

WELCOME TO MUM INDIA 2015

# TARA CONSULTANTS PVT LTD



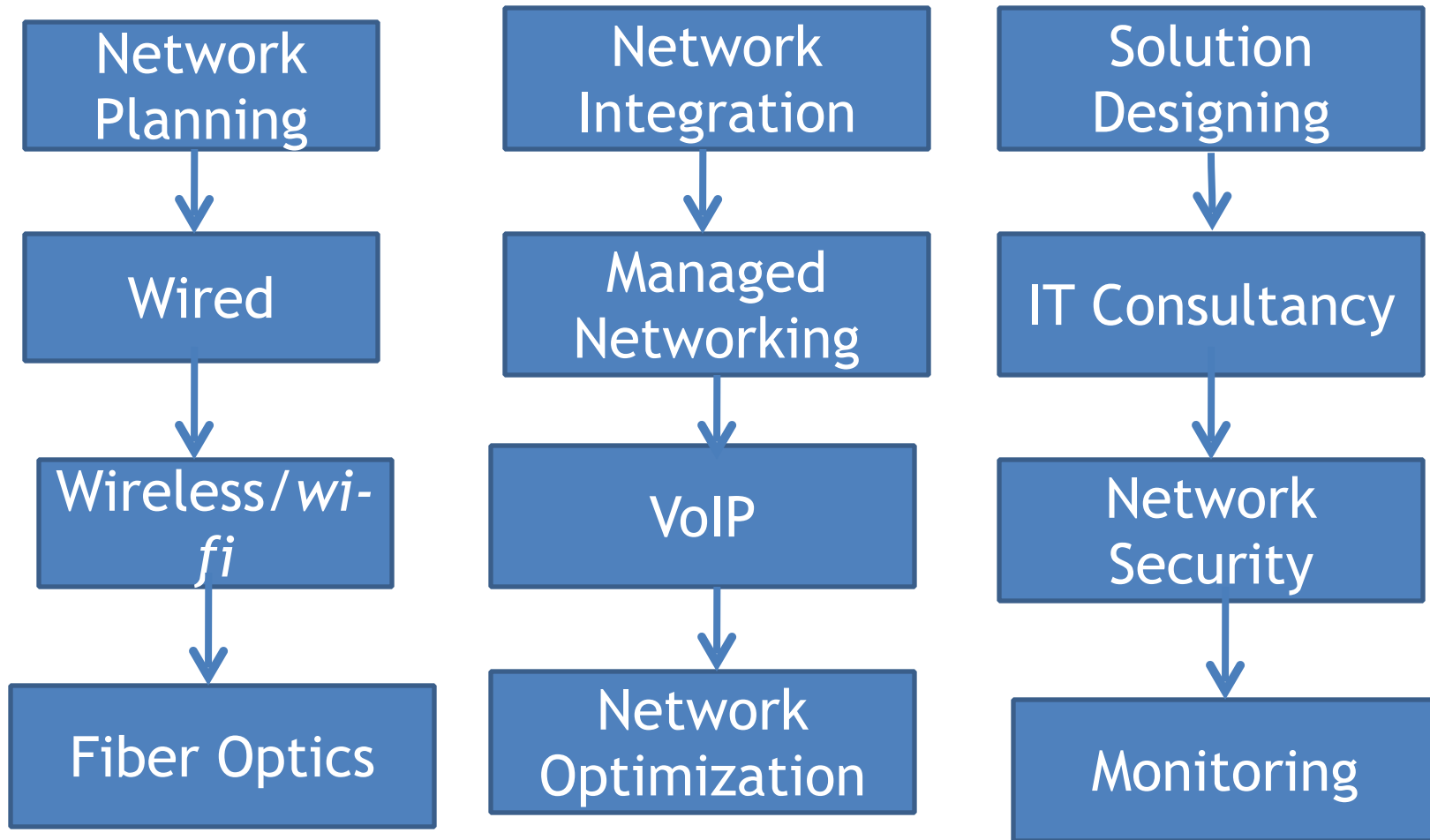


## About Us

**Tara Consultants Pvt Ltd**, a multi-faceted and multi-activity Group, a trusted name in developing Mass Marketing Concepts, Software Development. Networking Solutions – Wired and Wireless and Target based mass Marketing, TCPL is also commended and known for meticulous and time scheduled planning, implementation, Delivery and completion of large-scale solutions and projects. TCPL is energized and managed by a team of Professionals.

# What We Do

Tara Consultants Pvt Ltd



# Agenda

## User's Self Service Portal

- For PPPoE Users
- For Hotspot Users

## Internet Load Balancing

- PCC(Per Connection Classifier)
- Routing Policy
- Spillover



*By Vikas Kumar Gupta*

# Why User's Self Service Portal

- ❑ Are you frustrated with client's/User's daily calls for asking data usage or password change requests
- ❑ Does it irritates you when client asks that he/she haven't login, how there data consumes so much.



