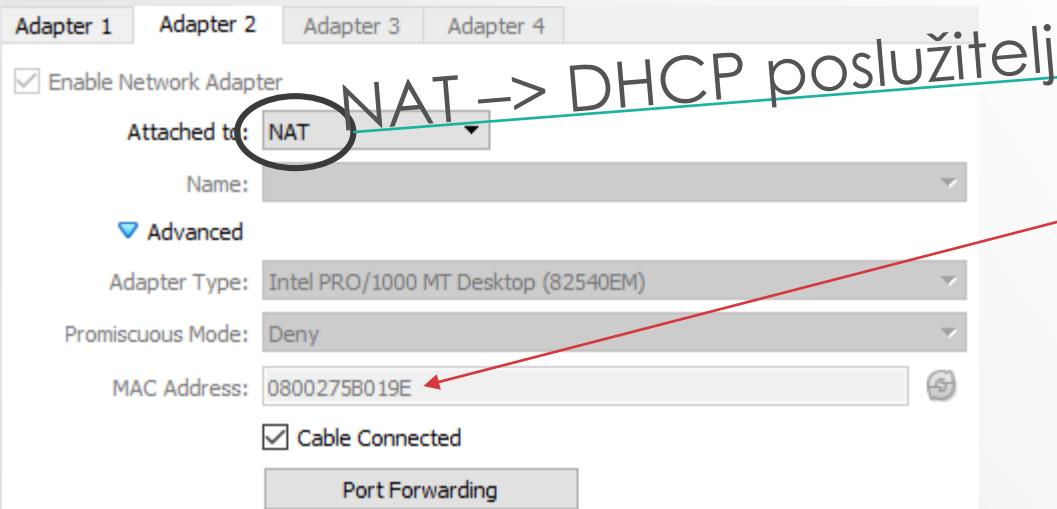


DNS POSLUŽITELJ NA LINUX OS-U

Mirko Jambrošić, mag. ing. inf. et comm. techn.

INFORMATIVKA

- omogućavanje sučelja
 - sudo ifconfig enp0s3 up
- određivanje sučelja na VirtualBoxu



```
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN mode DEFAULT group default qlen 10
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
2: enp0s3: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN mode DEFAULT group default qlen 1000
    link/ether 08:00:27:28:c0:73 brd ff:ff:ff:ff:ff:ff
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP mode DEFAULT group default
    link/ether 08:00:27:5b:01:9e brd ff:ff:ff:ff:ff:ff
```

```
MIRKO@MINT-VIRTUALBOX:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet6 fe80::a00:27ff:fe28:c073 prefixlen 64 scopeid 0x0
          ether 08:00:27:28:c0:73 txqueuelen 1000 (Ethernet)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 29 bytes 3389 (3.3 KB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions

enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 10.0.3.15 netmask 255.255.255.0 broadcast 10.0.3.15
          inet6 fe80::e51d:3984:e30:d98b prefixlen 64 scopeid 0x0
            ether 08:00:27:5b:01:9e txqueuelen 1000 (Ethernet)
            RX packets 341 bytes 32584 (32.5 KB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 390 bytes 36569 (36.5 KB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
      loop txqueuelen 1000 (Local Loopback)
        RX packets 132 bytes 11543 (11.5 KB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 132 bytes 11543 (11.5 KB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions
```

POSTAVLJANJE IP ADRESE NA „LOKALNO” SUČELJE

- sučelje koje je spojeno na *internal network*
 - enp0s3 u ovom slučaju
 - podmreža 192.168.1.0/24
- CHR u istom *internal networku*
 - adresa: 192.168.1.40/24
 - pingabilno?
 - zašto ne radi?

```
mirko@mint-virtualbox:~$ sudo ifconfig enp0s3 192.168.1.100 netmask 255.255.255.0
mirko@mint-virtualbox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 192.168.1.100 netmask 255.255.255.0 broadcast 192.168.1.255
              inet6 fe80::a00:27ff:fe28:c073 prefixlen 64 scopeid 0x20<link>
                ether 08:00:27:28:c0:73 txqueuelen 1000 (Ethernet)
                  RX packets 0 bytes 0 (0.0 B)
                  RX errors 0 dropped 0 overruns 0 frame 0
                  TX packets 40 bytes 5119 (5.1 KB)
                  TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
[admin@MikroTik] > ping 192.168.1.100
SEQ HOST SIZE TTL TIME STATUS
0 192.168.1.100 56 64 0ms
sent=1 received=1 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms
```

```
[admin@MikroTik] > ping net.hr
invalid value for argument address:
    invalid value of mac-address, mac address required
    invalid value for argument ipv6-address
    while resolving ip-address: could not get answer from dns server
[admin@MikroTik] > _
```

DNS POSLUŽITELJ NA LINUX-U

- instalacija DNS poslužitelj servisa
 - sudo apt-get update
 - sudo apt-get upgrade
 - instalacija bind9
 - sudo apt-get install bind9 bind9utils bind9-doc

KONFIGURIRANJE DNS MEĐUSPREMNIKA

- engl. cache
- dodavanje forwardera
 - dns server servis nije nadležan za domene
 - za pretvorbu mora pitati nekog – forwardera
 - sudo nano /etc/bind/named.conf.options
 - dodavanje (promjena zapisa)

```
forwarders {  
    1.1.1.1;  
};
```
- resetiranje servis bind9
 - sudo systemctl restart bind9

```
mirko@mint-virtualbox:~$ sudo nano /etc/bind/named.conf.options
```

```
options {  
    directory "/var/cache/bind";  
  
    forwarders {  
        1.1.1.1;  
    };  
  
    dnssec-validation auto;  
  
    auth-nxdomain no;      # conform to RFC1035  
    listen-on-v6 { any; };  
};
```

