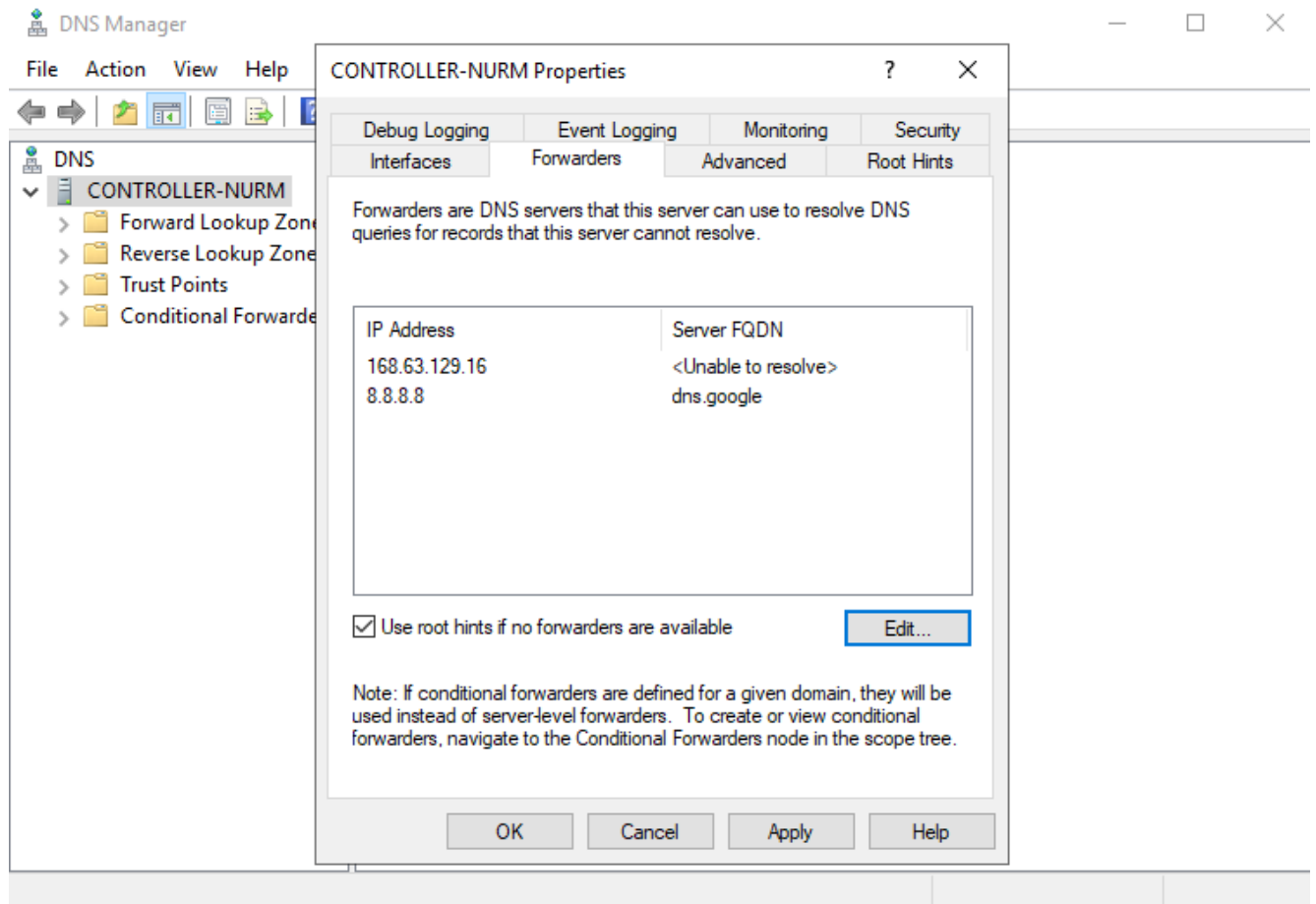


20.4.2024

Tehtävä 1: DNS forwarders

DNS-palveluihin tutustuminen alkoi DNS forwarders nimipalvelimilla. Hieman hämmennyin alkuun, kun DNS Managerin alta Forwards osoitteista ei löytynyt ohjeita vastavia IP osoitteita. Lisäilin kuitenkin googlen 8.8.8.8 osoitteen onnistuneesti.



20.4.2024

Tehtävä 2: DNS-välimuistit

Alkuun nslookup komennolla, millä saadaan wikipedian nimi ja IPv4 sekä IPv6 osoitteet.

```
C:\> Administrator: Command Prompt

Microsoft Windows [Version 10.0.17763.1935]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Administrator.NURMINEN>nslookup wikipedia.org
Server: UnKnown
Address: 10.208.0.10

Non-authoritative answer:
Name: wikipedia.org
Addresses: 2a02:ec80:300:ed1a::1
          185.15.59.224

C:\Users\Administrator.NURMINEN>
```

Seuraavaksi kävin vierailemassa wikipedian sivuilla selaimessa, jonka jälkeen olikin hyvä tarkistella PowerShellissä välimuistin tietoja. Sama toimii toki myös CMD puolella.

```
Select Administrator: Windows PowerShell

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator.NURMINEN> Get-DnsClientCache

Entry          RecordName      Record Status Section TimeTo Data  Data
-----          -
wikipedia.org  wikipedia.org    A      Success Answer    24    4 185.15.59.224
www.wikipedia.org  www.wikipedia.org CNAME Success Answer    192   8 dyna.wikimedia.org
www.wikipedia.org  dyna.wikimedia.org A      Success Answer    192   4 185.15.59.224
upload.wikimedia.org  upload.wikimedia.org A      Success Answer    202   4 185.15.59.240
login.wikimedia.org  login.wikimedia.org CNAME Success Answer    192   8 dyna.wikimedia.org
login.wikimedia.org  dyna.wikimedia.org A      Success Answer    192   4 185.15.59.224
ieonline.microsoft.com  ieonline.microsoft.com CNAME Success Answer   1539   8 any.edge.bing.com
ieonline.microsoft.com  any.edge.bing.com A      Success Answer   1539   4 204.79.197.200
meta.wikimedia.org  meta.wikimedia.org CNAME Success Answer    192   8 dyna.wikimedia.org
meta.wikimedia.org  dyna.wikimedia.org A      Success Answer    192   4 185.15.59.224
_ldap._tcp.default-fir... _ldap._tcp.Default-Fir... SRV Success Answer    173  16 controller-nurminen.nurminen.lan 0 100 389
_ldap._tcp.default-fir... controller-nurminen.nu... A      Success Addi...   173   4 10.208.0.10
controller-nurminen.nu... controller-nurminen.nu... A      Success Answer   2871   4 10.208.0.10
en.wikipedia.org  en.wikipedia.org CNAME Success Answer    192   8 dyna.wikimedia.org
en.wikipedia.org  dyna.wikimedia.org A      Success Answer    192   4 185.15.59.224

PS C:\Users\Administrator.NURMINEN>
```

