



نورة للحاسب الآلي
موزع معتمد لمنتجات مايكروتيك

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How To Configure Mikrotik Load Balancing (PCC Method)

RB2011UIAS-2HND-IN

سنوات مع مايكروتيك

10 Years with MikroTik

من نحن

نوره للحاسب الآلي أنشئت عام ١٤٢٦ هـ
٢٠٠٥م على يد مجموعة من الشباب
السعوديين تقوم على بيع عدد من المنتجات
اللاسلكية بالإضافة الى صيانتها وبرمجتها.
تم الحصول على حق توزيع منتجات شركة
مايكروتيك في عام ٢٠٠٧م



نورة للحاسب الآلي

موزع معتمد لمنتجات مايكروتيك

Nora for Computers

Mikrotik Distributor



Riyadh

الرياض

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```
/ ip address
add address=192.168.0.1/24 network=192.168.0.0 broadcast=192.168.0.255 interface=LAN
add address=10.111.0.2/24 network=10.111.0.0 broadcast=10.111.0.255 interface=ISP1
add address=10.112.0.2/24 network=10.112.0.0 broadcast=10.112.0.255 interface=ISP2

/ ip firewall mangle
add chain=prerouting dst-address=10.111.0.0/24 action=accept in-interface=LAN
add chain=prerouting dst-address=10.112.0.0/24 action=accept in-interface=LAN
add chain=prerouting in-interface=ISP1 connection-mark=no-mark action=mark-connection \
  new-connection-mark=ISP1_conn
add chain=prerouting in-interface=ISP2 connection-mark=no-mark action=mark-connection \
  new-connection-mark=ISP2_conn
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \
  per-connection-classifier=both-addresses:2/0 action=mark-connection new-connection-mark=ISP1_conn
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \
  per-connection-classifier=both-addresses:2/1 action=mark-connection new-connection-mark=ISP2_conn
add chain=prerouting connection-mark=ISP1_conn in-interface=LAN action=mark-routing \
  new-routing-mark=to_ISP1
add chain=prerouting connection-mark=ISP2_conn in-interface=LAN action=mark-routing \
  new-routing-mark=to_ISP2
add chain=output connection-mark=ISP1_conn action=mark-routing new-routing-mark=to_ISP1
add chain=output connection-mark=ISP2_conn action=mark-routing new-routing-mark=to_ISP2

/ ip route
add dst-address=0.0.0.0/0 gateway=10.111.0.1 routing-mark=to_ISP1 check-gateway=ping
add dst-address=0.0.0.0/0 gateway=10.112.0.1 routing-mark=to_ISP2 check-gateway=ping
add dst-address=0.0.0.0/0 gateway=10.111.0.1 distance=1 check-gateway=ping
add dst-address=0.0.0.0/0 gateway=10.112.0.1 distance=2 check-gateway=ping

/ ip firewall nat
add chain=srcnat out-interface=ISP1 action=masquerade
add chain=srcnat out-interface=ISP2 action=masquerade
```


Remove default configuration

The screenshot shows the Mikrotik WinBox interface. The title bar reads "admin@192.168.88.1 (MikroTik) - WinBox v6.38.5 on RB2011UiAS-2HnD (mipsbe)". The main window has tabs for "Session", "Settings", and "Dashboard". Below the tabs are navigation icons and a "Safe Mode" button. The "Session" field shows "192.168.88.1". On the left is a vertical menu with icons for various configuration sections: Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, and LCD. The main content area displays a dialog box titled "RouterOS Default Configuration". The dialog contains the following text:

The following default configuration has been installed on your router:

RouterMode:
* WAN port is protected by firewall and enabled DHCP client
* Wireless interfaces are part of LAN bridge
* IP address 192.168.88.1/24 is set on LAN port

wlan1 Configuration:
mode: ap-bridge;
band: 2ghz-b/g/n;
ht-chains: 0,1;
ht-extension: 20/40mhz-Ce;

LAN Configuration:
switch group: ether2 (master), ether3, ether4, ether5
switch group: ether6 (master), ether7, ether8, ether9, ether10
DHCP Server: enabled;
DNS: enabled;

WAN (gateway) Configuration:
gateway: ether1 ;
firewall: enabled;
NAT: enabled;

At the bottom of the dialog are three buttons: "Remove Configuration", "Show Script...", and "OK".

