

Laboratoare Retelistica

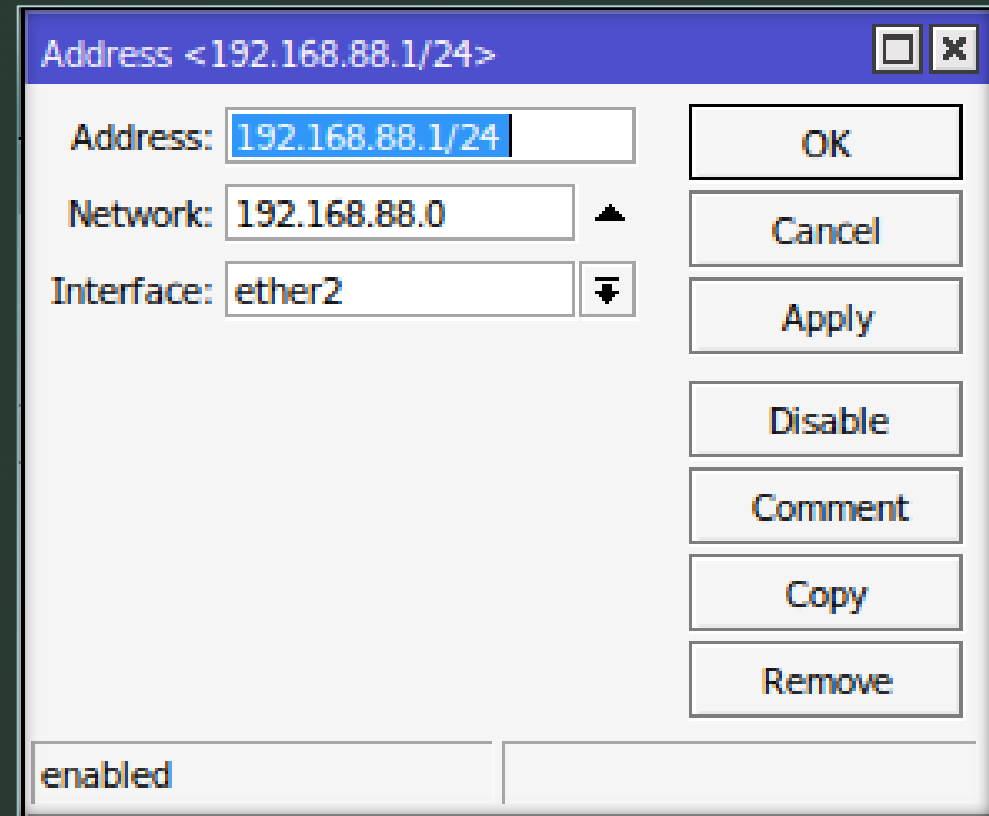
Serverul DHCP si DNS

Serverul DHCP

- Serverul DHCP (Dynamic Host Configuration Protocol) se ocupa de alocarea setarilor de retea clientilor cand se conecteaza la aceasta.
- Setarile minime pe care un server DHCP le poate oferi sunt de alocare al unui ip dintr-o clasa definita pe o durata de timp limitata si de a face managementul ip-urilor din clasa in care acesta are autoritate.

Serverul DHCP

- In primul rand trebuie sa setam un IP interfetei locale
- Setand adresa impreuna cu netmask-ul, reseaua si interfeata la care sunt asignate setarile



The screenshot shows a configuration window for a DHCP server. The title bar reads "Address <192.168.88.1/24>". Inside the window, there are three input fields: "Address:" with the value "192.168.88.1/24", "Network:" with the value "192.168.88.0", and "Interface:" with the value "ether2". To the right of these fields are several buttons: "OK", "Cancel", "Apply", "Disable", "Comment", "Copy", and "Remove". At the bottom left, there is a checkbox labeled "enabled" which is currently checked.

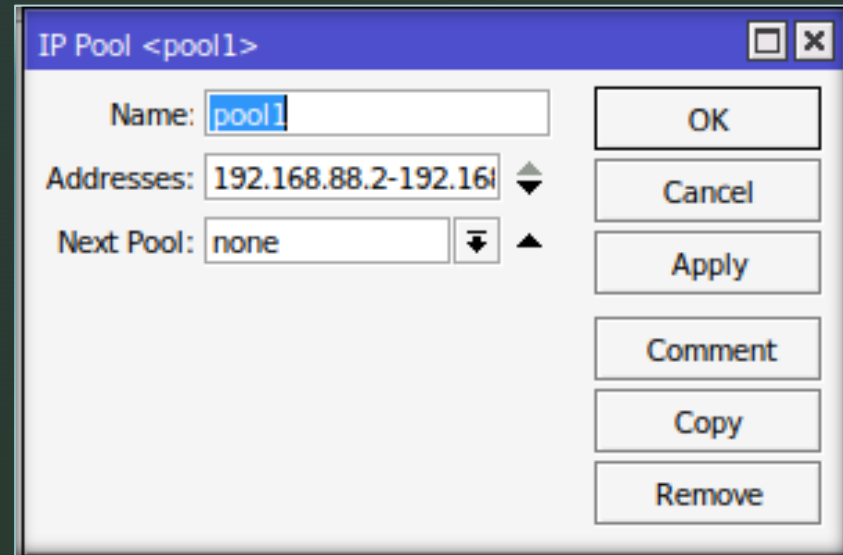
Address:	192.168.88.1/24
Network:	192.168.88.0
Interface:	ether2

Buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove

enabled

Serverul DHCP

- Pentru a putea configura un server DHCP in MikroTik trebuie in primul rand sa setam un pool in meniul IP -> Pool
- Dupa care puteam seta in IP-> DHCP Server -> Networks, setarile de retea pe care le ofera serverul DHCP.