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```
C:\Users\Administrator.NURMINEN>ipconfig /displaydns

Windows IP Configuration

    www.wikipedia.org
    -----
    Record Name . . . . . : www.wikipedia.org
    Record Type . . . . . : 5
    Time To Live . . . . . : 127
    Data Length . . . . . : 8
    Section . . . . . : Answer
    CNAME Record . . . . . : dyna.wikimedia.org

    Record Name . . . . . : dyna.wikimedia.org
    Record Type . . . . . : 1
    Time To Live . . . . . : 127
    Data Length . . . . . : 4
    Section . . . . . : Answer
    A (Host) Record . . . . : 185.15.59.224
```

Sama oli helppo toistaa myös ohjauspalvelimen puolella campusonline.fi käyttämällä.

```
C:\Users\Administrator>nslookup campusonline.fi
Server: UnKnown
Address: ::1

Non-authoritative answer:
Name: campusonline.fi
Address: 35.228.66.119
```

20.4.2024

Select Administrator: Windows PowerShell

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator> Get-DnsClientCache
```

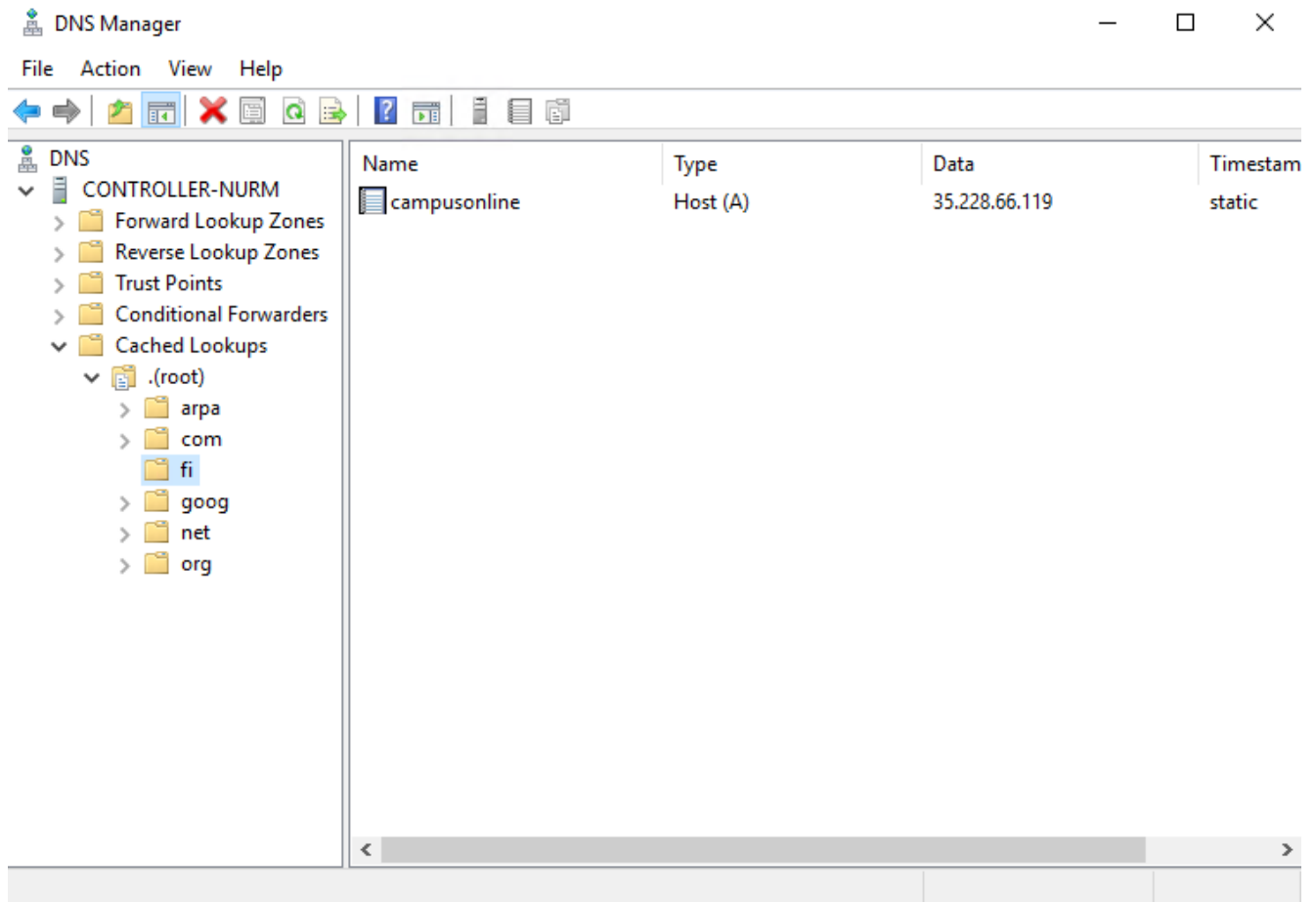
Entry	RecordName	Record Type	Status	Section	TimeTo Live	Data Length	Data
www.googletagmanager.com	www.googletagmanager.com	A	Success	Answer	195	4	142.250.74.136
region1.google-analyti...	region1.google-analyti...	A	Success	Answer	157	4	216.239.34.36
region1.google-analyti...	region1.google-analyti...	A	Success	Answer	157	4	216.239.32.36
ieonline.microsoft.com	ieonline.microsoft.com	CNAME	Success	Answer	630	8	any.edge.bing.com
ieonline.microsoft.com	any.edge.bing.com	A	Success	Answer	630	4	204.79.197.200
www.google-analytics.com	www.google-analytics.com	A	Success	Answer	153	4	142.250.74.78
8.8.8.8.in-addr.arpa	8.8.8.8.in-addr.arpa	PTR	Success	Answer	384	8	dns.google
fileserver-nurminen.nu...	fileserver-nurminen.nu...	A	Success	Answer	673	4	10.208.0.12
fileserver-nurminen.nu...	fileserver-nurminen.nu...	A	Success	Answer	673	4	10.208.0.12
ocsp.digicert.com	ocsp.digicert.com	CNAME	Success	Answer	1529	8	ocsp.edge.digicert.com
ocsp.digicert.com	ocsp.edge.digicert.com	CNAME	Success	Answer	1529	8	fp2e7a.wpc.2be4.phicdn.net
ocsp.digicert.com	fp2e7a.wpc.2be4.phicdn...	CNAME	Success	Answer	1529	8	fp2e7a.wpc.phicdn.net
ocsp.digicert.com	fp2e7a.wpc.phicdn.net	A	Success	Answer	1529	4	192.229.221.95
campusonline.fi	campusonline.fi	A	Success	Answer	1639	4	35.228.66.119
fonts.googleapis.com	fonts.googleapis.com	A	Success	Answer	48	4	142.250.74.138
storage.googleapis.com	storage.googleapis.com	A	Success	Answer	194	4	142.250.74.123
storage.googleapis.com	storage.googleapis.com	A	Success	Answer	194	4	142.250.74.155
storage.googleapis.com	storage.googleapis.com	A	Success	Answer	194	4	142.250.74.187
storage.googleapis.com	storage.googleapis.com	A	Success	Answer	194	4	216.58.211.27
storage.googleapis.com	storage.googleapis.com	A	Success	Answer	194	4	142.250.74.59
storage.googleapis.com	storage.googleapis.com	A	Success	Answer	194	4	142.250.74.91
storage.googleapis.com	storage.googleapis.com	A	Success	Answer	194	4	172.217.21.187
storage.googleapis.com	storage.googleapis.com	A	Success	Answer	194	4	216.58.207.219
ocsp.pki.goog	ocsp.pki.goog	CNAME	Success	Answer	194	8	pki-goog.l.google.com
ocsp.pki.goog	pki-goog.l.google.com	A	Success	Answer	194	4	142.250.74.131
fonts.gstatic.com	fonts.gstatic.com	A	Success	Answer	107	4	172.217.21.163

```
PS C:\Users\Administrator>
```

```
campusonline.fi
-----
Record Name . . . . . : campusonline.fi
Record Type . . . . . : 1
Time To Live . . . . . : 1590
Data Length . . . . . : 4
Section . . . . . : Answer
A (Host) Record . . . : 35.228.66.119
```

