

Protokoll zu DNS-Task (Linux Edition)

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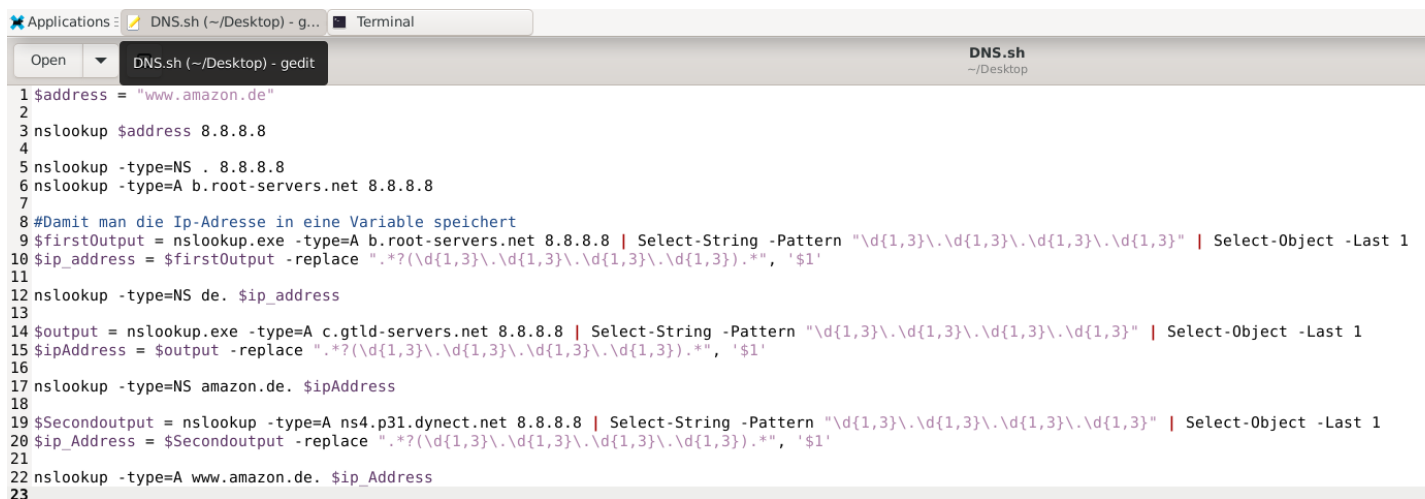
Aufgabenstellung:

Schreibe ein Bash-Script, dass einen FQDN auflöst und den Ablauf der Namensauflösung beginnend bei einem DNS-Root-Server im Detail beschreibt.

Beim Beispiel wurde www.amazon.de als FQDN genutzt

Da das Script für das „Protokoll zu DNS-Task (Windows Edition)“ nicht objektbasiert, sondern **textbasiert** war, konnte das Script weitläufig wieder verwendet werden.

