

USING DHCP SERVER LEASE AS A TOOL FOR NETWORK ADMINISTRATION

A SIMPLE GUIDE FOR NETWORK ADMINISTRATORS TO USE THE DHCP SERVER LEASES
TO MONITOR, ADD RATE LIMIT AND ADDRESS LISTING TO THE DHCP CLIENT.

MUM PH 2018

MUM PH 2018 | SIENA COLLEGE OF TAYTAY | INGENU IT SOLUTIONS



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**CURRICULUM ENHANCEMENT THROUGH
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USING DHCP SERVER LEASES AS A TOOL FOR NETWORK ADMINISTRATION

A SIMPLE GUIDE FOR NETWORK ADMINISTRATORS TO USE THE DHCP SERVER
LEASES TO MONITOR, ADD RATE LIMIT AND ADDRESS LISTING TO THE DHCP
CLIENT.

OBJECTIVE

- **For the Network Administrator**
 - To be able to monitor all the device client who is connected to the network.
 - To set a Dynamic IP Address to Static within Mikrotik.
 - To enable Use Source Mac Address option to lock the device IP to the device mac.
 - To add the Rate Limit to the device client.
 - To use Address Listing option to be able to add the client to a certain firewall rule.



REFERENCE:

wiki.mikrotik.com

forum.mikrotik.com

ROUTEROS: DHCP SERVER

Dynamic Host Configuration Protocol

- For easy distribution of IP in a network
- IP Assignment
- Obtaining IP Settings

ROUTEROS: DHCP SERVER

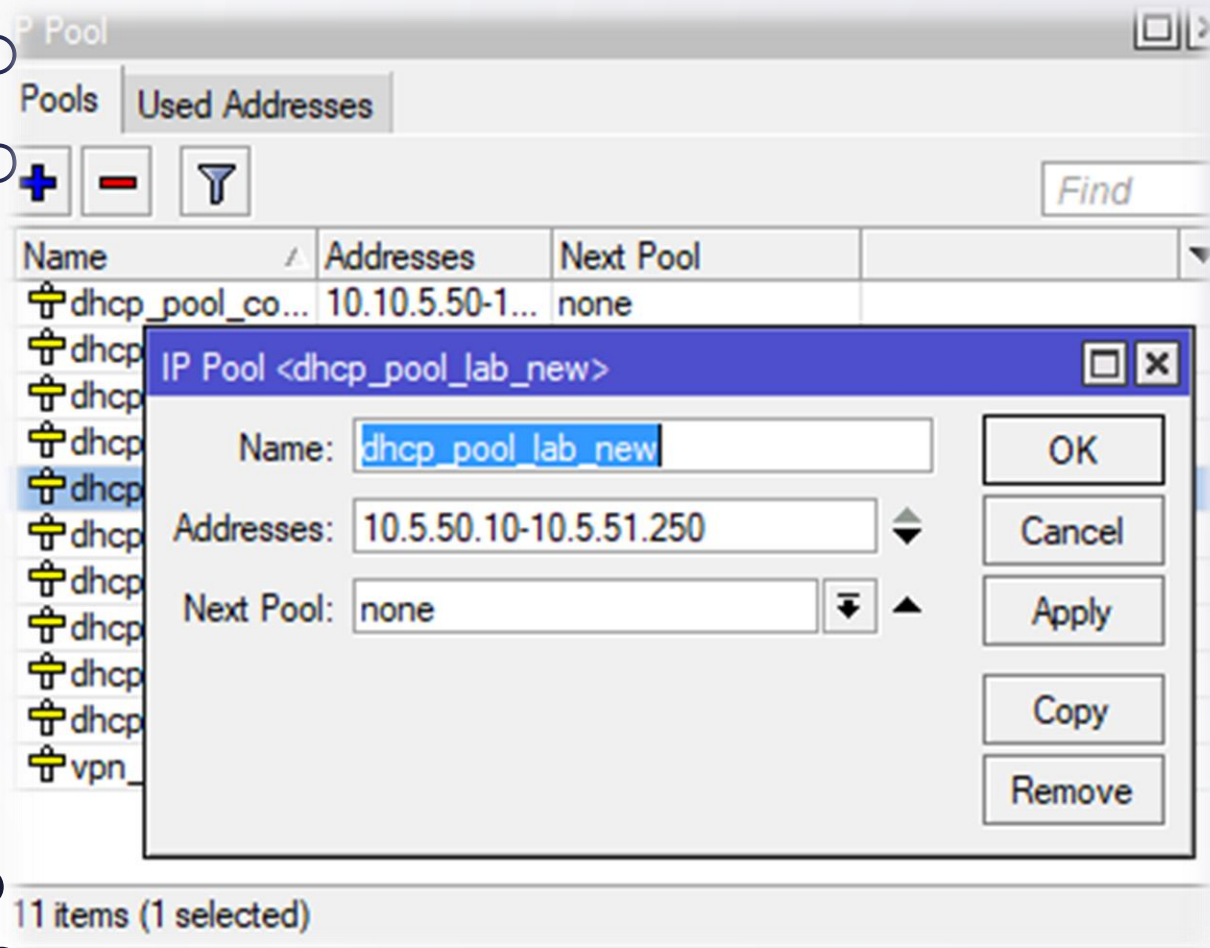
The screenshot shows the Mikrotik WinBox interface. On the left, the 'IP' menu item is highlighted with a red box. In the center, the 'DHCP Server' option is highlighted with a red box. On the right, the 'DHCP Server' configuration page is displayed, showing a table of DHCP servers. The 'dhcp_comp' entry is selected.

