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ACADEMY



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MikroTik User Meeting  
Conference, Exhibition, Workshop

Yogyakarta, 9 - 10 Oktober 2015  
Royal Ambarrukmo - Yogyakarta

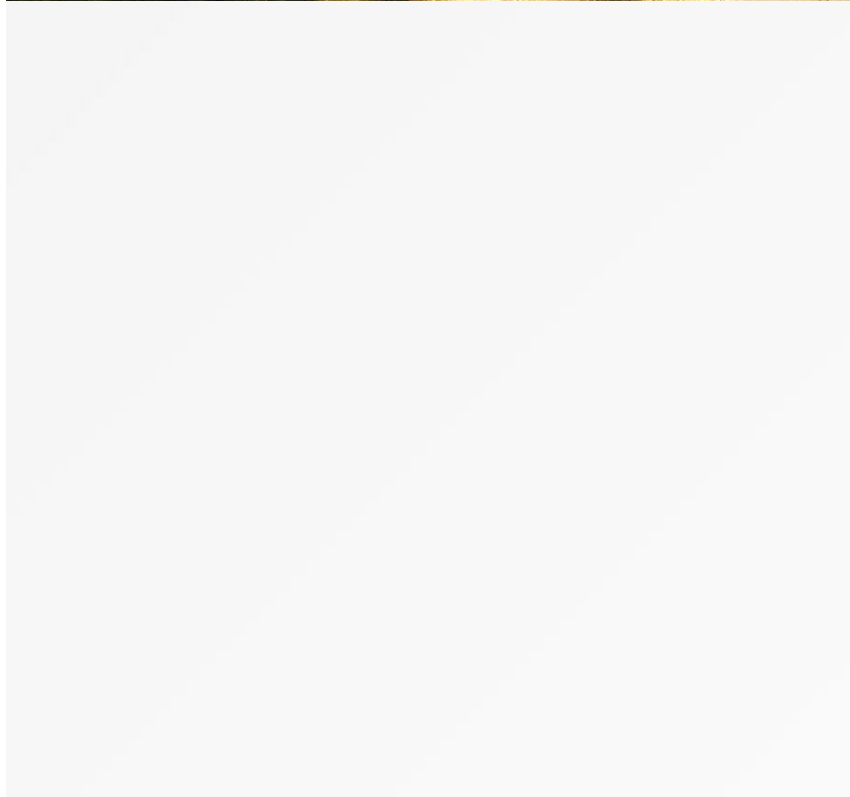


# IDENTITY

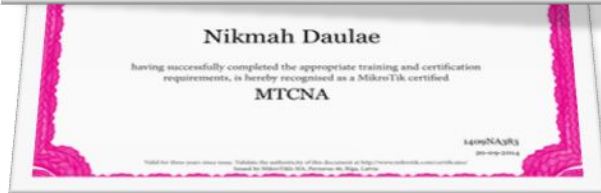
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## Organisation Experience:

- Comparative study in Singapore : 3 days
- CPD in Adelaide (South of Australia) : 3 weeks
- ..... : ..... ?



# MikroTik Academy



# First Certified Mikrotik Academy Training in my school



**RoMON**

**Router Management Overlay Network**

**Nikmah Daulae**  
**SMK N 1 Kota Bekasi**

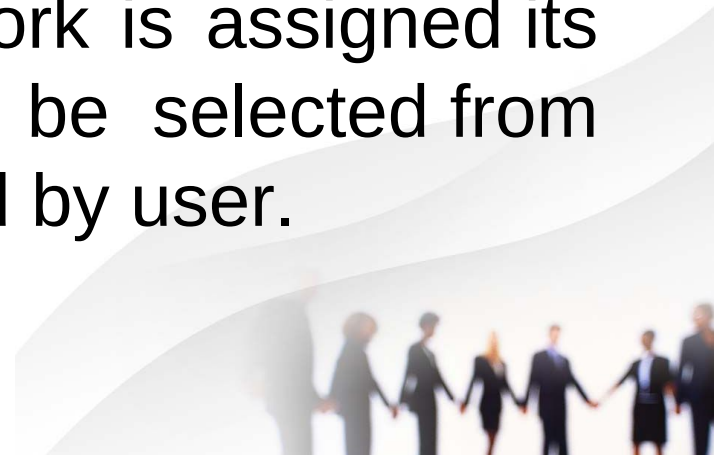
**MUM Yogyakarta**  
**9-10 October 2015**



# RoMON

- RoMON stands for **Router Management Overlay Network**. RoMON works by establishing independent MAC layer peer discovery and data forwarding network. RoMON network operates independently from **L2 or L3** forwarding configuration.
- Each router on RoMON network is assigned its RoMON ID. RoMON ID can be selected from **port MAC** address or specified by user.