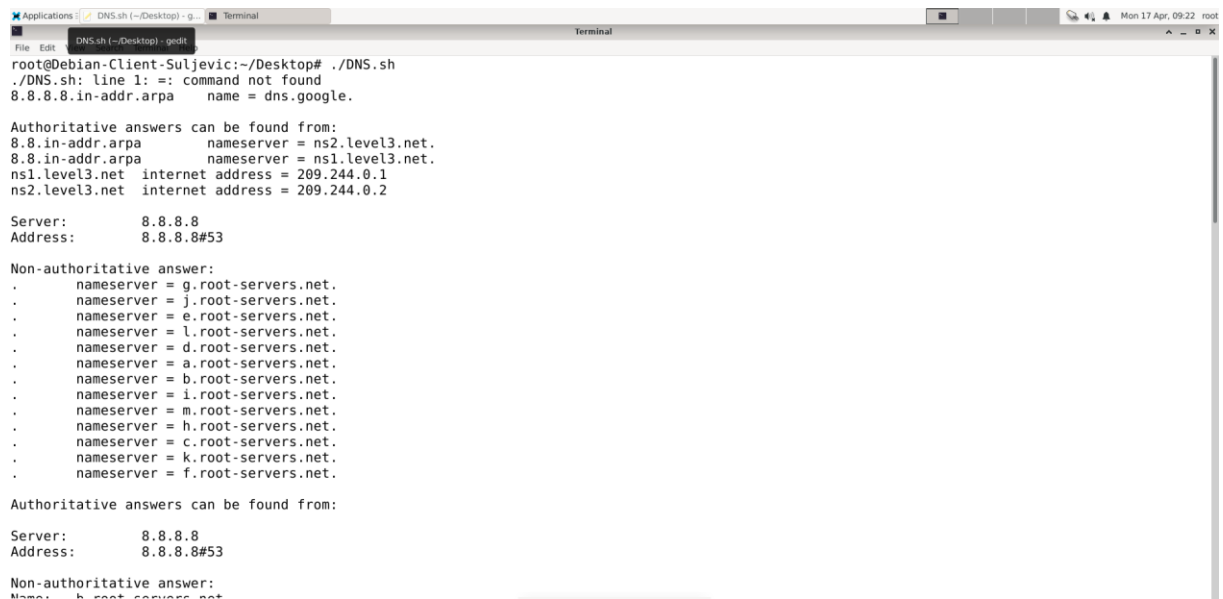
Script:



```
1 $address = "www.amazon.de"
2
3 nslookup $address 8.8.8.8
4
5 nslookup -type=NS . 8.8.8.8
6 nslookup -type=A b.root-servers.net 8.8.8.8
7
8 #Damit man die Ip-Adresse in eine Variable speichert
9 $firstOutput = nslookup.exe -type=A b.root-servers.net 8.8.8.8 | Select-String -Pattern "\d{1,3}\.\d{1,3}\.\d{1,3}\.\d{1,3}" | Select-Object -Last 1
10 $ip_address = $firstOutput -replace ".*?(\\d{1,3}\\.\d{1,3}\\.\d{1,3}\\.\d{1,3}).*", '$1'
11
12 nslookup -type=NS de. $ip_address
13
14 $output = nslookup.exe -type=A c.gtld-servers.net 8.8.8.8 | Select-String -Pattern "\d{1,3}\.\d{1,3}\.\d{1,3}\.\d{1,3}" | Select-Object -Last 1
15 $ipAddress = $output -replace ".*?(\\d{1,3}\\.\d{1,3}\\.\d{1,3}\\.\d{1,3}).*", '$1'
16
17 nslookup -type=NS amazon.de. $ipAddress
18
19 $Secondoutput = nslookup -type=A ns4.p31.dynect.net 8.8.8.8 | Select-String -Pattern "\d{1,3}\.\d{1,3}\.\d{1,3}\.\d{1,3}" | Select-Object -Last 1
20 $ip_Address = $Secondoutput -replace ".*?(\\d{1,3}\\.\d{1,3}\\.\d{1,3}\\.\d{1,3}).*", '$1'
21
22 nslookup -type=A www.amazon.de. $ip_Address
23
```

Code 1 - Namensauflösung von www.amazon.de

Ergebnis:



```
Applications [ DNS.sh (-/Desktop) - g... Terminal
DNS.sh (-/Desktop) - gedf
root@Debian-Client-Suljevic:~/Desktop# ./DNS.sh
./DNS.sh: line 1: =: command not found
8.8.8.8.in-addr.arpa    name = dns.google.

Authoritative answers can be found from:
8.8.8.8.in-addr.arpa    nameserver = ns2.level3.net.
8.8.8.8.in-addr.arpa    nameserver = ns1.level3.net.
ns1.level3.net    internet address = 209.244.0.1
ns2.level3.net    internet address = 209.244.0.2

Server:      8.8.8.8
Address:     8.8.8.8#53

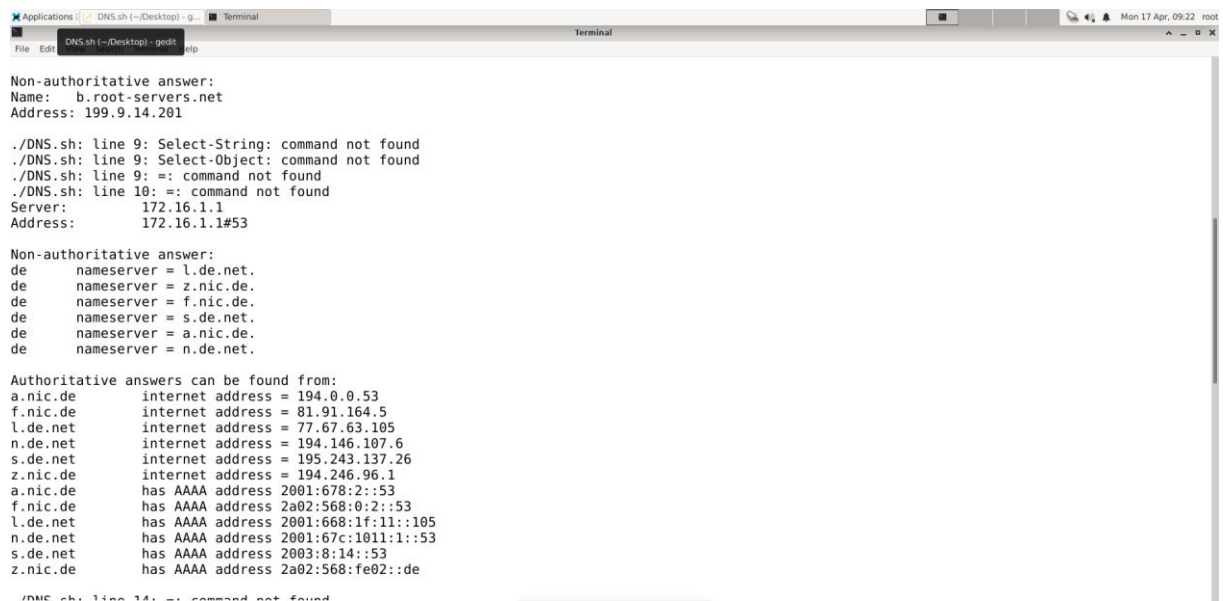
Non-authoritative answer:
.    nameserver = g.root-servers.net.
.    nameserver = j.root-servers.net.
.    nameserver = e.root-servers.net.
.    nameserver = l.root-servers.net.
.    nameserver = d.root-servers.net.
.    nameserver = a.root-servers.net.
.    nameserver = b.root-servers.net.
.    nameserver = i.root-servers.net.
.    nameserver = m.root-servers.net.
.    nameserver = h.root-servers.net.
.    nameserver = c.root-servers.net.
.    nameserver = k.root-servers.net.
.    nameserver = f.root-servers.net.

Authoritative answers can be found from:

Server:      8.8.8.8
Address:     8.8.8.8#53

Non-authoritative answer:
Name:  b.root-servers.net
```