Name	Interface	Relay	Lease
dhcp_ceit	LAB		
dhcp_comp	LAB NEW		
dhcp_convent	CONVENT		
dhcp_faculty	FACULTY		
dhcp_library	LIBRARY		
dhcp_local	LOCAL		
X dhcp_student	STUDENT		
dhcp_system	SYSTEM		

```
/ip dhcp-server
```

PRE-REQUISITE:

- DHCP Server should be configured.
- There should be an IP Pool.
- IPv4 for the devices should be set to obtain an IP address automatically.
 - Note: Devices with manually configured IP cannot be probed in the DHCP lease.



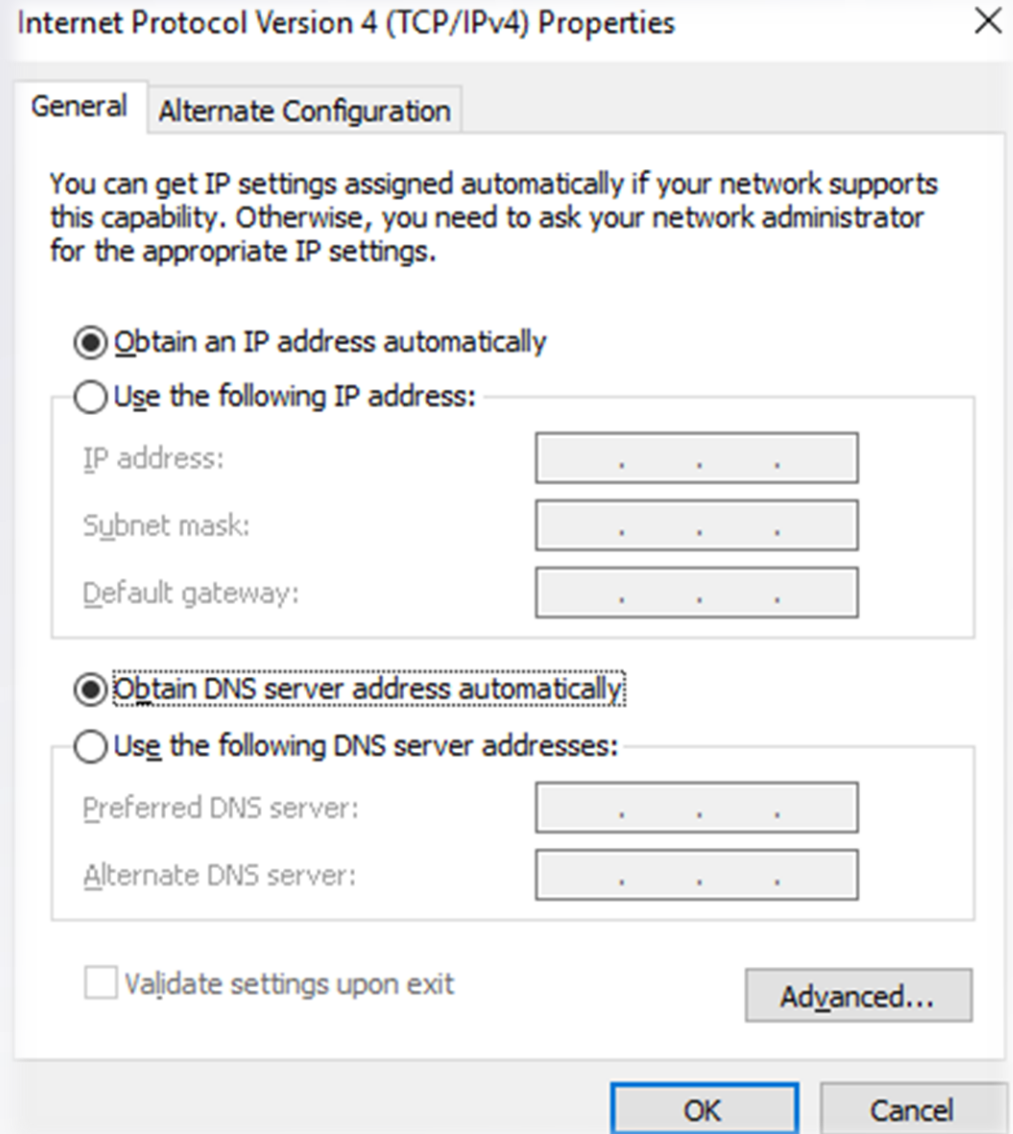
PRE-REQUISITE:

There should be an IP Pool.

Sub-menu: /ip pool

PRE-REQUISITE:

IPv4 for the devices should be set to obtain an IP address automatically.



Quick Set CAPsMAN Interfaces Wireless Bridge PPP Switch Mesh IP MPLS Routing System Queues Files Log Radius Tools New Terminal MetaROUTER Partition Make Supout.rif Manual New WinBox

DHCP Server

DHCP Networks Leases Options Option Sets Alerts

+ - ✓ ✗ 📁 🔍 Check Status Find

	Address	MAC Address	Client ID	Server	Active Address	Activ... /	Status
	10.5.50.143	10:78:D2:D4:F0:32	1:10:78:d...	dhcp_comp	10.5.50.143	HS4	bound
	10.5.50.22	10:78:D2:D4:F1:DF	1:10:78:d...	dhcp_comp	10.5.50.22	HS5	bound
	10.5.50.37	10:78:D2:D4:EF:02	1:10:78:d...	dhcp_comp	10.5.50.37	HS6	bound
	10.5.50.44	10:78:D2:D4:C4:44	1:10:78:d...	dhcp_comp	10.5.50.44	HS7	bound
	10.5.50.147	FA:DC:FE:FE:EB:69	1:fa:dc:fe...	dhcp_comp		HS8	waiting
	10.5.50.36	AA:DC:FE:FE:EB:...	1:aa:dc:f...	dhcp_comp		HS8	waiting
D	10.5.50.48	AA:DC:FE:FE:EF:69	1:aa:dc:f...	dhcp_comp	10.5.50.48	HS8	bound
D	10.5.50.52	74:C0:FB:CB:F4:CE	1:74:c0f...	dhcp_comp	10.5.50.52	HS9	bound
	10.5.50.29	10:78:D2:D5:3E:E4	1:10:78:d...	dhcp_comp	10.5.50.29	HS10	bound
	10.5.50.35	10:78:D2:D4:EE:AE	1:10:78:d...	dhcp_comp	10.5.50.35	HS11	bound
D	10.5.50.40	10:78:D2:D5:3F:08	1:10:78:d...	dhcp_comp	10.5.50.40	HS12	bound
	10.5.50.42	10:78:D2:D5:3E:9C	1:10:78:d...	dhcp_comp	10.5.50.42	HS14	bound
D	10.5.50.27	10:78:D2:D4:C2:97	1:10:78:d...	dhcp_comp	10.5.50.27	HS15	bound
	10.5.50.45	10:78:D2:D4:C5:DF	1:10:78:d...	dhcp_comp	10.5.50.45	HS16	bound
B	10.5.50.33	10:FF:2F:CF:FF:7F	1:10:ff:2f...	dhcp_comp		HS17	waiting
B	0.0.0.0	10:FF:2F:CF:FF:77	1:10:ff:2f...	dhcp_comp		HS17	waiting
D	10.5.50.49	10:F7:2F:CF:FF:77	1:10:f7:2f...	dhcp_comp	10.5.50.49	HS17	bound
D	10.5.50.50	00:80:AD:72:7E:2B	1:0:80:ad...	dhcp_comp	10.5.50.50	HS18	bound
	10.5.50.32	10:78:D2:D5:3F:2D	1:10:78:d...	dhcp_comp	10.5.50.32	HS19	bound
	10.5.50.30	10:78:D2:D4:ED:8C	1:10:78:d...	dhcp_comp	10.5.50.30	HS20	bound
	10.5.50.34	10:78:D2:D4:F2:6A	1:10:78:d...	dhcp_comp	10.5.50.34	HS23	bound
D	10.5.50.47	10:78:D2:D5:3E:E3	1:10:78:d...	dhcp_comp	10.5.50.47	HS24	bound
	10.5.50.24	10:78:D2:D4:C3:D7	1:10:78:d...	dhcp_comp	10.5.50.24	HS25	bound
	10.5.50.146	10:FF:C3:FE:FE:CA	1:10:ff:c3...	dhcp_comp		HS27	waiting
D	10.5.50.51	10:FF:32:FF:FE:EA	1:10:ff:32...	dhcp_comp	10.5.50.51	HS27	bound

695 items (1 selected)

DHCP SERVER LEASE

DHCP server lease submenu is used to monitor and manage server's leases.

