MUM

ROUTING THE WORLD
MikroTik™
www.mikrotik.com

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Basic Config MikroTik Captive Portal (HotSpot)

Teddy Yuliswar #TR0442

Phnom Penh, Cambodia January 21, 2019

About Presenter

Teddy Yuliswar

- Used MikroTik since RouterOS 2.97 (Since 2008)
- **MikroTik Certified** MTC [All] E (2014 – 2016)
- Mikrotik Certified Trainer (UEA, TTT Dubai 2016)
- MikroTiK Consultants Asia (Since 2016)
- Mikrotik Academy Coordinator in Indonesia (Since 2017)
- Founder Indonetworkers.com Training Center
- MikroTik User Meeting Presenter (2015 – 2019)
  - Yogyakarta , Jakarta -Indonesia (2015-2018)
  - Phnom Penh – Kamboja (2017)
  - Vientiane - Laos (2017)
  - Phnom Penh – Kamboja (2019 - **NOW**)

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Mikrotik Training Class

Banjarmasin – borneo island , 2017

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Mikrotik Training Class

Jakarta , 2017

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Mikrotik Seminar

With hotspotsystem - Malaysia

Kuala Lumpur, Malaysia - 2019

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MikroTiK Train-the-Trainer

Dubai, UEA - 2016

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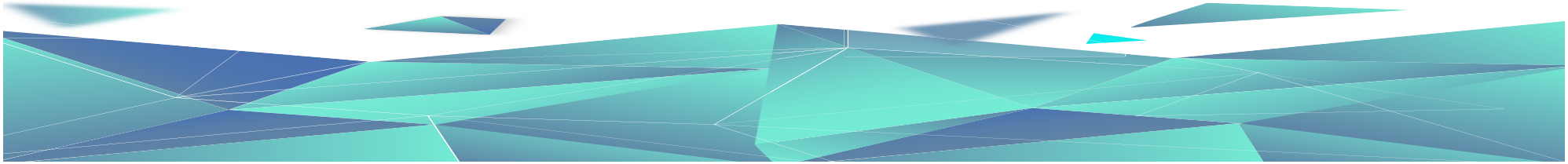
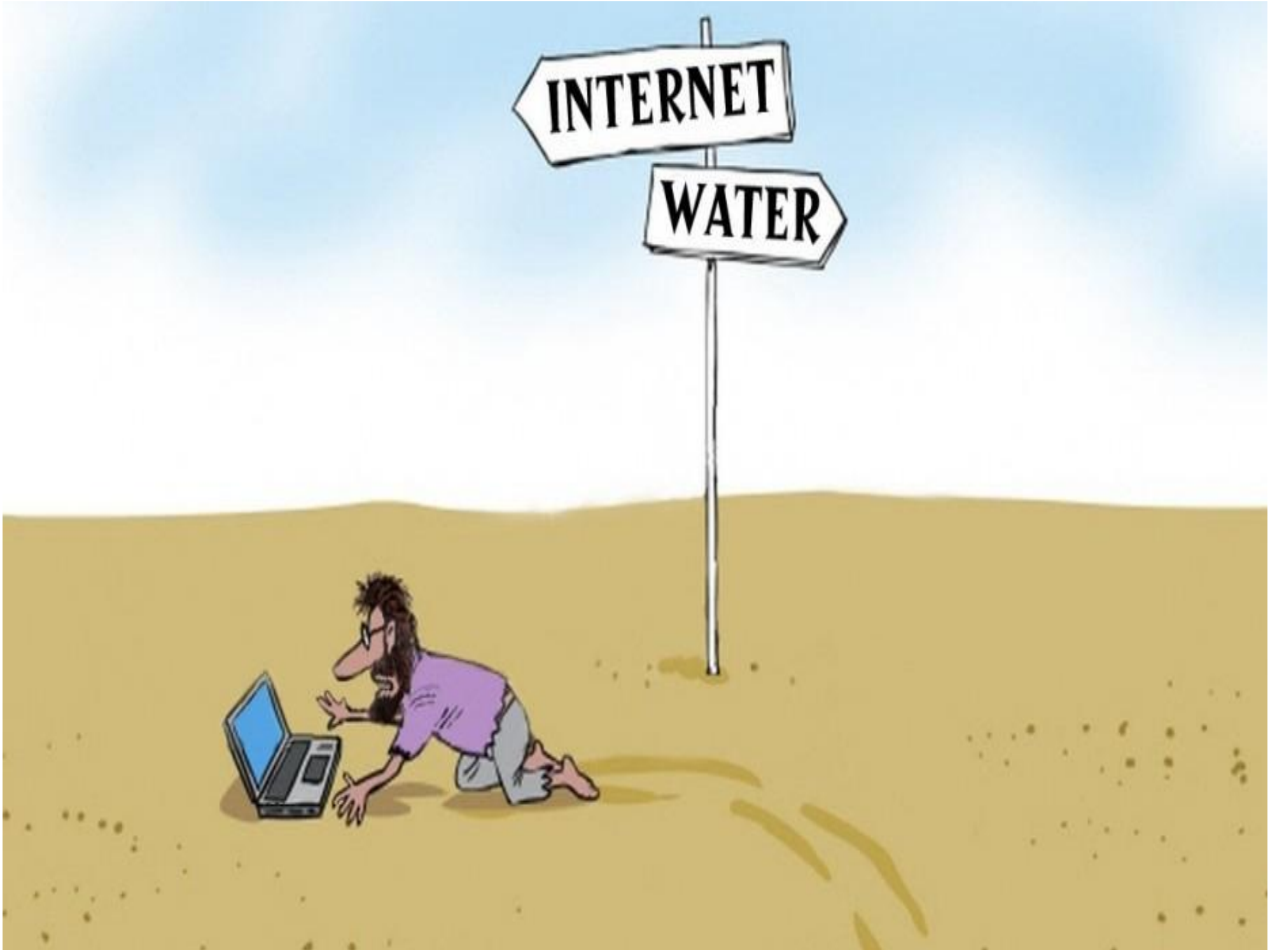
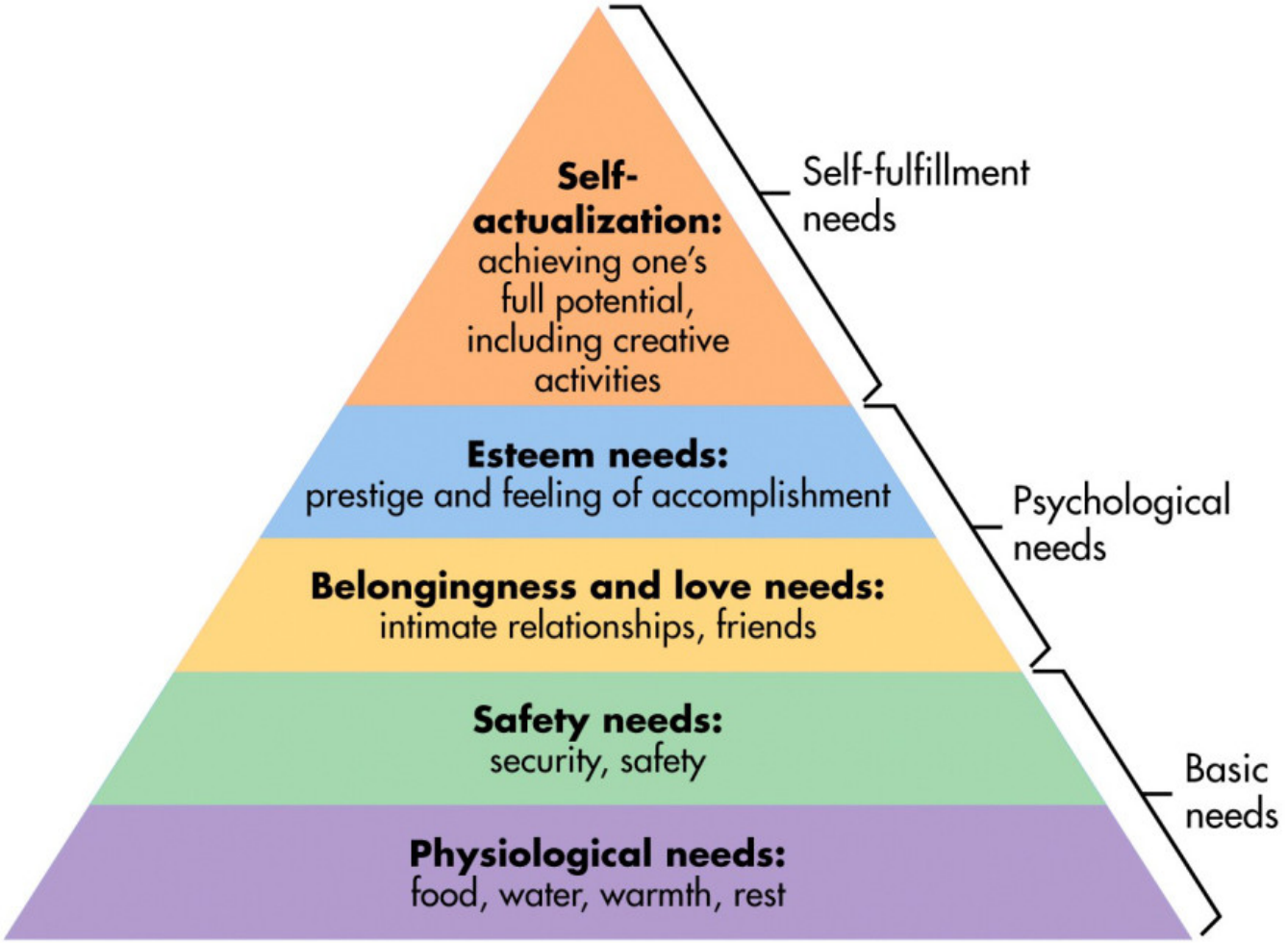
How long you can survive without the internet now?




INTERNET
WATER

Past..



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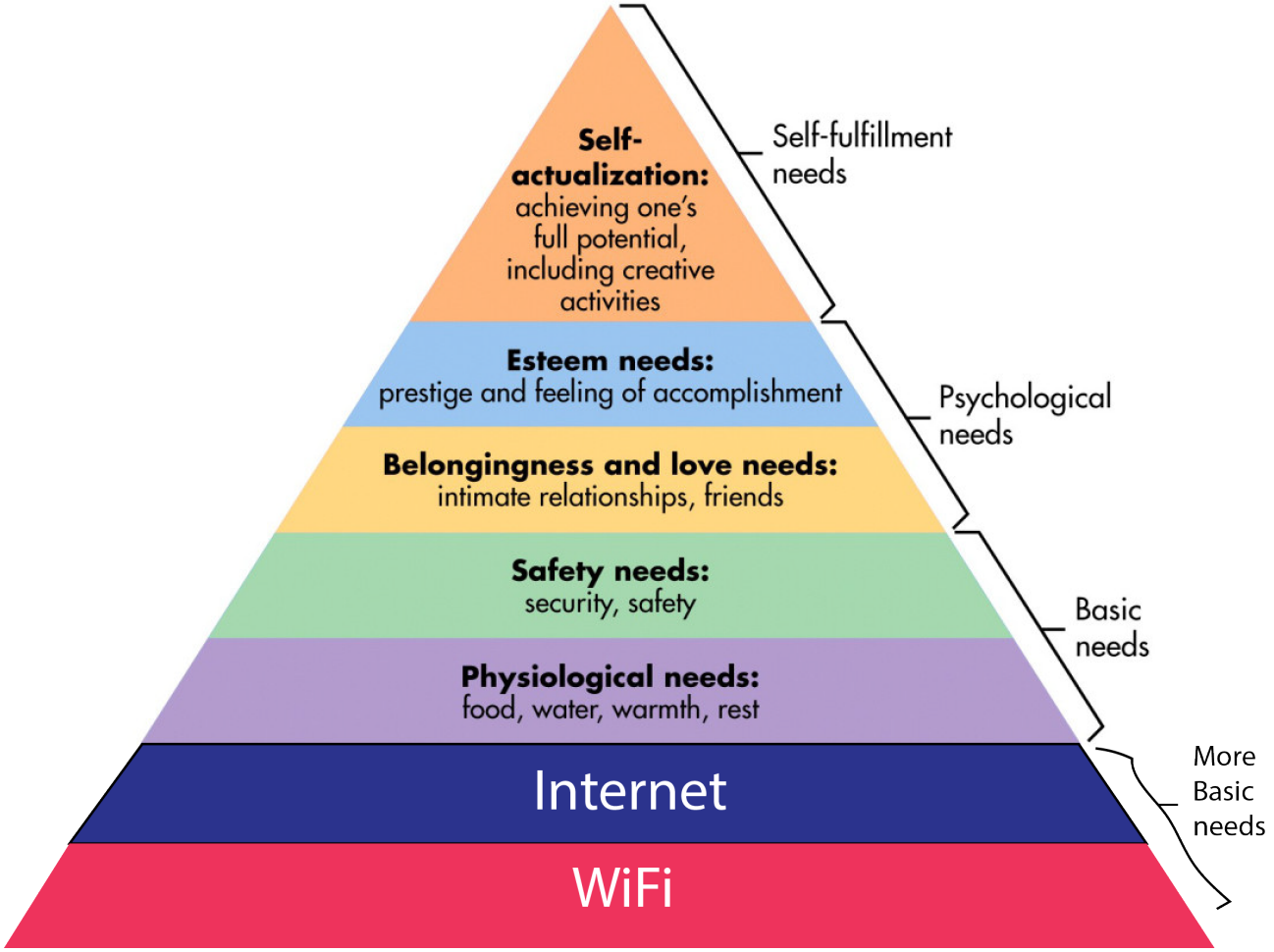
Now..