Abbildung 1 - Ergebnis der Namensauflösung



```
Applications [ DNS.sh (-/Desktop) - g... Terminal
DNS.sh (-/Desktop) - gedf
Non-authoritative answer:
Name:  b.root-servers.net
Address: 199.9.14.201

./DNS.sh: line 9: Select-String: command not found
./DNS.sh: line 9: Select-Object: command not found
./DNS.sh: line 9: =: command not found
./DNS.sh: line 10: =: command not found
Server:      172.16.1.1
Address:     172.16.1.1#53

Non-authoritative answer:
de    nameserver = l.de.net.
de    nameserver = z.nic.de.
de    nameserver = f.nic.de.
de    nameserver = s.de.net.
de    nameserver = a.nic.de.
de    nameserver = n.de.net.

Authoritative answers can be found from:
a.nic.de    internet address = 194.0.0.53
f.nic.de    internet address = 81.91.164.5
l.de.net    internet address = 77.67.63.105
n.de.net    internet address = 194.146.107.6
s.de.net    internet address = 195.243.137.26
z.nic.de    internet address = 194.246.96.1
a.nic.de    has AAAA address 2001:678:2::53
f.nic.de    has AAAA address 2a02:568:0:2::53
l.de.net    has AAAA address 2001:668:1f:11::105
n.de.net    has AAAA address 2001:67c:1011:1::53
s.de.net    has AAAA address 2003:8:14::53
z.nic.de    has AAAA address 2a02:568:fe02::de

./DNS.sh: line 14: =: command not found
```

Abbildung 2 - Ergebnis der Namensauflösung

```

Applications  DNS.sh (-/Desktop) - g...  Terminal
Terminal
z.nic.de      has AAAA address 2a02:568:fe02::de

./DNS.sh: line 14: =: command not found
./DNS.sh: line 14: Select-Object: command not found
./DNS.sh: line 14: Select-String: command not found
./DNS.sh: line 15: =: command not found
Server:      172.16.1.1
Address:     172.16.1.1#53

Non-authoritative answer:
amazon.de    nameserver = pdns6.ultradns.co.uk.
amazon.de    nameserver = ns3.p31.dynect.net.
amazon.de    nameserver = pdns1.ultradns.net.
amazon.de    nameserver = ns4.p31.dynect.net.
amazon.de    nameserver = ns2.p31.dynect.net.
amazon.de    nameserver = ns1.p31.dynect.net.

Authoritative answers can be found from:
ns1.p31.dynect.net    internet address = 108.59.161.31
ns2.p31.dynect.net    internet address = 108.59.162.31
ns3.p31.dynect.net    internet address = 108.59.163.31
ns4.p31.dynect.net    internet address = 108.59.164.31
pdns1.ultradns.net    internet address = 204.74.108.1
pdns6.ultradns.co.uk  internet address = 204.74.115.1
ns1.p31.dynect.net    has AAAA address 2600:2000:2210::31
ns2.p31.dynect.net    has AAAA address 2600:2000:2220::31
ns3.p31.dynect.net    has AAAA address 2600:2000:2230::31
ns4.p31.dynect.net    has AAAA address 2600:2000:2240::31
pdns1.ultradns.net    has AAAA address 2001:502:f3ff::1
pdns6.ultradns.co.uk  has AAAA address 2610:a1:1017::1

./DNS.sh: line 19: =: command not found
./DNS.sh: line 19: Select-Object: command not found
./DNS.sh: line 19: Select-String: command not found
./DNS.sh: line 20: =: command not found

