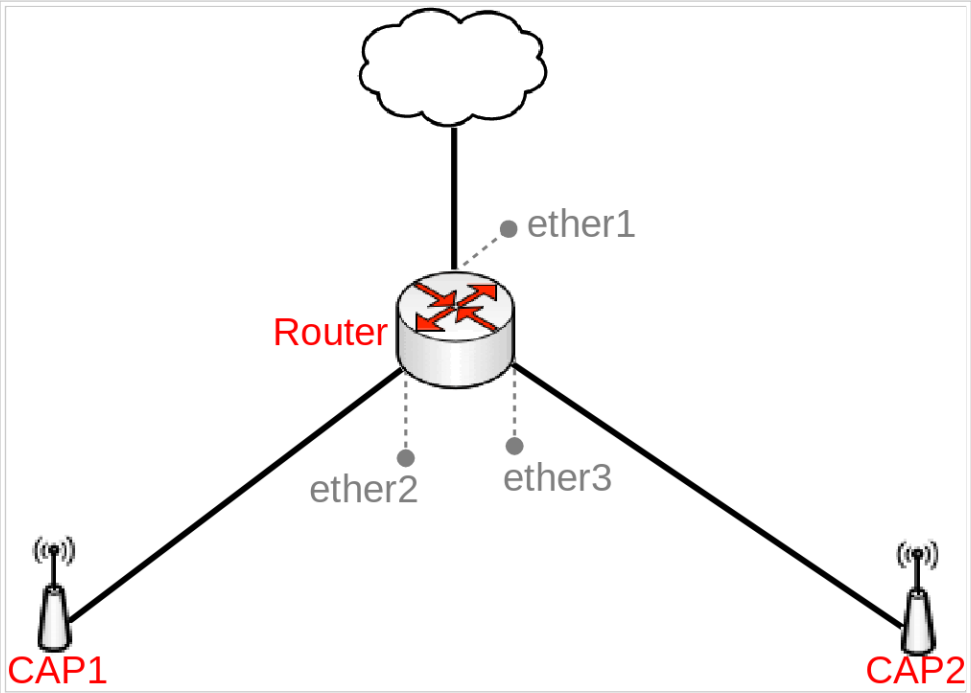
Manual:Simple CAPsMAN setup

From MikroTik Wiki

Contents

Introduction

It is possible to create centralized Access Point management setup for home or office environment that is scalable to many Access Point. This can be done by setting up Controlled Access Point system Manager (CAPsMAN) on your router and connecting Controlled Access Points (CAPs) to it. There are multiple benefits of setting up CAPsMAN in your environment, the most important benefit is centralized configuration, you don't need to adjust changes to all CAPs in your network, but rather you need to specify changes in your CAPsMAN and all CAPs will receive these configuration changes. Another benefit is a centralized Registration Table, this will allow you to easily monitor devices and create Access Lists for devices in your network from a single device (from CAPsMAN). There are a lot of customization options, you can read more about the possibilities in the CAPsMAN manual page. This guide will provide you with a very easy, simple and fast way to setup CAPsMAN.



Simple CAPsMAN Setup

Note: It is not required that your router has a Wireless interface, but it is required that the "wireless" package is installed. For this setup a RB960 (hEX PoE) and two RB912 were used, but any router running RouterOS and any device having at least one Wireless interface and running RouterOS can be used.

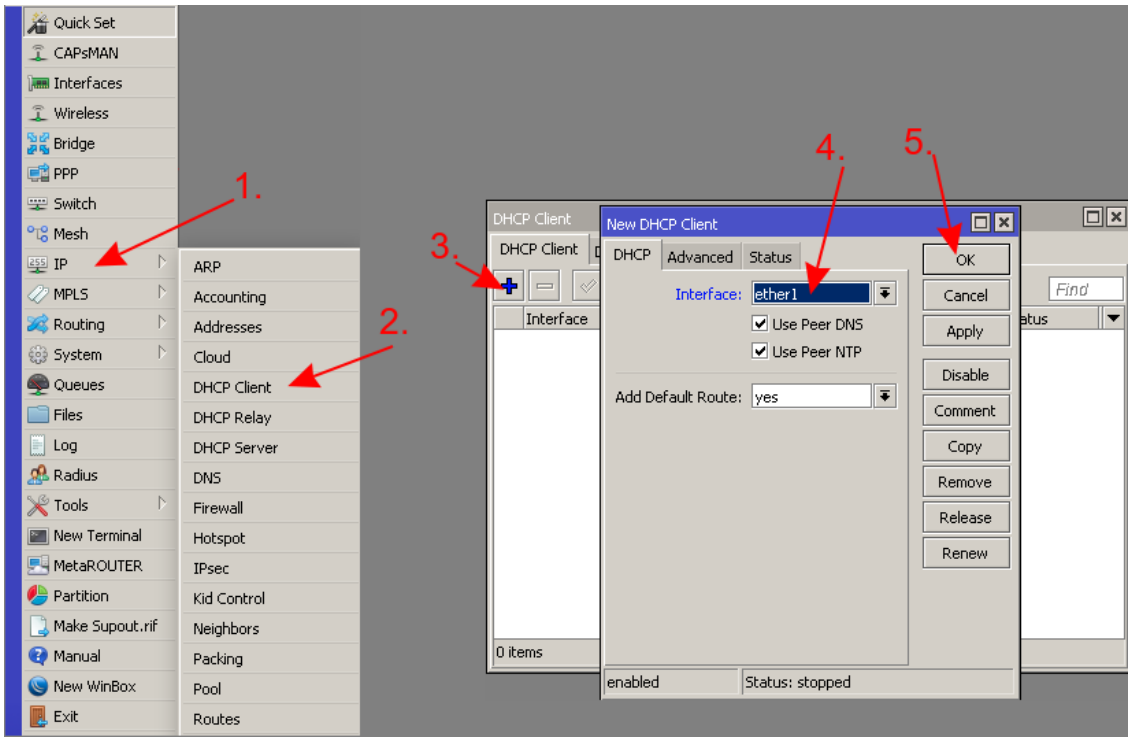
Option #1, using Winbox

Before you can start configuring CAPsMAN, you must configure your selected CAPsMAN device as a router. Here we will assume that **ether1** is used as a WAN port and **ether2-ether5** are used as LAN ports. You can skip Step1 if you are already using the default configuration on your router.