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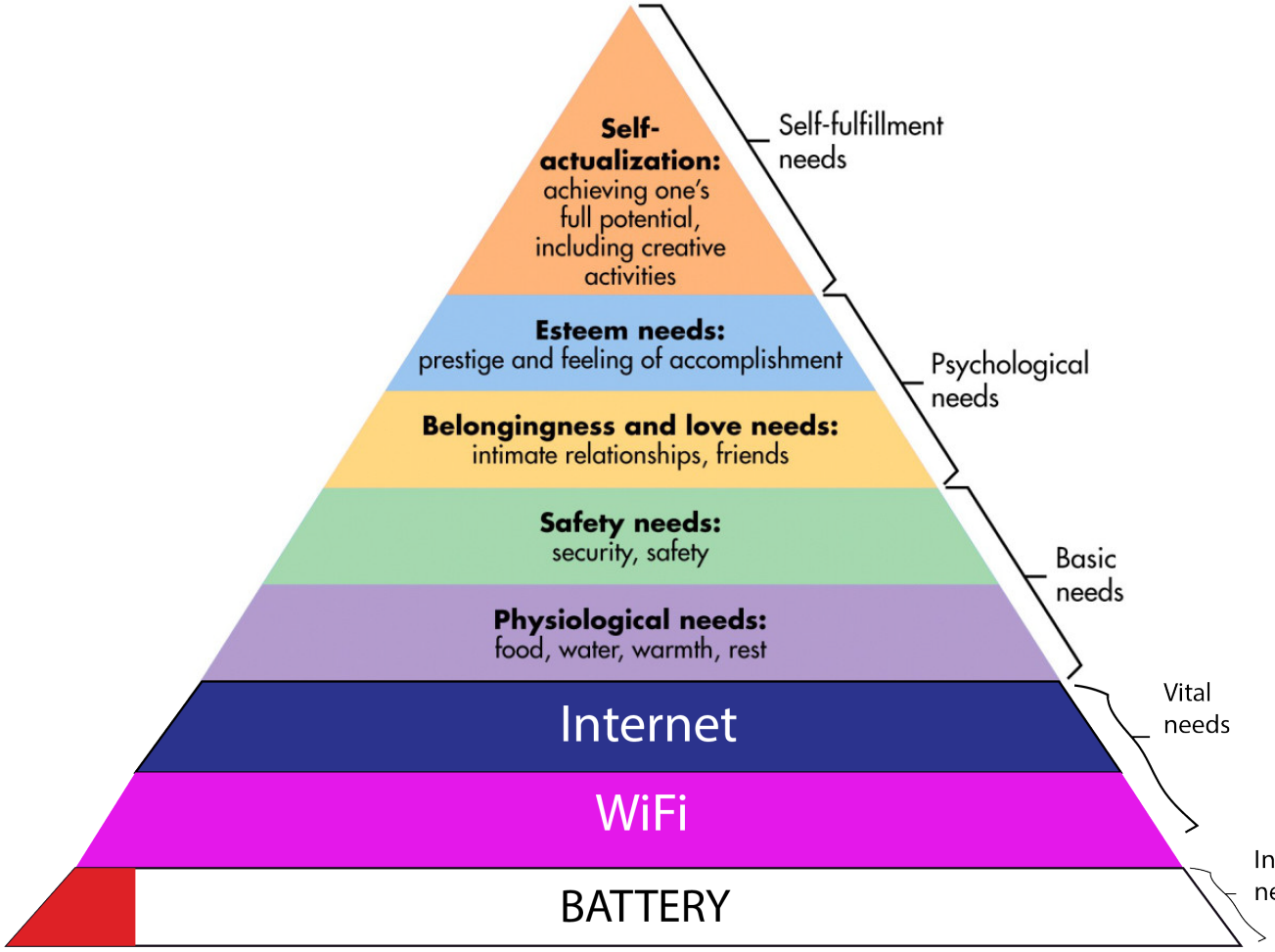
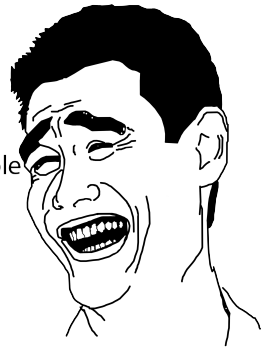
Now..





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endlessorigami.com

BASIC NEEDS FOR SURVIVAL

THEN

· FOOD · WATER
· SHELTER · CLOTHING

NOW

· INTERNET
· FOOD, SHELTER, WATER (OPTIONAL)

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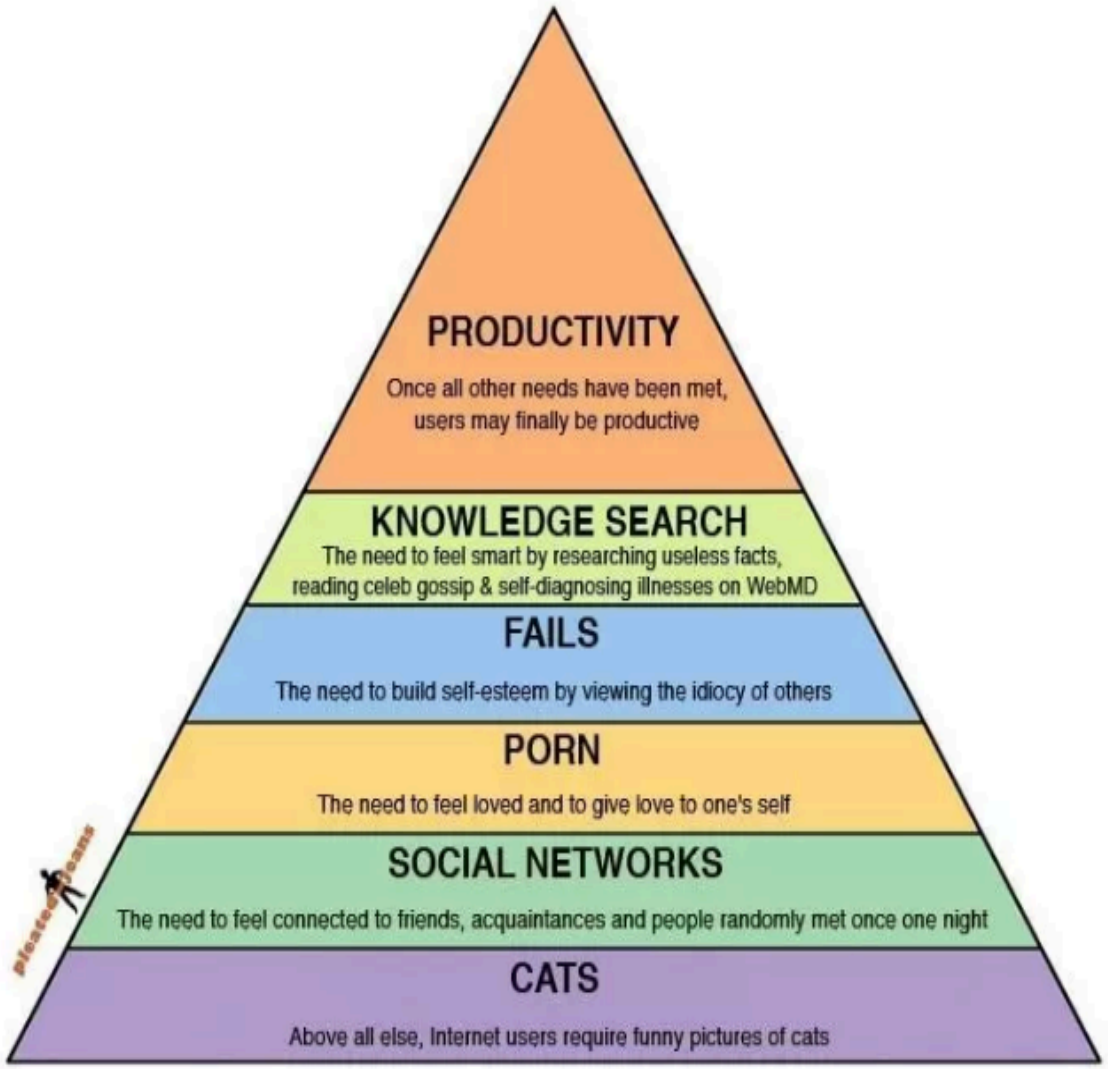
Maslow's Hierarchy of Internet Needs



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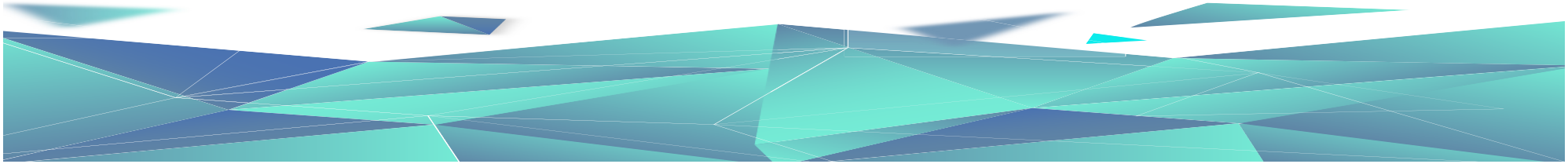
Which jobs that don't need the internet now?



Where we can get internet source?

- Subscribe to the internet from Internet Service Provider (ISP) at home (Paid every month)
- Buy data packages for mobile connections (Limited Data Quota)
- Buy HotSpot Voucher (Paid Hourly)
- Or ….

Get Free Wifi ☺

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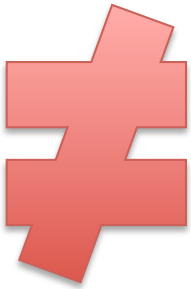
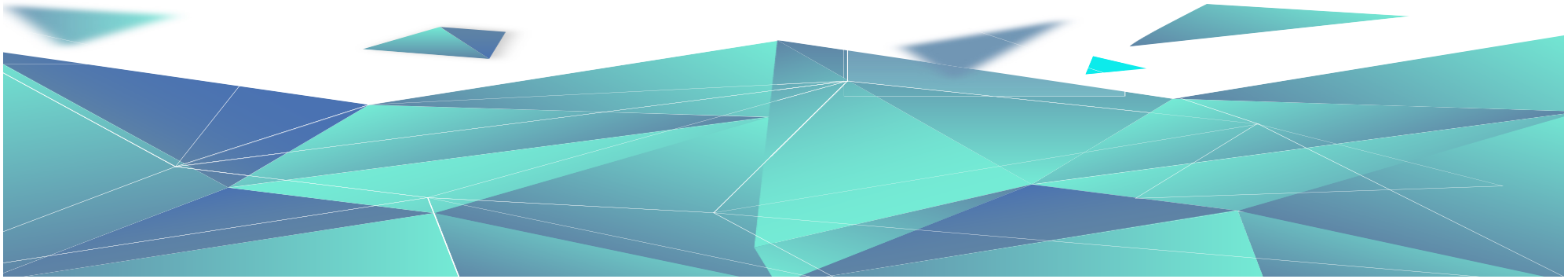


Login Hotspot



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Hotspot is a physical location where people may obtain Internet access, typically using **Wi-Fi technology**, via a wireless local area network (WLAN) using a router connected to an internet service provider.

MikroTik

Login Hotspot

Gateway provides authentication for clients before access to public networks Commonly called “captive portal” can running in **wireless networks** or **wire networks** even **Virtual Interface** like VLAN, Virtual AP , Tunnel and etc.

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Overview

- Plug-and-Play Internet Access
- Users authentication before access to the Internet
- Walled-garden to allow resources without authentication
- User Accounting
- Transparent proxy

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Usage

Airports

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Usage

University / Campus

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Usage

Student Dormitories / Leased Housing

photo source : www.naist.jp

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Usage

Restaurant or Café's

Usage

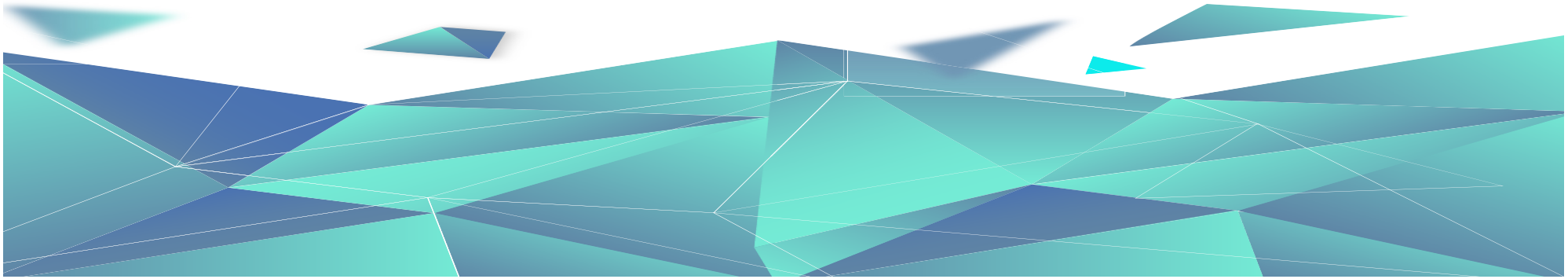
- Open Access Point
- Anywhere Authorization or Accounting are Required

