7 0e 77 08 00 45 00	...N-BN...w-E
0010	00 6b b1 b7 40 00 40 11 ea a0 c0 a8 8e 0d c0 a8	-k-@-@-.....
0020	8e cb 00 35 fe cc 00 57 ad b6 86 dd 81 80 00 01	...5...W.....
0030	00 02 00 00 00 00 03 77 77 77 08 66 61 c3 65 62w ww-faceb
0040	6f 6f 6b 03 63 6f 6d 00 00 01 00 01 c0 0c 00 05	ook-com-.....
0050	00 01 00 00 04 51 00 11 09 73 74 61 72 2d 6d 690...-star-mi

```
Name: www.facebook.com
Type: CNAME (Canonical NAME for an alias) (5)
Class: IN (0x0001)
Time to live: 1105 (18 minutes, 25 seconds)
Data length: 17
CNAME: star-mini.c10r.facebook.com
```

```
Name: star-mini.c10r.facebook.com
Type: A (Host Address) (1)
Class: IN (0x0001)
Time to live: 38 (38 seconds)
Data length: 4
Address: 157.240.2.35
```

[Time: 0.123644000 seconds]

nslookup



```
Command Prompt
Microsoft Windows [Version 10.0.19042.1466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Asman>nslookup google.com
Server: UnKnown
Address: 192.168.142.13

Non-authoritative answer:
Name: google.com
Addresses: 2607:f8b0:4005:80e::200e
          142.251.46.238

C:\Users\Asman>
```


nslookup

Command Prompt - nslookup

Microsoft Windows [Version 10.0.19042.1466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Asman>nslookup google.com

Server: UnKnown
Address: 192.168.142.13

Non-authoritative answer:

Name: google.com
Addresses: 2607:f8b0:4005:80e::200e
142.251.46.238

C:\Users\Asman>nslookup

Default Server: UnKnown
Address: 192.168.142.13

> set type=ns

> google.com

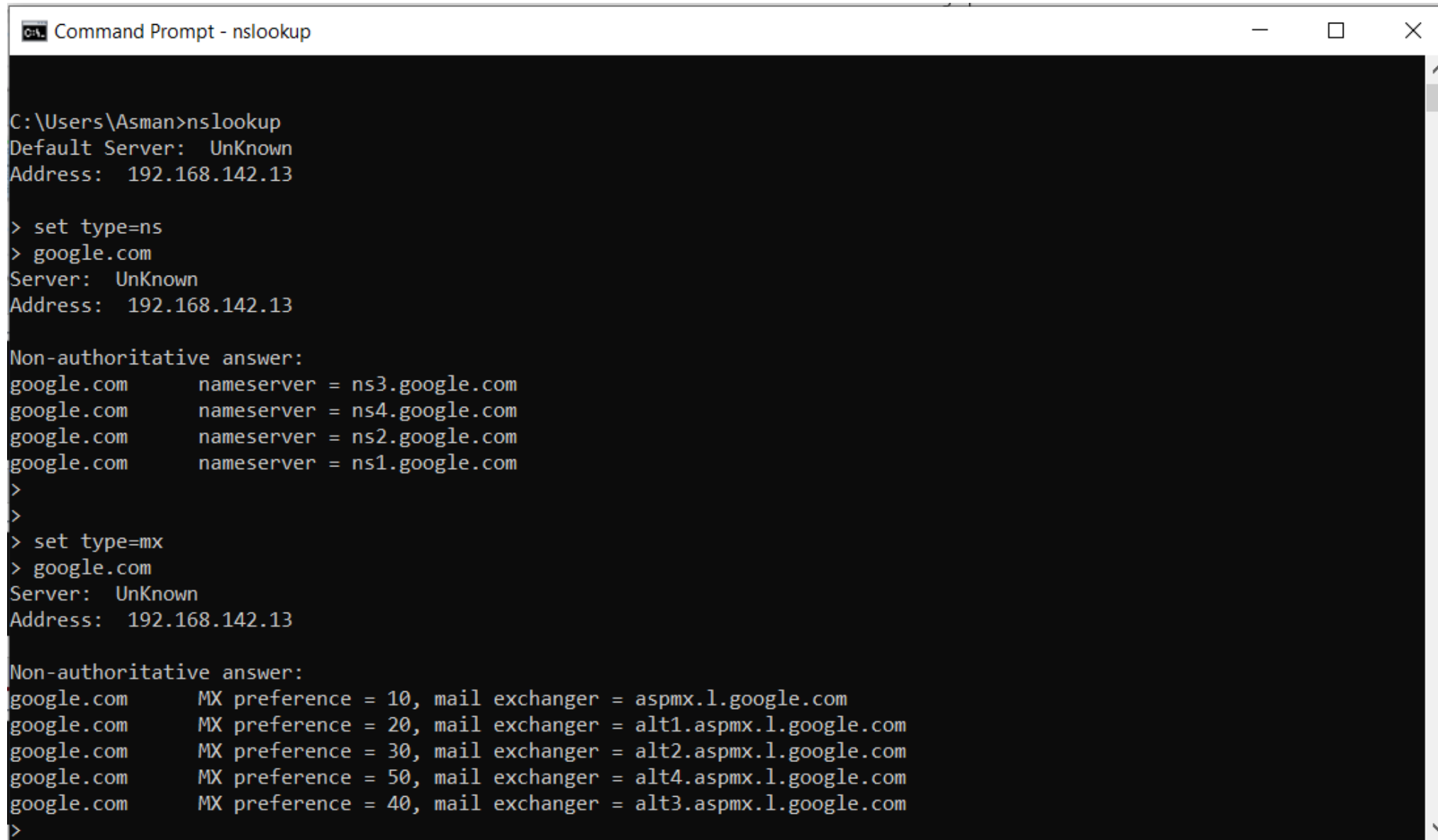
Server: UnKnown
Address: 192.168.142.13

Non-authoritative answer:

google.com nameserver = ns3.google.com
google.com nameserver = ns4.google.com
google.com nameserver = ns2.google.com
google.com nameserver = ns1.google.com

>

nslookup



```
Command Prompt - nslookup

C:\Users\Asman>nslookup
Default Server:  UnKnown
Address:  192.168.142.13

> set type=ns
> google.com
Server:  UnKnown
Address:  192.168.142.13

Non-authoritative answer:
google.com      nameserver = ns3.google.com
google.com      nameserver = ns4.google.com
google.com      nameserver = ns2.google.com
google.com      nameserver = ns1.google.com
>
>
> set type=mx
> google.com
Server:  UnKnown
Address:  192.168.142.13

Non-authoritative answer:
google.com      MX preference = 10, mail exchanger = aspmx.l.google.com
google.com      MX preference = 20, mail exchanger = alt1.aspmx.l.google.com
google.com      MX preference = 30, mail exchanger = alt2.aspmx.l.google.com
google.com      MX preference = 50, mail exchanger = alt4.aspmx.l.google.com
google.com      MX preference = 40, mail exchanger = alt3.aspmx.l.google.com
>
```