# Here is the Answer

## MikroTik User Manager

A Radius manager package for Mikrotik, to enable Centralized authentication of Users

Level number	0 (Trial mode)	1 (Free Demo)	3 (WISP CPE)	4 (WISP)	5 (WISP)	6 (Controller)
User manager active sessions	24h trial	1	10	20	50	Unlimited

MikroTik User Manager does not come by default in packages

System > Packages

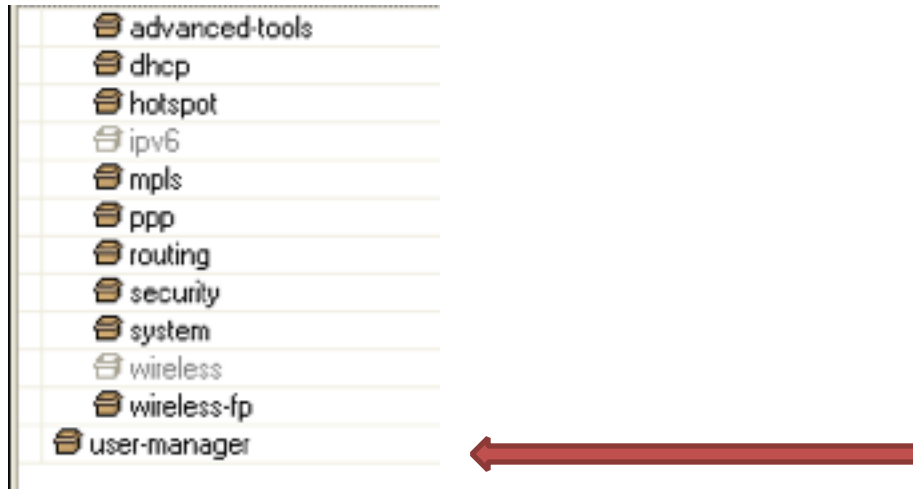


Install User Manager available in Extra Package from MikroTik Download Page

<http://www.mikrotik.com/download>



After adding user manager



**Note: Download User manager version according to the ROS version and ROS architecture.**

# Configure RouterOS to enable authentication of Users from User Manager

**Add Radius**

**Click Radius**

**Use LHost Address**

**For PPPoE Users**

**For Hotspot Users**

**Secret**

**Change Timeout accordingly**



# Configure RouterOS to enable authentication of Users from User Manager

The image shows two overlapping windows from the Mikrotik WinBox interface. The background window is titled "PPP Authentication & Accounting" and has tabs for "Interface", "PPPoE Servers", "Secrets", "Profiles", and "Active Connections". It contains a table with columns: Name, Password, Service, Caller ID, Profile, Local Address, Remote Address, and Last Logged Out. The foreground window is titled "Hotspot" and has tabs for "Servers", "Server Profiles", "Users", "User Profiles", "Active", "Hosts", "IP Bindings", and "Service Ports". It contains a table with columns: Name, DNS Name, HTML Directory, and Rate Limit (rx/tx). A "Hotspot Server Profile <hsprof1>" dialog box is open over the "Hotspot" window, with tabs for "General", "Login", and "RADIUS". The "RADIUS" tab is active, showing a checked "Use RADIUS" checkbox, a "Default Domain" dropdown, "Location ID", "Location Name", "MAC Format", "Accounting" (checked), "Interim Update", and "NAS Port Type" (19 (wireless-802.11)).

**Select Use Radius**

**For Hotspot**

**Select Radius**

## Time to Configure User Manager for Self Service Portal

1. Open Web browser and type address [http://Router\\_IP/userman](http://Router_IP/userman)



MikroTik  
Mikrotik User Manager

Login

Password

1. Default Username is “admin” with no password.

## 2. Add Router

The screenshot displays the MikroTik Vajra Telecom User database interface. On the left is a navigation menu with buttons for Routers, Users, Sessions, Customers, Logs, Payments, Profiles, Settings, Reports, 0 A sessions, 0 A users, Advanced search, and Maintenance. The main area shows a table with columns for Name and IP address. A 'Router details' dialog box is open, showing the following configuration:

- Name: TCPL
- Owner: admin
- IP address: 127.0.0.1
- Shared secret: vajra@123
- Time zone: Parent time zone
- Disabled:
- Log events:  Authorization success,  Authorization failure,  Accounting success,  Accounting failure

### 3. Add Customers

**MikroTik**  
Vajra Telecom User database

Router:  Login:  Parent:   
admin

**Customer details**

▲ Main

Login: admin  
Password: ..... **← Add Password**  
Disabled:   
Parent: admin  
Permissions: Owner  
Public ID: clients **← Client will access this**  
Public host:  
Backup allowed:

▲ Access

Own routers  
 Parents routers  
 Own users  
 Parents users  
Access:  Own profiles  
 Parents profiles  
 Own limitations  
 Parents limitations  
 Configure payment gateways  
 Use parent payment gateways

▼ Private information  
▼ Signup options  
▼ Format

Save

## 4. Change Appearance of User's Self Service Portal

The screenshot shows the MikroTik Vajra Telecom User database management interface. The 'Appearance' tab is selected, showing options for Style, Templates, Language, Payment gateways, and Signup. The 'Table columns' section is expanded, showing a list of tables (Routers, Users, Sessions, Customers, Logs, Payments, Limitations) and a list of visible columns (Password, First name, Last name, Email, Download Used, Upload Used, Uptime Used, Start time, End time, Username, Till time, Total time left). The 'Hidden' columns list includes IP address, Caller ID, Shared users, Preshared key, Enc key, Enc algo, Last used IP, Last used MAC, Time left, Download limit, Upload limit, and Transfer limit. A blue arrow points to the 'Settings' button in the left sidebar. Another blue arrow points to the 'Users' table in the 'Table' list. A third blue arrow points to the 'Uptime Used' column in the 'Visible' list. A text box at the bottom right states: 'These Options will be available in User's Self Service Portal'.