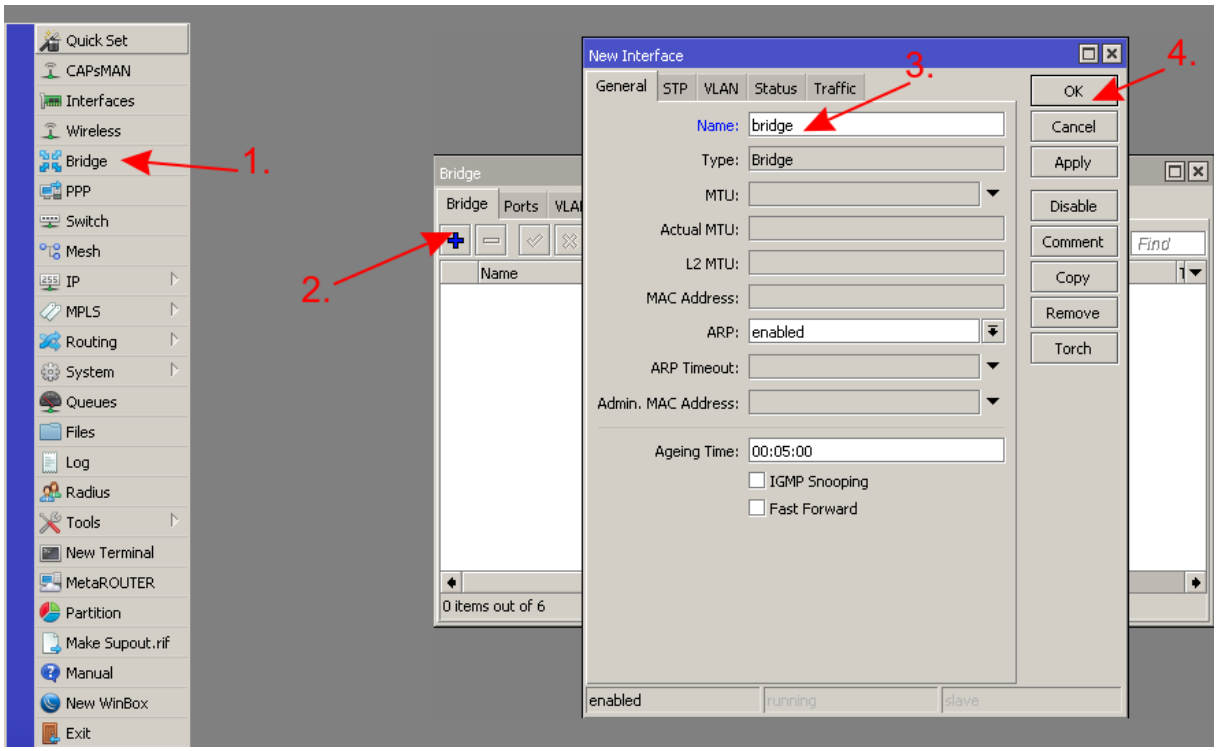
Step #1, setup router

Router

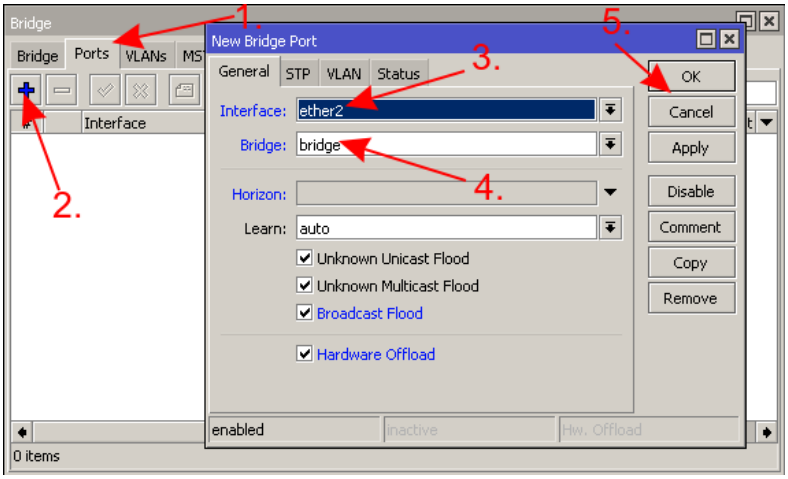
- Get an IP address from WAN (or add a static IP address)



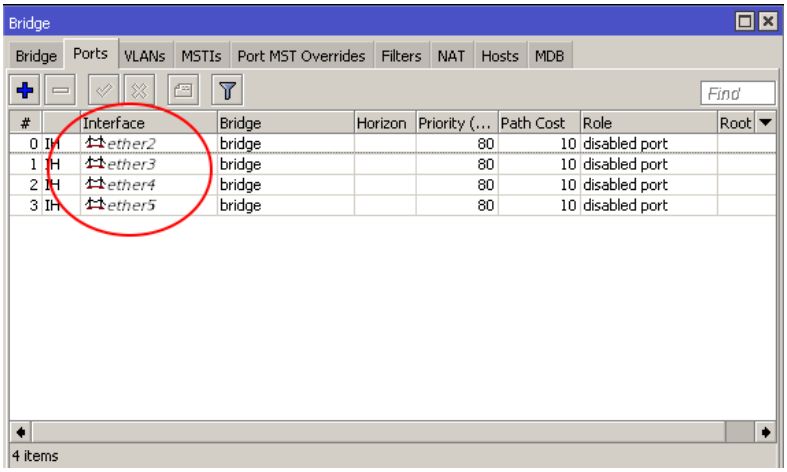
- Create a bridge



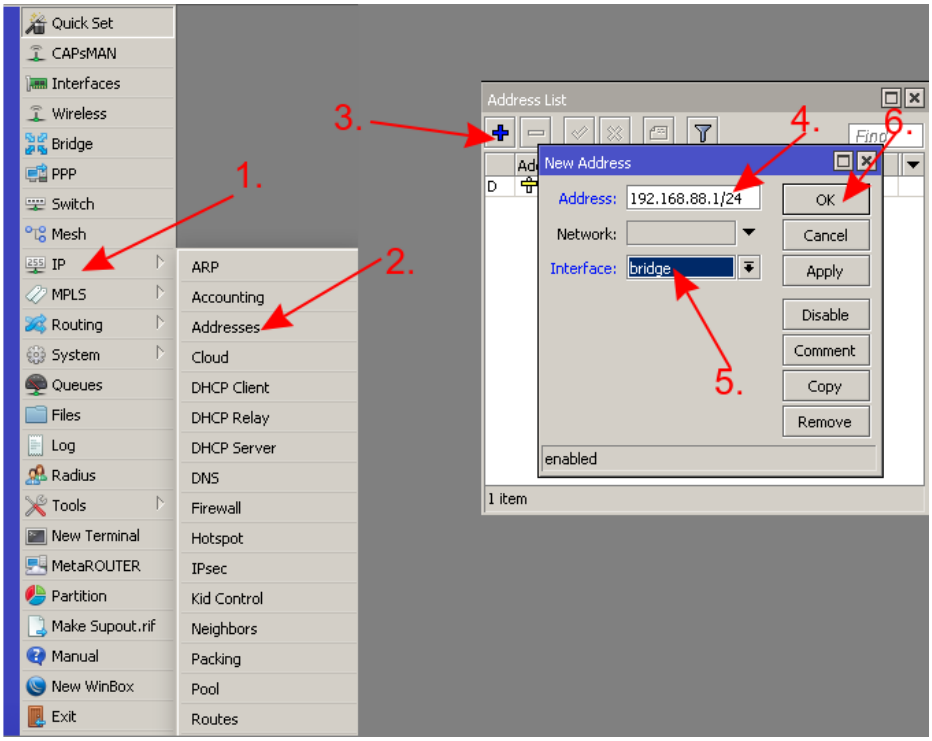
- Assign ports to the bridge



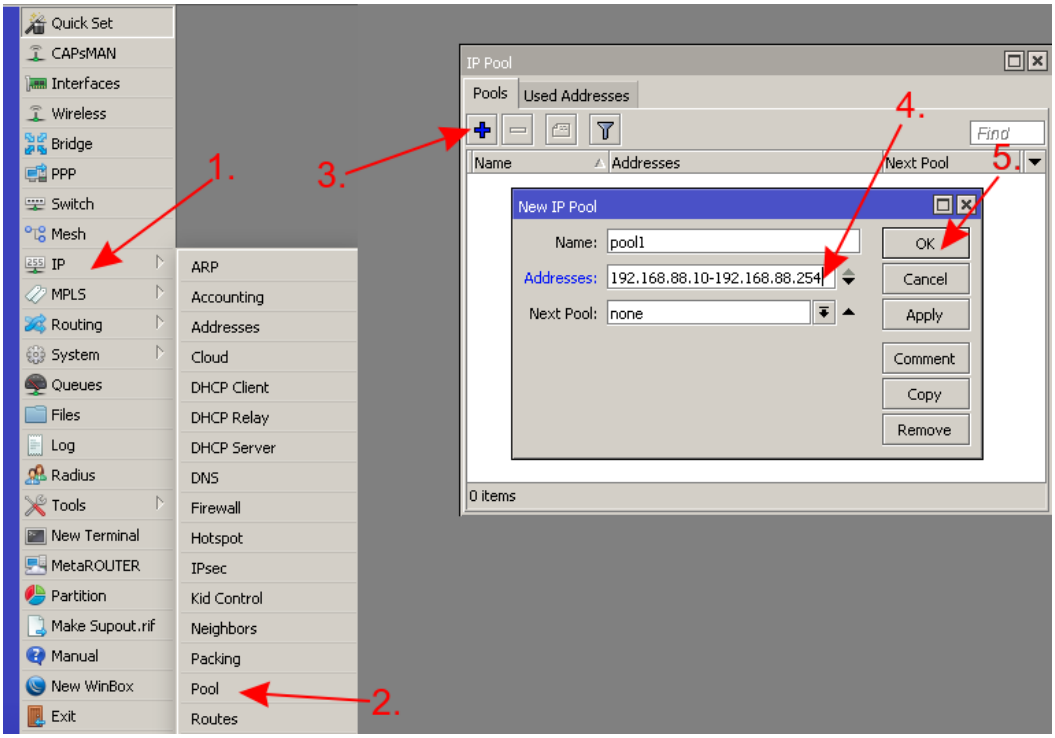
- Repeat the step to add more ports to the bridge