Sub-menu: `/ip dhcp-server lease`

DHCP SERVER LEASE

Options:

- Assign IP
- Bind IP to MAC Address
- Client ID
- Assign Server
- Lease Time
- Block Access
- Always Broadcast
- DHCP Options
- Rate Limit
- Queue
- Address List

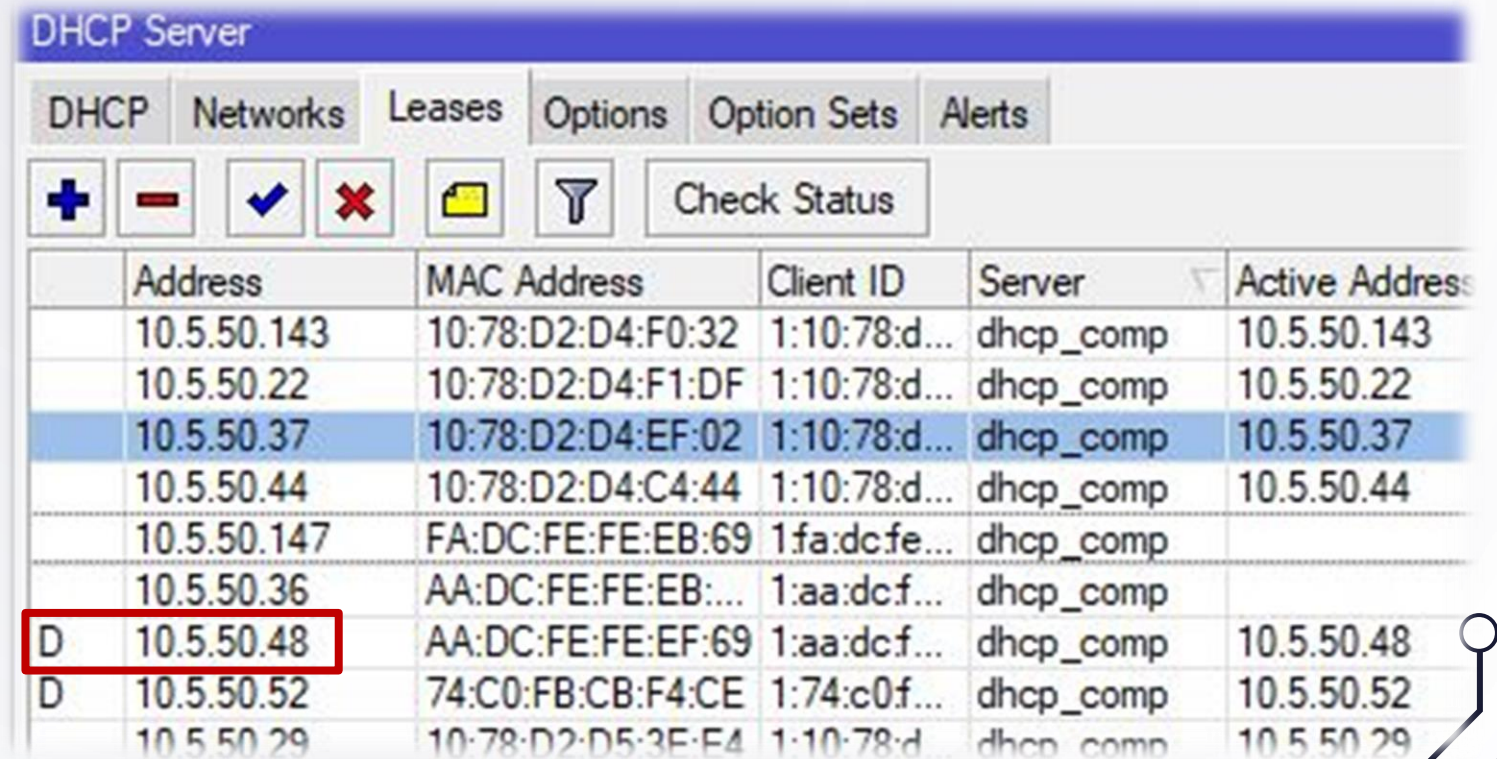
The screenshot shows a DHCP Server configuration window with the following fields and options:

- General** | **Active**
- Address:** 10.5.50.48
- MAC Address:** AA:DC:FE:FE:EF:69
- Use Src. MAC Address
- Client ID:** 1:aa:dc:fe:fe:ef:69
- Server:** dhcp_comp
- Lease Time:** [Empty]
- Block Access
- Always Broadcast
- DHCP Options:** [Empty]
- DHCP Option Set:** [Empty]
- Rate Limit:** 512k/2M
- Insert Queue Before:** first
- Address List:** Computer Lab

Buttons on the right side: OK, Cancel, Apply, Disable, Comment, Copy, Remove, Check Status.