Operation

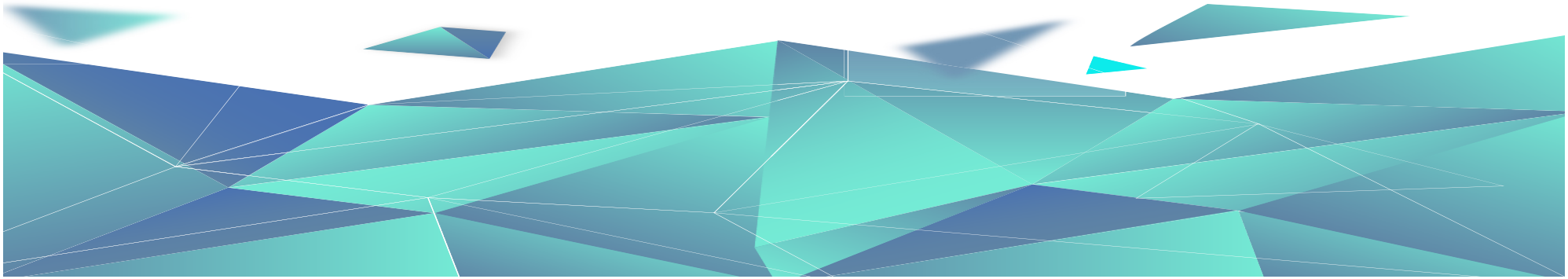
- User can use wrong network configuration settings, Hotspot server **translates them** to correct ones
- No Internet Available before Hotspot **Authorization**
- **Exceptions** are added to walled-garden and / ip hotspot ip-binding

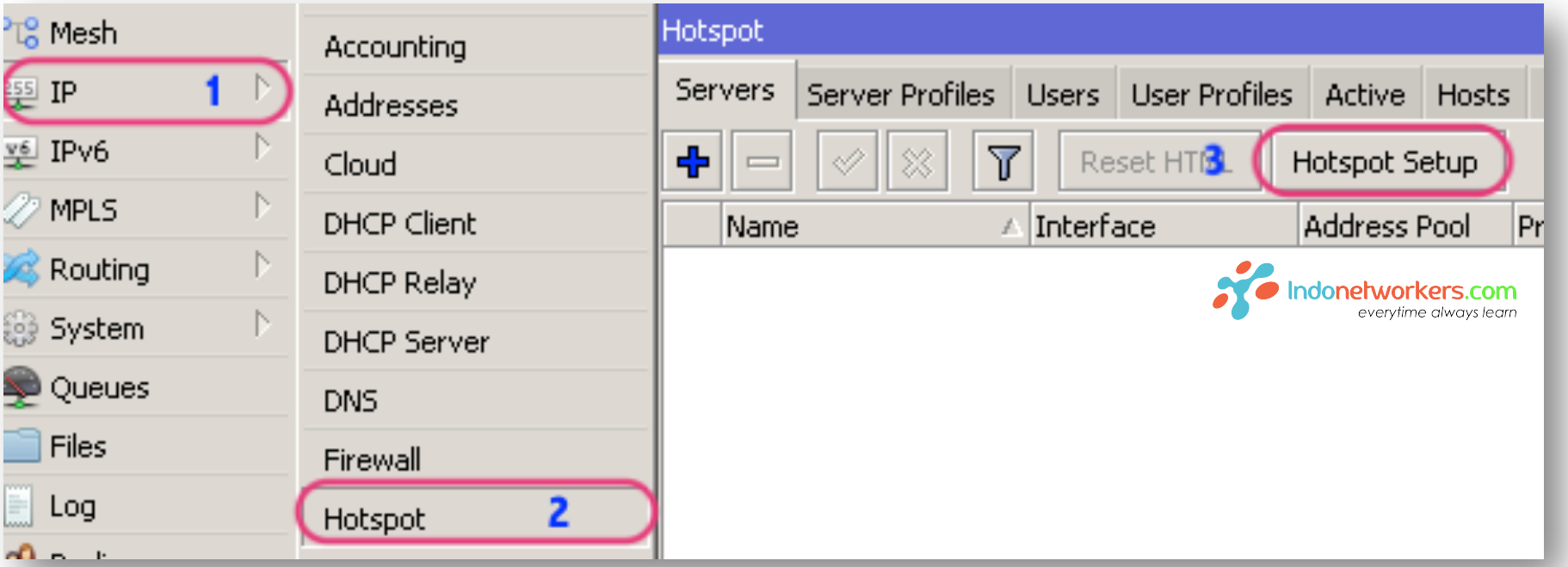
Operation

- Enter username/password in Hotspot Login page to get the **Internet (Authentication)**
- Other login **methods** available
- Different **accounting** options
  - Measures the resources a user consumes during access



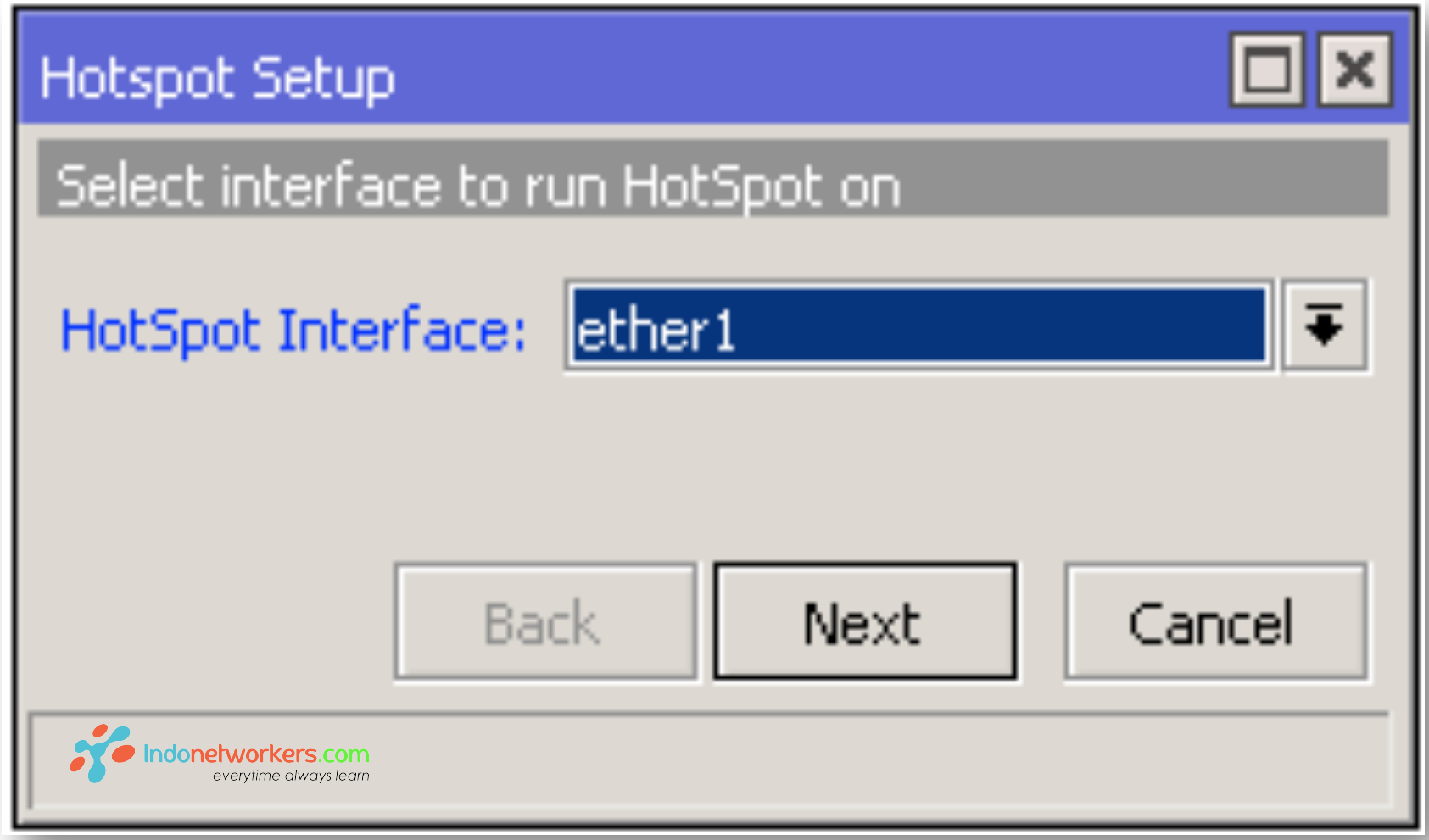
HotSpot Setup



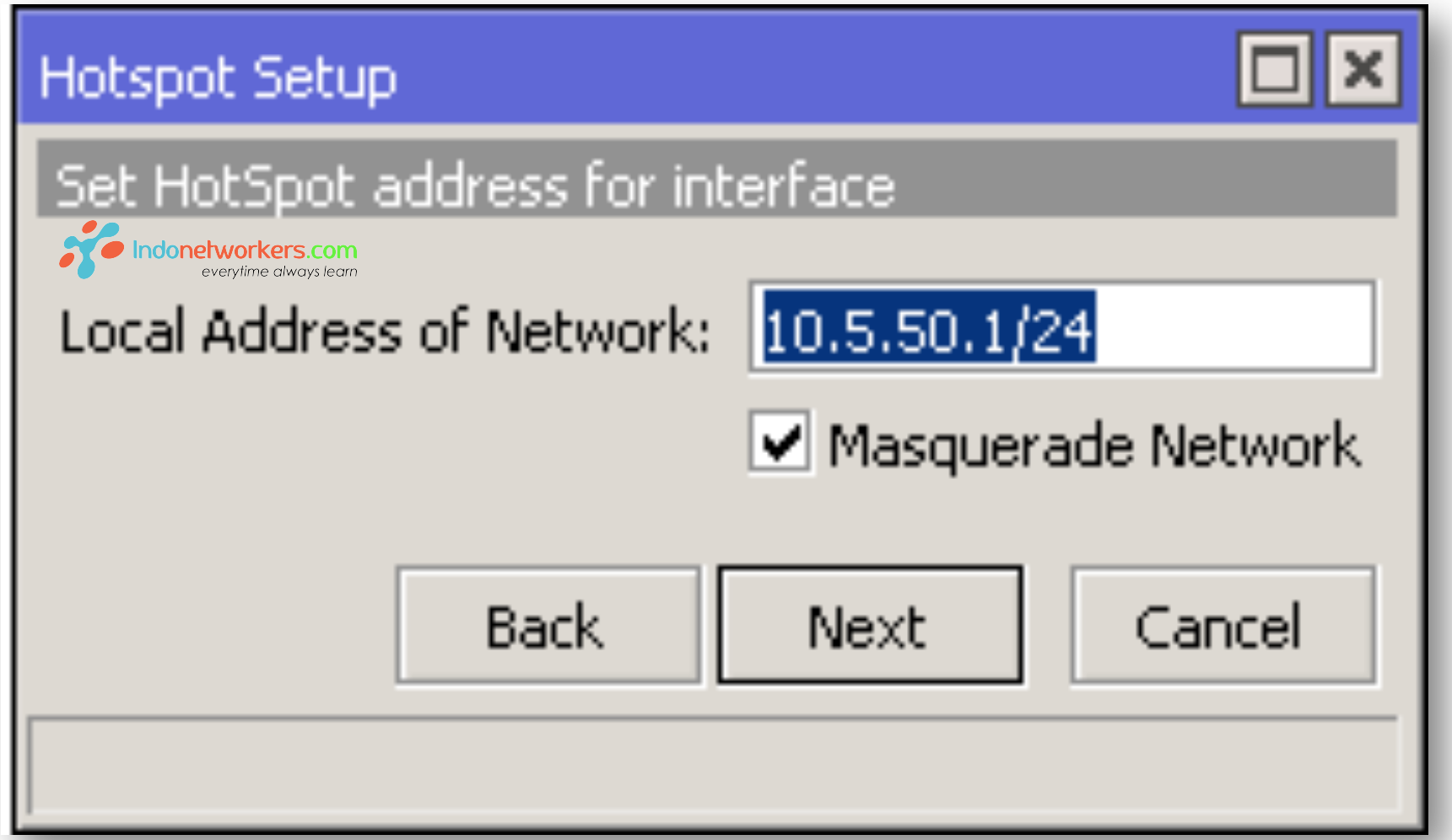


Select IP → Hotspot → Hotspot Setup in WinBox
or if with CLI/Terminal use command :