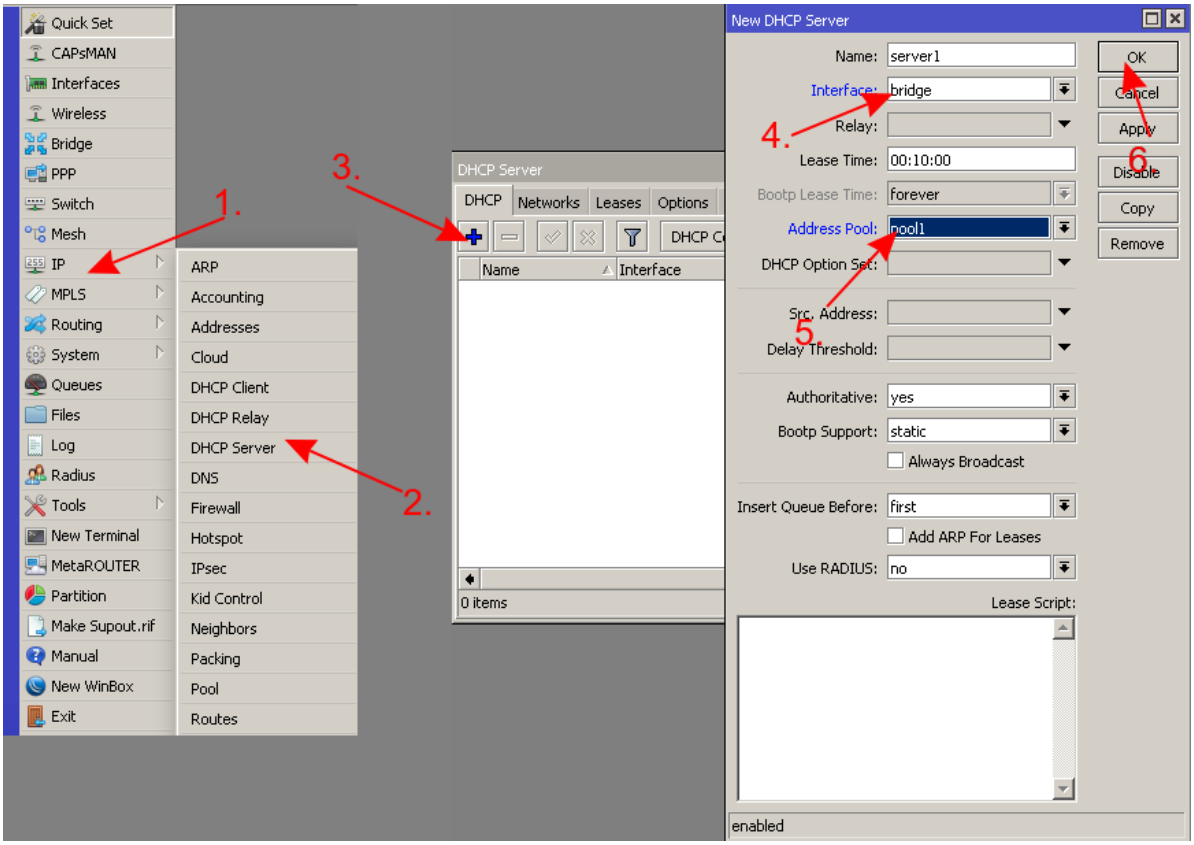
- Add an IP address to the bridge

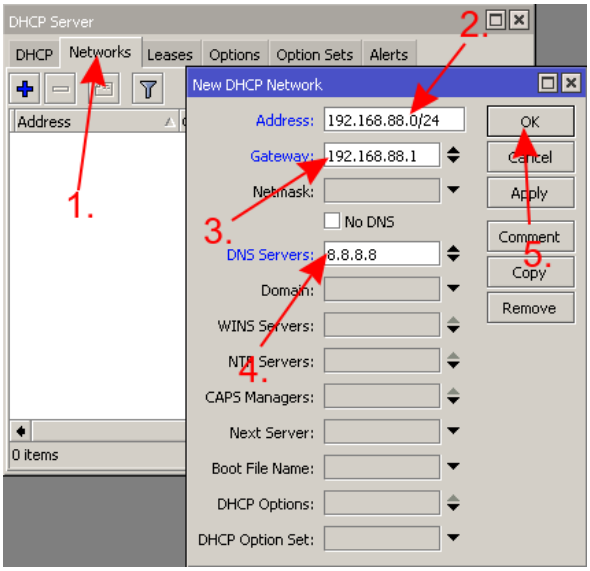


- Create a new address pool for the DHCP Server

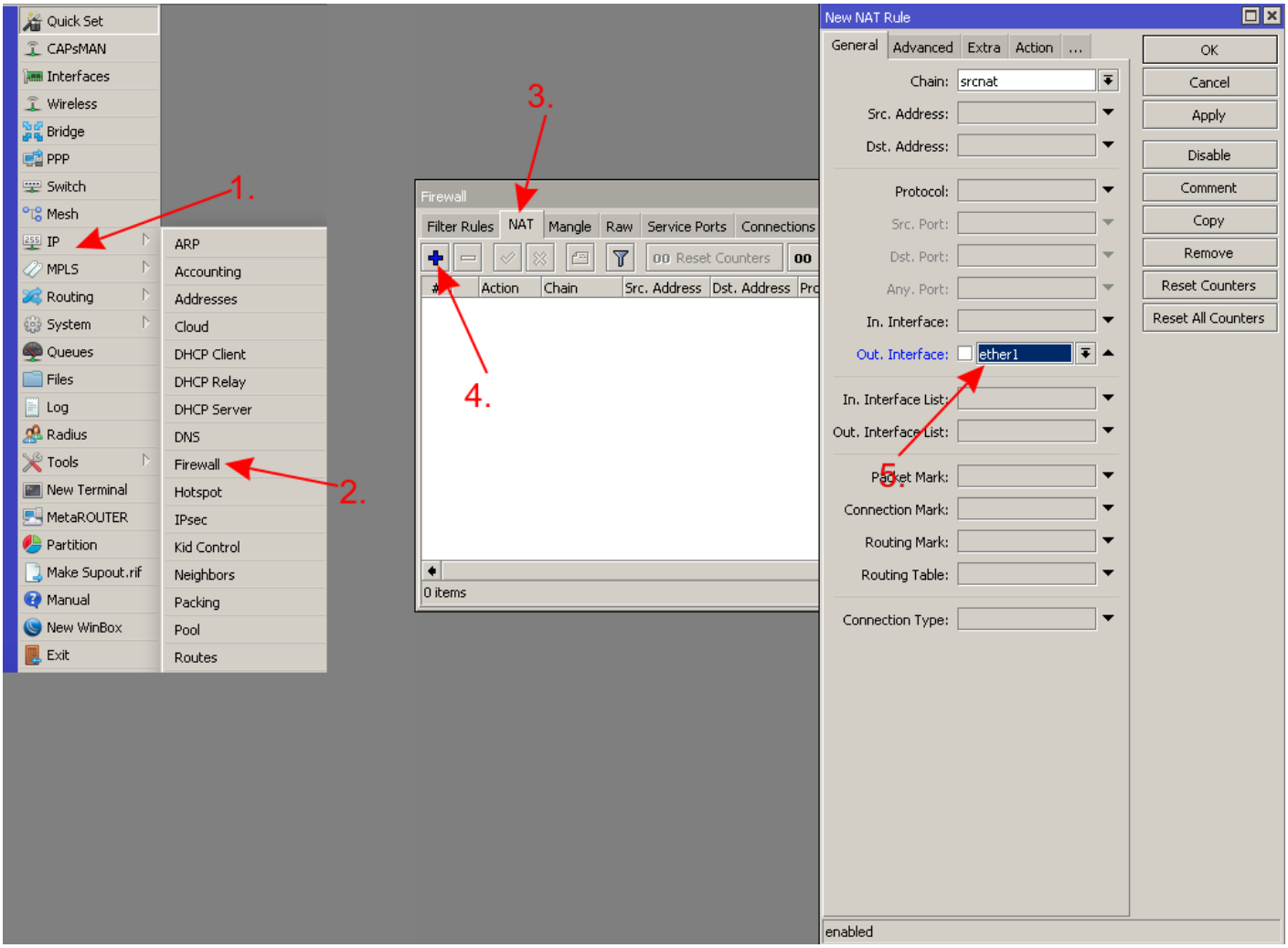


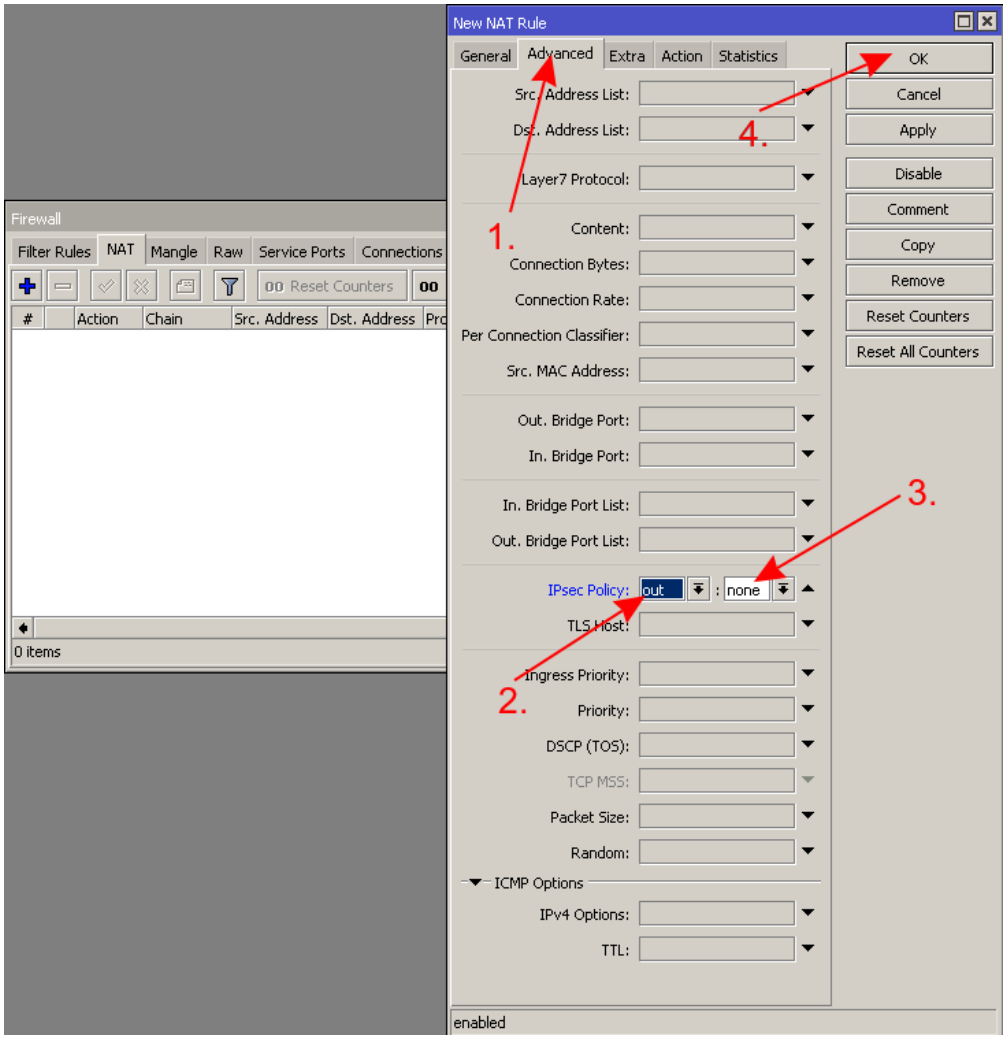
- Setup the DHCP Server





- Setup NAT on your router



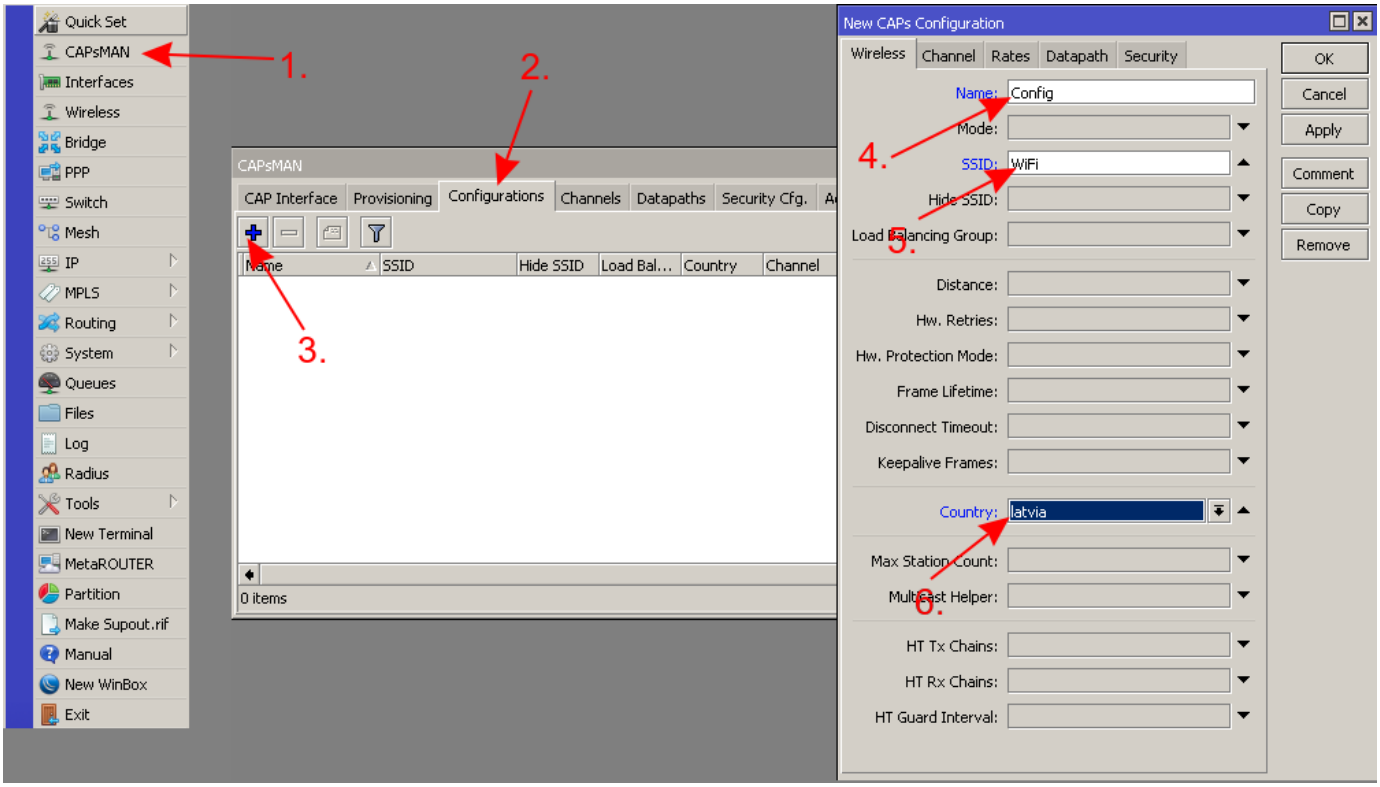


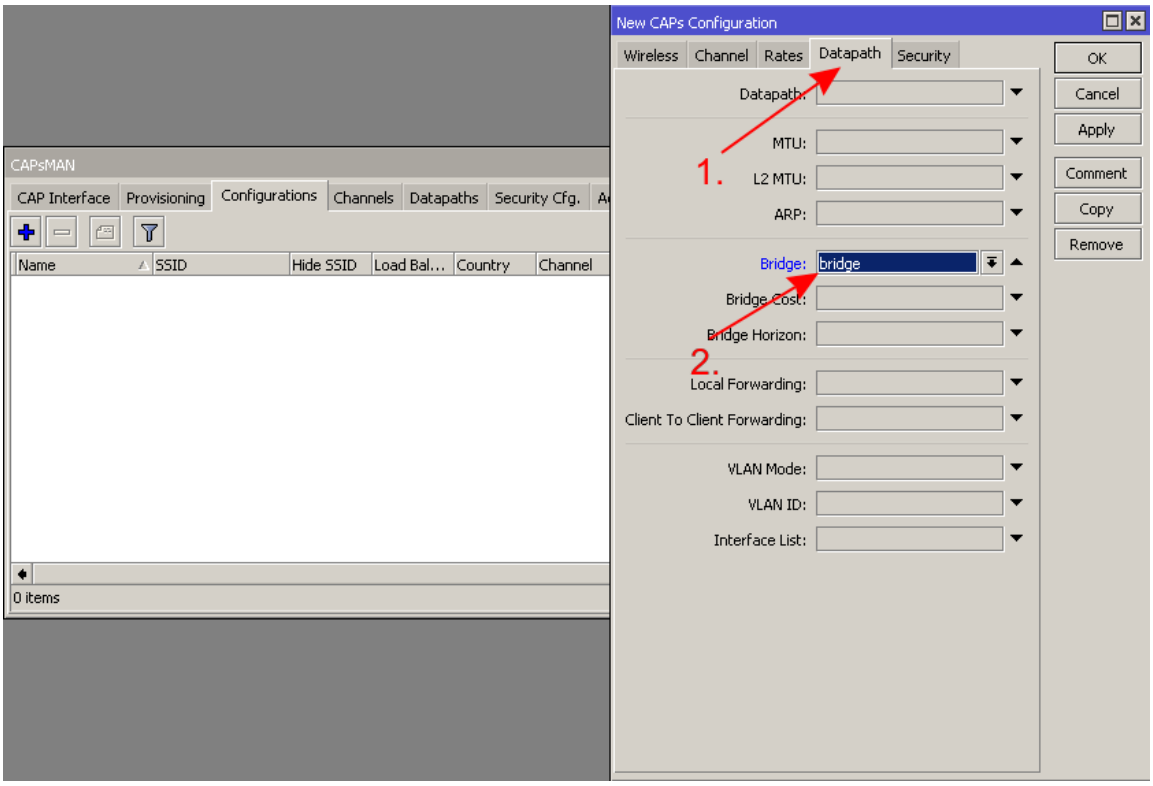
Note: You can skip these steps in case you have reset your device to defaults, these steps were only required for devices with no configuration at all (empty config).

Step #2, setup CAPsMAN

Router

- Create a configuration template for all your CAPs


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
Exit
1.
2.
3.
CAPsMAN
CAP Interface
Provisioning
Configurations
Channels
Datapaths
Security Cfg.
Name
SSID
Hide SSID
Load Bal...
Country
Channel
0 items
New CAPs Configuration
Wireless
Channel
Rates
Datapath
Security
OK
Cancel
Apply
Comment
Copy
Remove
Name: Config
Mode:
SSID: WiFi
Hide SSID:
Load Balancing Group:
4.
5.
Distance:
Hw. Retries:
Hw. Protection Mode:
Frame Lifetime:
Disconnect Timeout:
Keepalive Frames:
Country: latvia
Max Station Count:
Multicast Helper:
6.
HT Tx Chains:
HT Rx Chains:
HT Guard Interval:


CAPsMAN
CAP Interface
Provisioning
Configurations
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Security Cfg.
Name
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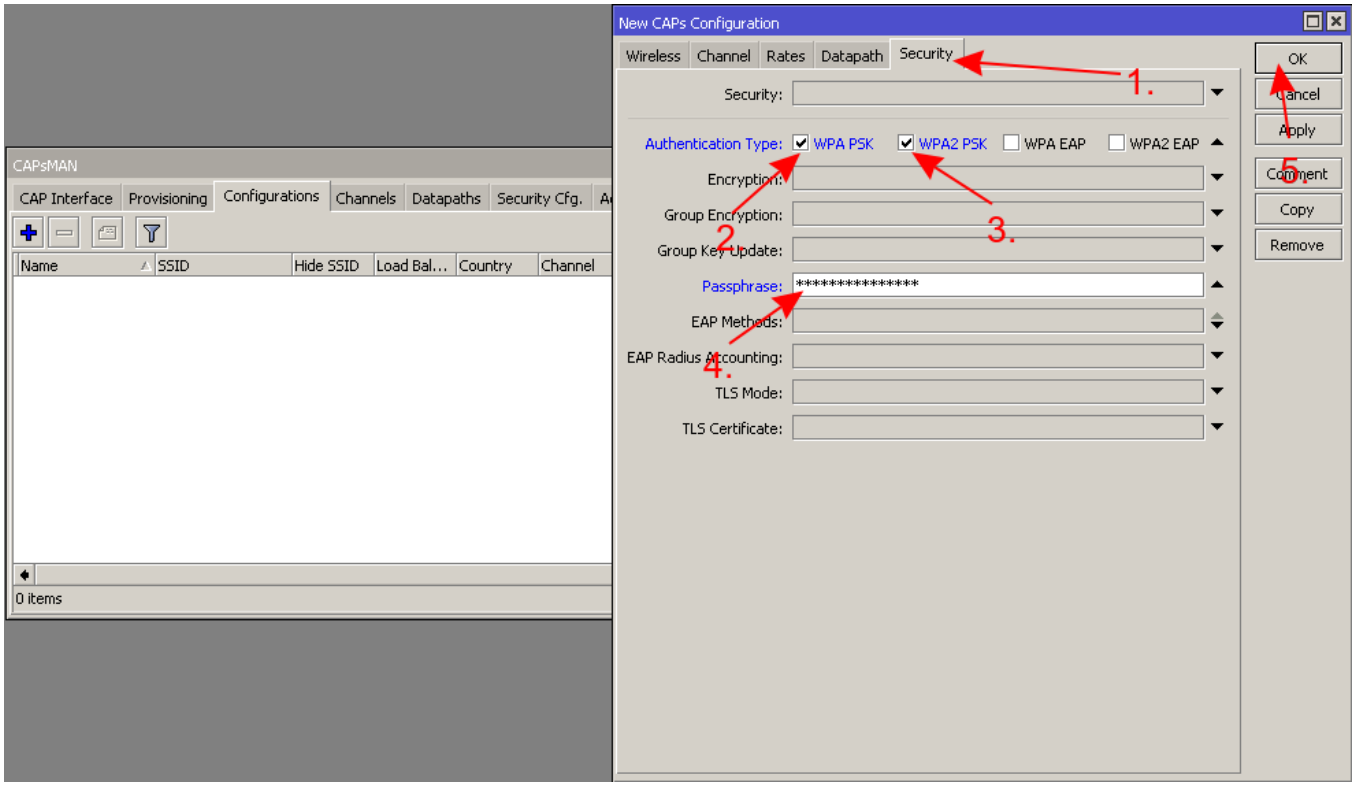
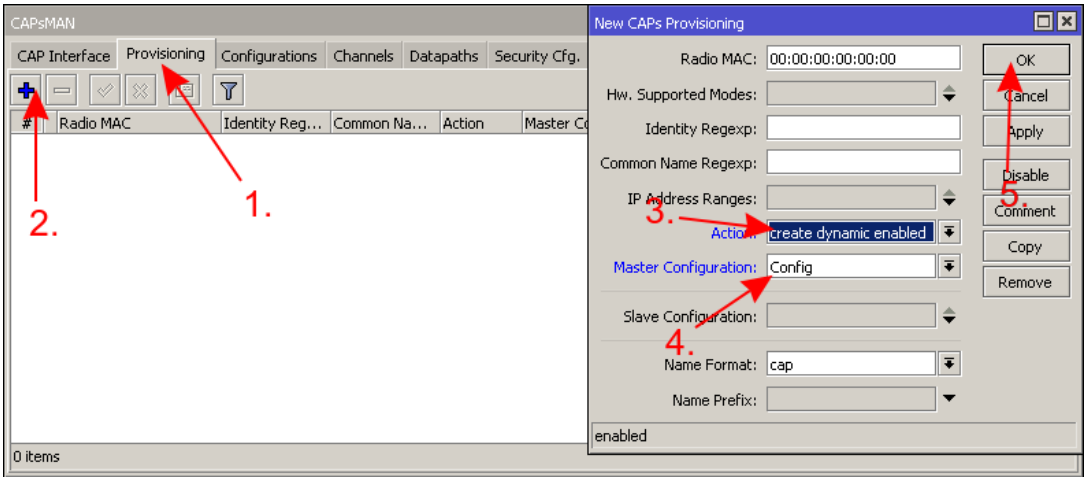
Load Bal...
Country
Channel
0 items
New CAPs Configuration
Wireless
Channel
Rates
Datapath
Security
OK
Cancel
Apply
Comment
Copy
Remove
Datapath:
1.
MTU:
L2 MTU:
ARP:
Bridge: bridge
Bridge Cost:
Bridge Horizon:
2.
Local Forwarding:
Client To Client Forwarding:
VLAN Mode:
VLAN ID:
Interface List:

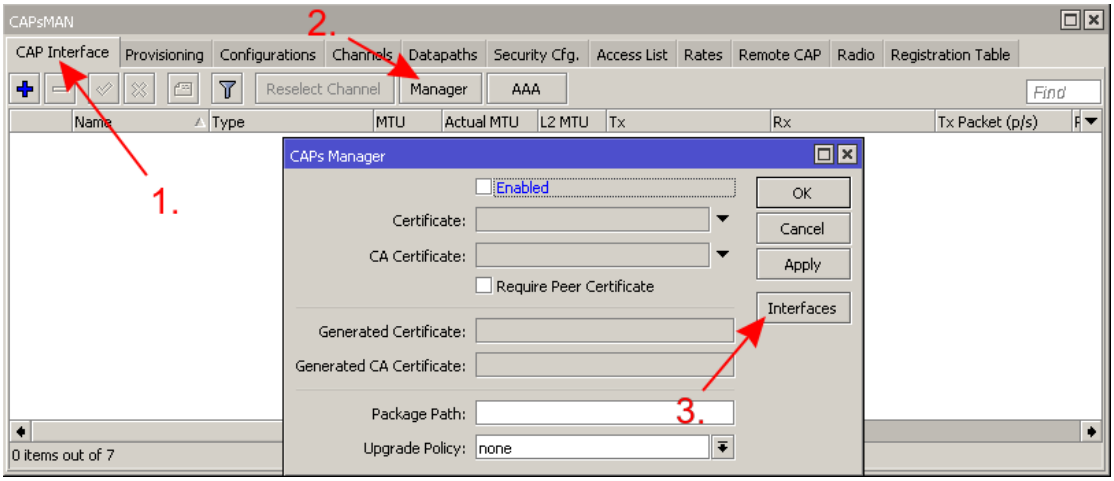


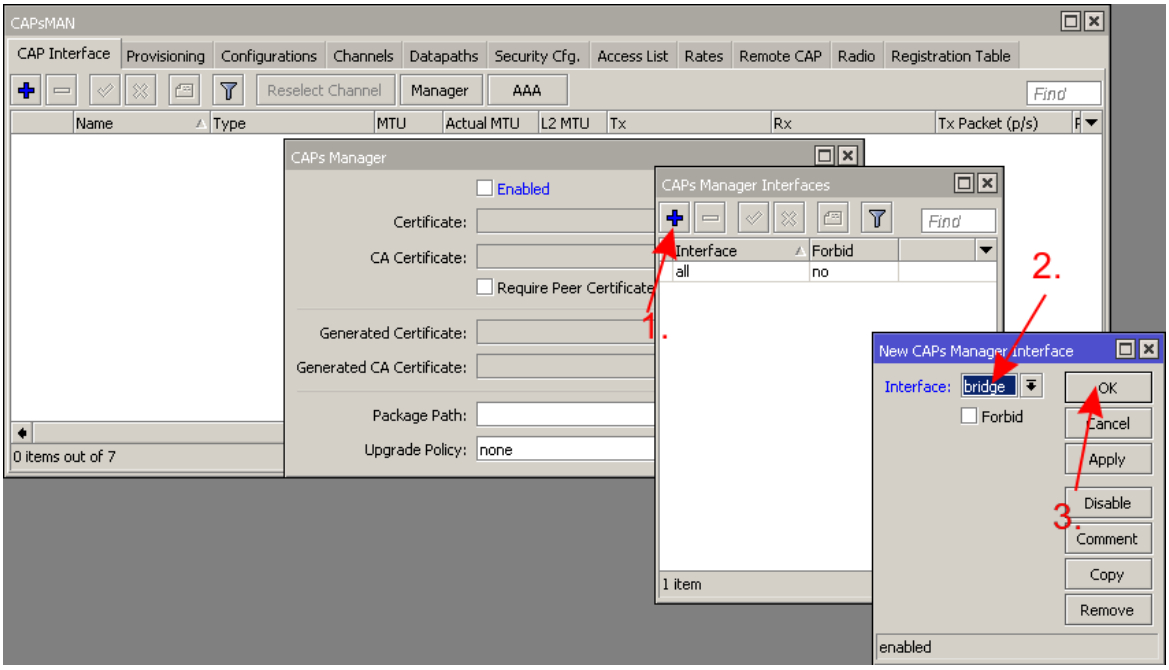
- Specify CAPsMAN to use the created configuration



Warning: Do NOT forget to change the country and the password. Select the right country or otherwise the CAP might select a frequency that is not supported in your area.