DYNAMIC TO STATIC

- Double click on any dynamically assigned IP to view the DHCP Lease options.



DHCP Server

DHCP Networks Leases Options Option Sets Alerts

+ - ✓ ✗ 📁 🔍 Check Status

	Address	MAC Address	Client ID	Server	Active Address
	10.5.50.143	10:78:D2:D4:F0:32	1:10:78:d...	dhcp_comp	10.5.50.143
	10.5.50.22	10:78:D2:D4:F1:DF	1:10:78:d...	dhcp_comp	10.5.50.22
	10.5.50.37	10:78:D2:D4:EF:02	1:10:78:d...	dhcp_comp	10.5.50.37
	10.5.50.44	10:78:D2:D4:C4:44	1:10:78:d...	dhcp_comp	10.5.50.44
	10.5.50.147	FA:DC:FE:FE:EB:69	1:fa:dc:fe...	dhcp_comp	
	10.5.50.36	AA:DC:FE:FE:EB:...	1:aa:dc:f...	dhcp_comp	
D	10.5.50.48	AA:DC:FE:FE:EF:69	1:aa:dc:f...	dhcp_comp	10.5.50.48
D	10.5.50.52	74:C0:FB:CB:F4:CE	1:74:c0:f...	dhcp_comp	10.5.50.52
	10.5.50.29	10:78:D2:D5:3E:E4	1:10:78:d...	dhcp_comp	10.5.50.29

DHCP Lease <10.5.50.48,10.5.50.48>

General Active

Address: 10.5.50.48

MAC Address: AA:DC:FE:FE:EF:69

Client ID: 1:aa:dc:fe:fe:ef:69

Server: dhcp_comp

OK

Copy

Remove

Make Static

Check Status

- Click Make Static.
- Close the DHCP Lease window and re-open it again.

dynamic enabled radius blocked bound

DHCP Lease <10.5.50.48,10.5.50.48>

General Active

Address: 10.5.50.48

MAC Address: AA:DC:FE:FE:EF:69

Use Src. MAC Address

Client ID: 1:aa:dc:fe:fe:ef:69

Server: dhcp_comp

Lease Time:

Block Access

Always Broadcast

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Check Status

- Type the IP address that will be assigned to the client.
- Tick the box of Use Src. MAC Address to bind the IP to the MAC Address

ADDING RATE LIMIT

- Type the desired bandwidth limit on the Rate Limit field.

Example:
512k Upload
2M Download

DHCP Lease <10.5.50.48,10.5.50.48>

General Active

Address: 10.5.50.48

MAC Address: AA:DC:FE:FE:EF:69

Use Src. MAC Address

Client ID: 1:aa:dc:fe:fe:ef:69

Server: dhcp_comp

Lease Time: []

Block Access

Always Broadcast

DHCP Options: []

DHCP Option Set: []

Rate Limit: 512k/2M

Insert Queue Before: first

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Check Status

ADDING RATE LIMIT

#	Name	Target
9	WP - FACULTY	10.10.7.0/
10	WP - LAB	10.10.1.0/
11	WP - LAB NEW	10.5.50.0/
12	WP - LOCAL	192.168.1
14	WP - STUDENT	10.10.2.0/
15	WP - SYSTEM	10.10.0.0/
0 D	dhcp<AA:DC:FE:FE:EF:69/1:aa:dc:fe:fe:ef:69/dhcp_comp>	10.5.50.48

Simple Queue <dhcp<AA:DC:FE:FE:EF:69/1:aa:dc:fe:fe:ef:69/dhcp_comp>>

General | Advanced | Statistics | Traffic | Total | Total Statistics

Name: dhcp<AA:DC:FE:FE:EF:69/1:aa:dc:fe:fe:ef:69/dhcp

Target: 10.5.50.48

Dst.:

Max Limit: 512k | Target Upload: 2M | Target Download:

Burst Limit: unlimited | unlimited

Burst Threshold: unlimited | unlimited

Burst Time: 0 | 0

OK, Copy, Remove, Reset Counters, Reset All Counters, Torch

- It will be automatically be added on the Queue List

ASSIGN ADDRESS LIST

- Type a name/group where the client device will be assigned.