IP Pool <pool1>

Name: pool1

Addresses: 192.168.88.2-192.168.88.254

Next Pool: none

OK

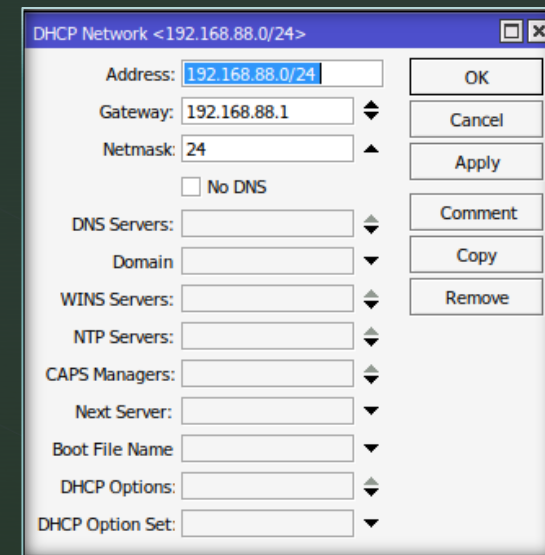
Cancel

Apply

Comment

Copy

Remove



DHCP Network <192.168.88.0/24>

Address: 192.168.88.0/24

Gateway: 192.168.88.1

Netmask: 24

☐ No DNS

DNS Servers:

Domain:

WINS Servers:

NTP Servers:

CAPS Managers:

Next Server:

Boot File Name:

DHCP Options:

DHCP Option Set:

OK

Cancel

Apply

Comment

Copy

Remove

Serverul DHCP

- In tabul DHCP Adaugam un server nou.
- In acesta setam interfata pe care sa asculte serverul.
- Il asignam pool-ul creat mai devreme si restul setarilor raman cele implicite.

The screenshot shows the 'DHCP Server <dhcp1>' configuration window. The 'Generic' tab is selected. The configuration fields are as follows:

- Name: dhcp1
- Interface: ether2
- Relay: (empty)
- Lease Time: 00:10:00
- Bootp Lease Time: forever
- Address Pool: pool1
- DHCP Option Set: (empty)
- Server Address: (empty)
- Delay Threshold: (empty)
- Authoritative: yes
- Bootp Support: static
- Client MAC Limit: (empty)
- Use RADIUS: no

At the bottom, there are four checkboxes:

- ☐ Always Broadcast
- ☐ Add ARP For Leases
- ☒ Use Framed As Classless
- ☒ Conflict Detection

On the right side, there are buttons for OK, Cancel, Apply, Disable, Comment, Copy, and Remove. At the bottom left, the status is 'enabled'.