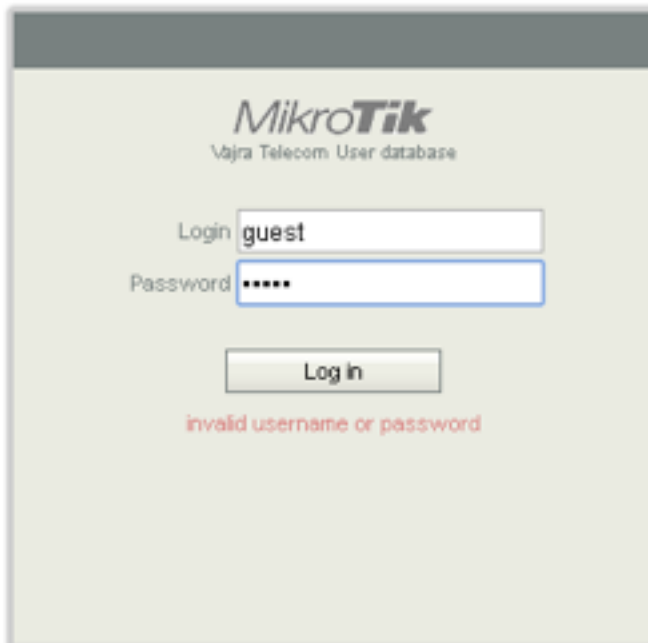
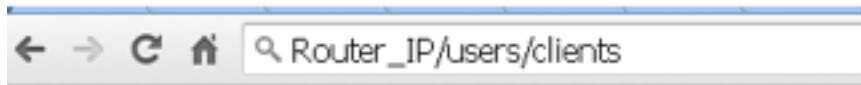
Select Users

These Options will be available in User's Self Service Portal

5. Now Add Profiles and Users Accordingly

6. Now its time to check User's Self Service Portal

- Type [http://Router\\_IP/users/clients](http://Router_IP/users/clients) in Address Bar

A screenshot of a web page for MikroTik Vajra Telecom. The page has a light green background. At the top, the MikroTik logo is displayed, followed by the text "Vajra Telecom User database". Below this, there is a login form with two input fields: "Login" containing the text "guest" and "Password" containing six dots. A "Log in" button is positioned below the password field. Underneath the button, a red error message reads "invalid username or password".

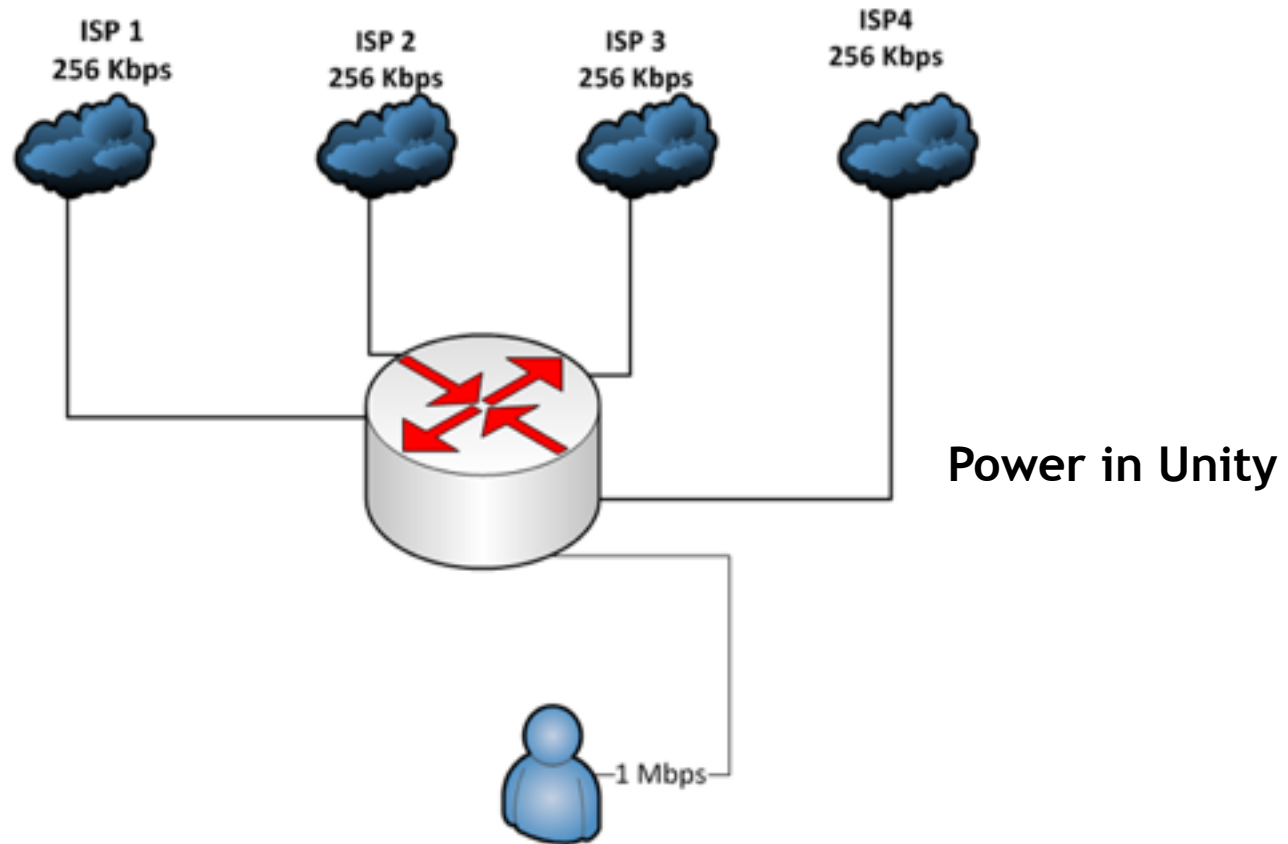
## 7. Client/User can check the available options provided by admin