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# Features in RoMON

- Establishing secured layers connection to mikrotik devices through physical (ethernet) and tunnel layers .
- Discovery and management MikroTik devices through Ping, SSH, Winbox (version 3.0.rc.9).
- Discovering on enabled RoMon of mikrotik devices which had previously been passed through multiple hops.,





# RoMON Implementation

- Winbox version **3.0.rc.9** which supports RoMon Applications features should be the minimal requirement.
- RoMON features is configured in **/romon** menu (in version 6.28) or under **/tool romon** menu (in version 6.28 above).
- In order to connect in RoMon network the feature should be **enabled**, and **ports** that participate in RoMON network must be specified.



# How to enable RoMON feature

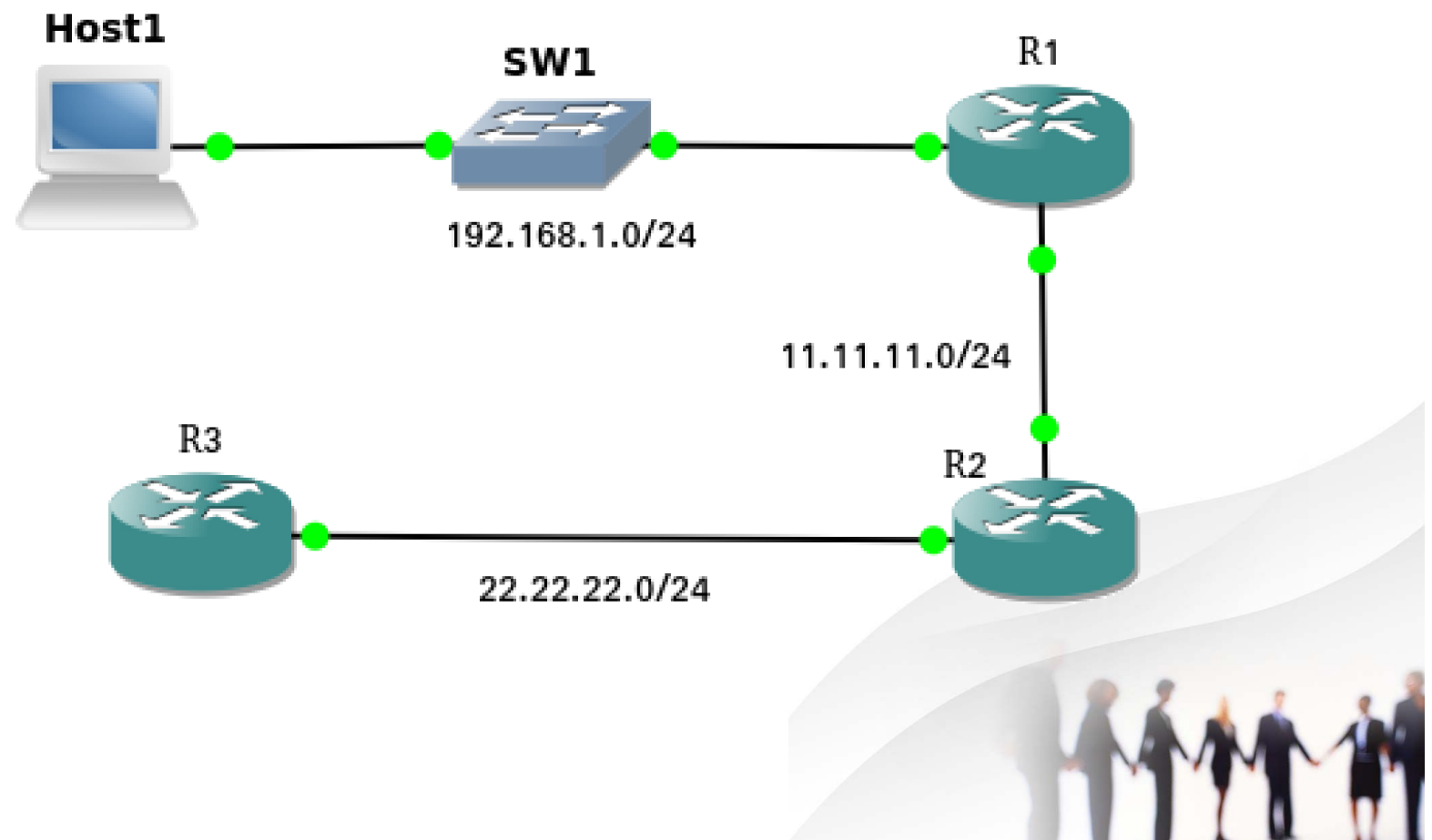
- RoMon feature can be found in the **Tools** menu → **RoMon**. To enable, please click **“Enabled”**.

```
[admin@MikroTik] > tool romon pr
enabled: no
id: 00:00:00:00:00:00
secrets:
[admin@MikroTik] > tool romon set enabled=yes secrets=123
[admin@MikroTik] > tool romon pr
enabled: yes
id: 00:00:00:00:00:00
secrets: 123
current-id: 00:00:AB:E4:51:04
[admin@MikroTik] >
```