- For security reasons specify on which interfaces to listen to CAPs


CAPsMAN
CAP Interface
Provisioning
Configurations
Channels
Datapaths
Security Cfg.
Access List
Rates
Remote CAP
Radio
Registration Table
Reselect Channel
Manager
AAA
Find
Name
Type
MTU
Actual MTU
L2 MTU
Tx
Rx
Tx Packet (p/s)
0 items out of 7
CAPs Manager
Enabled
Certificate:
CA Certificate:
Require Peer Certificate
Generated Certificate:
Generated CA Certificate:
Package Path:
Upgrade Policy:
none
OK
Cancel
Apply
Interfaces
1.
2.
3.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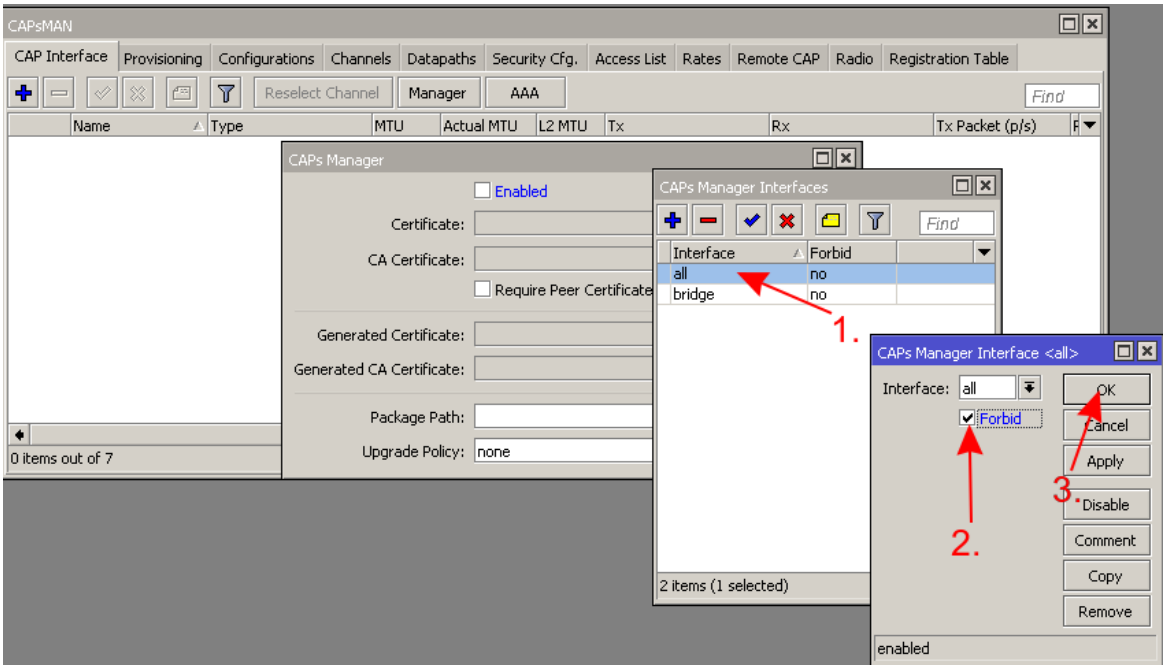
Enabled
Certificate:
CA Certificate:
Require Peer Certificate
Generated Certificate:
Generated CA Certificate:
Package Path:
Upgrade Policy:
none
CAPs Manager Interfaces
Interface
Forbid
all
no
1 item
New CAPs Manager Interface
Interface:
bridge
Forbid
OK
Cancel
Apply
Disable
Comment
Copy
Remove
enabled
1.
2.
3.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Rx
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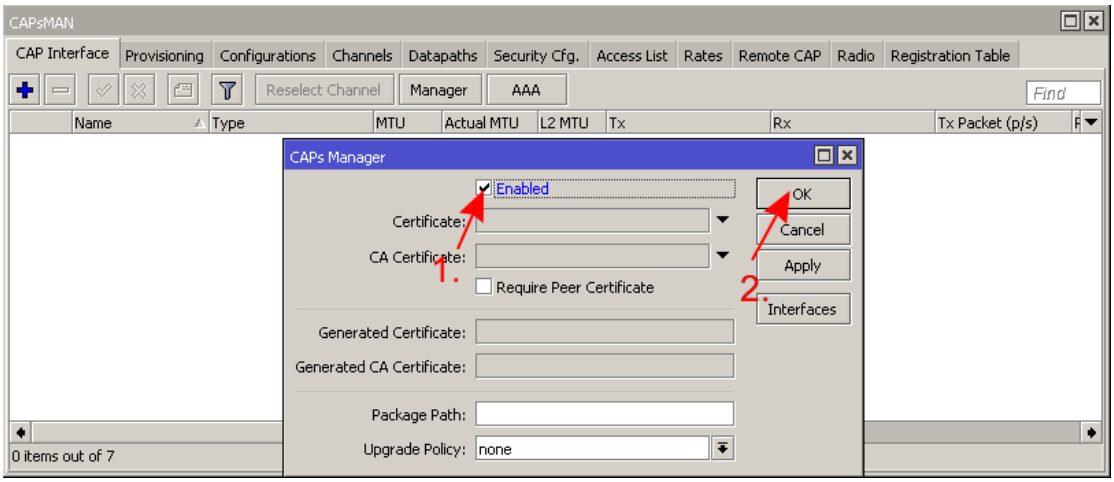
0 items out of 7
CAPs Manager
Enabled
Certificate:
CA Certificate:
Require Peer Certificate
Generated Certificate:
Generated CA Certificate:
Package Path:
Upgrade Policy:
none
CAPs Manager Interfaces
Interface
Forbid
all
no
bridge
no
2 items (1 selected)
CAPs Manager Interface <all>
Interface:
all
Forbid
OK
Cancel
Apply
Disable
Comment
Copy
Remove
enabled
1.
2.
3.

Note: If default configuration is used, then specifying CAPsMAN ports can be skipped since the default firewall will block all incoming traffic from WAN side. This step can also be skipped if firewall is setup properly to block unwanted traffic from other ports.