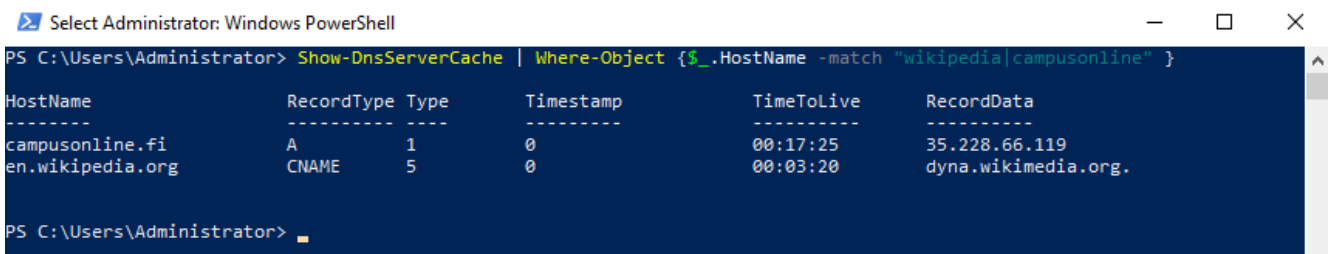
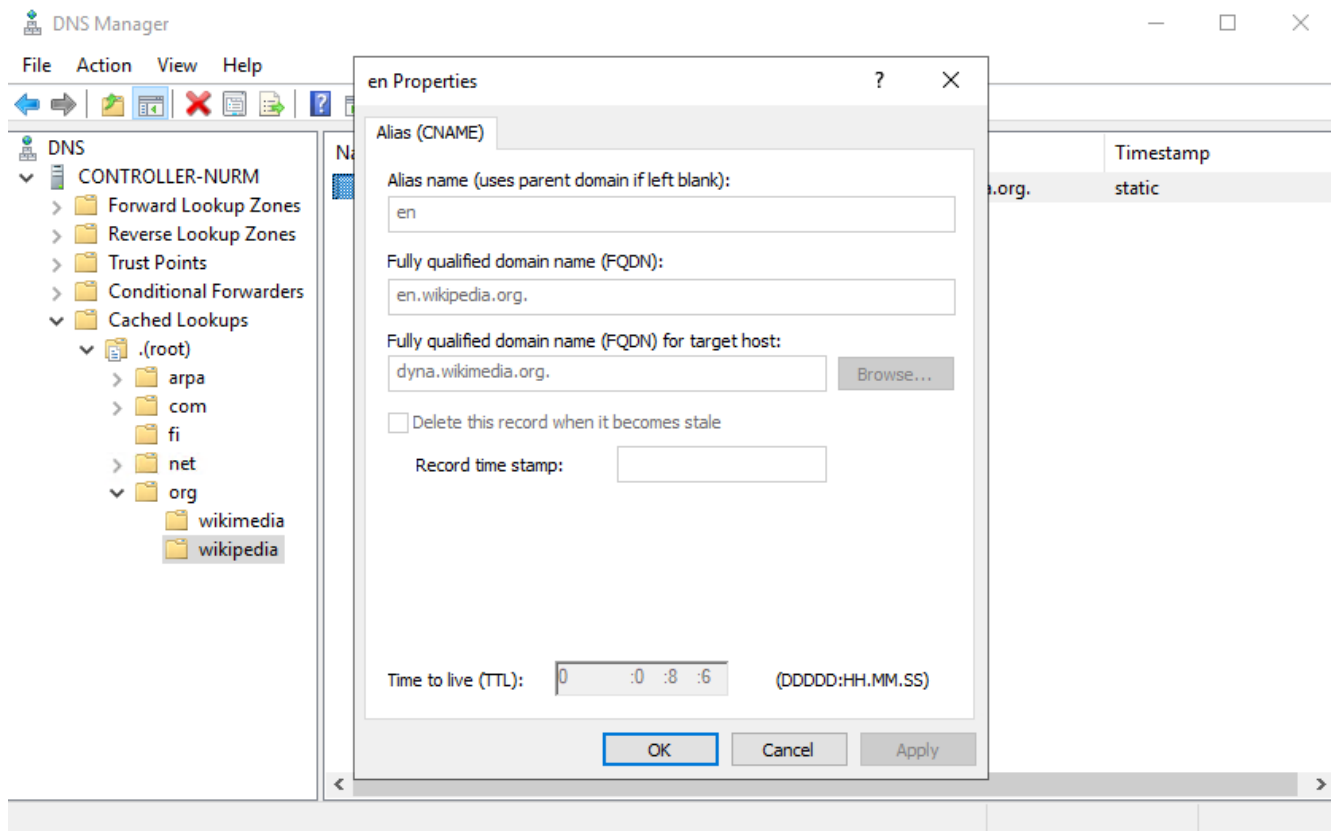
Campusonline.fi näkyy nyt myös DNS Managerissa Cached Lookups alla.