```
/ ip address
add address=192.168.0.1/24 network=192.168.0.0 broadcast=192.168.0.255 interface=LAN
add address=10.111.0.2/24 network=10.111.0.0 broadcast=10.111.0.255 interface=ISP1
add address=10.112.0.2/24 network=10.112.0.0 broadcast=10.112.0.255 interface=ISP2

/ ip firewall mangle
add chain=prerouting dst-address=10.111.0.0/24 action=accept in-interface=LAN
add chain=prerouting dst-address=10.112.0.0/24 action=accept in-interface=LAN
add chain=prerouting in-interface=ISP1 connection-mark=no-mark action=mark-connection \
  new-connection-mark=ISP1_conn
add chain=prerouting in-interface=ISP2 connection-mark=no-mark action=mark-connection \
  new-connection-mark=ISP2_conn
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \
  per-connection-classifier=both-addresses:2/0 action=mark-connection new-connection-mark=ISP1_conn
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \
  per-connection-classifier=both-addresses:2/1 action=mark-connection new-connection-mark=ISP2_conn
add chain=prerouting connection-mark=ISP1_conn in-interface=LAN action=mark-routing \
  new-routing-mark=to_ISP1
add chain=prerouting connection-mark=ISP2_conn in-interface=LAN action=mark-routing \
  new-routing-mark=to_ISP2
add chain=output connection-mark=ISP1_conn action=mark-routing new-routing-mark=to_ISP1
add chain=output connection-mark=ISP2_conn action=mark-routing new-routing-mark=to_ISP2

/ ip route
add dst-address=0.0.0.0/0 gateway=10.111.0.1 routing-mark=to_ISP1 check-gateway=ping
add dst-address=0.0.0.0/0 gateway=10.112.0.1 routing-mark=to_ISP2 check-gateway=ping
add dst-address=0.0.0.0/0 gateway=10.111.0.1 distance=1 check-gateway=ping
add dst-address=0.0.0.0/0 gateway=10.112.0.1 distance=2 check-gateway=ping