- Enable CAPsMAN manager to listen to CAPs

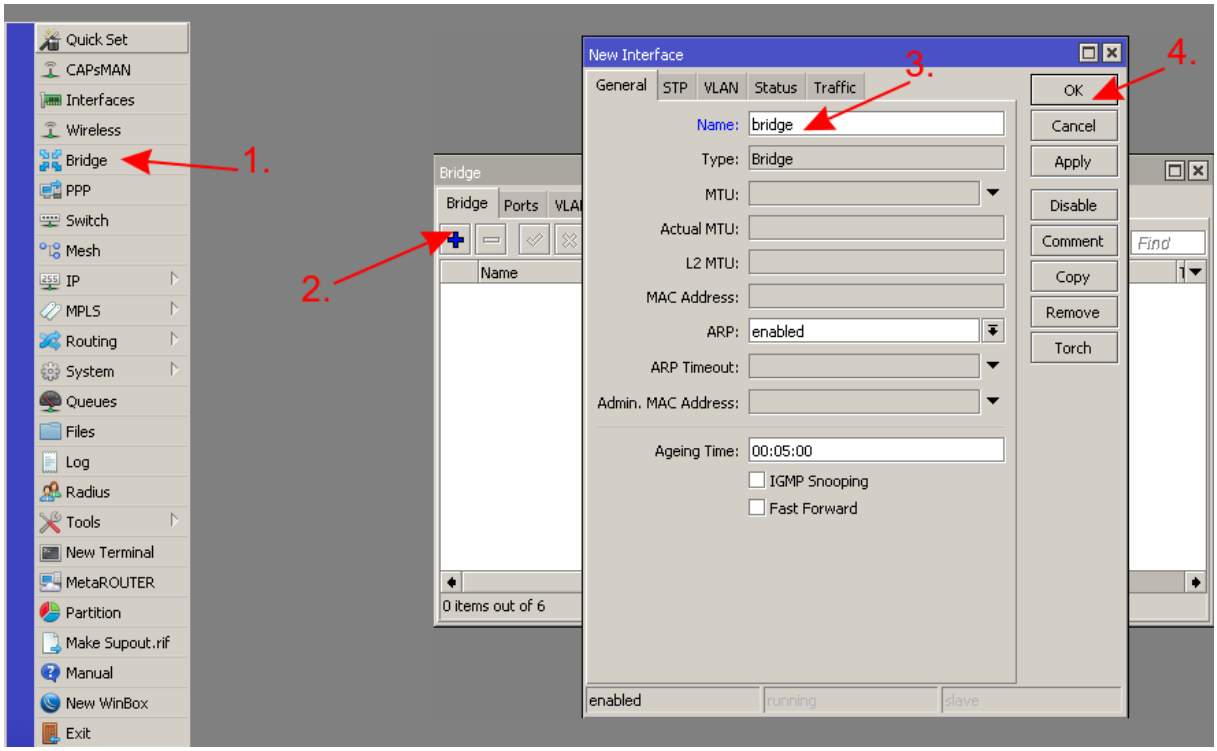


Step #3, setup CAPs

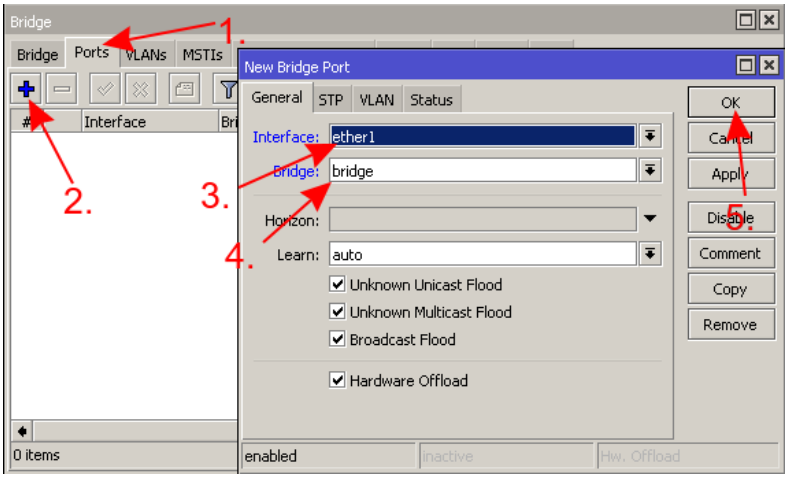
Note: This step can be skipped if you connect your CAP while it is in CAPs mode, the device will automatically add configuration that will work with this CAPsMAN setup. You can read more about how to put your device into CAPs mode Here. Make sure that your device supports CAPs mode.

CAPs

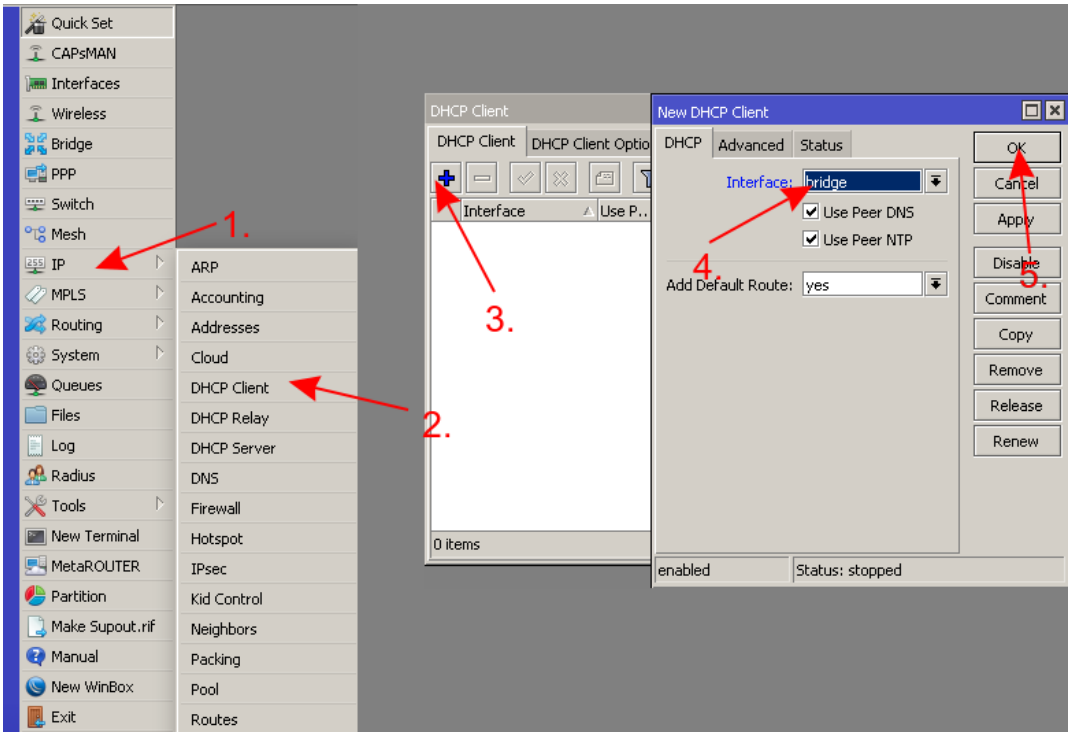
- Connect to your CAP, create a bridge



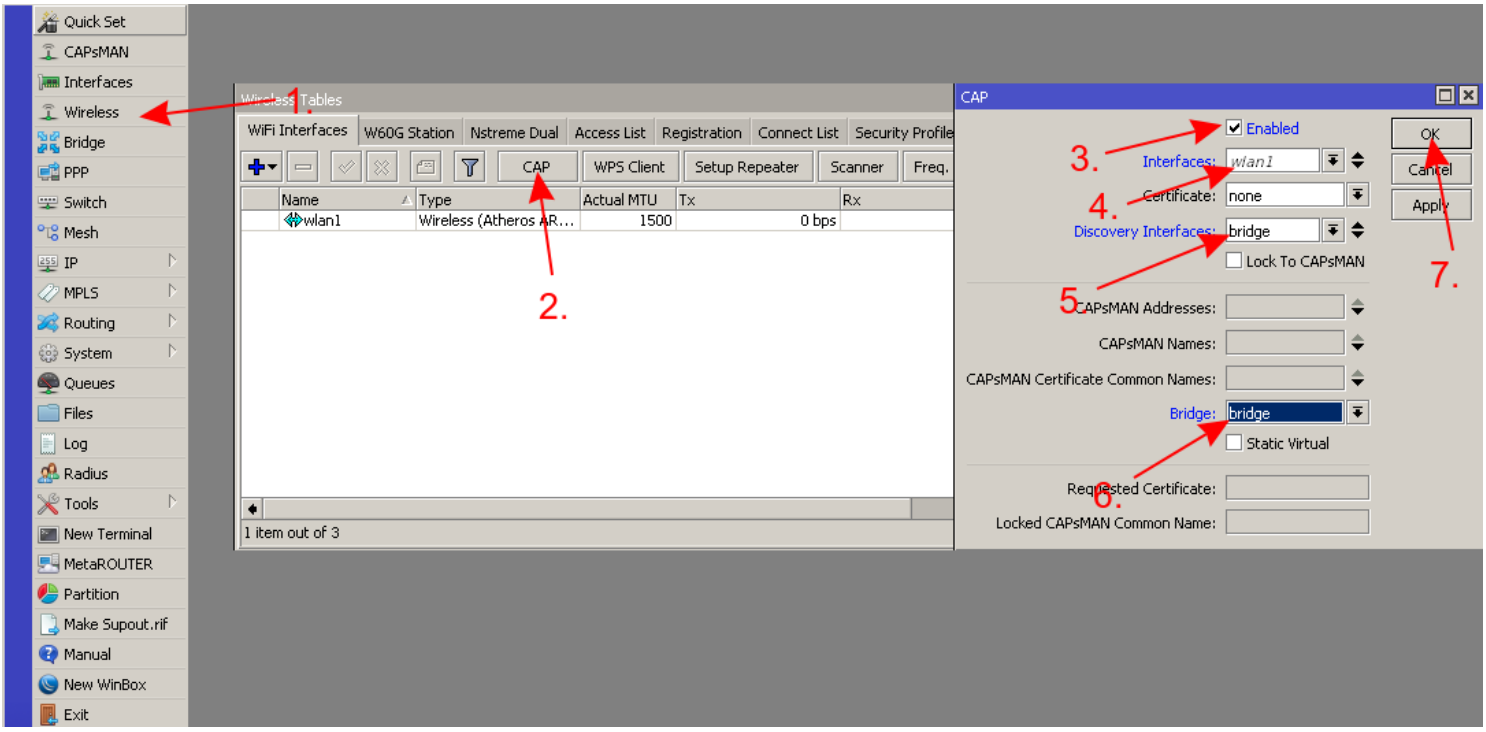
- Add the interface that is connected to the CAPsMAN in a bridge