20.4.2024



Wikipedian tiedot näkyi kylläkin hieman ohjeista poikkeavilla tavoilla, enkä ihan keksinyt syytä asialle.

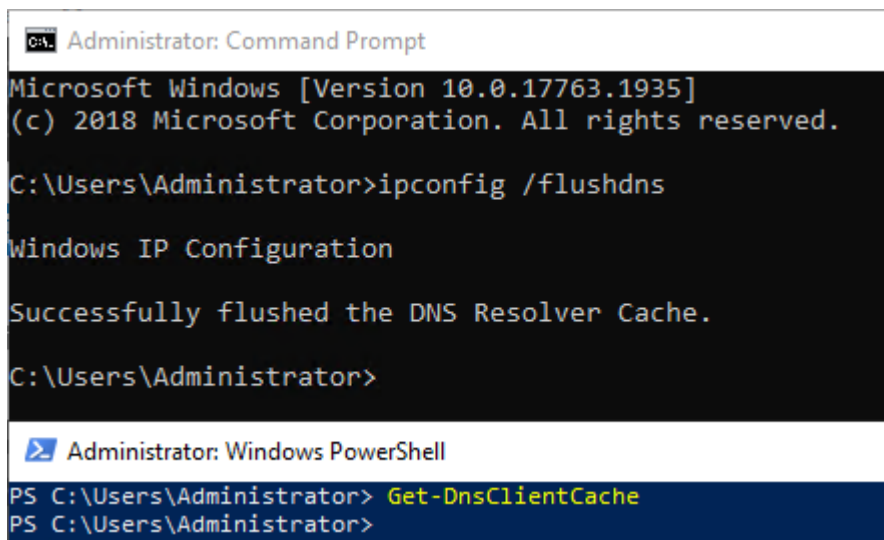
20.4.2024



Wikipedian tiedot näkyy CNAME pohjaisena, vaikka ohjeistuksessa ne oli A/AAAA.

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Välimuistin tyhjentämisen suoritin testimielessä molemmilla tavoilla.



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.17763.1935]
(c) 2018 Microsoft Corporation. All rights reserved.

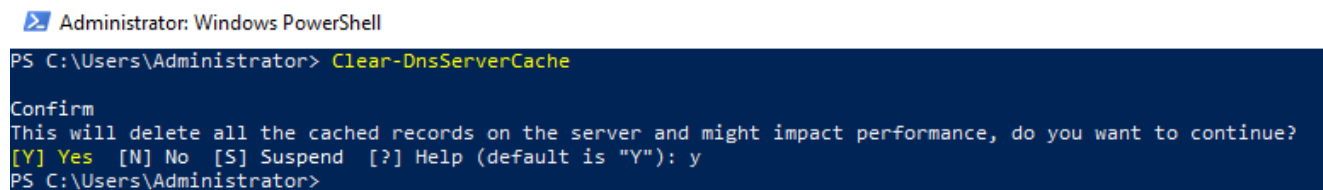
C:\Users\Administrator>ipconfig /flushdns

Windows IP Configuration

Successfully flushed the DNS Resolver Cache.