The screenshot displays the MikroTik user interface for a user database. The top left corner features the MikroTik logo and the text "/ajra Telecom User database". Below this, there are three buttons: "Settings", "Status" (which is highlighted in blue), and "Logout". To the right of these buttons is a navigation menu with four tabs: "Summary" (highlighted in blue), "Profile", "Sessions", and "Payments". The main content area shows the following account details:

Till time:	Unknown
Time left:	30m
Money paid:	0.00
Money used:	0.00
Money left:	0.00
Uptime Used:	0:00:00
Download Used:	0 B
Upload Used:	0 B

# Why Internet Load Balancing

## 1. Multiple Slow Speed Internet connections.





## How to do that

### 1. IP Addressing

/ ip address

**add address=192.168.0.1/24 network=192.168.0.0 interface=LAN**

**add address=10.111.0.2/24 network=10.111.0.0 interface=ISP1**

**add address=10.112.0.2/24 network=10.112.0.0 interface=ISP2**

**add address=10.113.0.2/24 network=10.113.0.0 interface=ISP3**

**add address=10.114.0.2/24 network=10.114.0.0 interface=ISP4**

## Marking Connections

```
/ 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 dst-address=10.113.0.0/24 action=accept in-interface=LAN
```

```
add chain=prerouting dst-address=10.114.0.0/24 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=ISP2 connection-mark=no-mark action=mark-connection  
new-connection-mark=ISP3_conn
```

```
add chain=prerouting in-interface=ISP2 connection-mark=no-mark action=mark-connection  
new-connection-mark=ISP4_conn
```

## Marking Continued.....

```
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \  
  per-connection-classifier=both-addresses:4/0 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:4/1 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:4/2 action=mark-connection new-connection-  
mark=ISP3_conn
```

```
add chain=prerouting in-interface=LAN connection-mark=no-mark dst-address-type=!local \  
  per-connection-classifier=both-addresses:4/3 action=mark-connection new-connection-  
mark=ISP4_conn
```

PCC for 4 Connections



## Marking Continued....

```
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=prerouting connection-mark=ISP3_conn in-interface=LAN action=mark-routing \
```

```
  new-routing-mark=to_ISP3
```

```
add chain=prerouting connection-mark=ISP4_conn in-interface=LAN action=mark-routing \
```

```
  new-routing-mark=to_ISP4
```

```
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
```

```
add chain=output connection-mark=ISP3_conn action=mark-routing new-routing-mark=to_ISP3
```

```
add chain=output connection-mark=ISP4_conn action=mark-routing new-routing-mark=to_ISP4
```

## IP Routing

```
/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=10.113.0.1 routing-mark=to_ISP3 check-gateway=ping
```

```
add dst-address=0.0.0.0/0 gateway=10.114.0.1 routing-mark=to_ISP4 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
```

```
add dst-address=0.0.0.0/0 gateway=10.113.0.1 distance=3 check-gateway=ping
```

```
add dst-address=0.0.0.0/0 gateway=10.114.0.1 distance=4 check-gateway=ping
```