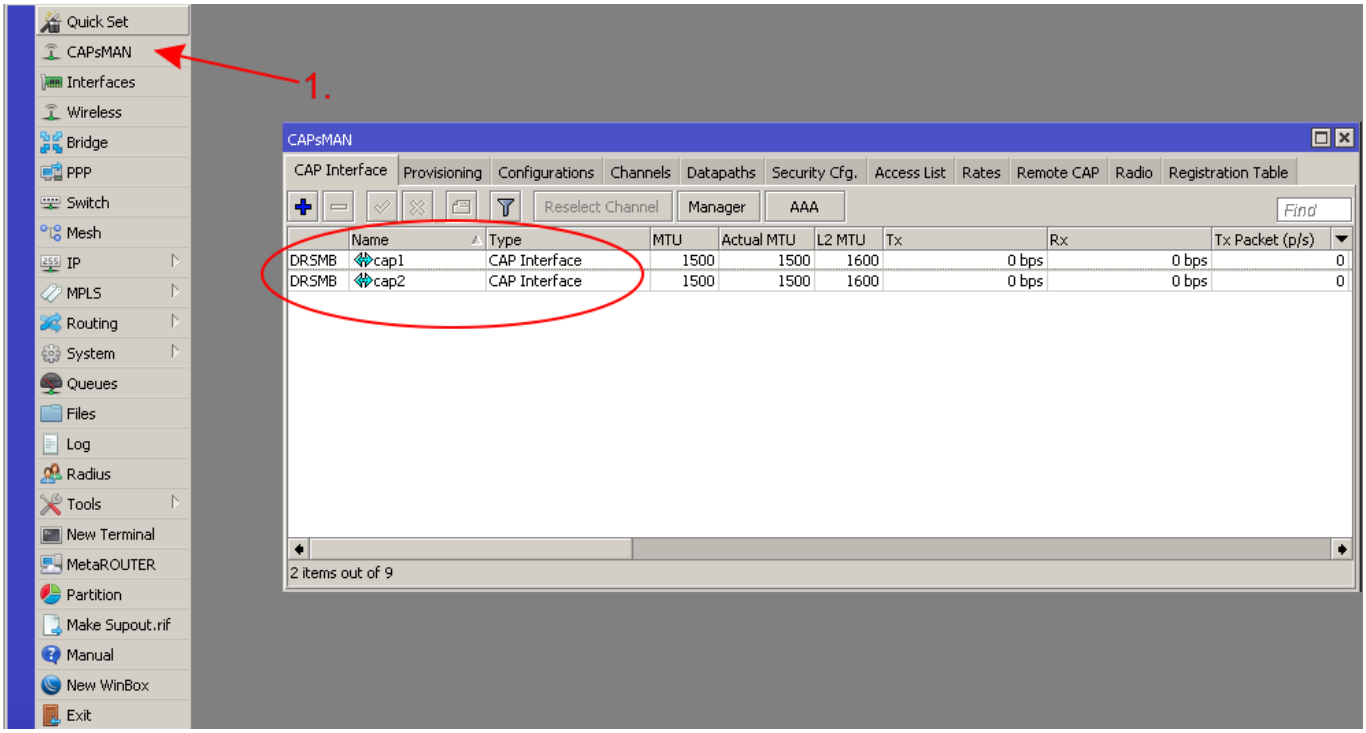
- Get an IP address from your router (or add a static IP address)



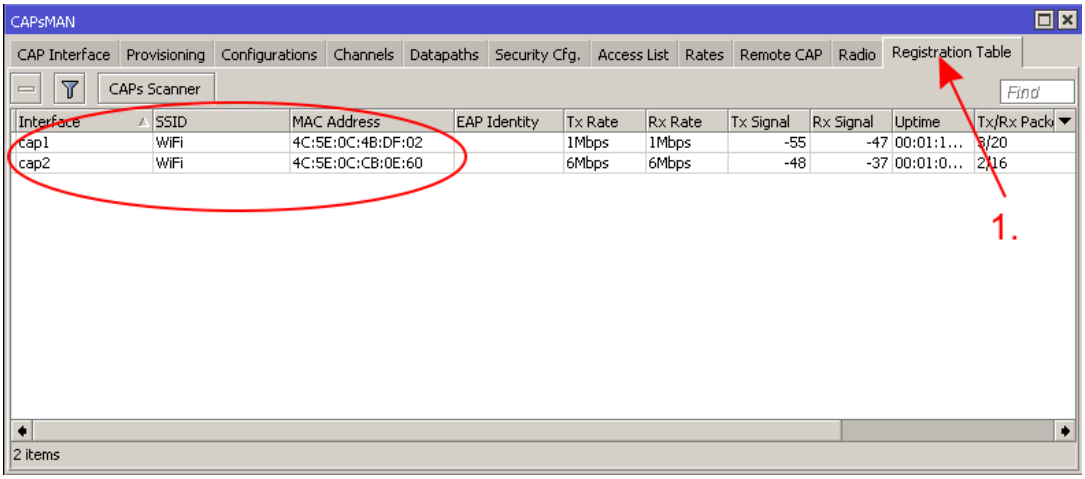
- Enable CAP on Wireless interfaces



- Connect more CAPs to your CAPsMAN and they should appear as CAP interfaces in your **CAPsMAN Router**



That is it! Check your connectivity by using another Wireless device, for example, your smarthphone, your device should be visible in the **CAPsMAN Router's** registration table:



Option #2, using CLI

Before you can start configuring CAPsMAN, you must configure your selected CAPsMAN device as a router. Here we will assume that **ether1** is used as a WAN port and **ether2-ether5** are used as LAN ports. You can skip Step1 if you are already using the default configuration on your router.

Step #1, setup router

Router

- Get an IP address from WAN (or add a static IP address)

```
/ip dhcp-client
add disabled=no interface=ether1
```

- Create a bridge and add bridge ports to it

```
/interface bridge
add name=bridge
/interface bridge port
add bridge=bridge interface=ether2
add bridge=bridge interface=ether3
add bridge=bridge interface=ether4
add bridge=bridge interface=ether5
```

- Add an IP address to the bridge

```
/ip address
add address=192.168.88.1/24 interface=bridge
```

- Setup DHCP Server

```
/ip pool
add name=pool1 ranges=192.168.88.10-192.168.88.254
/ip dhcp-server
add address-pool=pool1 disabled=no interface=bridge
/ip dhcp-server network
add address=192.168.88.0/24 dns-server=8.8.8.8 gateway=192.168.88.1
```

- Setup NAT on your router

```
/ip firewall nat
add action=masquerade chain=srcnat ipsec-policy=out,none out-interface=ether1
```

Note: You can skip these steps in case you have reset your device to defaults, these steps were only required for devices with no configuration at all (empty config).

Step #2, setup CAPsMAN

Router

- Create a configuration template for all your CAPs

```
/caps-man configuration
```

```
/caps-man configuration
add country=latvia datapath.bridge=bridge name=Config security.authentication-types=wpa-psk,wpa2-psk security.passphrase=secret_wifi_password ssid=WiFi
/caps-man provisioning
add action=create-dynamic-enabled master-configuration=Config
```

Warning: Do NOT forget to change the country and the password. Select the right country or otherwise the CAP might select a frequency that is not supported in your area.

- For security reasons specify on which interfaces to listen to CAPs

```
/caps-man manager interface
set [ find default=yes ] forbid=yes
add disabled=no interface=bridge
```

Note: If default configuration is used, then specifying CAPsMAN ports can be skipped since the default firewall will block all incoming traffic from WAN side. This step can also be skipped if firewall is setup properly to block unwanted traffic from other ports.

- Enable CAPsMAN manager to listen to CAPs

```
/caps-man manager
set enabled=yes
```

Step #3, setup CAPs

Note: This step can be skipped if you connect your CAP while it is in CAPs mode, the device will automatically add configuration that will work with this CAPsMAN setup. You can read more about how to put your device into CAPs mode Here. Make sure that your device supports CAPs mode.

CAPs

- Connect to your CAP, create a bridge and add the interface that is connected to the CAPsMAN in a bridge

```
/interface bridge
add name=bridge
/interface bridge port
add bridge=bridge interface=ether1
```

- Get an IP address from your router (or add a static IP address)

```
/ip dhcp-client
add disabled=no interface=bridge
```

- Enable CAP on Wireless interfaces

```
/interface wireless cap
set bridge=bridge discovery-interfaces=bridge enabled=yes interfaces=wlan1
```

- Connect more CAPs to your CAPsMAN and they should appear as CAP interfaces in your **CAPsMAN Router**

```
/caps-man interface print
Flags: M - master, D - dynamic, B - bound, X - disabled, I - inactive, R - running
 #      NAME                                                RADIO-MAC
 0 MDBR cap1                                                4C:5E:0C:0F:C8:48
 1 MDBR cap2                                                4C:5E:0C:C0:D9:AA
```

That is it! Check your connectivity by using another Wireless device, for example, your smarthphone, your device should be visible in the **CAPsMAN Router's** registration table:

```
/caps-man registration-table print
 # INTERFACE                                          SSID                                               MAC-ADDRESS
 0 cap1                                               WiFi                                               4C:5E:0C:4B:DF:02
 1 cap2                                               WiFi                                               4C:5E:0C:CB:0E:60
```

Case studies

CAP in CAPsMAN

If your device has a Wireless interface and you want to use it as a CAPsMAN and a CAP, then it is possible, but it requires additional configuration. If you set your Wireless interface on your CAPsMAN to be managed by CAPsMAN, but the CAP interface is not showing up in CAPsMAN, then it is very likely that the Firewall on your Router is blocking traffic that is coming from the CAP interface.

- In case you are using the default configuration

```
/ip firewall filter
add action=accept chain=input dst-address-type=local src-address-type=local place-before=[/ip firewall filter find where comment="defconf: drop all not com
```

- In case you are NOT using the default configuration

```
/ip firewall filter
add action=accept chain=input dst-address-type=local src-address-type=local
```

- If you have limited the CAPsMAN manager on certain interfaces, then you will have enable all CAPsMAN on all interfaces and forbid any interface that you don't want CAPsMAN to listen to:

```
/capsman manager interface
remove [find where interface=bridge and forbid=no]
set [find default=yes] forbid=no
add forbid=yes interface=ether1
```