DHCP Lease <10.5.50.48,10.5.50.48>

General Active

Address: 10.5.50.48

MAC Address: AA:DC:FE:FE:EF:69

Use Src. MAC Address

Client ID: 1:aa:dc:fe:fe:ef:69

Server: dhcp_comp

Lease Time:

Block Access

Always Broadcast

DHCP Options:

DHCP Option Set:

Rate Limit: 512k/2M

Insert Queue Before: first

Address List: Computer Lab

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Check Status

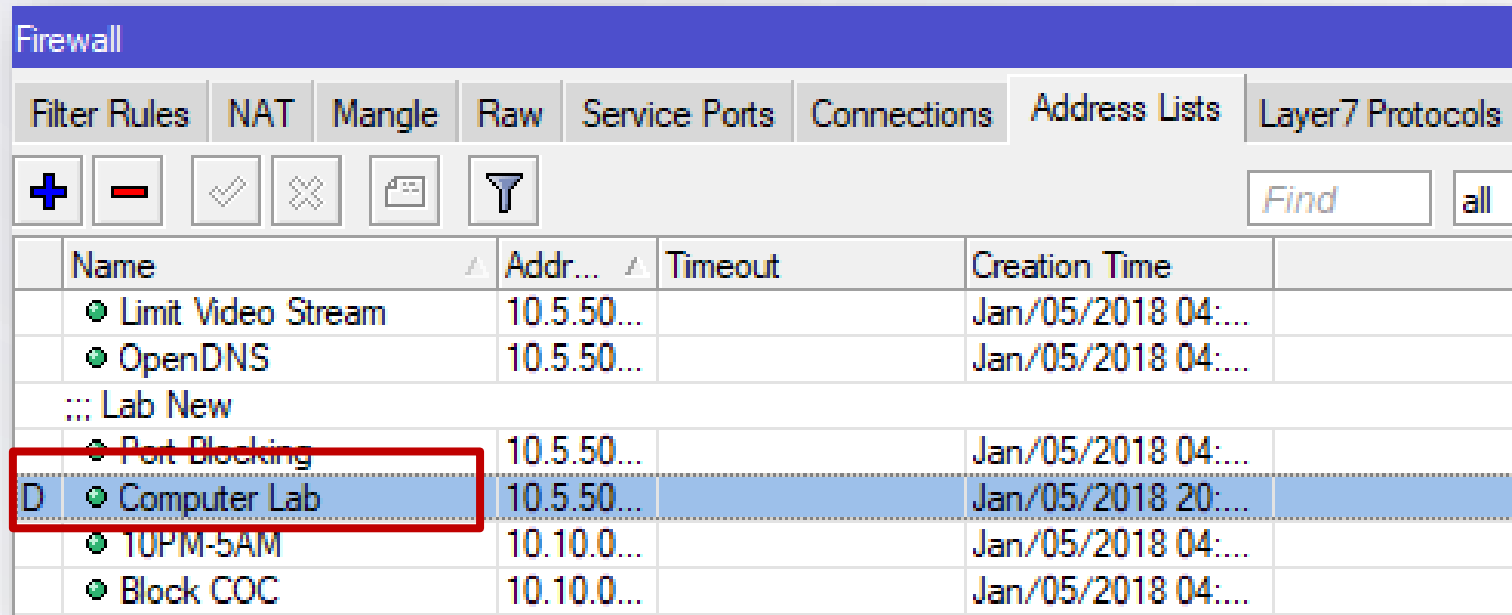
enabled radius blocked bound

ASSIGN ADDRESS LIST

- It will automatically be added in the Address list which can be used in creating filter rules.

Example:

Filter Rules for Computer Lab Internet Hours



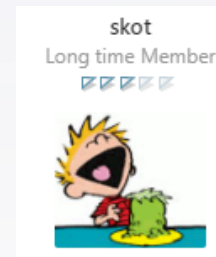
The screenshot shows the Mikrotik WinBox Firewall configuration interface. The 'Address Lists' tab is active, displaying a table of address lists. The 'Computer Lab' entry is highlighted with a blue selection bar and a red rectangular box around it. The table columns are Name, Address, Timeout, and Creation Time.

Name	Addr...	Timeout	Creation Time
Limit Video Stream	10.5.50...		Jan/05/2018 04:...
OpenDNS	10.5.50...		Jan/05/2018 04:...
::: Lab New			
Port Blocking	10.5.50...		Jan/05/2018 04:...
D Computer Lab	10.5.50...		Jan/05/2018 20:...
TUPM-5AM	10.10.0...		Jan/05/2018 04:...
Block COC	10.10.0...		Jan/05/2018 04:...