C:\Users\Administrator>
```

```
Administrator: Windows PowerShell
PS C:\Users\Administrator> Get-DnsClientCache
PS C:\Users\Administrator>
```



```
Administrator: Windows PowerShell
PS C:\Users\Administrator> Clear-DnsServerCache

Confirm
This will delete all the cached records on the server and might impact performance, do you want to continue?
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): y
PS C:\Users\Administrator>
```

Tarkastelussa huomataan, että tyhjennys onnistui hyvin.

20.4.2024

Administrator: Windows PowerShell

HostName	RecordType	Type	Timestamp	TimeToLive	RecordData
@	NS	2	0	00:00:00	k.root-servers.net.
@	NS	2	0	00:00:00	j.root-servers.net.
@	NS	2	0	00:00:00	i.root-servers.net.
@	NS	2	0	00:00:00	h.root-servers.net.
@	NS	2	0	00:00:00	g.root-servers.net.
@	NS	2	0	00:00:00	f.root-servers.net.
@	NS	2	0	00:00:00	e.root-servers.net.
@	NS	2	0	00:00:00	d.root-servers.net.
@	NS	2	0	00:00:00	c.root-servers.net.
@	NS	2	0	00:00:00	b.root-servers.net.
@	NS	2	0	00:00:00	a.root-servers.net.
@	NS	2	0	00:00:00	l.root-servers.net.
@	NS	2	0	00:00:00	m.root-servers.net.
localhost	A	1	0	17089.09:21:54	127.0.0.1
a.root-servers.net	AAAA	28	0	00:00:00	2001:503:ba3e::2:30
b.root-servers.net	AAAA	28	0	00:00:00	2801:1b8:10::b
c.root-servers.net	AAAA	28	0	00:00:00	2001:500:2::c
d.root-servers.net	AAAA	28	0	00:00:00	2001:500:2d::d
e.root-servers.net	AAAA	28	0	00:00:00	2001:500:a8::e
f.root-servers.net	AAAA	28	0	00:00:00	2001:500:2f::f
g.root-servers.net	AAAA	28	0	00:00:00	2001:500:12::d0d
h.root-servers.net	AAAA	28	0	00:00:00	2001:500:1::53
i.root-servers.net	AAAA	28	0	00:00:00	2001:7fe::53
j.root-servers.net	AAAA	28	0	00:00:00	2001:503:c27::2:30
k.root-servers.net	AAAA	28	0	00:00:00	2001:7fd::1
l.root-servers.net	AAAA	28	0	00:00:00	2001:500:9f::42
m.root-servers.net	AAAA	28	0	00:00:00	2001:dc3::35

PS C:\Users\Administrator>

Tehtävä 3: Tietueiden ja käänteisvyöhykkeen lisäys

Ohjauspalvelimen vyöhykkeiden tiedot etsin PowerShellistä.

Administrator: Windows PowerShell