## IP Nating

```
/ ip firewall nat
```

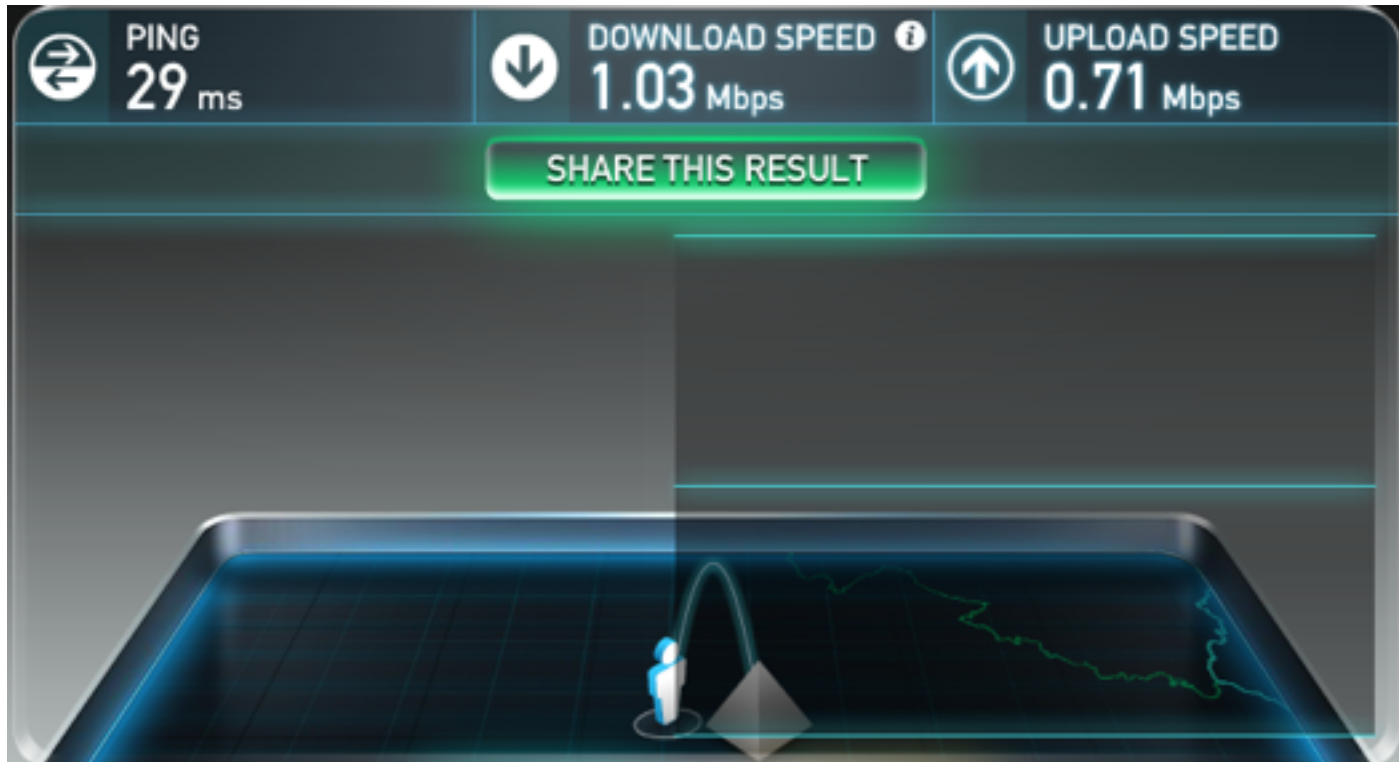
```
add chain=srcnat out-interface=ISP1 action=masquerade
```

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

```
add chain=srcnat out-interface=ISP3 action=masquerade
```

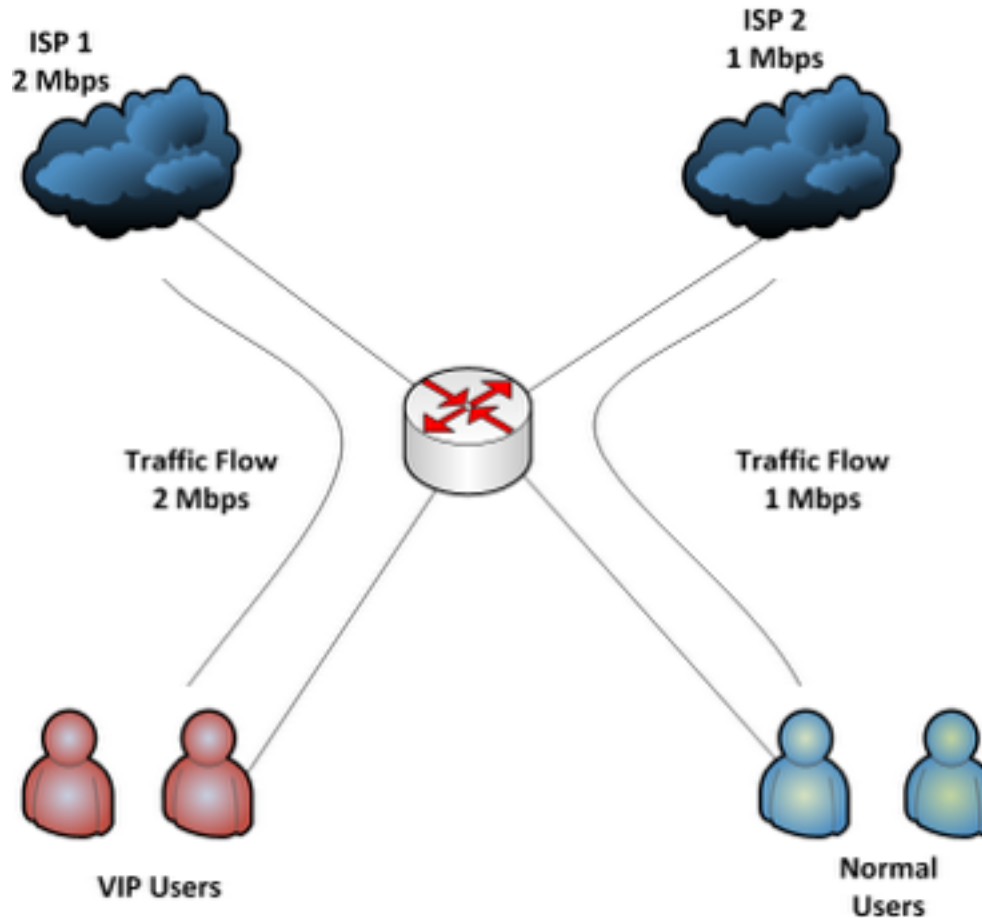
```
add chain=srcnat out-interface=ISP4 action=masquerade
```