# Topology

## Romon + Static Routing



# Parameter Secrets in RoMON

- This parameter work as authentication for connected MikroTik devices.

```
[admin@MikroTik] > tool romon set secrets=123
```



# Parameter ID in RoMON

- This ID defined as MAC Address from used router for device connectivity. We can decide it with random MAC Address on router interface. Alternatively, it will be filled automatically with existing MAC Address route as default.

```
[admin@MikroTik] > tool romon set id=00:00:00:00:00:01
[admin@MikroTik] > tool romon pr
  enabled: yes
      id: 00:00:00:00:00:01
  secrets: 123
current-id: 00:00:00:00:00:01
```



# Port Menu in RoMON

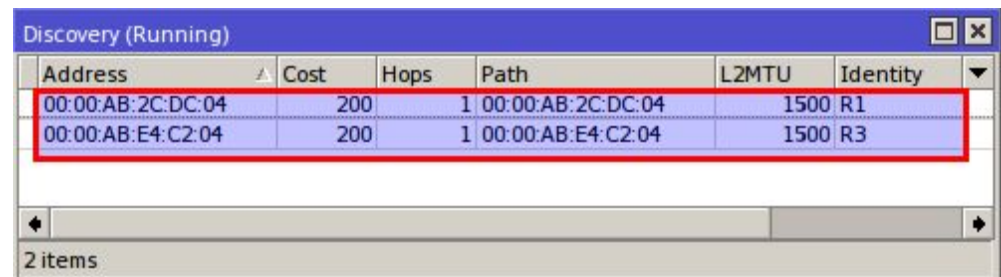
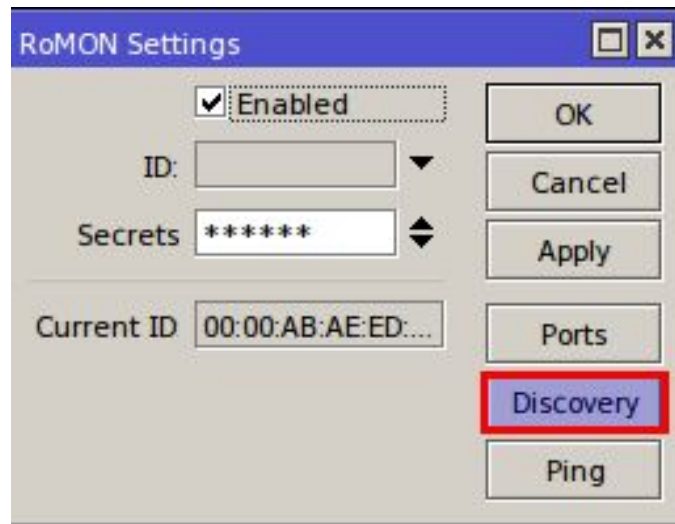
- As default, all interface on router is active for RoMon. We can activate any interface to be enabled. More manual configuration can be done to set parameter on 'Cost' and 'Secret'.

```
[admin@MikroTik] > tool romon port pr
Flags: X - disabled, D - dynamic
# INTERFACE FORBID COST
0 all no 100
[admin@MikroTik] > tool romon port set cost=1 numbers=0
[admin@MikroTik] > tool romon port pr
Flags: X - disabled, D - dynamic
# INTERFACE FORBID COST
0 all no 1
```