```
PS C:\Users\Administrator> Get-DnsServerResourceRecord -ZoneName "nurminen.lan" | Where-Object {$_.RecordType -match "A|@"}
```

HostName	RecordType	Type	Timestamp	TimeToLive	RecordData
@	A	1	4/20/2024 2:00:00 PM	00:10:00	10.208.0.10
@	SOA	6	0	01:00:00	[26][controller-nurminen.nurminen.lan.][hostmas...
controller-nurminen	A	1	0	01:00:00	10.208.0.10
DomainDnsZones	A	1	4/20/2024 2:00:00 PM	00:10:00	10.208.0.10
FileServer-Nurminen	A	1	4/20/2024 2:00:00 PM	00:20:00	10.208.0.12
ForestDnsZones	A	1	4/20/2024 2:00:00 PM	00:10:00	10.208.0.10

PS C:\Users\Administrator>

Lisäsin seuraavaksi web & intra CNAME-tietueet.

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New Resource Record

New Resource Record



Alias (CNAME)

Alias name (uses parent domain if left blank):

intra

Fully qualified domain name (FQDN):

intra.nurminen.lan.

Fully qualified domain name (FQDN) for target host:

FileServer-Nurminen.nurminen.lan

Browse...

☐ Delete this record when it becomes stale

Record time stamp:

☐ Allow any authenticated user to update all DNS records with the same name. This setting applies only to DNS records for a new name.

Time to live (TTL): 0 :1 :0 :0 (DDDDD:HH.MM.SS)

OK

Cancel

Alias (CNAME)

Alias name (uses parent domain if left blank):

web

Fully qualified domain name (FQDN):

web.nurminen.lan.

Fully qualified domain name (FQDN) for target host:

FileServer-Nurminen.nurminen.lan

Browse...

☐ Delete this record when it becomes stale

Record time stamp:

☐ Allow any authenticated user to update all DNS records with the same name. This setting applies only to DNS records for a new name.

Time to live (TTL): 0 :1 :0 :0 (DDDDD:HH.MM.SS)

OK

Cancel

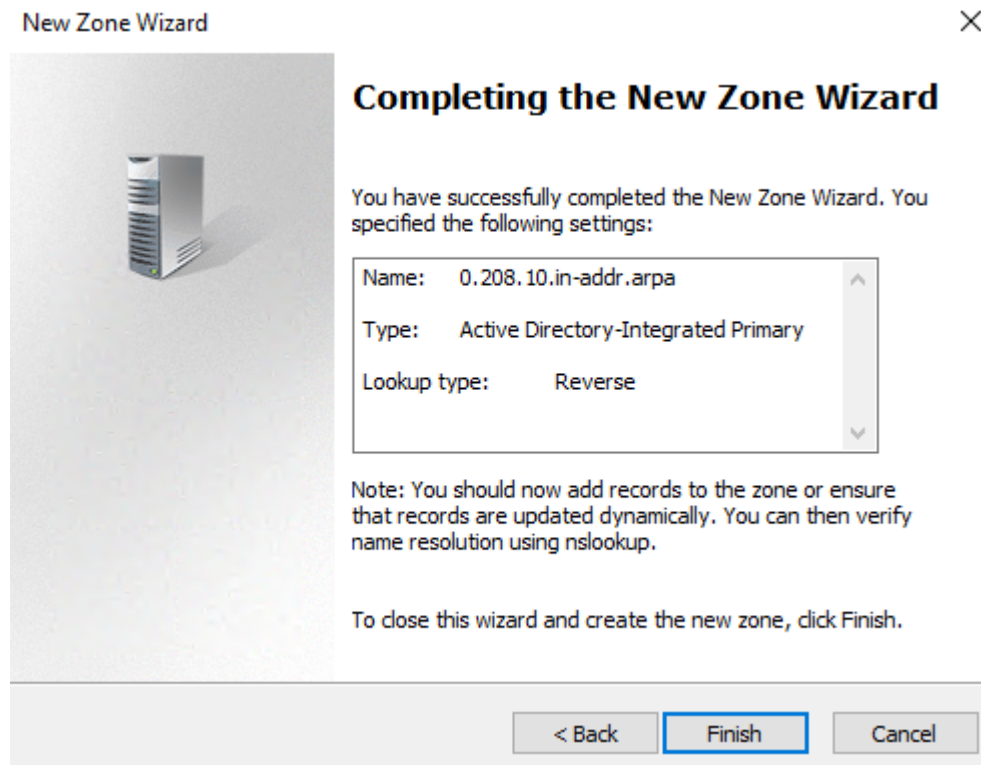
DNS Manager

File Action View Help

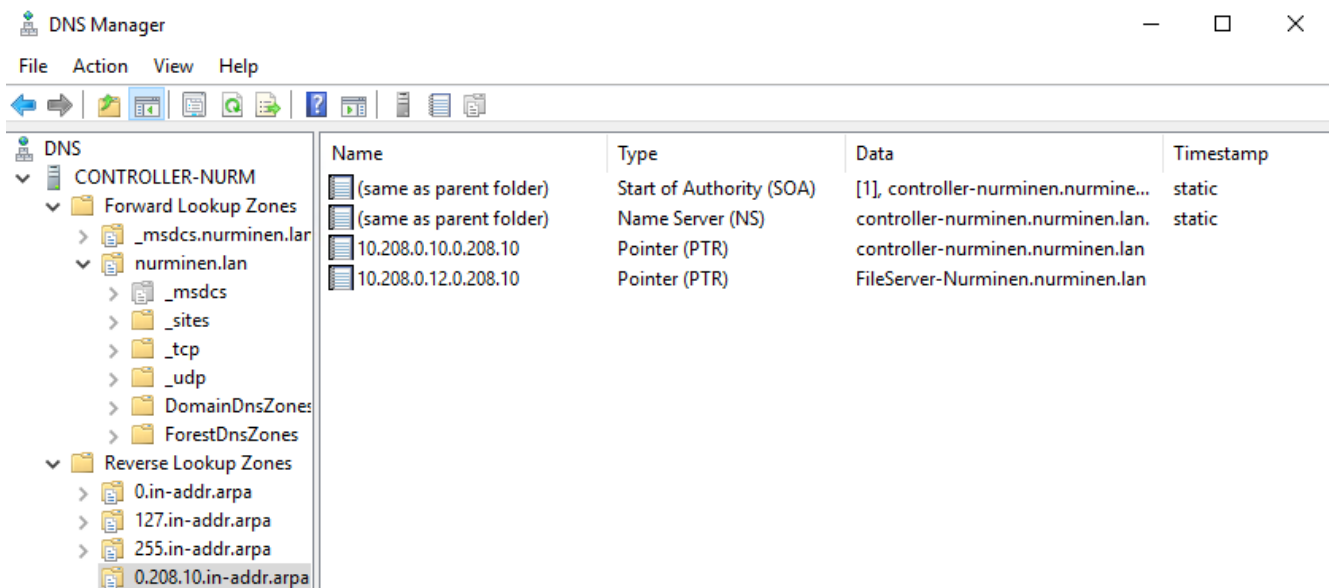
DNS	Name	Type	Data	Timestamp
CONTROLLER-NURM				
Forward Lookup Zones				
_msdcs.nurminen.lan				
nurminen.lan				
_msdcs	_msdcs			
_sites	_sites			
_tcp	_tcp			
_udp	_udp			
DomainDnsZones	DomainDnsZones			
ForestDnsZones	ForestDnsZones			
(same as parent folder)	(same as parent folder)	Start of Authority (SOA)	[26], controller-nurminen.nurmin...	static
(same as parent folder)	(same as parent folder)	Name Server (NS)	controller-nurminen.nurminen.lan.	static
(same as parent folder)	(same as parent folder)	Host (A)	10.208.0.10	4/20/2024 2:00:00 I
controller-nurminen	controller-nurminen	Host (A)	10.208.0.10	static
FileServer-Nurminen	FileServer-Nurminen	Host (A)	10.208.0.12	4/20/2024 2:00:00 I
intra	intra	Alias (CNAME)	FileServer-Nurminen.nurminen.lan	
web	web	Alias (CNAME)	FileServer-Nurminen.nurminen.lan	
Reverse Lookup Zones				
Trust Points				
Conditional Forwarders				
Cached Lookups				

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Seuraavaksi siirryn luomaan uutta käänteisvyöhykettä.



Ja samalla käänteisvyöhykkeen alle uudet PTR-tietueet tiedostopalvelimelle ja ohjauspalvelimelle.



20.4.2024

Testatessa kuitenkin törmäsin kummisikin hieman erikoiseen tulokseen, kun käytin nslookup komentoa omaan tiedostonpalvelimen osoitteeseen.