/ ip firewall nat
add chain=srcnat out-interface=ISP1 action=masquerade
add chain=srcnat out-interface=ISP2 action=masquerade
```

Add Bridge

The screenshot displays the Mikrotik WinBox interface. At the top, the window title is "admin@64:D1:54:8E:BC:57 (MikroTik) - WinBox v6.38.5 on RB2011UiAS-2HnD (mipsbe)". Below the title bar, there are navigation tabs for "Session", "Settings", and "Dashboard". A "Safe Mode" button and a "Session: 64:D1:54:8E:BC:57" indicator are visible.

The left sidebar contains a menu with various configuration options: Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, and LCD. The "Bridge" option is highlighted.

The main area shows the "New Interface" dialog box. The "General" tab is active, and the "Name" field is set to "LAN". The "Type" is set to "Bridge". Other fields include "MTU", "Actual MTU", "L2 MTU", "MAC Address", "ARP" (set to "enabled"), "ARP Timeout", and "Admin. MAC Address". A list of existing bridges is shown below, currently empty with "0 items out of 12".

On the right side of the dialog, there are several buttons: "OK", "Cancel", "Apply", "Disable", "Comment", "Copy", "Remove", and "Torch".

Add All Ports And WiFi Except ether1 and ether2

admin@64:D1:54:8E:BC:57 (MikroTik) - WinBox v6.38.5 on RB2011UiAS-2HnD (mipsbe)

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

outerOS WinBox

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

Bridge

Bridge Ports Filters NAT Hosts

Find

	Interface	Bridge	Priority (h...	Path Cost	Horizon	Role	Root Pat...	
	ether10	LAN	80	10		disabled port		
	ether3	LAN	80	10		designated port		
	ether4	LAN	80	10		disabled port		
	ether5	LAN	80	10		disabled port		
	ether6	LAN	80	10		disabled port		
	ether7	LAN	80	10		disabled port		
	ether8	LAN	80	10		disabled port		
	ether9	LAN	80	10		disabled port		
	sfp 1	LAN	80	10		disabled port		
	wlan 1	LAN	80	10		disabled port		

10 items

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
- IP
- MPLS
- Routing
- System
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- Manual
- New WinBox

Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports

Reset HTML Hotspot Setup

Name	Interface	Address Pool	Profile	Address
0 items				

Hotspot Setup

Select interface to run HotSpot on

HotSpot Interface: LAN

Back Next Cancel

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

Configure Hotspot

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
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Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walled Garden ...

Reset HTML Hotspot Setup Find

Name	Interface	Address Pool	Profile	Addresses ...
0 items				

Hotspot Setup

Set HotSpot address for interface

Local Address of Network: 10.5.50.1/24

Masquerade Network

Back Next Cancel

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
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Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walk

+ - ✓ ✕ 🔍 Reset HTML Hotspot Setup

Name	Interface	Address Pool	Profile	Addresses ...
0 items				

Hotspot Setup

Set pool for HotSpot addresses

Address Pool of Network: 0.5.50.2-10.5.50.254

Back Next Cancel

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

- Quick Set
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Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walled Garden ...

+ - ✓ ✕ 🔍 Reset HTML Hotspot Setup Find

Name	Interface	Address Pool	Profile	Addresses ...
0 items				

Hotspot Setup

Select hotspot SSL certificate

Select Certificate: none

Back Next Cancel

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

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Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walled Garden

+ - [check] [x] [filter] Reset HTML Hotspot Setup

Name	Interface	Address Pool	Profile	Addresses ...
0 items				

Hotspot Setup

Select SMTP server

IP Address of SMTP Server:

Back Next Cancel

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

- Quick Set
- CAPsMAN
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Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walled Garden ...

+ - [check] [x] [filter] Reset HTML Hotspot Setup Find

Name	Interface	Address Pool	Profile	Addresses ...
0 items				

Hotspot Setup

Setup DNS configuration

DNS Servers:

Back Next Cancel

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

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Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports V

+ - ✓ ✕ 🔍 Reset HTML Hotspot Setup

Name	Interface	Address Pool	Profile	Addresses ...
0 items				

Hotspot Setup

DNS name of local hotspot server

DNS Name:

Back Next Cancel

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

Quick Set
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Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walled Garden ...

+ - ✓ ✕ 🔍 Reset HTML Hotspot Setup Find

Name	Interface	Address Pool	Profile	Addresses ...
0 items				

Hotspot Setup

Create local HotSpot user

Name of Local HotSpot User:

Password for the User:

Back Next Cancel



Session Settings Dashboard



Safe Mode

Session: 64:D1:54:8E:BC:57



- Quick Set
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Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walled Garden ...

+ - ✓ ✗ ⏏ Reset HTML Hotspot Setup Find

Name	Interface	Address Pool	Profile	Addresses ...
hotspot 1	LAN	hs-pool-14	hsprof1	2

Hotspot Setup

Setup has completed successfully

OK



```
/ ip address
add address=192.168.0.1/24 network=192.168.0.0 broadcast=192.168.0.255 interface=LAN
add address=10.111.0.2/24 network=10.111.0.0 broadcast=10.111.0.255 interface=ISP1
add address=10.112.0.2/24 network=10.112.0.0 broadcast=10.112.0.255 interface=ISP2

/ ip firewall mangle
add chain=prerouting dst-address=10.111.0.0/24 action=accept in-interface=LAN
add chain=prerouting dst-address=10.112.0.0/24 action=accept in-interface=LAN
add chain=prerouting in-interface=ISP1 connection-mark=no-mark action=mark-connection \
  new-connection-mark=ISP1_conn
add chain=prerouting in-interface=ISP2 connection-mark=no-mark action=mark-connection \
  new-connection-mark=ISP2_conn
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \
  per-connection-classifier=both-addresses:2/0 action=mark-connection new-connection-mark=ISP1_conn
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \
  per-connection-classifier=both-addresses:2/1 action=mark-connection new-connection-mark=ISP2_conn
add chain=prerouting connection-mark=ISP1_conn in-interface=LAN action=mark-routing \
  new-routing-mark=to_ISP1
add chain=prerouting connection-mark=ISP2_conn in-interface=LAN action=mark-routing \
  new-routing-mark=to_ISP2
add chain=output connection-mark=ISP1_conn action=mark-routing new-routing-mark=to_ISP1
add chain=output connection-mark=ISP2_conn action=mark-routing new-routing-mark=to_ISP2