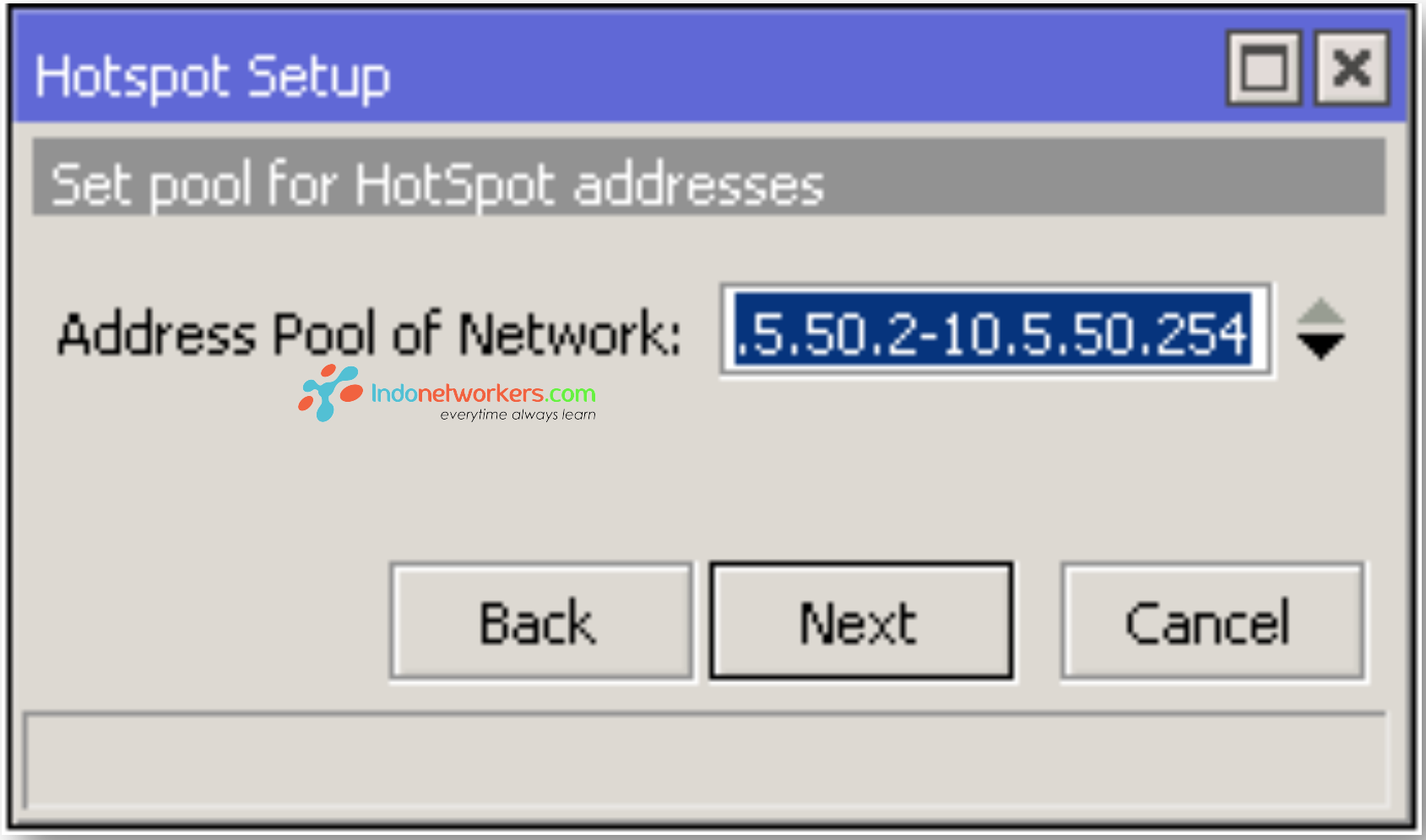
```
/ip hotspot setup
```



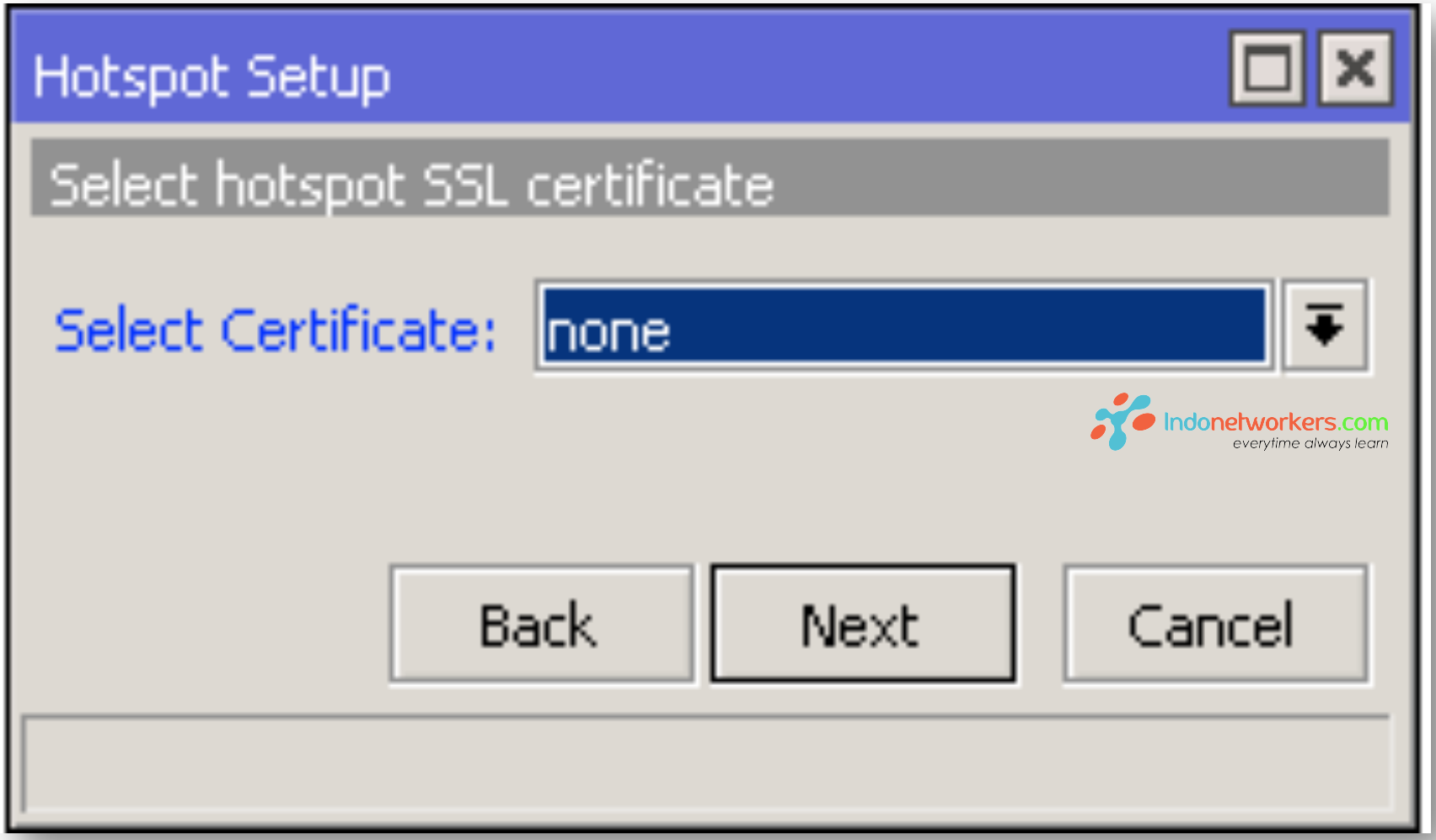
Select Interface then Click “Next”



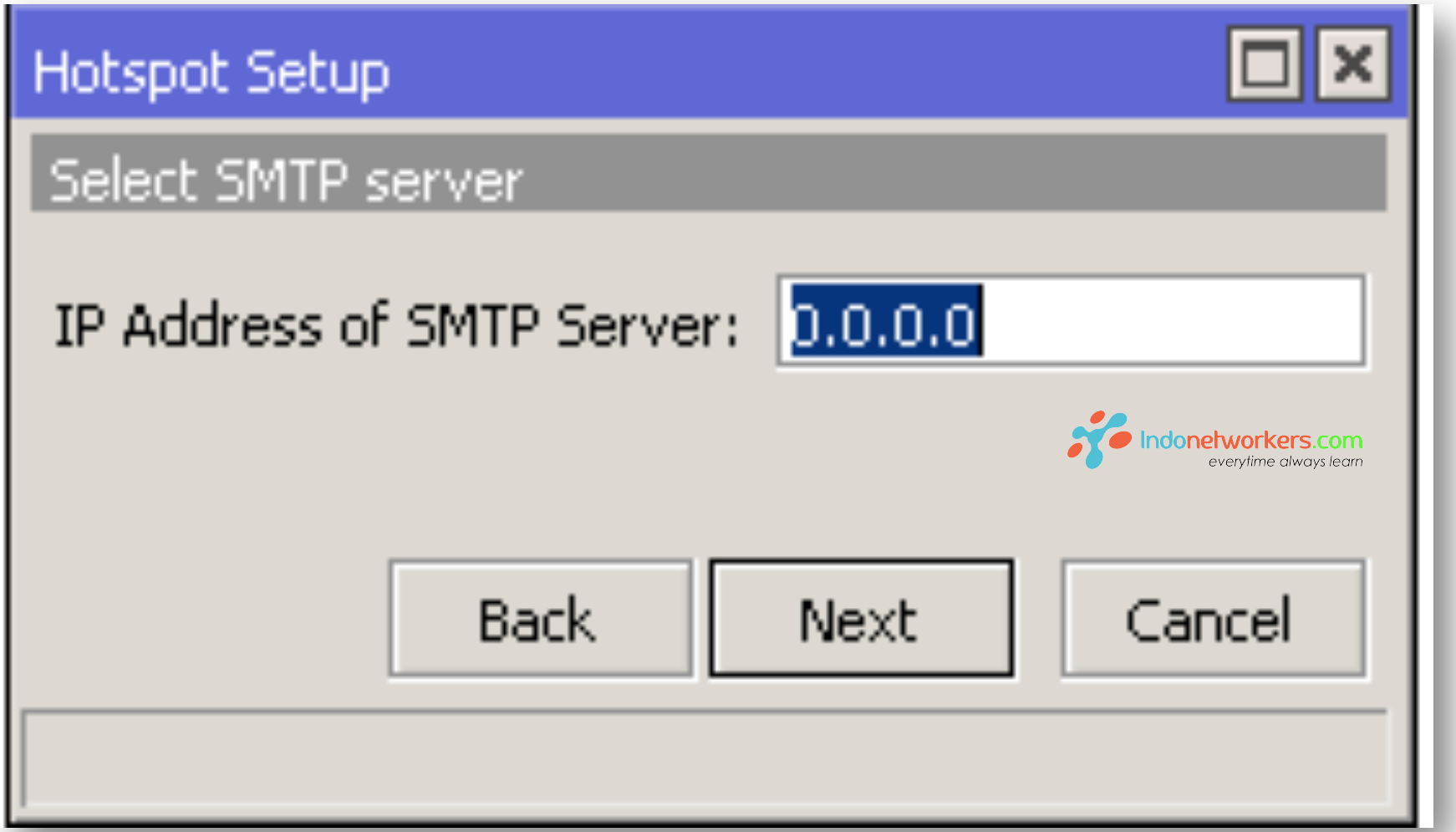
- Set HotSpot Address, offered automatically, if no IP Address in interface for HotSpot, MikroTik RouterOS will be give 10.5.50.1/24
- Masquerade Network or not