# Discovery Menu in RoMON

- **Discovery** command in setting can be used to show the active and connected devices. RoMon ID (Address), Cost, Hops number and Identity can also be found here.



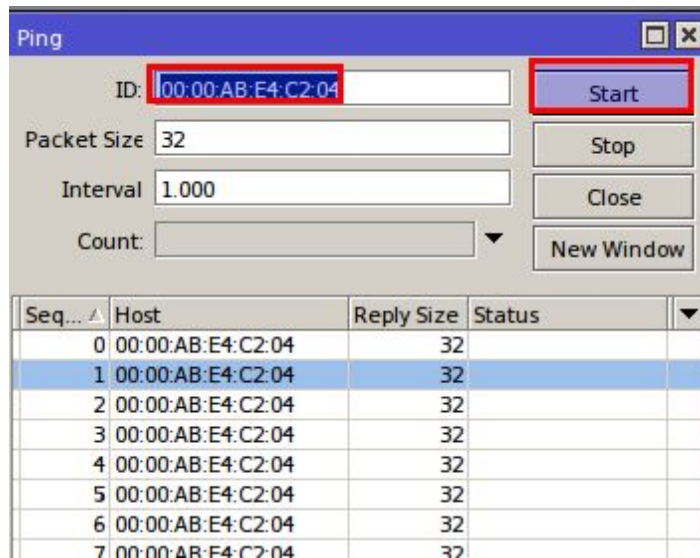
The image shows the 'Discovery (Running)' window, which displays a table of discovered devices. The table has columns for Address, Cost, Hops, Path, L2MTU, and Identity. Two rows are visible, both highlighted with a red border. The first row shows an address of 00:00:AB:2C:DC:04, a cost of 200, 1 hop, a path of 00:00:AB:2C:DC:04, an L2MTU of 1500, and an identity of R1. The second row shows an address of 00:00:AB:E4:C2:04, a cost of 200, 1 hop, a path of 00:00:AB:E4:C2:04, an L2MTU of 1500, and an identity of R3. Below the table, there is a scroll bar and the text '2 items'.

| Address           | Cost | Hops | Path              | L2MTU | Identity |
|-------------------|------|------|-------------------|-------|----------|
| 00:00:AB:2C:DC:04 | 200  | 1    | 00:00:AB:2C:DC:04 | 1500  | R1       |
| 00:00:AB:E4:C2:04 | 200  | 1    | 00:00:AB:E4:C2:04 | 1500  | R3       |