INSTALACIJA I KONFIGURACIJA PRIMARNOG DNS POSLUŽITELJA

- konfiguracijska datoteka
 - sudo nano /etc/bind/named.conf
 - mora sadržavati (ako ne sadrži, kopiraj!)

```
include "/etc/bind/named.conf.options";
include "/etc/bind/named.conf.local";
include "/etc/bind/named.conf.default-zones";
```
- definiranje primarne DNS zone (vlastite)
 - sudo nano /etc/bind/named.conf.local
 - ime domene
 - datoteka gdje se nalaze zapisi
 - prefiks: for. -> forward lookup zona
 - prefiks: rev. -> reverse lookup zona

```
zone "tsc2020.local"{
    type master;
    file "/etc/bind/for.tsc2020.local";
    allow-transfer {};
    also-notify {};
};

zone "100.168.192.in-addr.arpa"{
    type master;
    file "/etc/bind/rev.tsc2020.local";
    allow-transfer {};
    also-notify {};
};
```

KREIRANJE FORWARD ZONE

- kreiranje datoteke
 - sudo nano /etc/bind/for.ostechnix.lan
- primjer konfiguracije
 - poslužitelj će
pri.tsc2020.local pretvoriti u 192.168.1.100
 - **mikrotik.tsc2020.local** pretvoriti u 192.168.1.40
 - **test.tsc2020.local** pretvoriti u 192.168.1.43

```
$TTL 86400 ;TTL za dns zapis
@ IN SOA pri.tsc.local. root.tsc2020.local.
2011071001
3600
1800
604800
86400; minimalni TTL
)
@ IN NS pri.tsc.local.
@ IN A 192.168.1.100
pri IN A 192.168.1.100
test IN A 192.168.1.42
mikrotik IN A 192.168.1.40
```

NS = poslužitelj zadužen za domenu
A zapis = ime -> IP adresu

PRAVA PRISTUPA I PROVJERA KONFIGURACIJE

- promjena prava pristupa
 - sudo chmod -R 755 /etc/bind
 - sudo chown -R bind:bind /etc/bind
- ukoliko naredbe ne vrate ništa, DNS konfiguracija je ispravna
 - sudo named-checkconf /etc/bind/named.conf
 - sudo named-checkconf /etc/bind/named.conf.local
- provjera zone
 - sudo named-checkzone tsc2020.local /etc/bind/for.tsc2020.local
 - naredba mora vratiti
zone *ime_zone*: loaded serial SERIJSKI BROJ ZAPISA
OK
- resetiranje servisa
 - sudo systemctl restart bind9

```
mirko@mint-virtualbox:~$ sudo named-checkzone tsc2020.local /etc/bind/for.tsc2020.local
zone tsc2020.local/IN: loaded serial 2011071001
OK
mirko@mint-virtualbox:~$
```

TESTIRANJE

- na CHR-u koji je spojen s Linuxom postaviti DNS poslužitelj IP adresu Linux OS-a
 - ip dns set servers=192.168.1.100

```
[admin@MikroTik] > ip dns print
    servers: 192.168.1.100
    dynamic-servers:
    allow-remote-requests: no
    max-udp-packet-size: 4096
    query-server-timeout: 2s
    query-total-timeout: 10s
    max-concurrent-queries: 100
    max-concurrent-tcp-sessions: 20
    cache-size: 2048KiB
    cache-max-ttl: 1w
    cache-used: 19KiB
[admin@MikroTik] >
```

TESTIRANJE

- `ping test.tsc2020.local`
 - DNS radi
 - pretvorit se `test.tsc2020.local` u `192.168.1.42`
 - (prema DNS zapisu!)
 - ping ne prolazi jer nema uređaja (sučelja) s tom IP adresom!

```
[admin@MikroTik] > ping test.tsc2020.local
SEQ HOST
 0 192.168.1.42
 1 192.168.1.42
 2 192.168.1.40
 3 192.168.1.42
 4 192.168.1.42
 5 192.168.1.42
 6 192.168.1.42
sent=7 received=0 packet-loss=100%
SIZE TTL TIME STATUS
84 64 981ms host
timeout
timeout
timeout
timeout
timeout
timeout
timeout
```

TESTIRANJE

- ping pri.tsc2020.local
 - pri.tsc2020.local se pretvori u 192.168.1.100
 - to je IP adresa linux
 - ping prolazi
 - ...

```
[admin@MikroTik] > ping pri.tsc2020.local
SEQ HOST SIZE TTL TIME STATUS
 0 192.168.1.100 56 64 0ms
 1 192.168.1.100 56 64 0ms
 2 192.168.1.100 56 64 0ms
sent=3 received=3 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms
```

TESTIRANJE

- korištenje nslookup naredbe u RouterOS-u
put [:resolve ALIAS]
 - npr put [:resolve tsck.hr]
- ping ne prolazi jer ne postoji ruta do odredišta

```
[admin@MikroTik] > put [:resolve tsck.hr]
193.198.184.131
[admin@MikroTik] > _
```

```
[admin@MikroTik] > ping tsck.hr
SEQ HOST SIZE TTL TIME STATUS
          0
sent=1 received=0 packet-loss=100%
[admin@MikroTik] >
```