/ ip route
add dst-address=0.0.0.0/0 gateway=10.111.0.1 routing-mark=to_ISP1 check-gateway=ping
add dst-address=0.0.0.0/0 gateway=10.112.0.1 routing-mark=to_ISP2 check-gateway=ping
add dst-address=0.0.0.0/0 gateway=10.111.0.1 distance=1 check-gateway=ping
add dst-address=0.0.0.0/0 gateway=10.112.0.1 distance=2 check-gateway=ping

/ ip firewall nat
add chain=srcnat out-interface=ISP1 action=masquerade
add chain=srcnat out-interface=ISP2 action=masquerade
```

Change Interface Name of ether1 and ether2

admin@64:D1:54:8E:BC:57 (MikroTik) - WinBox v6.38.5 on RB2011UiAS-2HnD (mipsbe)

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

RouterOS WinBox

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Interface List

Interface | Interface List | Ethernet | EoIP Tunnel | IP Tunnel | GRE Tunnel | VLAN | VRRP | Bonding | LTE

+ - ✓ ✗ 📁 🏠 Find

	Name	Type	Actual MTU	L2 MTU	Tx	Rx
	ISP1	Ethernet	1500	1598	0 bps	0
	ISP2	Ethernet	1500	1598	0 bps	0
R	LAN	Bridge	1500	1598	146.6 kbps	5.7 k
RS	ether3	Ethernet	1500	1598	147.6 kbps	7.6 k
S	ether4	Ethernet	1500	1598	0 bps	0
S	ether5	Ethernet	1500	1598	0 bps	0
S	ether6	Ethernet	1500	1598	0 bps	0
S	ether7	Ethernet	1500	1598	0 bps	0
S	ether8	Ethernet	1500	1598	0 bps	0
S	ether9	Ethernet	1500	1598	0 bps	0
S	ether10	Ethernet	1500	1598	0 bps	0
S	sfp1	Ethernet	1500	1598	0 bps	0
S	wlan1	Wireless (Atheros AR9...	1500	1600	0 bps	0

13 items (1 selected)

Add DHCP Client for ISP2

admin@64:D1:54:8E:BC:57 (MikroTik) - WinBox v6.38.5 on RB2011UiAS-2HnD (mipsbe)

Session Settings Dashboard

Safe Mode Session: 64:D1:54:8E:BC:57

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DHCP Client

DHCP Client DHCP Client Options

+ - ✓ ✗ [] [] Release Renew Find

Interface	Use P...	Add D...	IP Address	Expires After	Status
ISP1	yes	no			searching...
ISP2	yes	no			searching...

2 items

DHCP Client <ISP2>

DHCP Status

Interface:

Use Peer DNS
 Use Peer NTP

DHCP Options:

Add Default Route:

Default Route Distance:

OK Cancel Apply Disable Comment Copy Remove Release Renew

enabled Status: searching...



```
/ ip address
```

```
add address=192.168.0.1/24 network=192.168.0.0 broadcast=192.168.0.255 interface=LAN
```

```
add address=10.111.0.2/24 network=10.111.0.0 broadcast=10.111.0.255 interface=ISP1
```

```
add address=10.112.0.2/24 network=10.112.0.0 broadcast=10.112.0.255 interface=ISP2
```

```
/ ip firewall mangle
```

```
add chain=prerouting dst-address=10.111.0.0/24 action=accept in-interface=LAN
```

```
add chain=prerouting dst-address=10.112.0.0/24 action=accept in-interface=LAN
```

```
add chain=prerouting in-interface=ISP1 connection-mark=no-mark action=mark-connection \
new-connection-mark=ISP1_conn
```

```
add chain=prerouting in-interface=ISP2 connection-mark=no-mark action=mark-connection \
new-connection-mark=ISP2_conn
```

```
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \
per-connection-classifier=both-addresses:2/0 action=mark-connection new-connection-mark=ISP1_conn
```

```
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \
per-connection-classifier=both-addresses:2/1 action=mark-connection new-connection-mark=ISP2_conn
```

```
add chain=prerouting connection-mark=ISP1_conn in-interface=LAN action=mark-routing \
new-routing-mark=to_ISP1
```

```
add chain=prerouting connection-mark=ISP2_conn in-interface=LAN action=mark-routing \
new-routing-mark=to_ISP2
```

```
add chain=output connection-mark=ISP1_conn action=mark-routing new-routing-mark=to_ISP1
```