## Result at User's Machine



This is on Broadband Internet Connections

## 2. Want to provide high speed connections to VIP members only





## IP Addressing

**/ ip address**

**add address=192.168.0.1/24 network=192.168.0.0 interface=LAN**

**add address=10.111.0.2/24 network=10.111.0.0 interface=ISP1 \_2Mb**

**add address=10.112.0.2/24 network=10.112.0.0 interface=ISP2 \_1Mb**

## Marking

**/ip firewall mangle**

**add chain=prerouting src-address=192.168.0.2/32 action=mark-routing  
new-routing-mark=vip\_2Mb**

**add chain=prerouting src-address=192.168.0.3/32 action=mark-routing  
new-routing-mark=vip\_2Mb**

**add chain=prerouting src-address=192.168.0.11/32 action=mark-routing  
new-routing-mark=user\_1Mb**

**add chain=prerouting src-address=192.168.0.12/32 action=mark-routing  
new-routing-mark=user\_1Mb**

## Natting

```
/ ip firewall nat
```

```
add chain=srcnat out-interface=ISP1_2Mb action=masquerade
```

```
add chain=srcnat out-interface=ISP2_1Mb action=masquerade
```

## Routing

```
/ip route
```

```
add dst-address=0.0.0.0/0 gateway=10.111.0.1 routing-mark=ISP1_2Mb check-gateway=ping
```

```
add dst-address=0.0.0.0/0 gateway=10.112.0.1 routing-mark=ISP2_1Mb check-gateway=ping
```

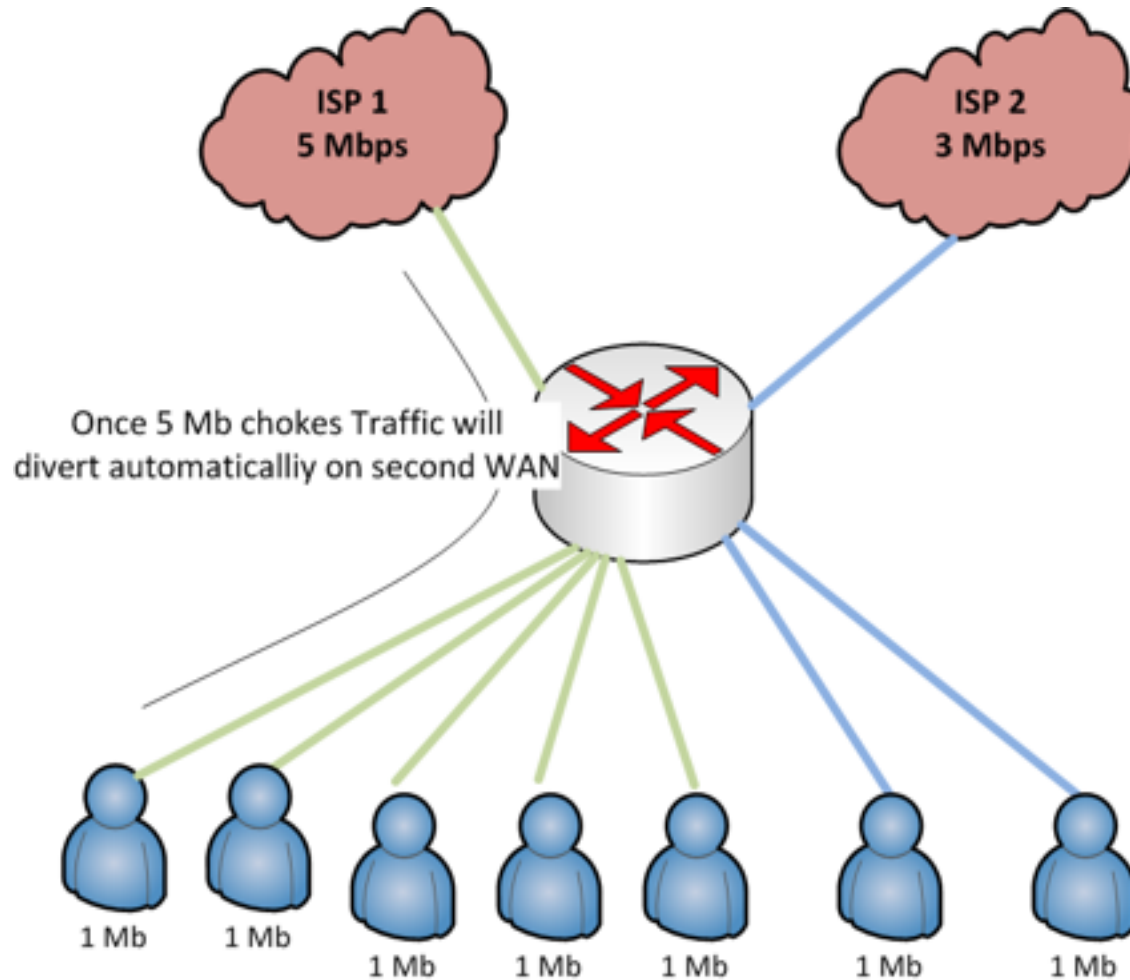
```
add dst-address=0.0.0.0/0 gateway=10.111.0.1 distance=1 check-gateway=ping
```