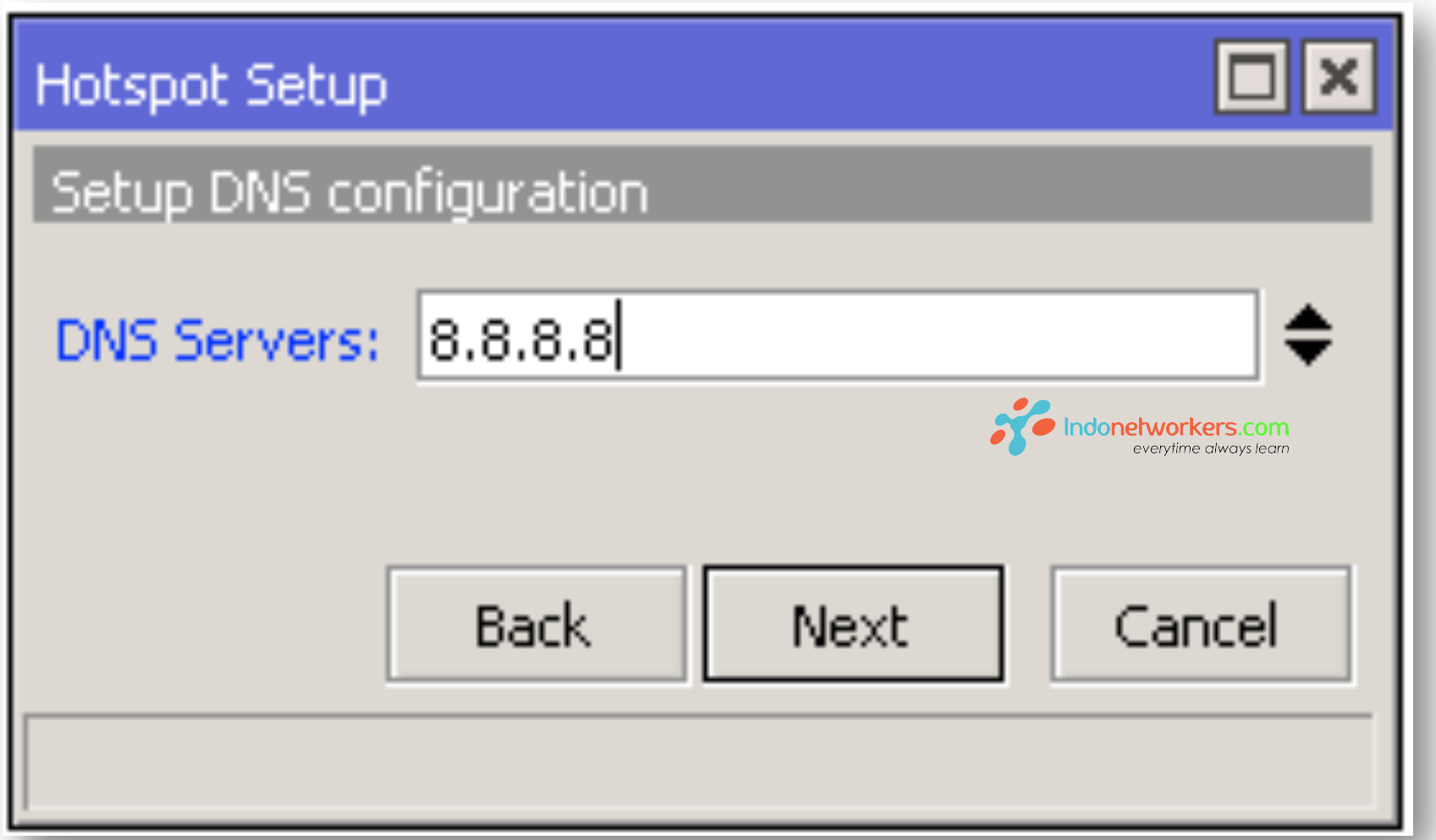
- **Address-range** to use for clients



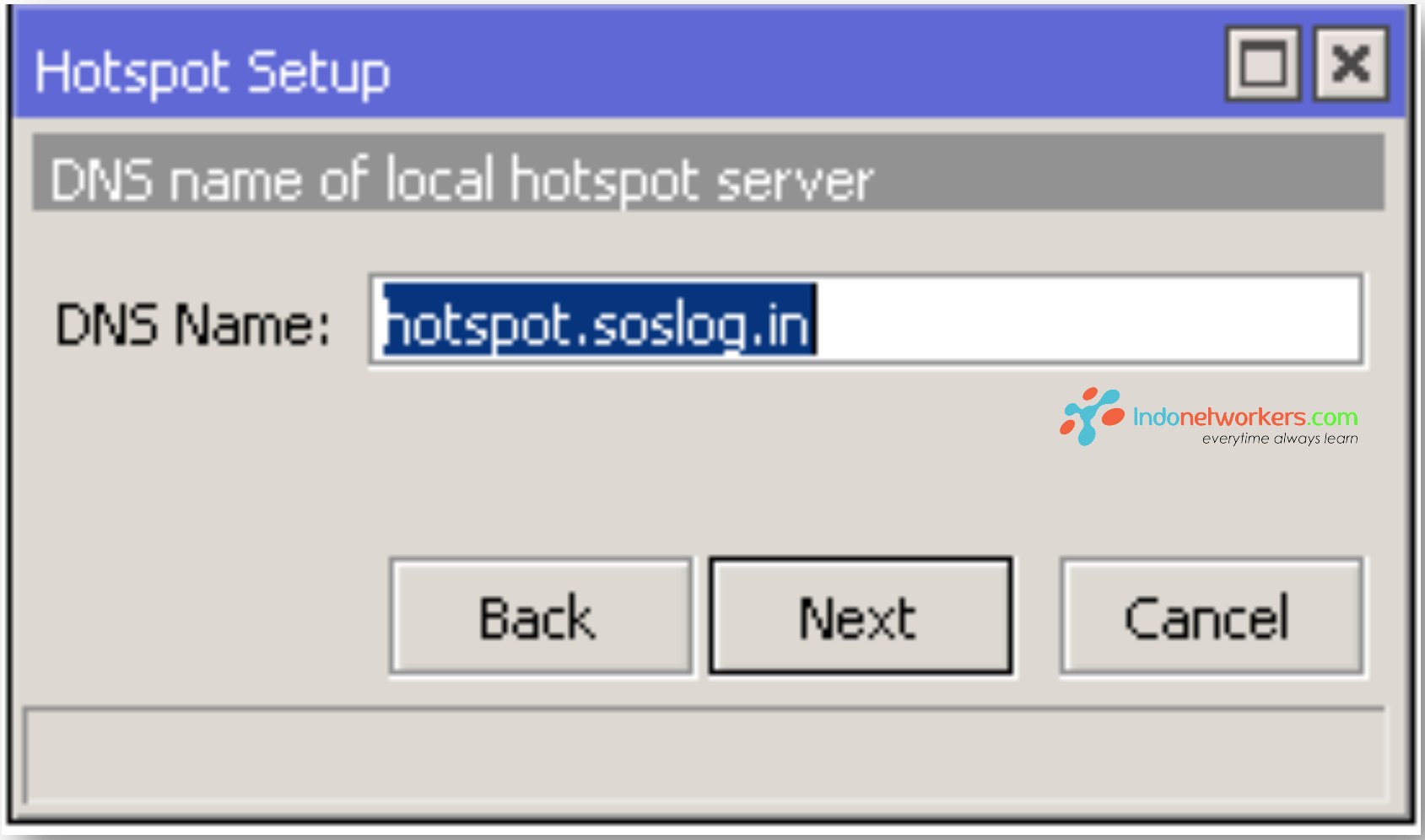
- **SSL certificate,** used for HTTPS login



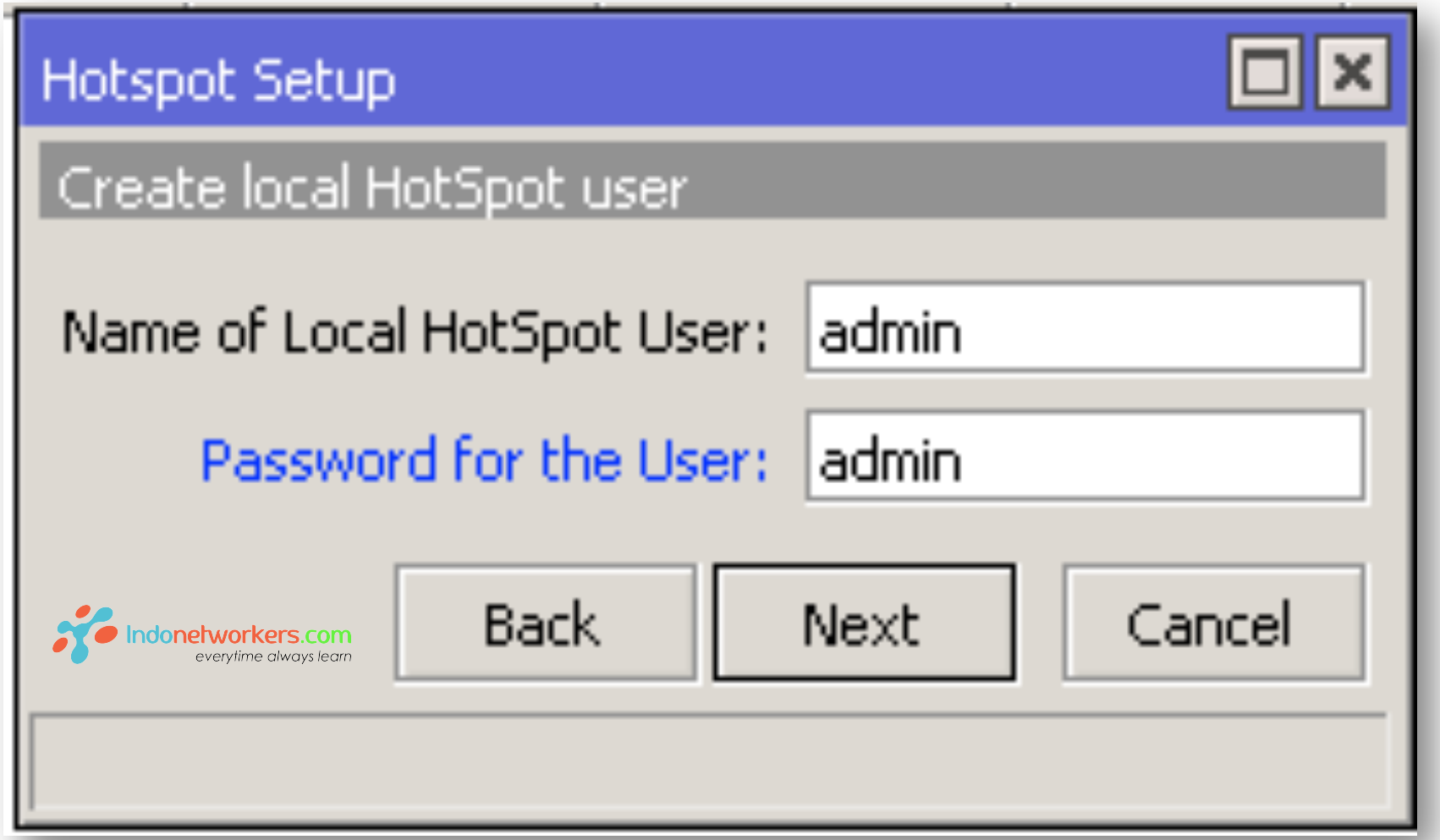
- **SMTP Server** address, to redirect all HotSpot users to



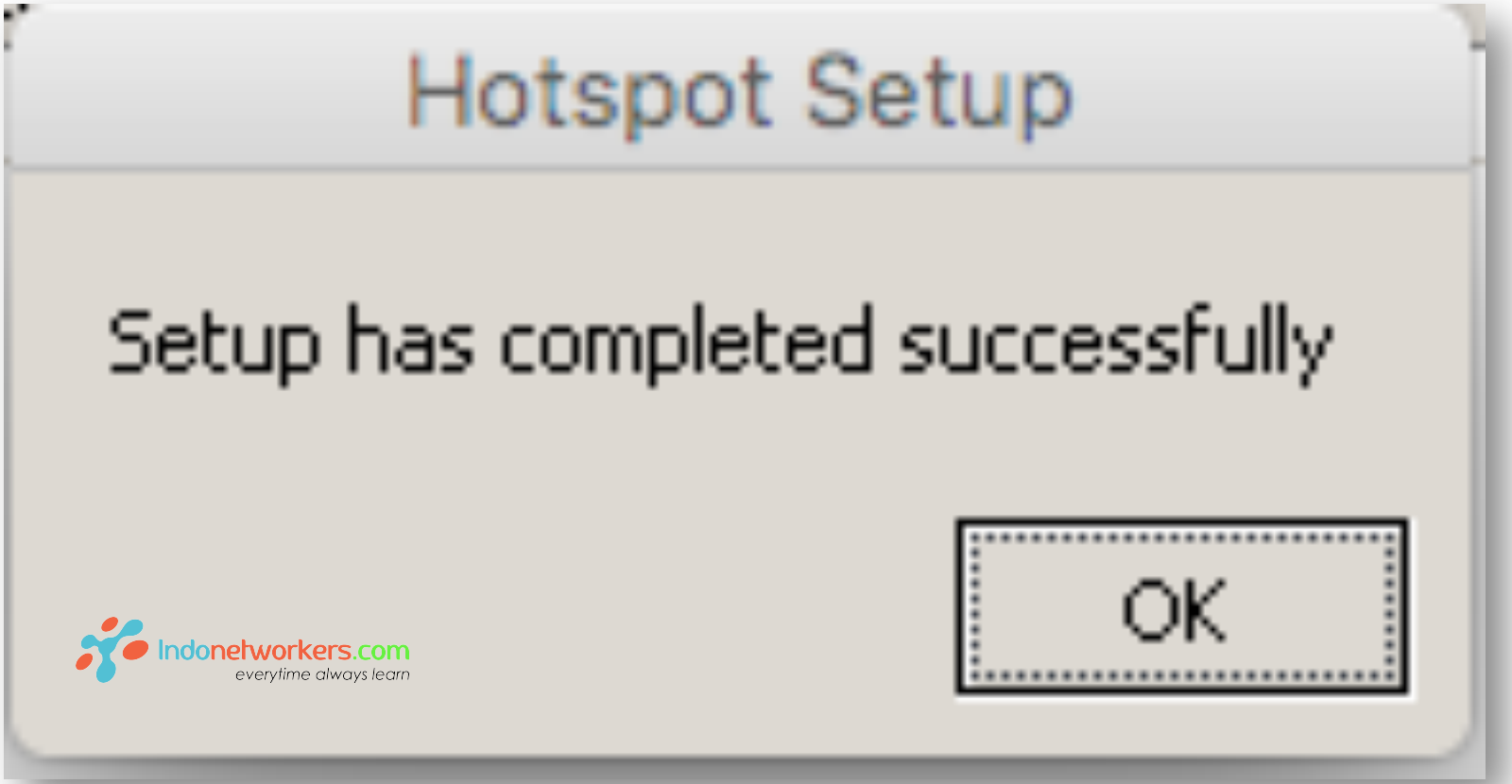
- **DNS Server** for HotSpot users, taken from /ip dns



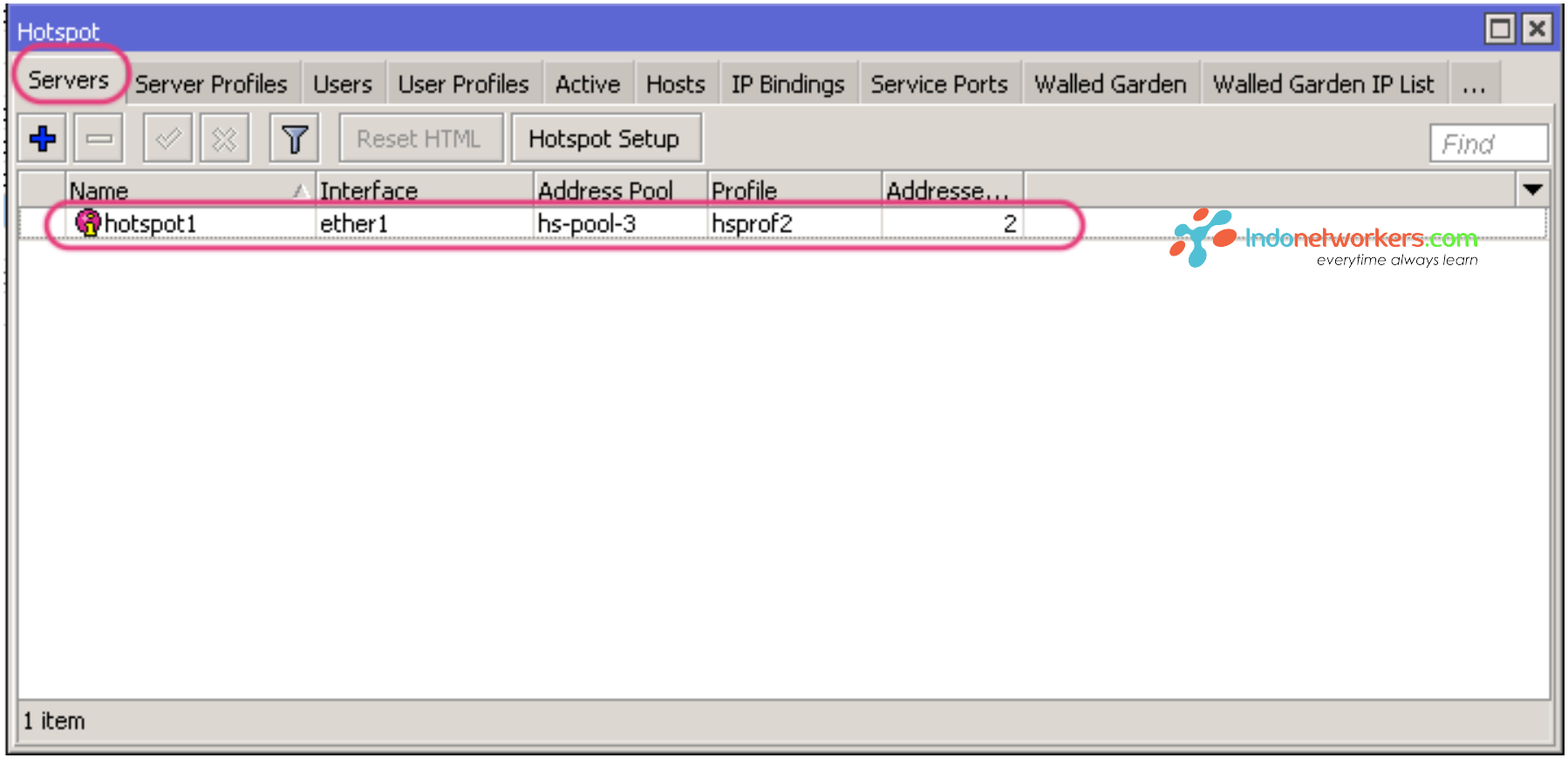
- **HotSpot DNS name** for access login page, **FQDN** required (www.example.com)