```
add chain=output connection-mark=ISP2_conn action=mark-routing new-routing-mark=to_ISP2
```

```
/ ip route
```

```
add dst-address=0.0.0.0/0 gateway=10.111.0.1 routing-mark=to_ISP1 check-gateway=ping
```

```
add dst-address=0.0.0.0/0 gateway=10.112.0.1 routing-mark=to_ISP2 check-gateway=ping
```

```
add dst-address=0.0.0.0/0 gateway=10.111.0.1 distance=1 check-gateway=ping
```

```
add dst-address=0.0.0.0/0 gateway=10.112.0.1 distance=2 check-gateway=ping
```

```
/ ip firewall nat
```

```
add chain=srcnat out-interface=ISP1 action=masquerade
```

```
add chain=srcnat out-interface=ISP2 action=masquerade
```

- Quick Set
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- Exit

RouterOS WinBox

Terminal

```

      XXX      XXX      XXX      TTTTTTTTTT      XXX
      XXXX     XXXX     XXX      TTTTTTTTTT      XXX
      XXX XXXX XXX III XXX XXX XXXXXX 000000      TTT      III XXX
      XXX XX  XXX III XXXXXX  XXX XXX 000 000      TTT      III XXX
      XXX      XXX III XXX XXX XXXXXX 000 000      TTT      III XXX
      XXX      XXX III XXX XXX XXX XXX 000000      TTT      III XXX

```

MikroTik RouterOS 6.37.4 (c) 1999-2016 http://www.mikrotik.com

```

[?] Gives the list of available commands
command [?] Gives help on the command and list of arguments

[Tab] Completes the command/word. If the input is ambiguous,
a second [Tab] gives possible options

/ Move up to base level
.. Move up one level
/command Use command at the base level

```

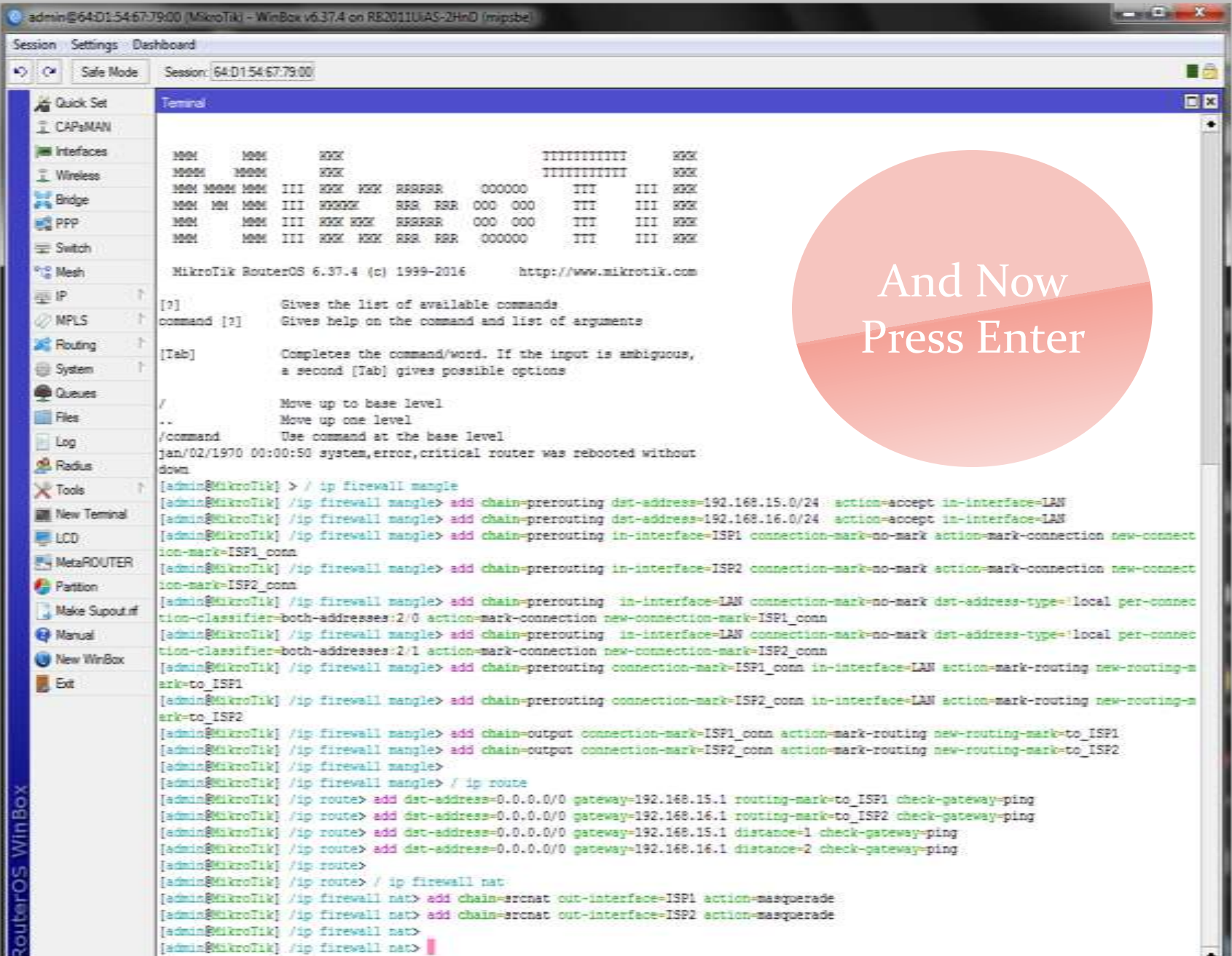
```

