

Linux Servers

Classroom Assignment 6 – Hostnames and DNS

Mikael Romanov

Document your commands or take screenshots. Answer questions in english or finnish.

1. Hostnames

Configure all your VMs with the correct hostnames given in the topology picture. Add them to the hosts files also so you can use hostnames when pinging. Test with ping.

On the router:

```
GNU nano 2.3.1                                File: /etc/hostname
router.localdomain
```

```
GNU nano 2.3.1                                File: /etc/hosts                                Modified
127.0.0.1    localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
192.168.1.107 router.local
192.168.3.2  admin.local
192.168.2.3  client.local
```

```
[root@router ~]# ping admin.local
PING admin.local (192.168.3.2) 56(84) bytes of data.
```

2. DNS servers

Find out what DNS servers the Router.local VM gets automatically from the LabraNet DHCP server. Configure the other VMs to use these DNS-servers also. You should now have a fully working Internet access on all of the VMs. Test with ping, traceroute, nslookup and other tools.

Here is my dns server:

```
DNS Servers . . . . . : 192.168.1.1
NetBIOS over Tcpip. . . . . : Enabled
```

```
GNU nano 2.3.1                                File: /etc/resolv.conf
Generated by NetworkManager
search elisa-laajakaista.fi elisa-laajakaista.fi. localdomain
nameserver 192.168.1.1
```

```
ADMIN [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
GNU nano 2.3.1 File: /etc/resolv.conf

# Generated by NetworkManager
search local
nameserver 192.168.1.1
```

```
ADMIN [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[root@admin ~]# ping iltalehti.fi
PING iltalehti.fi (178.217.128.81) 56(84) bytes of data.
64 bytes from cdn-vip2.hard.ware.fi (178.217.128.81): icmp_seq=1 ttl=58 time=19.0 ms
64 bytes from cdn-vip2.hard.ware.fi (178.217.128.81): icmp_seq=2 ttl=58 time=19.4 ms
64 bytes from cdn-vip2.hard.ware.fi (178.217.128.81): icmp_seq=3 ttl=58 time=19.6 ms
```

```
[root@admin ~]# traceroute iltalehti.fi
traceroute to iltalehti.fi (178.217.128.81), 30 hops max, 60 byte packets
 1  192.168.3.1 (192.168.3.1)  0.194 ms  0.119 ms  0.069 ms
 2  RootBox (192.168.1.1)  0.682 ms  0.559 ms  0.505 ms
 3  a88-112-44-2.elisa-laa.jakaista.fi (88.112.44.2)  14.485 ms  14.575 ms  13.950 ms
 4  193.229.29.206 (193.229.29.206)  19.172 ms  19.390 ms  19.349 ms
 5  139.97.94.52 (139.97.94.52)  18.892 ms  18.870 ms  19.022 ms
 6  xe0-0-1.tamnal-gw1.fi.elisa.net (139.97.21.65)  19.226 ms  18.476 ms  19.080 ms
 7  139.97.71.2 (139.97.71.2)  19.070 ms  19.114 ms  19.251 ms
 8  cdn-vip2.hard.ware.fi (178.217.128.81)  18.861 ms  18.880 ms  18.878 ms
```

```
[root@admin ~]# nslookup iltalehti.fi
Server:      192.168.1.1
Address:     192.168.1.1#53

Non-authoritative answer:
Name:   iltalehti.fi
Address: 178.217.128.81
```

3. Name lookup

With the dig -tool, find out the next information:

- How many different IP addresses are behind www.iltasanomat.fi?

```
[root@admin ~]# dig www.iltasanomat.fi
```

```
;; ANSWER SECTION:
www.iltasanomat.fi.      24      IN      A       54.240.184.190
www.iltasanomat.fi.      24      IN      A       54.240.184.178
www.iltasanomat.fi.      24      IN      A       54.240.184.61
www.iltasanomat.fi.      24      IN      A       54.240.184.66
www.iltasanomat.fi.      24      IN      A       54.240.184.172
www.iltasanomat.fi.      24      IN      A       54.240.184.144
www.iltasanomat.fi.      24      IN      A       54.240.184.36
www.iltasanomat.fi.      24      IN      A       54.240.184.156
```