- Create first HotSpot **user**



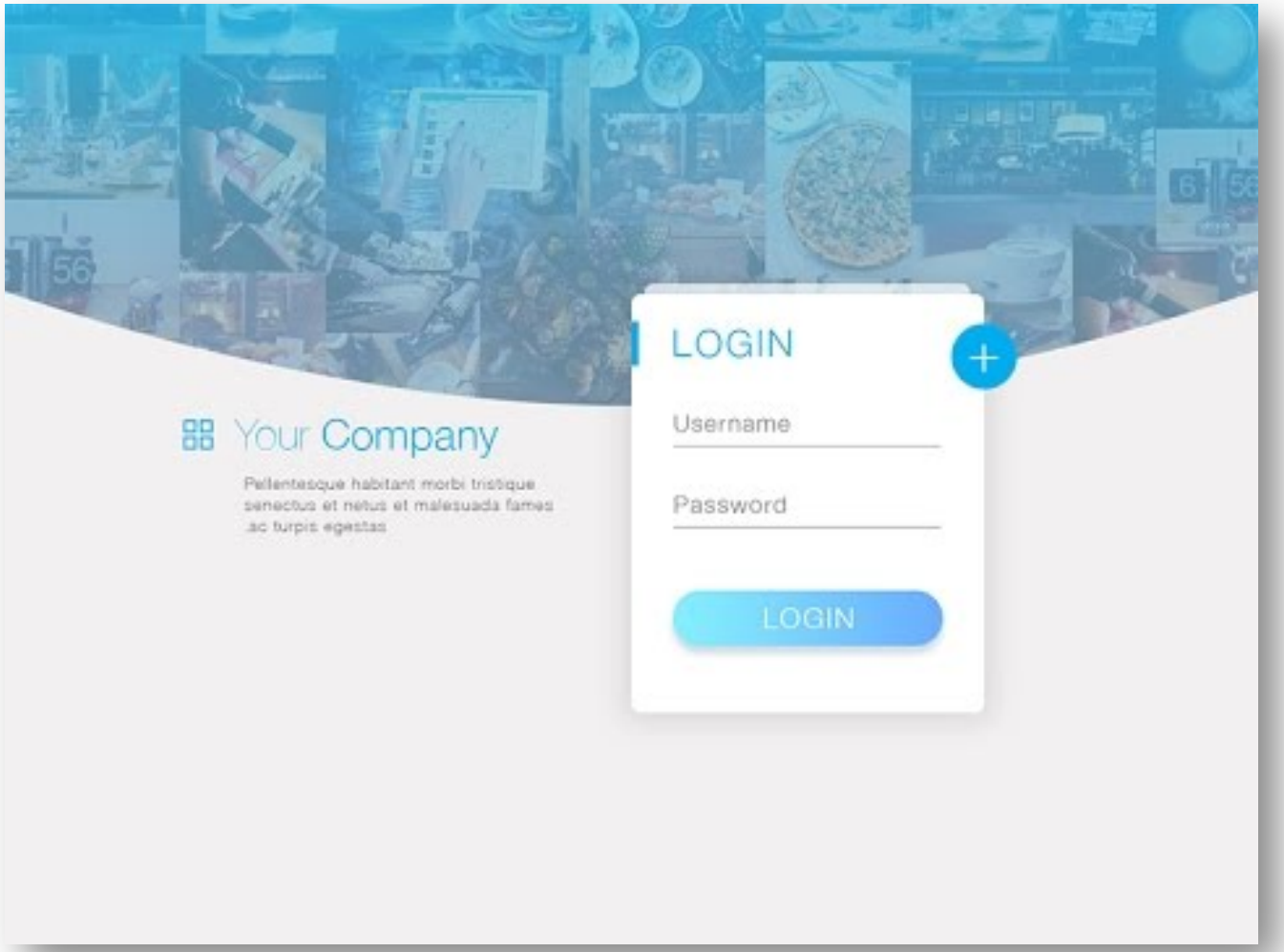
HotSpot setup is **completed** successfully



Check /ip hotspot menu

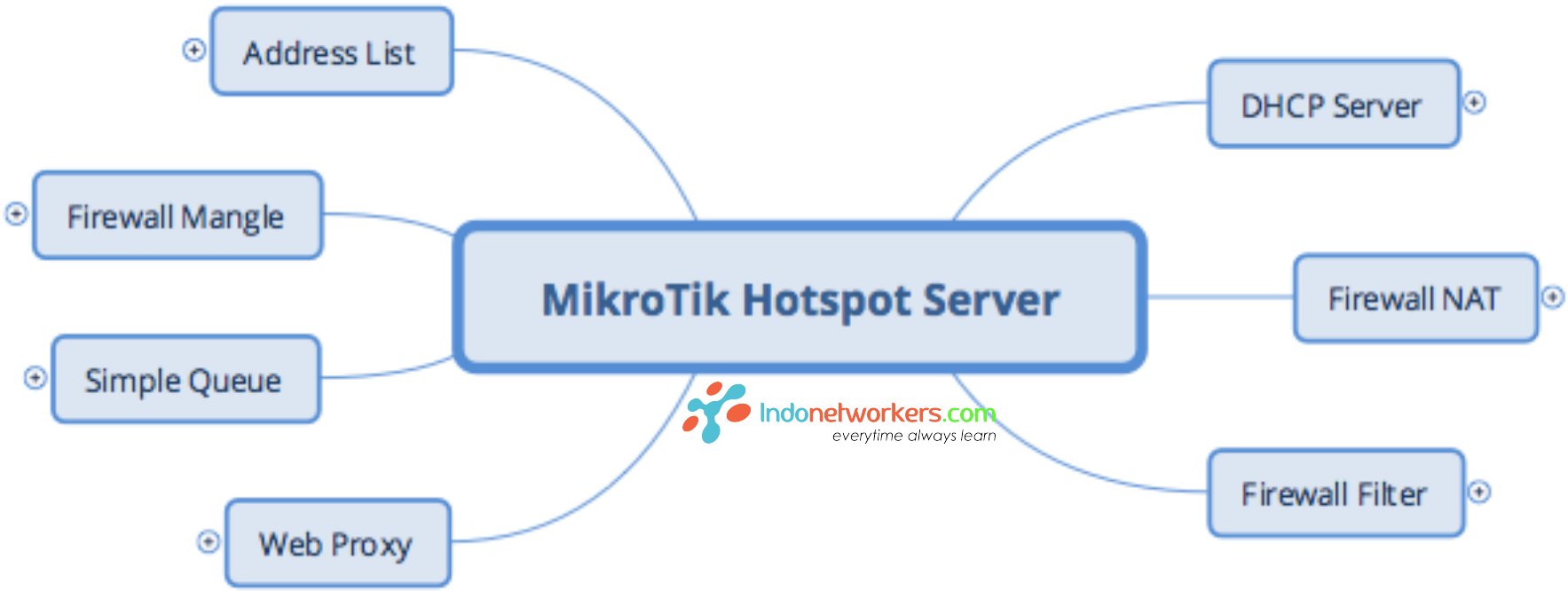
HotSpot Default Login Page

HotSpot Custom Login Page

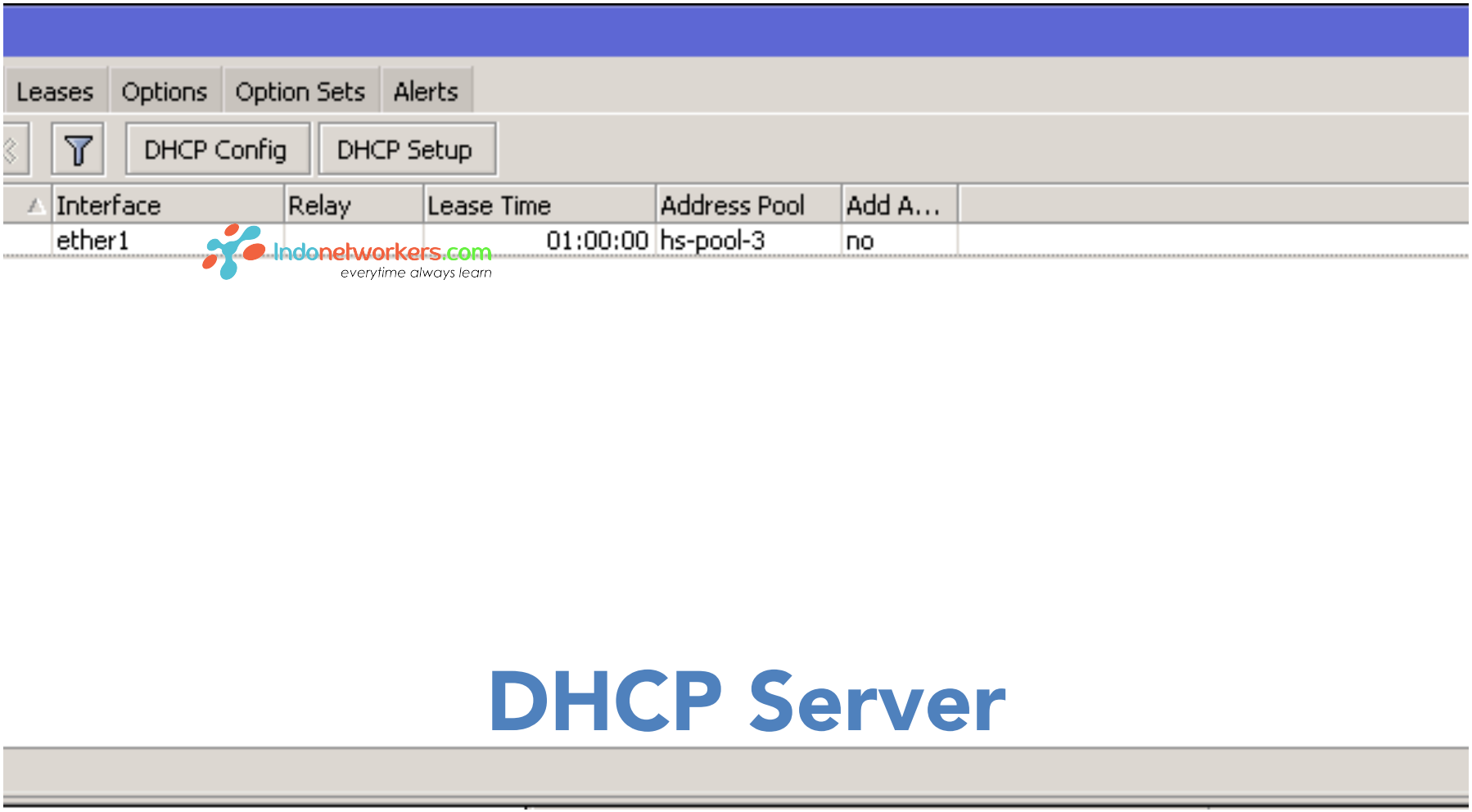


Required : web programming knowledge (html or php)