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

# Results : Appreciation



### 3. SpillOver : Want to shift traffic of fully consumed bandwidth of one ISP to Another



# IP Addressing

**/ ip address**

**add address=192.168.0.1/24 network=192.168.0.0 interface=LAN**

**add address=10.111.0.2/24 network=10.111.0.0 interface=ISP1**

**add address=10.112.0.2/24 network=10.112.0.0 interface=ISP2**

# Marking

**/ip firewall mangle**

**add chain=prerouting src-address=192.168.0.0/24 action=mark-routing  
new-routing-mark=to\_ISP1**

# Nating

```
/ ip firewall nat
```

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

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

# Routing

```
/ip route
```

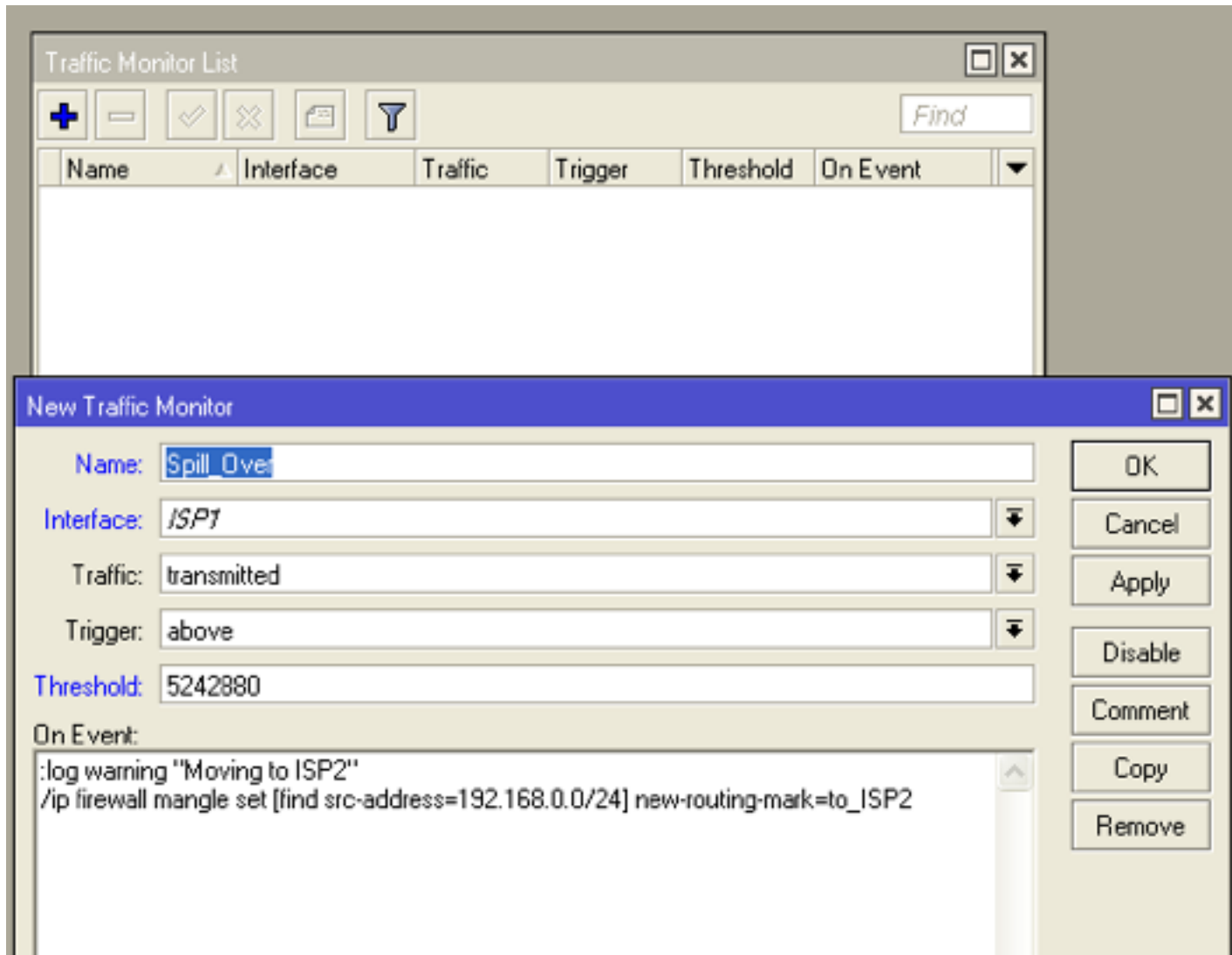
```
add dst-address=0.0.0.0/0 gateway=10.111.0.1 routing-mark=to_ISP1 check-gateway=ping
```