Serverul DHCP

- Resetam masina "u1" sau folosim comanda "dhclient eth0" pentru a primi noile setari de la serverul de dhcp.

```
root@u1:~# ifconfig eth0
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.88.252 netmask 255.255.255.0 broadcast 192.168.88.255
    inet6 fe80::216:3eff:feed:1a prefixlen 64 scopeid 0x20<link>
    ether 00:16:3e:ed:00:1a txqueuelen 1000 (Ethernet)
    RX packets 563 bytes 40794 (40.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 45 bytes 7232 (7.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

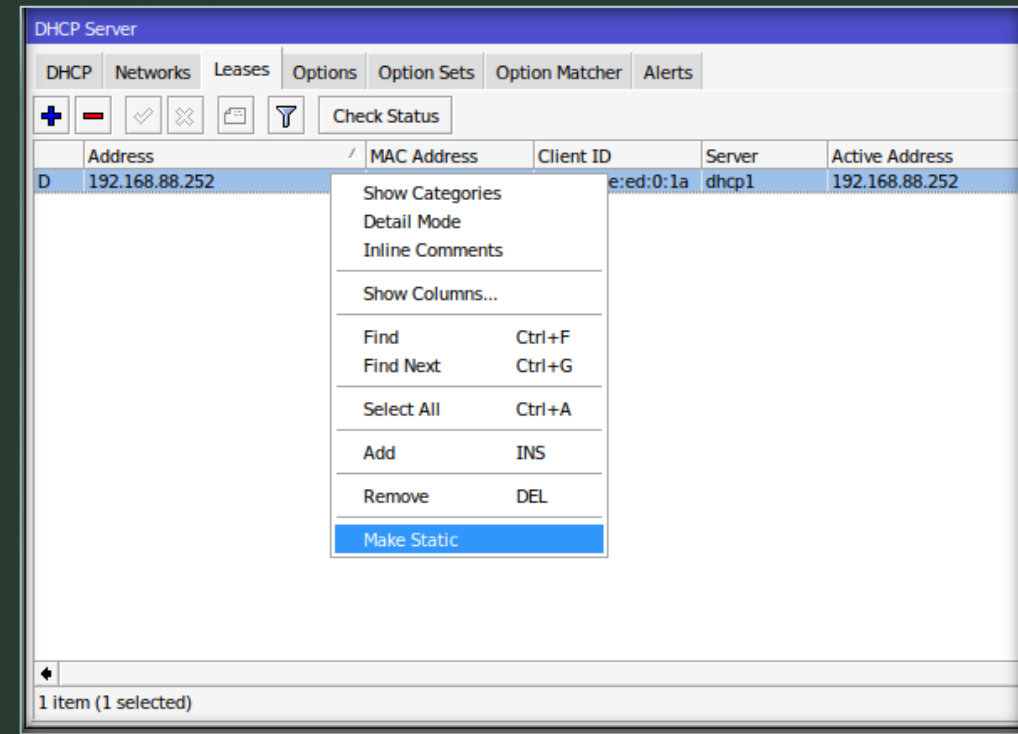
```
root@u1:~# route
Kernel IP routing table

```

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
default	_gateway	0.0.0.0	UG	100	0	0	eth0
192.168.88.0	0.0.0.0	255.255.255.0	U	100	0	0	eth0
_gateway	0.0.0.0	255.255.255.255	UH	100	0	0	eth0
192.168.122.1	_gateway	255.255.255.255	UGH	100	0	0	eth0

Serverul DHCP

- Pentru a face o asignare statica in interfata de DHCP Server mergem la tab-ul "Leases" selectam ip-ul pe care vrem sa il asignam ca static si in meniul accesibil prin click dreapta activam "Make Static"



Serverul DNS

- Serverul DNS (Domain Name System) este folosit pentru rezolvarea numelor de domeniu in adrese ip.
- Desi solutia oferita de MikroTik in acest sens este desul de rudimentara ea este suficienta pentru o afacere mica sau medie in care poate asigura DNS-uri interne si externe.

Serverul DNS

- Pentru a incepe configurarea serverului DNS trebuie sa mergem in IP-> DNS.
- In acesta vom seta serverele sau rezolversele de unde vom primi rezolutiile de DNS.
- Dupa care putem face primul DNS accesand meniul "Static"
- Aici o sa setam numele "test.lo" (ATENTIE! Orice suprascriere a unui DNS de aici va anula rezolitiile reale.)
- Type este setata ca A (IPv4 Address)
- TTL o zi (acesta indica rezolvelor cat de des sa reindexeze)
- Adresa IP cu care sa faca rezolutia.

DNS Settings

Servers: 8.8.8.8

Dynamic Servers: 192.168.122.1

Use DoH Server:

☐ Verify DoH Certificate

☒ Allow Remote Requests

Max UDP Packet Size: 4096

Query Server Timeout: 2.000 s

Query Total Timeout: 10.000 s

Max. Concurrent Queries: 100

Max. Concurrent TCP Sessions: 20

Cache Size: 2048 KiB

Cache Max TTL: 7d 00:00:00

Cache Used: 32 KiB

OK Cancel Apply Static Cache

DNS Static Entry <test.lo>

Name: test.lo

Regexp:

Type: A

TTL: 1d 00:00:00 s

Address: 192.168.88.252

OK Cancel Apply Disable Comment Copy Remove

enabled

Serverul DNS

- Putem verifica printr-un ping daca primim raspuns de la rezoltauie sau putem folosi comanda dig
- In cazul in care nu este instalata folosim comanda "apt install dnsutils"
- Si pentru a face o interogare de tip A la serverul DNS "192.168.88.1"

dig A test.lo @192.168.88.1

```
root@ul:~# ping test.lo
PING test.lo (192.168.88.252) 56(84) bytes of data:
64 bytes from test.lo (192.168.88.252): icmp_seq=1 ttl=64 time=0.014 ms
64 bytes from test.lo (192.168.88.252): icmp_seq=2 ttl=64 time=0.037 ms
^C
--- test.lo ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1004ms
rtt min/avg/max/mdev = 0.014/0.025/0.037/0.011 ms
```

```
root@ul:~# apt install dnsutils
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  bind9-dnsutils bind9-host bind9-libs liblmbd0 libmaxminddb0 libuv1
```

```
root@ul:~# dig A test.lo @192.168.88.1

;<<>> DiG 9.18.1-lubuntu1.1-Ubuntu <<>> A test.lo @192.168.88.1
;; global options: +cmd
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 22733
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 0

;; QUESTION SECTION:
;test.lo.                IN      A

;; ANSWER SECTION:
test.lo.                 86400   IN      A      192.168.88.252

;; Query time: 0 msec
;; SERVER: 192.168.88.1#53(192.168.88.1) (UDP)
;; WHEN: Tue Aug 30 17:34:00 UTC 2022
;; MSG SIZE rcvd: 41
```