```
C:\> Administrator: Command Prompt

Microsoft Windows [Version 10.0.17763.1935]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Administrator.NURMINEN>nslookup web.nurminen.lan
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

Name: FileServer-Nurminen.nurminen.lan
Address: 10.208.0.12
Aliases: web.nurminen.lan

C:\Users\Administrator.NURMINEN>nslookup intra.nurminen.lan
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

Name: FileServer-Nurminen.nurminen.lan
Address: 10.208.0.12
Aliases: intra.nurminen.lan

C:\Users\Administrator.NURMINEN>
```

```
C:\> Select Administrator: Command Prompt

Microsoft Windows [Version 10.0.17763.1935]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Administrator.NURMINEN>nslookup 10.208.0.10
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

Name: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

C:\Users\Administrator.NURMINEN>nslookup 10.208.0.12
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

0.208.10.in-addr.arpa
primary name server = controller-nurminen.nurminen.lan
responsible mail addr = hostmaster.nurminen.lan
serial = 6
refresh = 900 (15 mins)
retry = 600 (10 mins)
expire = 86400 (1 day)
default TTL = 3600 (1 hour)
*** No internal type for both IPv4 and IPv6 Addresses (A+AAAA) records available for 10.208.0.12

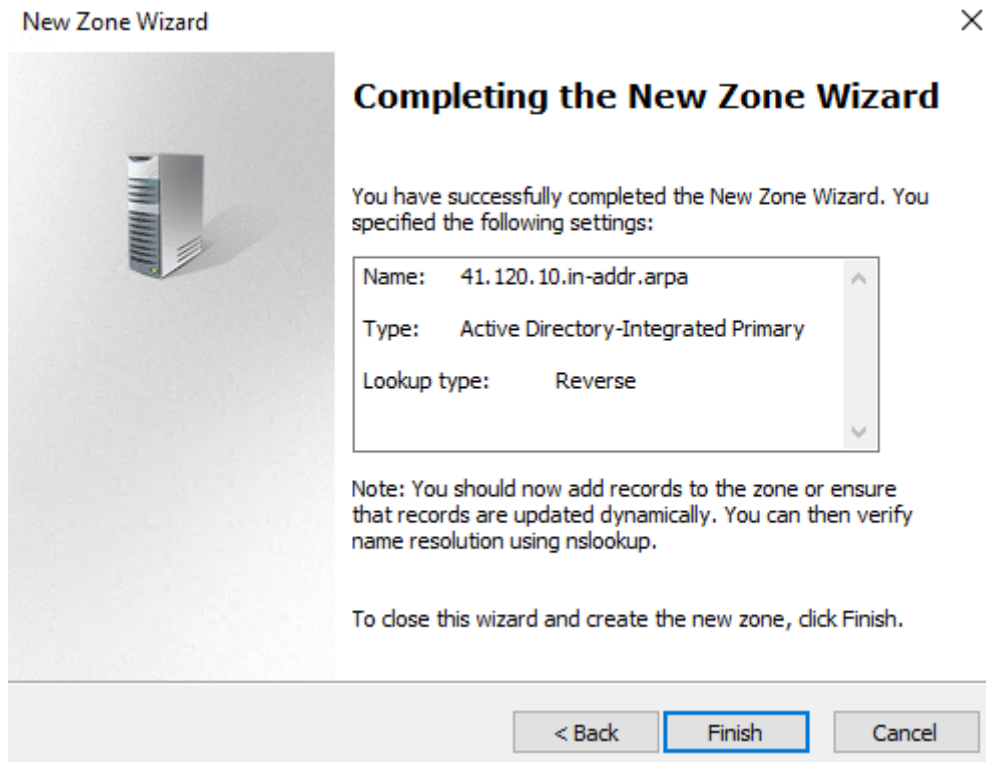
C:\Users\Administrator.NURMINEN>ipconfig