HotSpot Dynamic Rule

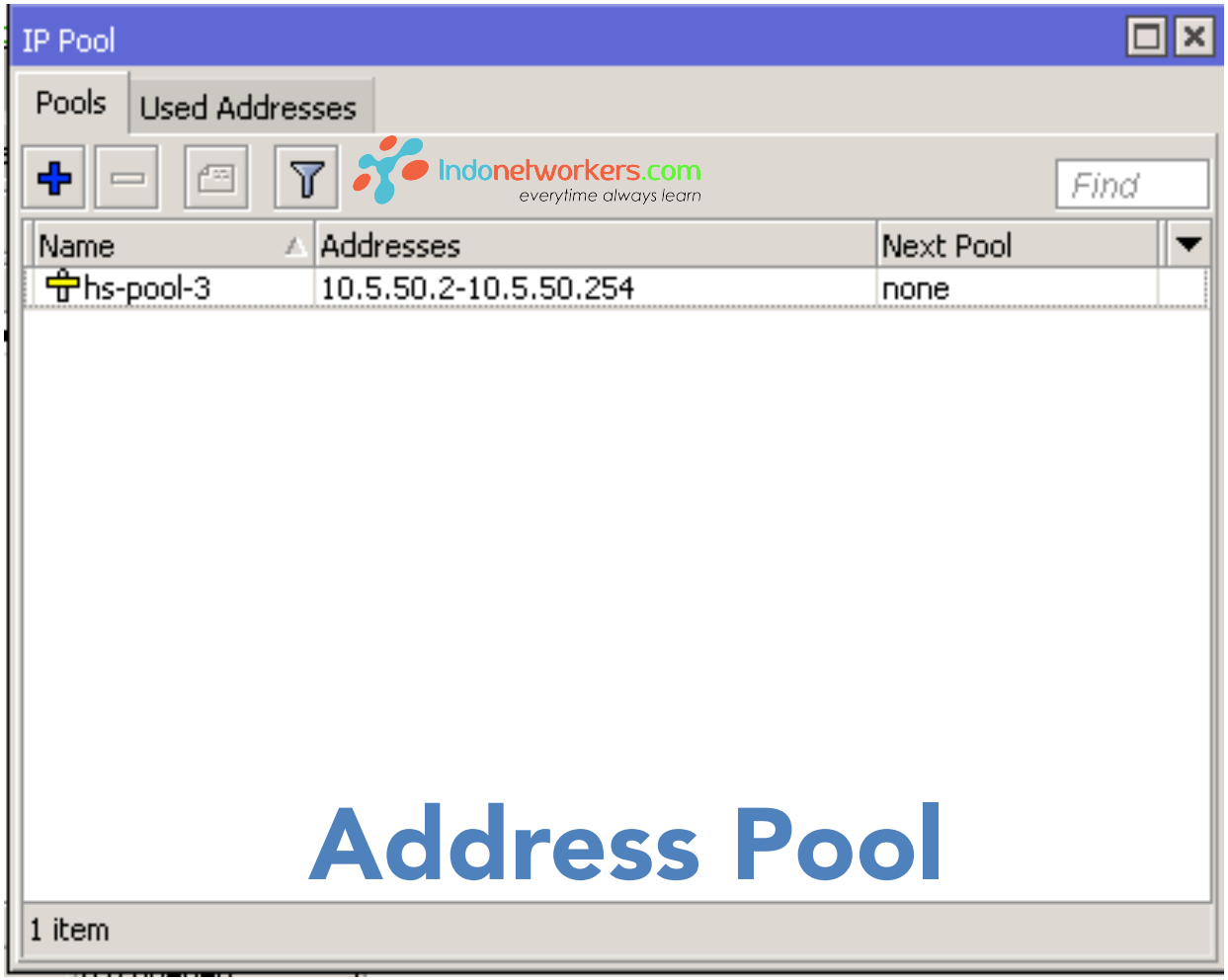


Configuration created

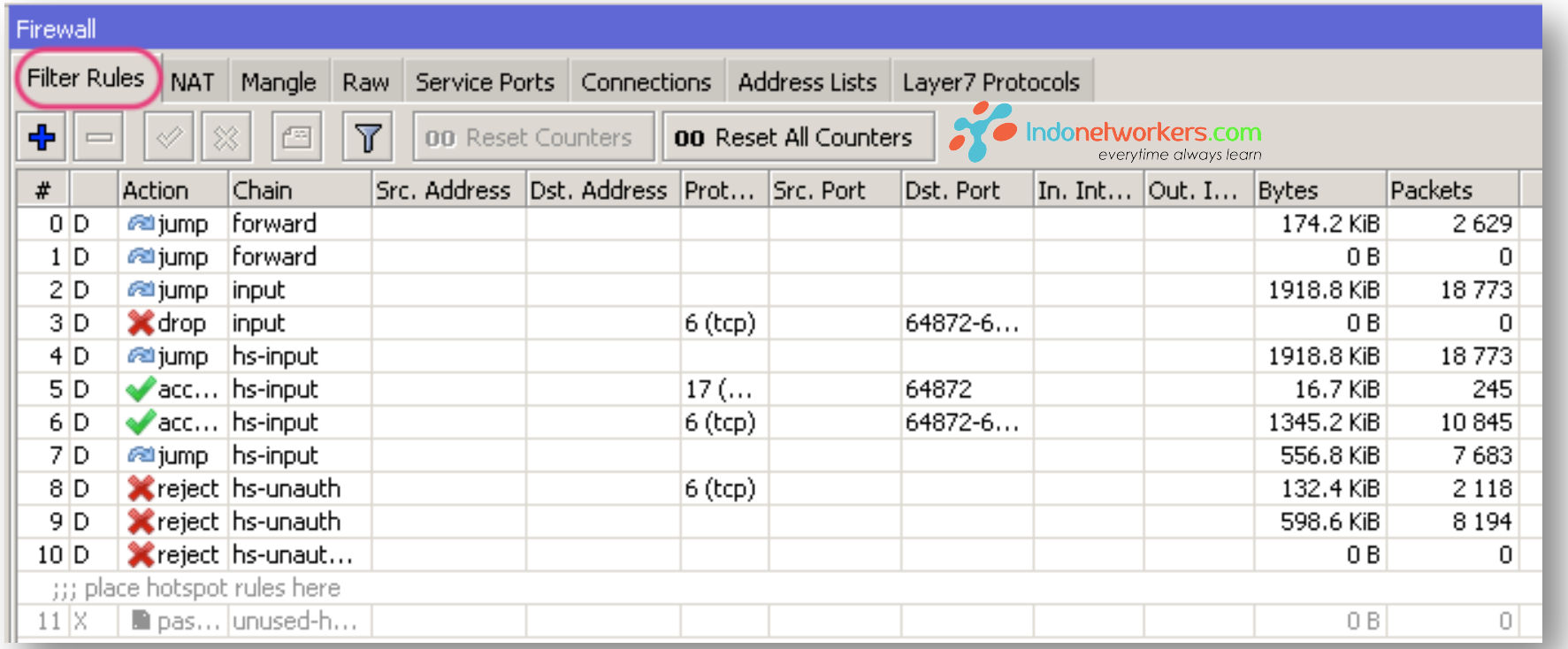


DHCP Server

Configuration created



Configuration created

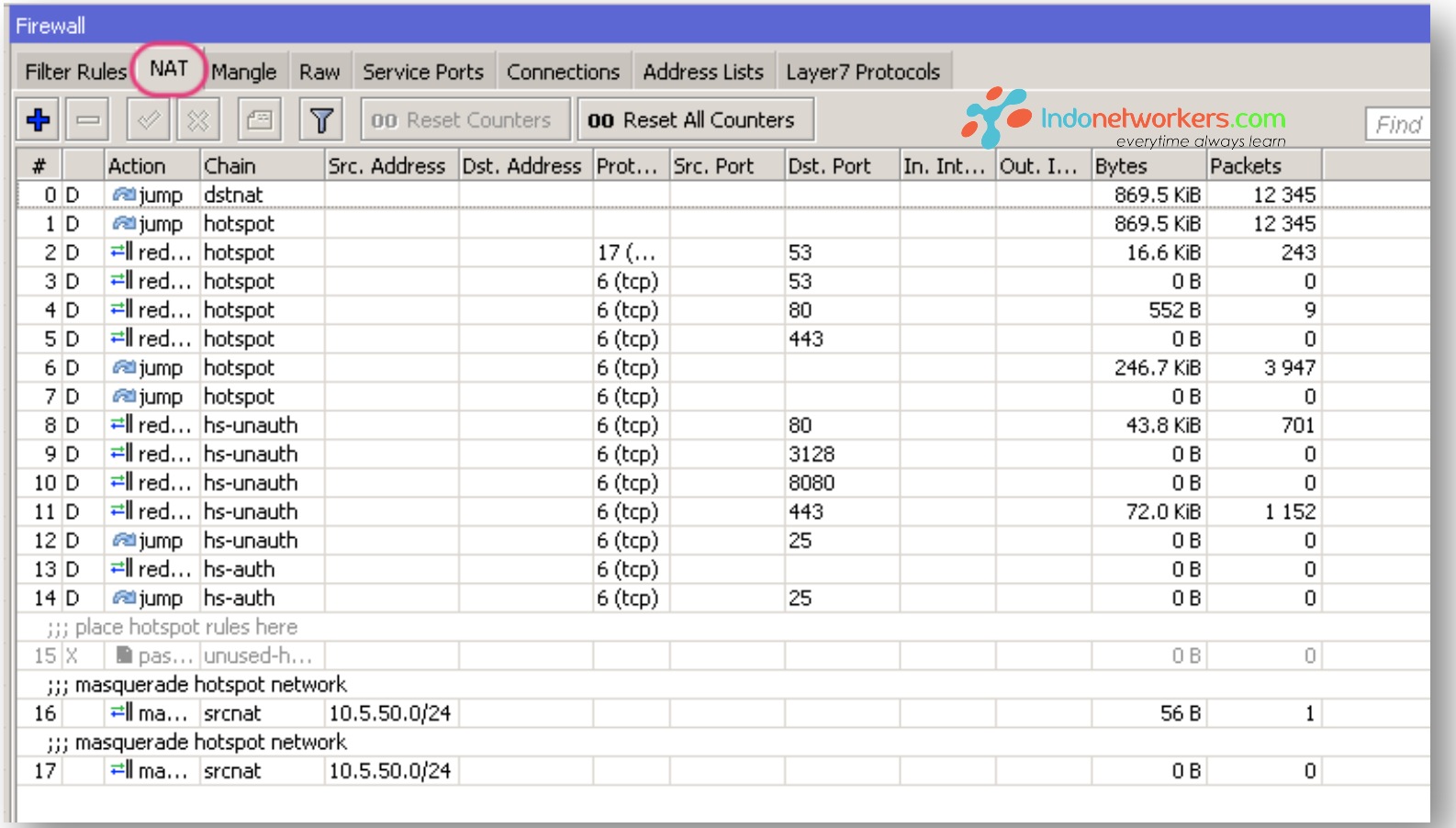


#		Action	Chain	Src. Address	Dst. Address	Prot...	Src. Port	Dst. Port	In. Int...	Out. I...	Bytes	Packets
0	D	jump	forward								174.2 KiB	2 629
1	D	jump	forward								0 B	0
2	D	jump	input								1918.8 KiB	18 773
3	D	drop	input			6 (tcp)		64872-6...			0 B	0
4	D	jump	hs-input								1918.8 KiB	18 773
5	D	acc...	hs-input			17 (...		64872			16.7 KiB	245
6	D	acc...	hs-input			6 (tcp)		64872-6...			1345.2 KiB	10 845
7	D	jump	hs-input								556.8 KiB	7 683
8	D	reject	hs-unauth			6 (tcp)					132.4 KiB	2 118
9	D	reject	hs-unauth								598.6 KiB	8 194
10	D	reject	hs-unaut...								0 B	0
;;; place hotspot rules here												
11	X	pas...	unused-h...								0 B	0

- /ip firewall filter print dynamic

Dynamic **Firewall** and **NAT** rules

Configuration created



#		Action	Chain	Src. Address	Dst. Address	Prot...	Src. Port	Dst. Port	In. Int...	Out. I...	Bytes	Packets
0	D	jump	dstnat								869.5 KiB	12 345
1	D	jump	hotspot								869.5 KiB	12 345
2	D	red...	hotspot			17 (...		53			16.6 KiB	243
3	D	red...	hotspot			6 (tcp)		53			0 B	0
4	D	red...	hotspot			6 (tcp)		80			552 B	9
5	D	red...	hotspot			6 (tcp)		443			0 B	0
6	D	jump	hotspot			6 (tcp)					246.7 KiB	3 947
7	D	jump	hotspot			6 (tcp)					0 B	0
8	D	red...	hs-unauth			6 (tcp)		80			43.8 KiB	701
9	D	red...	hs-unauth			6 (tcp)		3128			0 B	0
10	D	red...	hs-unauth			6 (tcp)		8080			0 B	0
11	D	red...	hs-unauth			6 (tcp)		443			72.0 KiB	1 152
12	D	jump	hs-unauth			6 (tcp)		25			0 B	0
13	D	red...	hs-auth			6 (tcp)					0 B	0
14	D	jump	hs-auth			6 (tcp)		25			0 B	0
;;; place hotspot rules here												
15	X	pas...	unused-h...								0 B	0
;;; masquerade hotspot network												
16		ma...	srcnat	10.5.50.0/24							56 B	1
;;; masquerade hotspot network												
17		ma...	srcnat	10.5.50.0/24							0 B	0

- /ip firewall nat print dynamic

Dynamic **Firewall** and **NAT** rules

MikroTik Login HotSpot Featured

1. Bandwidth Limitation (Rate Limit or Quota)
2. HotSpot server login method
3. Exception or Bypass HotSpot connection
4. Custom Landing Pages
5. Advertisement System
6. Integrated with Social Media Login with API