# Ping Menu in RoMON

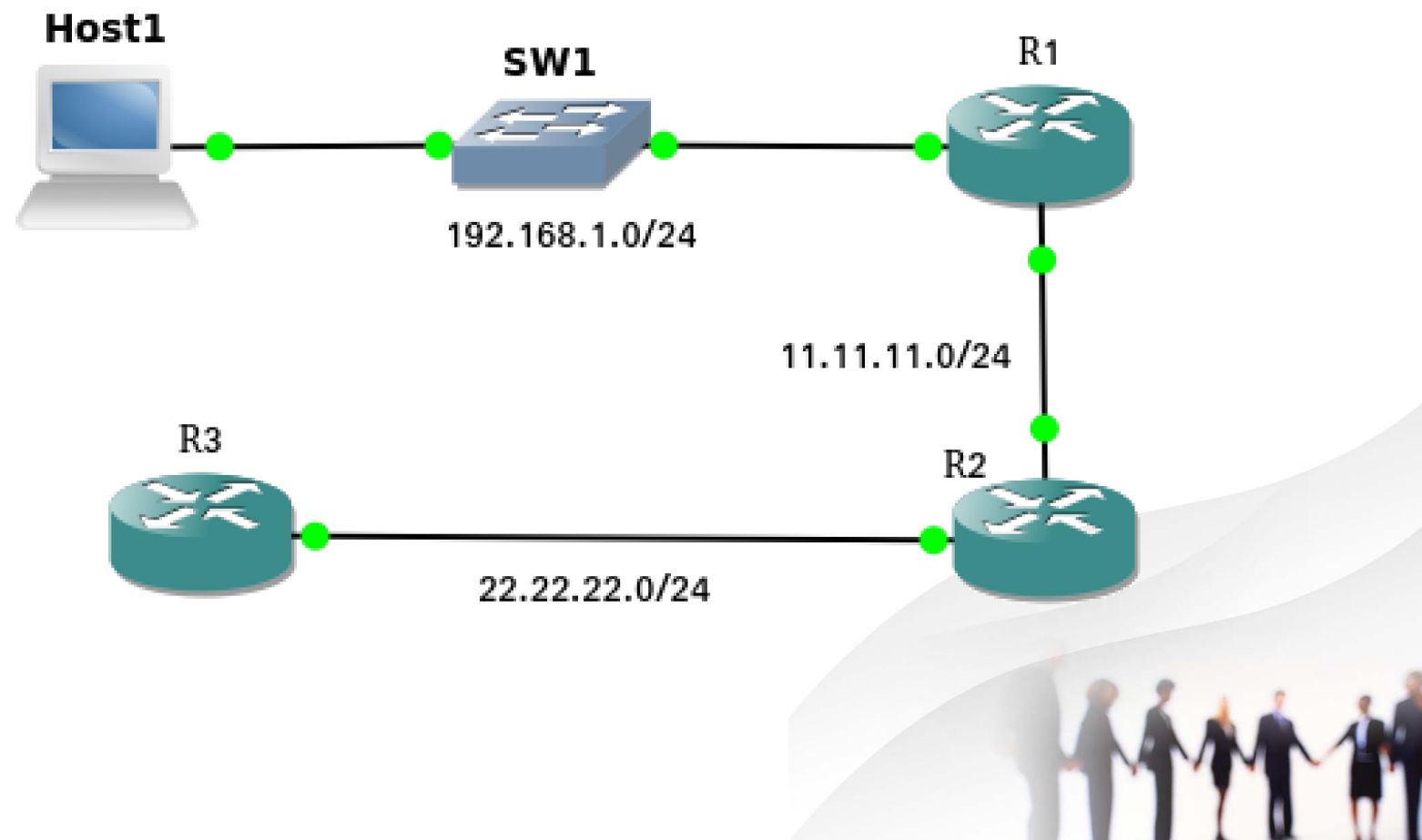
- We can monitor all mikrotik devices to identify its active status and configuration status on connected devices. To do so, Ping RoMON can be done accordingly.





# Topology

## Romon + Static Routing



# Configuration Router1

- Setting ip address in R1

```
[admin@R1] > ip address pr
Flags: X - disabled, I - invalid, D - dynamic
#  ADDRESS          NETWORK          INTERFACE
0  192.168.1.2/24    192.168.1.0     ether1
1  11.11.11.1/24    11.11.11.0     ether2
[admin@R1] >
```

- Setting Static Routing in R1

```
[admin@R1] > ip route add dst-address=22.22.22.0/24 gateway=11.11.11.2
[admin@R1] > ip route pr
Flags: X - disabled, A - active, D - dynamic,
C - connect, S - static, r - rip, b - bgp, o - ospf, m - mme,
B - blackhole, U - unreachable, P - prohibit
#  DST-ADDRESS      PREF-SRC        GATEWAY          DISTANCE
0  ADC 11.11.11.0/24   11.11.11.1     ether2           0
1  A S  22.22.22.0/24   11.11.11.2     11.11.11.2      1
2  ADC 192.168.1.0/24  192.168.1.2    ether1           0
[admin@R1] > _
```