```

Abbildung 3 - Ergebnis der Namensauflösung

```

Applications  DNS.sh (-/Desktop) - g...  Terminal
Terminal
amazon.de     nameserver = ns3.p31.dynect.net.
amazon.de     nameserver = pdns1.ultradns.net.
amazon.de     nameserver = ns4.p31.dynect.net.
amazon.de     nameserver = ns2.p31.dynect.net.
amazon.de     nameserver = ns1.p31.dynect.net.

Authoritative answers can be found from:
ns1.p31.dynect.net    internet address = 108.59.161.31
ns2.p31.dynect.net    internet address = 108.59.162.31
ns3.p31.dynect.net    internet address = 108.59.163.31
ns4.p31.dynect.net    internet address = 108.59.164.31
pdns1.ultradns.net    internet address = 204.74.108.1
pdns6.ultradns.co.uk  internet address = 204.74.115.1
ns1.p31.dynect.net    has AAAA address 2600:2000:2210::31
ns2.p31.dynect.net    has AAAA address 2600:2000:2220::31
ns3.p31.dynect.net    has AAAA address 2600:2000:2230::31
ns4.p31.dynect.net    has AAAA address 2600:2000:2240::31
pdns1.ultradns.net    has AAAA address 2001:502:f3ff::1
pdns6.ultradns.co.uk  has AAAA address 2610:a1:1017::1

./DNS.sh: line 19: =: command not found
./DNS.sh: line 19: Select-Object: command not found
./DNS.sh: line 19: Select-String: command not found
./DNS.sh: line 20: =: command not found
Server:      172.16.1.1
Address:     172.16.1.1#53

Non-authoritative answer:
www.amazon.de canonical name = tp.abe2c2f23-frontier.amazon.de.
tp.abe2c2f23-frontier.amazon.de canonical name = djvbdzlobemzo.cloudfront.net.
Name:        djvbdzlobemzo.cloudfront.net
Address:     18.66.21.162

root@Debian-Client-Suljevic:~/Desktop#

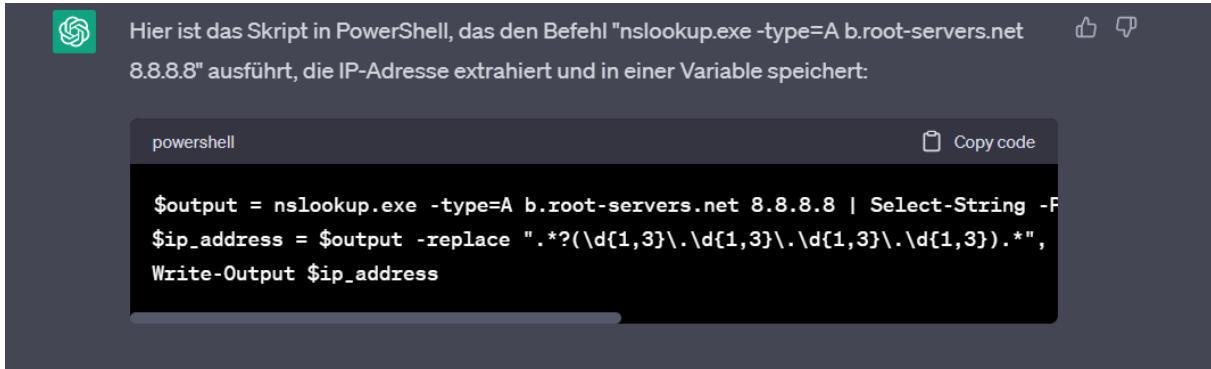
```

Abbildung 4 - Ergebnis der Namensauflösung

Als Ergebnis von der Namensauflösung bekommen wir die IP-Adresse von www.amazon.de 18.66.21.162

Hilfe:

Um die IP-Adresse von `nslookup -type=A b.root-servers.net 8.8.8.8` in eine Variable zu speichern, wurde die Hilfe von [ChatGPT](#) genutzt



The screenshot shows a ChatGPT interface. At the top left is the OpenAI logo. To its right, the text reads: "Hier ist das Skript in PowerShell, das den Befehl "nslookup.exe -type=A b.root-servers.net 8.8.8.8" ausführt, die IP-Adresse extrahiert und in einer Variable speichert:". To the right of this text are thumbs-up and thumbs-down icons. Below the text is a dark-themed code block with a "powershell" label and a "Copy code" button. The code inside the block is:

```
$output = nslookup.exe -type=A b.root-servers.net 8.8.8.8 | Select-String -F
$ip_address = $output -replace ".*?(\\d{1,3}\\.\\d{1,3}\\.\\d{1,3}\\.\\d{1,3}).*",
Write-Output $ip_address
```

Abbildung 5 – ChatGPT