SCRIPT: EXTRACTING LEASES

This script will help you extract the necessary information from the lease that you want to include in your CSV file.

```
/ip dhcp-server lease :foreach i in=[find] do={ :put ([get $i address].",",".[get $i mac-address].",",".[get $i client-id].",",".[get $i server]) }
```




BIG THANKS to **skot** for this
post contribution @ Mikrotik Forum

SCRIPT: EXTRACTING LEASES

```
@SCT RB1100AHx2 Main Router] /ip dhcp-server lease> :foreach i in=[find] do={ :put {[get $i  
active-address      address-lists      blocked           disabled          last-seen        server  
active-client-id    agent-circuit-id  client-id         dynamic           lease-time       src-mac-address  
active-mac-address  agent-remote-id   comment          expires-after     mac-address      status  
active-server       always-broadcast  dhcp-option      host-name         radius           use-src-mac  
address             block-access      dhcp-option-set  insert-queue-before rate-limit       value-name
```

`/ip dhcp-server lease> :foreach I in=[find] do=(:put {[get $I`



Note: Typing this script and pressing  will show the available options that you may include in the command.

SCRIPT: EXTRACTING LEASES

Here is the script if we want to extract the list of block-access client with client-id and dhcp-server included

```
:foreach i in=[find] do={ :put ([get $i block-access].",".[get $i  
client-id].",".[get $i server]) }
```

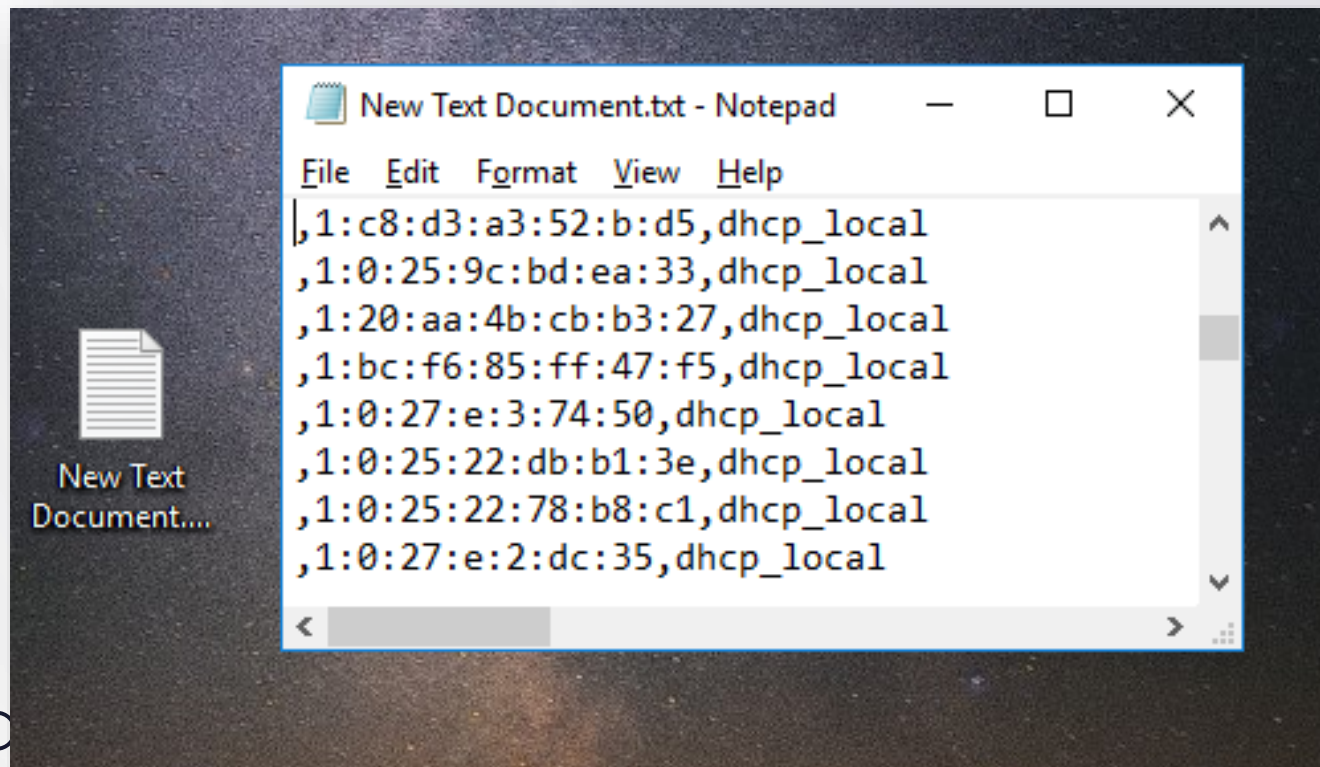
SCRIPT: EXTRACTING LEASES

```
@SCT RB1100AHx2 Main Router] /ip dhcp-server lease> :foreach i in=[find] do={ :put ([get $i block-access].",".[get $i client-id].",".[get $i server]) }  
,1:78:54:2e:a1:ca:7f,dhcp_local  
,1:c8:d3:a3:52:b:d5,dhcp_local  
,1:0:25:9c:bd:ea:33,dhcp_local  
,1:20:aa:4b:cb:b3:27,dhcp_local  
,1:bc:f6:85:ff:47:f5,dhcp_local  
,1:0:27:e:3:74:50,dhcp_local  
,1:0:25:22:db:b1:3e,dhcp_local  
,1:0:25:22:78:b8:c1,dhcp_local
```