- What are the nameservers for the sonera.fi domain?

```
[root@client ~]# dig NS sonera.fi
```

```
;; ANSWER SECTION:
sonera.fi.              1080    IN      NS      ns2-usa.global.sonera.net.
sonera.fi.              1080    IN      NS      ns2-fin.global.sonera.fi.
sonera.fi.              1080    IN      NS      ns1-fin.global.sonera.fi.
sonera.fi.              1080    IN      NS      ns1-swe.global.sonera.se.
```

- Does jamk.fi have an IPv6 address? How about google.com?

```
[root@admin ~]# dig google.com ANY +short
ns4.google.com.
ns1.google.com.
ns3.google.com.
ns2.google.com.
```

JAMK doesn't have

```
[root@admin ~]# dig jamk.fi ANY +short
jazz.jypoly.fi. hostmaster.jamk.fi. 201101773 43200 900 1209600 3600
tango.jypoly.fi.
humppa.jypoly.fi.
jazz.jypoly.fi.
```

- What server is responsible for E-mail to @jamk.fi –addresses? How about @student.jamk.fi?

```
[root@admin ~]# dig jamk.fi MX
;; ANSWER SECTION:
jamk.fi.                60      IN      MX      10 jamk-fi.mail.protection.outlook.com.
```

```
[root@admin ~]# dig student.jamk.fi MX
;; ANSWER SECTION:
student.jamk.fi.        3600    IN      MX      0 student-jamk-fi.mail.protection.outlook.com.
```

- Do a reverse lookup for IP address 195.148.26.130. What is this server?

```
[root@admin ~]# dig -x 195.148.26.130
;; ANSWER SECTION:
130.26.148.195.in-addr.arpa. 86400 IN PTR student.labranet.jamk.fi.
130.26.148.195.in-addr.arpa. 86400 IN PTR homes.labranet.jamk.fi.
```

- Do a full trace of the name student.labranet.jamk.fi. How many different nameservers are responsible for the whole query?

```
[root@admin ~]# dig +trace student.labranet.jamk.fi
; <<>> DiG 9.9.4-RedHat-9.9.4-18.el7_1.5 <<>> +trace student.labranet.jamk.fi
;; global options: +cmd
.           85676      IN      NS      b.root-servers.net.
.           85676      IN      NS      d.root-servers.net.
.           85676      IN      NS      j.root-servers.net.
.           85676      IN      NS      e.root-servers.net.
.           85676      IN      NS      h.root-servers.net.
.           85676      IN      NS      l.root-servers.net.
.           85676      IN      NS      m.root-servers.net.
.           85676      IN      NS      c.root-servers.net.
.           85676      IN      NS      a.root-servers.net.
.           85676      IN      NS      i.root-servers.net.
.           85676      IN      NS      f.root-servers.net.
.           85676      IN      NS      k.root-servers.net.
.           85676      IN      NS      g.root-servers.net.
;; Received 241 bytes from 192.168.1.1#53(192.168.1.1) in 311 ms
```

```
fi.         172800     IN      NS      a.fi.
fi.         172800     IN      NS      b.fi.
fi.         172800     IN      NS      c.fi.
fi.         172800     IN      NS      d.fi.
fi.         172800     IN      NS      e.fi.
fi.         172800     IN      NS      f.fi.
fi.         172800     IN      NS      g.fi.
fi.         172800     IN      NS      h.fi.
```

```
student.labranet.jamk.fi. 60      IN      A       195.148.26.130
jamk.fi.     86400      IN      NS      tango.jypoly.fi.
jamk.fi.     86400      IN      NS      humppa.jypoly.fi.
jamk.fi.     86400      IN      NS      jazz.jypoly.fi.
;; Received 268 bytes from 195.148.128.19#53(jazz.jypoly.fi) in 42 ms
```