Windows IP Configuration
```

20.4.2024

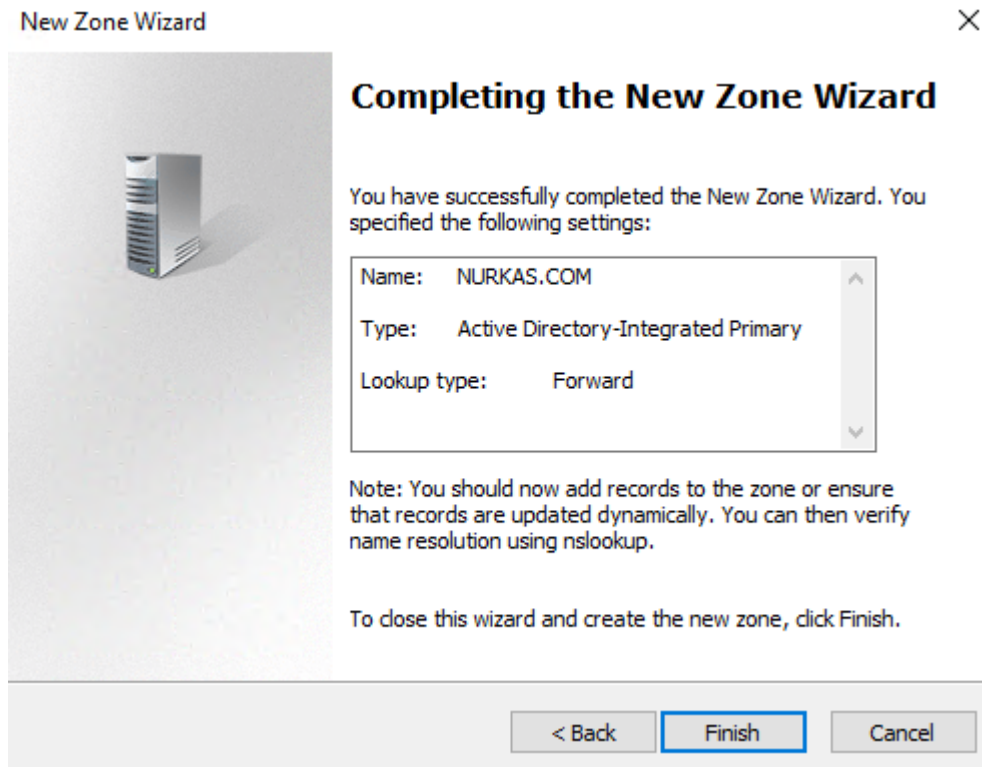
Tehtävä 4: Mielivaltaisesti keksityt vyöhykkeet

Loin alkuun aikaisempaa opetettua soveltaen uuden käänteisvyöhykkeen verkkoavaruuteen 10.120.41.

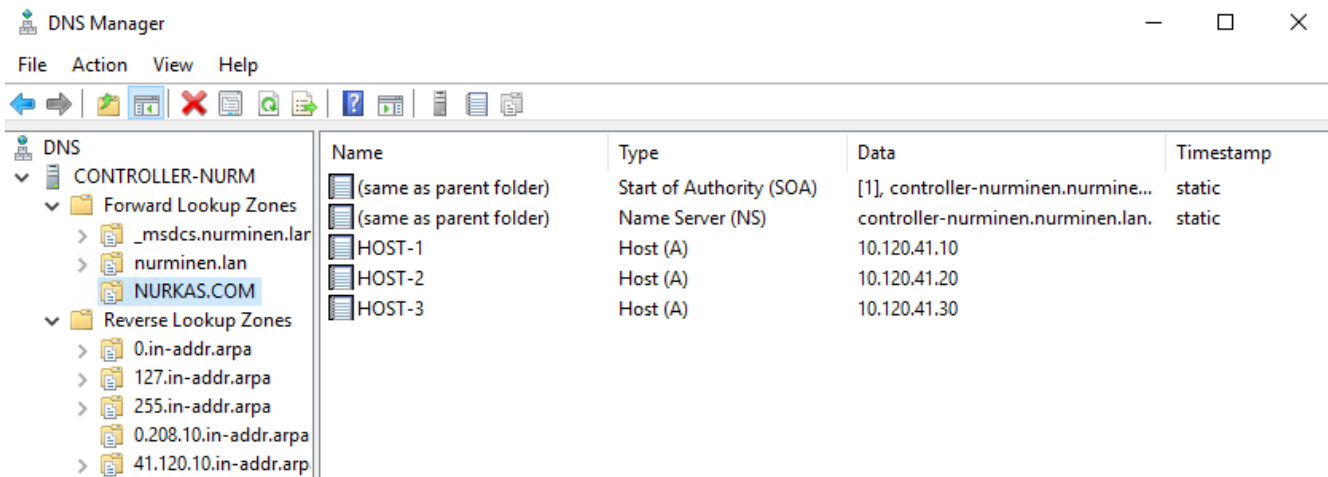


Tämän jälkeen loin uuden Forward-vyöhykkeen NURKAS.COM.

20.4.2024

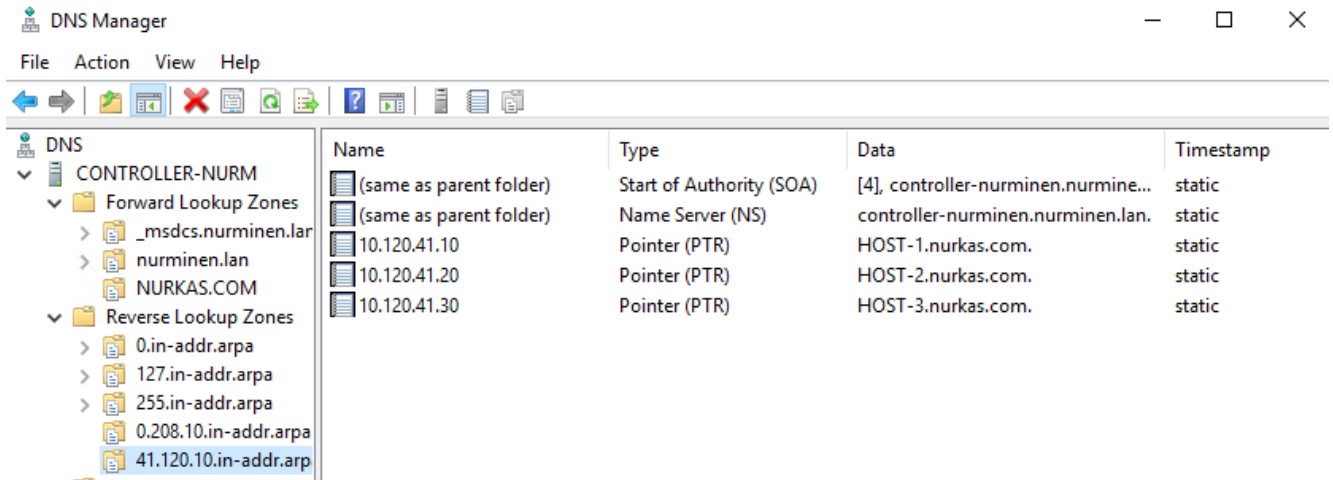


Seuraavaksi lisäsin kolme HOST A-tietuetta.



Ja samat tietueet toki näkyy myös Reverse Lookup Zonella.

20.4.2024



Loppuun vielä tulosten testaukset kahdella eri tavalla.

```
C:\> Administrator: Command Prompt

Microsoft Windows [Version 10.0.17763.1935]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Administrator.NURMINEN>nslookup host-1.nurkas.com
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

Name: host-1.nurkas.com
Address: 10.120.41.10

C:\Users\Administrator.NURMINEN>nslookup host-2.nurkas.com
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

Name: host-2.nurkas.com
Address: 10.120.41.20

C:\Users\Administrator.NURMINEN>nslookup host-3.nurkas.com
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

Name: host-3.nurkas.com
Address: 10.120.41.30

C:\Users\Administrator.NURMINEN>
```

20.4.2024

```
C:\> Administrator: Command Prompt

Microsoft Windows [Version 10.0.17763.1935]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Administrator.NURMINEN>nslookup 10.120.41.10
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

Name: HOST-1.nurkas.com
Address: 10.120.41.10

C:\Users\Administrator.NURMINEN>nslookup 10.120.41.20
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

Name: HOST-2.nurkas.com
Address: 10.120.41.20

C:\Users\Administrator.NURMINEN>nslookup 10.120.41.30
Server: Controller-Nurminen.nurminen.lan
Address: 10.208.0.10

Name: HOST-3.nurkas.com
Address: 10.120.41.30

C:\Users\Administrator.NURMINEN>
```