- Highlight the extracted information and copy paste it in a text file in your desktop.

```
,1:f0:3:8c:26:a1:63,dhcp_faculty  
,1:cc:b0:da:8e:9:93,dhcp_faculty  
,1:78:fd:94:bb:8d:39,dhcp_library  
,1:0:26:82:10:b6:59,dhcp_local  
,,dhcp_ceit  
,1:c:d2:92:73:f7:21,dhcp_library  
,1:40:b8:37:c1:f2:b2,dhcp_faculty  
,1:c:8f:ff:83:b8:1c,dhcp_faculty  
,1:40:b8:37:c1:f2:b2,dhcp_local  
,1:b8:86:87:db:51:f3,dhcp_ceit  
,1:c8:38:70:83:86:15,dhcp_library  
,,dhcp_local  
,1:f8:d0:bd:1:68:3e,dhcp_local  
,,dhcp_faculty
```

SCRIPT: EXTRACTING LEASES

A screenshot of a Windows Notepad window titled "New Text Document.txt - Notepad". The window contains a list of DHCP lease information, including IP addresses, MAC addresses, and the DHCP server name. The text is as follows:

```
File Edit Format View Help
|,1:c8:d3:a3:52:b:d5,dhcp_local
|,1:0:25:9c:bd:ea:33,dhcp_local
|,1:20:aa:4b:cb:b3:27,dhcp_local
|,1:bc:f6:85:ff:47:f5,dhcp_local
|,1:0:27:e:3:74:50,dhcp_local
|,1:0:25:22:db:b1:3e,dhcp_local
|,1:0:25:22:78:b8:c1,dhcp_local
|,1:0:27:e:2:dc:35,dhcp_local
```

- Create a text file in your desktop.
- Copy paste the extracted fields from the terminal.

SCRIPT: EXTRACTING LEASES

- Change the extension name to CSV. Open the CSV file.
- You successfully extracted the list in your desktop



	A	B	C	D	E	F
1	10.5.50.65	10:78:D2:D4:C4:14	1:10:78:d2:d4:c4:14	dhcp_comp		
2	10.5.50.66	10:78:D2:D4:C3:27	1:10:78:d2:d4:c3:27	dhcp_comp		
3	10.5.50.67	10:78:D2:D4:ED:57	1:10:78:d2:d4:ed:57	dhcp_comp		
4	10.5.50.68	10:78:D2:D5:3E:FB	1:10:78:d2:d5:3e:fb	dhcp_comp		
5	10.5.50.69	10:78:D2:D5:3F:34	1:10:78:d2:d5:3f:34	dhcp_comp		
6	10.5.50.71	10:78:D2:D4:ED:81	1:10:78:d2:d4:ed:81	dhcp_comp		
7	10.5.50.74	10:78:D2:D4:F1:DD	1:10:78:d2:d4:f1:dd	dhcp_comp		
8	10.10.1.59	C8:60:00:CC:16:A9	1:c8:60:0:cc:16:a9	dhcp_ceit		
9		BC:E6:3F:21:5A:12	1:bc:e6:3f:21:5a:12			
10		EC:F3:42:0E:B0:AF	1:ec:f3:42:e:b0:af			
11	10.10.1.22	00:16:B6:9C:55:E6	1:0:16:b6:9c:55:e6	dhcp_ceit		
12	10.10.1.23	00:1C:10:65:94:AC	1:0:1c:10:65:94:ac	dhcp_ceit		
13	10.10.1.27	00:1C:10:65:A0:9E	1:0:1c:10:65:a0:9e	dhcp ceit		

THANK YOU AND ENJOY A HAPPY MUM PH 2018

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