[admin@MikroTik] > / ip firewall mangle
[admin@MikroTik] /ip firewall mangle> add chain-prerouting dst-address=192.168.15.0/24 action=accept in-interface=LAN
[admin@MikroTik] /ip firewall mangle> add chain-prerouting dst-address=192.168.16.0/24 action=accept in-interface=LAN
[admin@MikroTik] /ip firewall mangle> add chain-prerouting in-interface=ISP1 connection-mark=no-mark action-mark-connection new-connection-mark=ISP1_conn
[admin@MikroTik] /ip firewall mangle> add chain-prerouting in-interface=ISP2 connection-mark=no-mark action-mark-connection new-connection-mark=ISP2_conn
[admin@MikroTik] /ip firewall mangle> add chain-prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local per-connection-classifier-both-addresses:2/0 action-mark-connection new-connection-mark=ISP1_conn
[admin@MikroTik] /ip firewall mangle> add chain-prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local per-connection-classifier-both-addresses:2/1 action-mark-connection new-connection-mark=ISP2_conn
[admin@MikroTik] /ip firewall mangle> add chain-prerouting connection-mark=ISP1_conn in-interface=LAN action-mark-routing new-routing-mark-to_ISP1
[admin@MikroTik] /ip firewall mangle> add chain-prerouting connection-mark=ISP2_conn in-interface=LAN action-mark-routing new-routing-mark-to_ISP2
[admin@MikroTik] /ip firewall mangle> add chain-output connection-mark=ISP1_conn action-mark-routing new-routing-mark-to_ISP1
[admin@MikroTik] /ip firewall mangle> add chain-output connection-mark=ISP2_conn action-mark-routing new-routing-mark-to_ISP2
[admin@MikroTik] /ip firewall mangle>
[admin@MikroTik] /ip firewall mangle> / ip route
[admin@MikroTik] /ip route> add dst-address=0.0.0.0/0 gateway=192.168.15.1 routing-mark-to_ISP1 check-gateway-ping
[admin@MikroTik] /ip route> add dst-address=0.0.0.0/0 gateway=192.168.16.1 routing-mark-to_ISP2 check-gateway-ping
[admin@MikroTik] /ip route> add dst-address=0.0.0.0/0 gateway=192.168.15.1 distance=1 check-gateway-ping
[admin@MikroTik] /ip route> add dst-address=0.0.0.0/0 gateway=192.168.16.1 distance=2 check-gateway-ping
[admin@MikroTik] /ip route>
[admin@MikroTik] /ip route> / ip firewall nat
[admin@MikroTik] /ip firewall nat> add chain-srcnat out-interface=ISP1 action-masquerade
[admin@MikroTik] /ip firewall nat> add chain-srcnat out-interface=ISP2 action-masquerade

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Add MikroTik PCC
<https://wiki.mikrotik.com/wiki/Manual:PCC>



And Now
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RouterOS WinBox



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