# Configuration Router2

- Setting ip address in R2

```
[admin@R2] > ip address pr
Flags: X - disabled, I - invalid, D - dynamic
#  ADDRESS          NETWORK          INTERFACE
0  11.11.11.2/24     11.11.11.0      ether1
1  22.22.22.1/24     22.22.22.0      ether2
[admin@R2] > _
```

- Setting Static Routing in R2

```
[admin@R2] > ip route add dst-address=192.168.1.0/24 gateway=11.11.11.1
[admin@R2] > ip route pr
Flags: X - disabled, A - active, D - dynamic,
C - connect, S - static, r - rip, b - bgp, o - ospf, m - mme,
B - blackhole, U - unreachable, P - prohibit
#  DST-ADDRESS      PREF-SRC  GATEWAY          DISTANCE
0  ADC  11.11.11.0/24    11.11.11.2     ether1           0
1  ADC  22.22.22.0/24    22.22.22.1     ether2           0
2  A S  192.168.1.0/24   11.11.11.1     1
[admin@R2] > _
```



# Configuration Router3

- Setting ip address in R3

```
[admin@R3] > ip address pr
Flags: X - disabled, I - invalid, D - dynamic
#  ADDRESS          NETWORK          INTERFACE
0  22.22.22.2/24     22.22.22.0      ether1
[admin@R3] >
```

- Setting Static Routing in R3

```
[admin@R3] > ip route add dst-address=11.11.11.0/24 gateway=22.22.22.1
[admin@R3] > ip route add dst-address=192.168.1.0/24 gateway=22.22.22.1
[admin@R3] > ip route pr
Flags: X - disabled, A - active, D - dynamic,
C - connect, S - static, r - rip, b - bgp, o - ospf, m - mme,
B - blackhole, U - unreachable, P - prohibit
#  DST-ADDRESS      PREF-SRC  GATEWAY          DISTANCE
0  A S  11.11.11.0/24    22.22.22.1     1
1  ADC 22.22.22.0/24    22.22.22.2     0
2  A S  192.168.1.0/24  22.22.22.1     1
[admin@R3] > _
```



# Configuration RoMon all Router

## Setting RoMon in R1

```
[admin@R1] > tool romon set enabled=yes secrets=daulae  
[admin@R1] > tool romon pr  
enabled: yes  
id: 00:00:00:00:00:00  
secrets: daulae  
current-id: 00:00:AB:2C:DC:04  
[admin@R1] >
```

## Setting RoMon in R3

```
[admin@R3] > tool romon set enabled=yes secrets=daulae  
[admin@R3] > tool romon pr  
enabled: yes  
id: 00:00:00:00:00:00  
secrets: daulae  
current-id: 00:00:AB:E4:C2:04  
[admin@R3] >
```

## Setting RoMon in R2

```
[admin@R2] > tool romon set enabled=yes secrets=daulae  
[admin@R2] > tool romon pr  
enabled: yes  
id: 00:00:00:00:00:00  
secrets: daulae  
current-id: 00:00:AB:AE:ED:04  
[admin@R2] >
```



# Test RoMon in Host

For RoMon connection we use winbox versi 3-up click neighbors → Refresh → Click ip address → Connect to RoMon.

The screenshot shows the WinBox v3.0rc13 (Addresses) interface. The window title is "WinBox v3.0rc13 (Addresses)". The menu bar includes "File" and "Tools". The main area contains a "Connect To:" field, a "Login:" field with "admin" entered, and a "Password:" field. To the right, there are checkboxes for "Keep Password" (checked) and "Open In New Window" (unchecked). Below these fields are three buttons: "Add/Set", "Connect To RoMON" (highlighted with a red box and labeled "4"), and "Connect".

Below the connection fields, there is a "Managed" section with a "Neighbors" button (highlighted with a red box and labeled "1"). Below the "Neighbors" button is a "Refresh" button (highlighted with a red box and labeled "2").