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

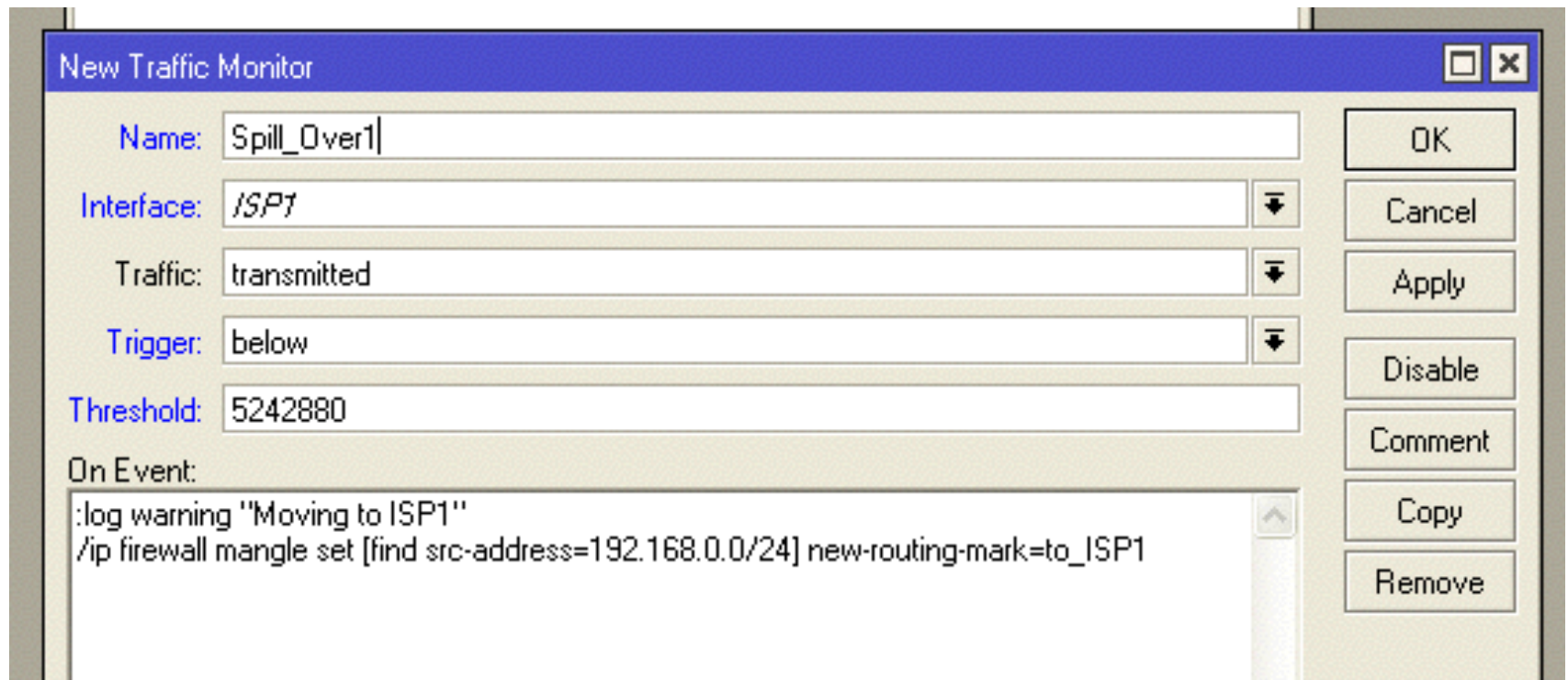
```
add dst-address=0.0.0.0/0 gateway=10.111.0.1 distance=1 check-gateway=ping
```

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

## Trick 1: Shifting traffic to ISP 2



## Trick 2: Shifting traffic back to ISP 1



The screenshot shows a 'New Traffic Monitor' dialog box with the following configuration:

- Name:** Spill\_Over1
- Interface:** ISP1
- Traffic:** transmitted
- Trigger:** below
- Threshold:** 5242880

**On Event:**

```
:log warning "Moving to ISP1"  
/ip firewall mangle set [find src-address=192.168.0.0/24] new-routing-mark=to_ISP1
```

Buttons on the right side of the dialog include: OK, Cancel, Apply, Disable, Comment, Copy, and Remove.



**Results :**



# Questions ?



Thank You for Listening 😊

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