Below the "Refresh" button is a table with the following columns: "MAC Address", "IP Address", "Identity", "Version", and "Board". The table contains two rows of data:

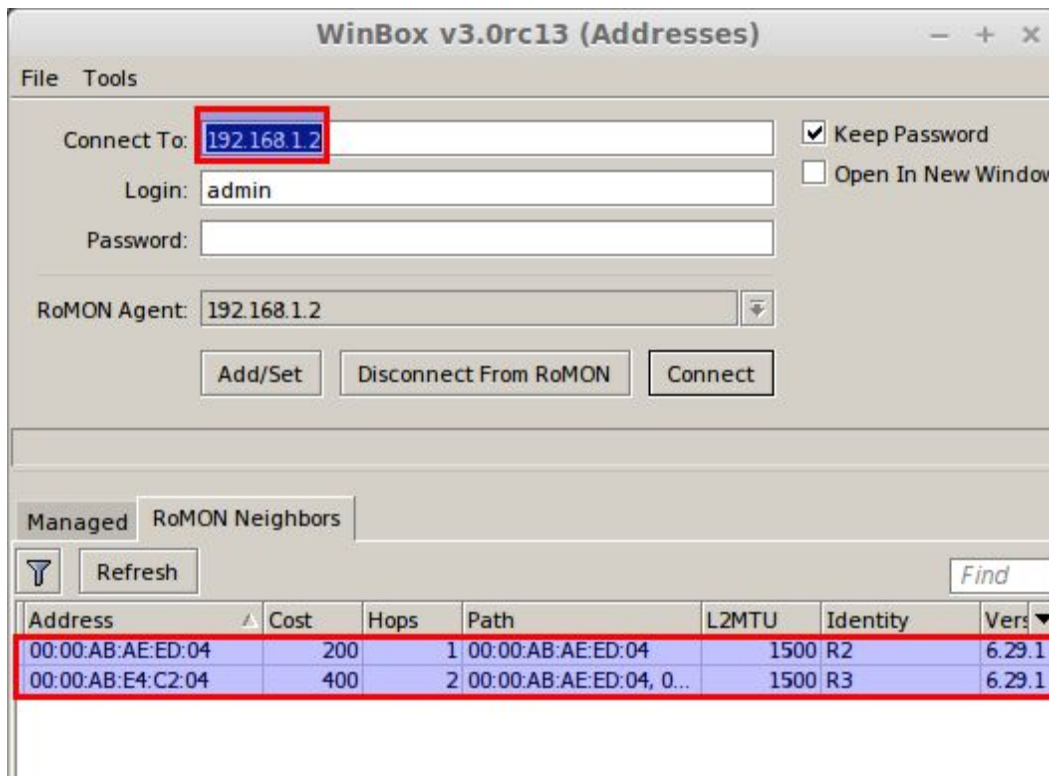
| MAC Address       | IP Address              | Identity | Version | Board |
|-------------------|-------------------------|----------|---------|-------|
| 00:00:AB:2C:DC:00 | 192.168.1.2             | R1       | 6.29.1  | x86   |
| 00:00:AB:2C:DC:00 | fe80::200:abff:fe2c:... | R1       | 6.29.1  | x86   |

The "IP Address" field "192.168.1.2" in the first row is highlighted with a red box and labeled "3".

At the bottom right of the interface, there is a small image of a group of people in business attire holding hands.

# Test RoMon in Host

After setting the RoMon in every router we can see another router identity in ours.



The screenshot shows the WinBox v3.0rc13 (Addresses) interface. The 'Connect To' field is set to 192.168.1.2, and the 'RoMON Agent' is also set to 192.168.1.2. The 'Login' field is set to 'admin'. The 'Keep Password' checkbox is checked, and the 'Open In New Window' checkbox is unchecked. The 'Add/Set', 'Disconnect From RoMON', and 'Connect' buttons are visible.

The 'Managed' tab is selected, and the 'RoMON Neighbors' sub-tab is active. The 'Refresh' button is visible. The table below shows the RoMON Neighbors:

| Address           | Cost | Hops | Path                    | L2MTU | Identity | Vers   |
|-------------------|------|------|-------------------------|-------|----------|--------|
| 00:00:AB:AE:ED:04 | 200  | 1    | 00:00:AB:AE:ED:04       | 1500  | R2       | 6.29.1 |
| 00:00:AB:E4:C2:04 | 400  | 2    | 00:00:AB:AE:ED:04, 0... | 1500  | R3       | 6.29.1 |





**Thank You**

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