Case Study – Bandwidth Limitation

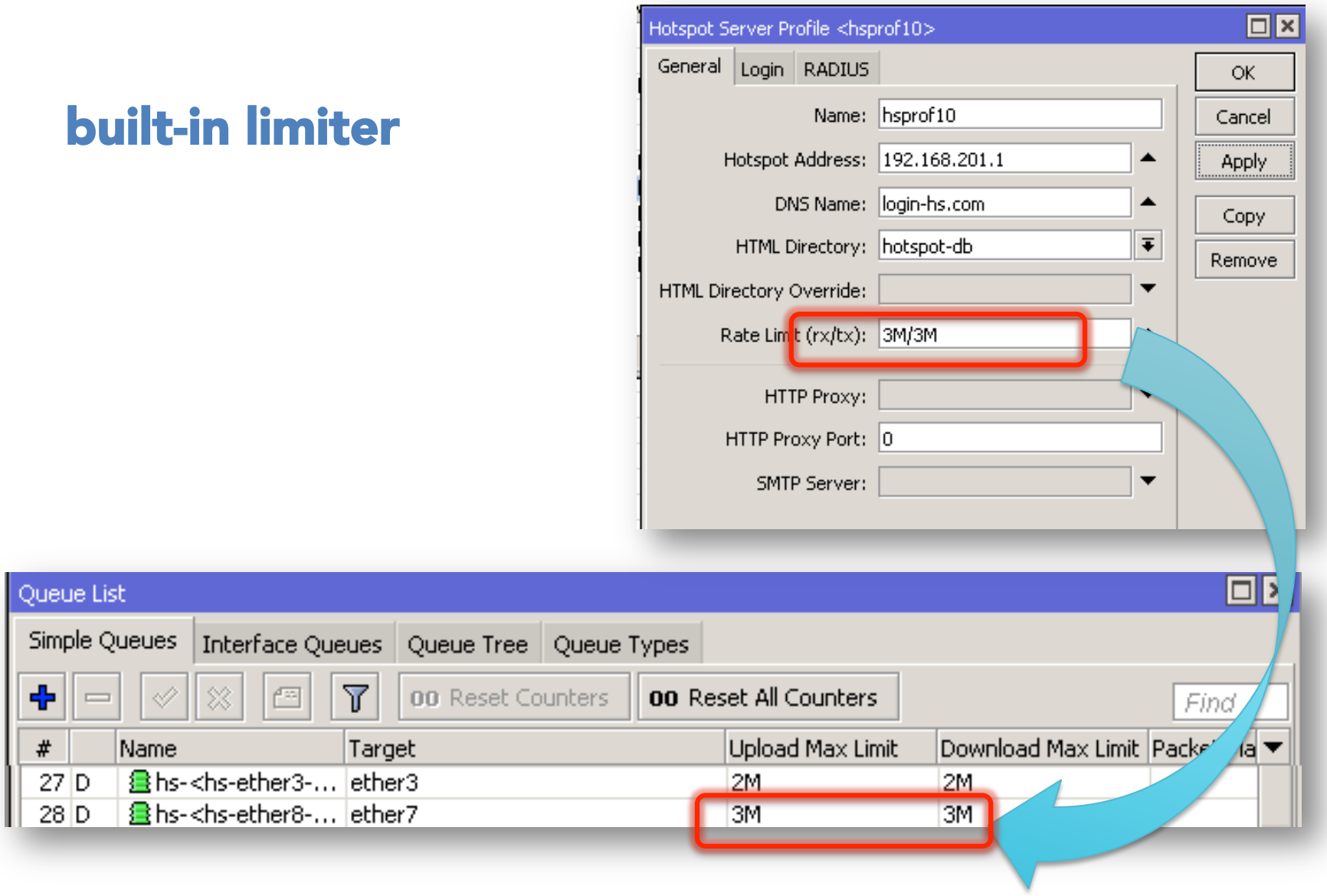
Limit Bandwidth on MikroTik Hotspots is very necessary

Method of MikroTik Hotspot Bandwidth limitation is :

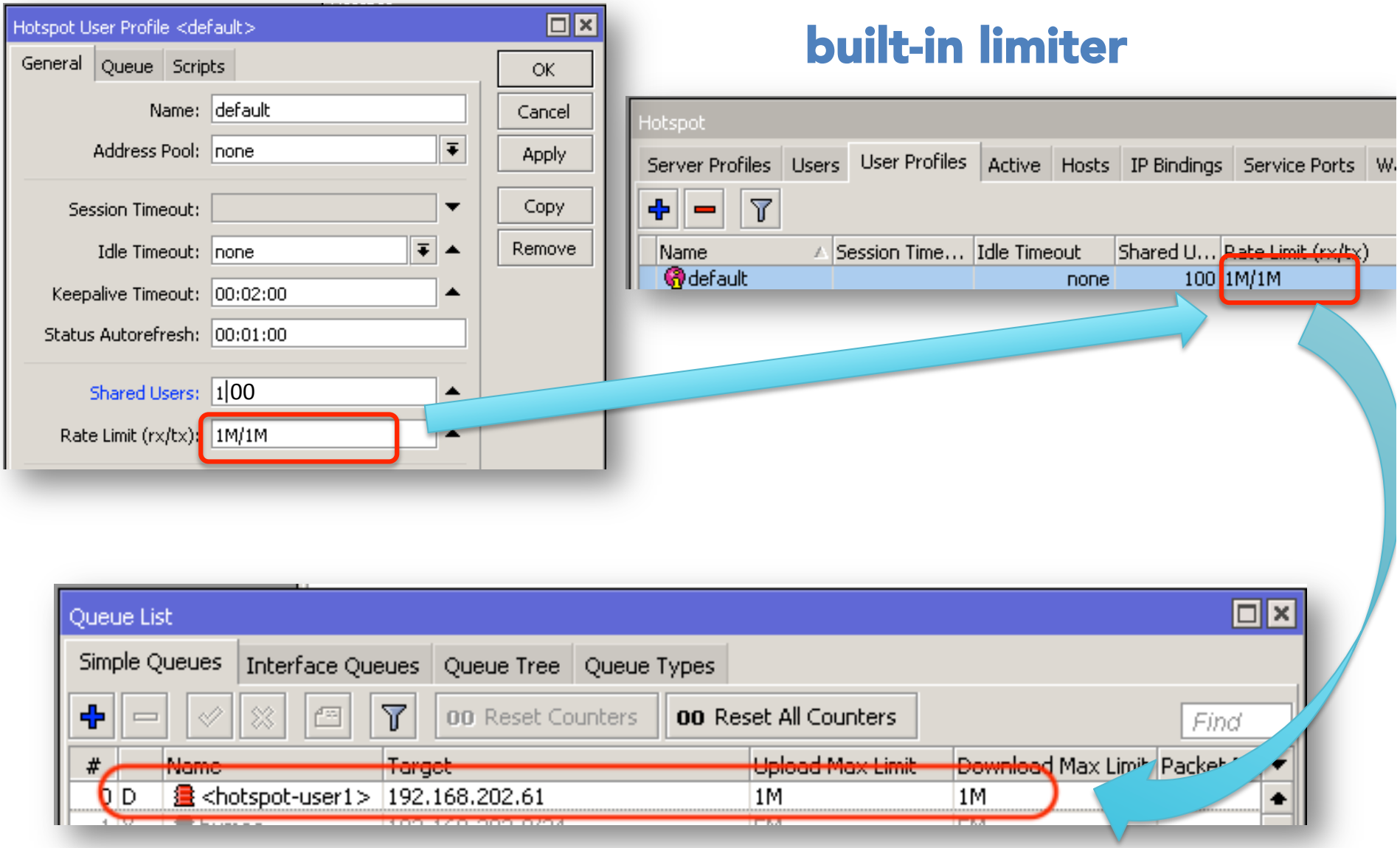
1. **built-in limiter** is the MikroTik Hotspot Limit Bandwidth method that uses a **rate-limit** parameter on the **hotspot servers profile** to protect the total traffic from a hotspot network while if you want a limit **per user** you can use the rate-limit in the **hotspot user profile**. Built-in Limitation is done automatically and easily but it is not possible to implement HTB.

Rate Limit on Profile Hotspot Server

built-in limiter



Rate Limit on Hotspots User Profile

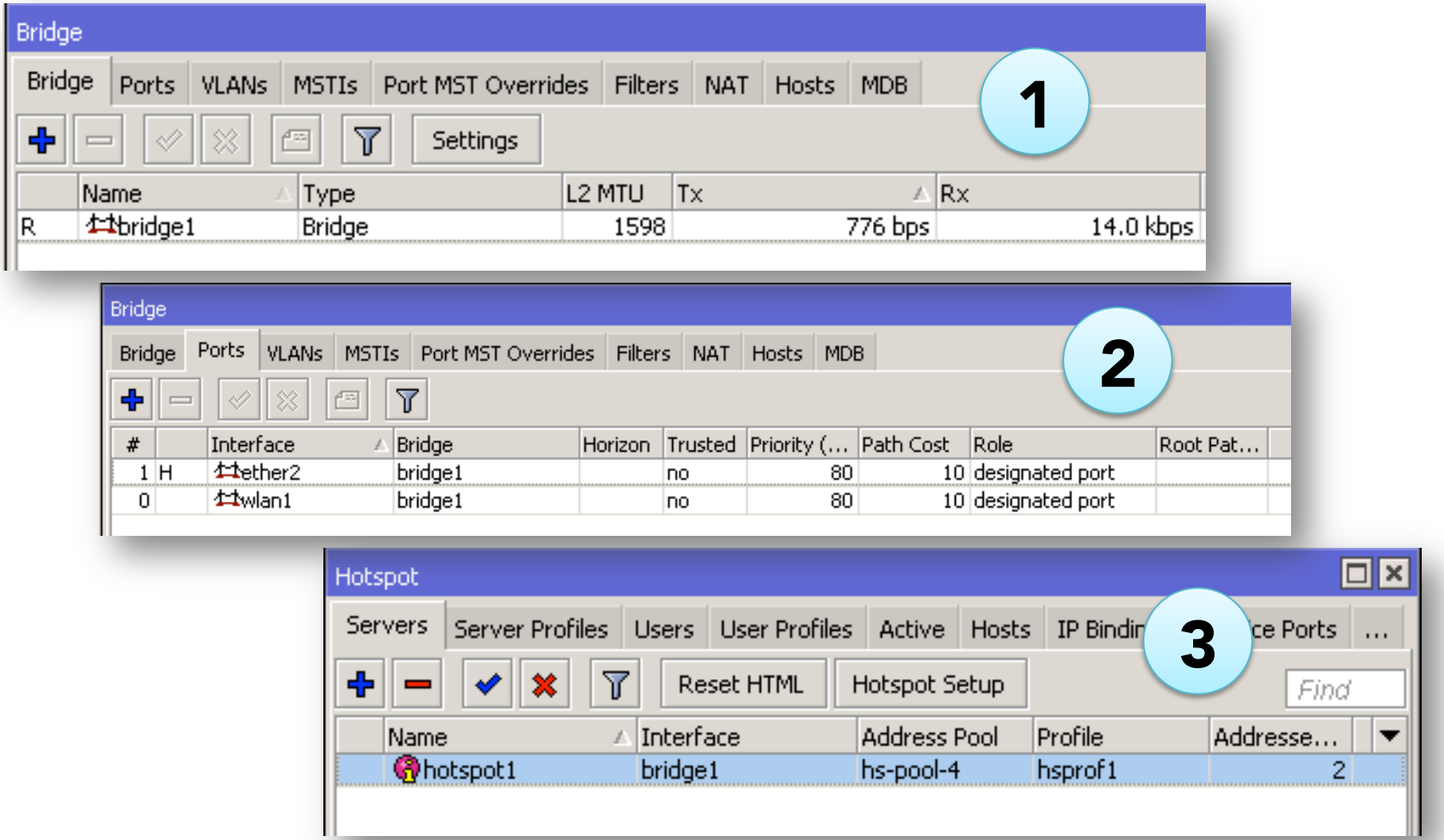


Case Study – Bandwidth Limitation

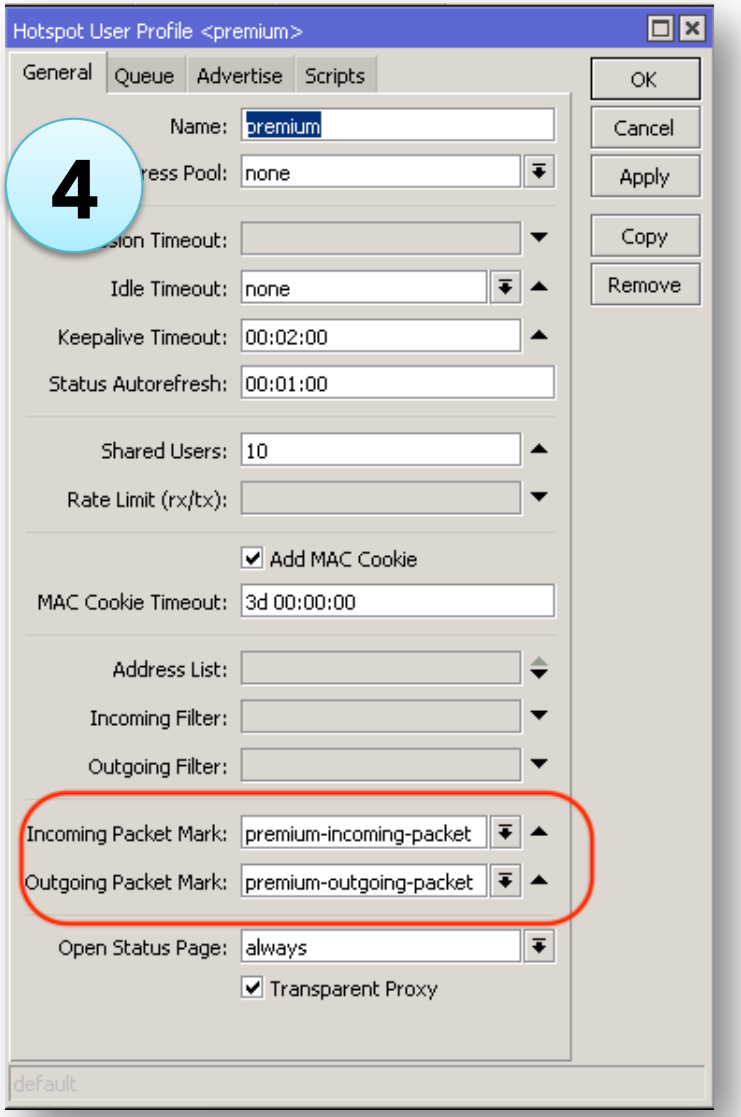
The Other Method of MikroTik Hotspot Bandwidth limitation is :

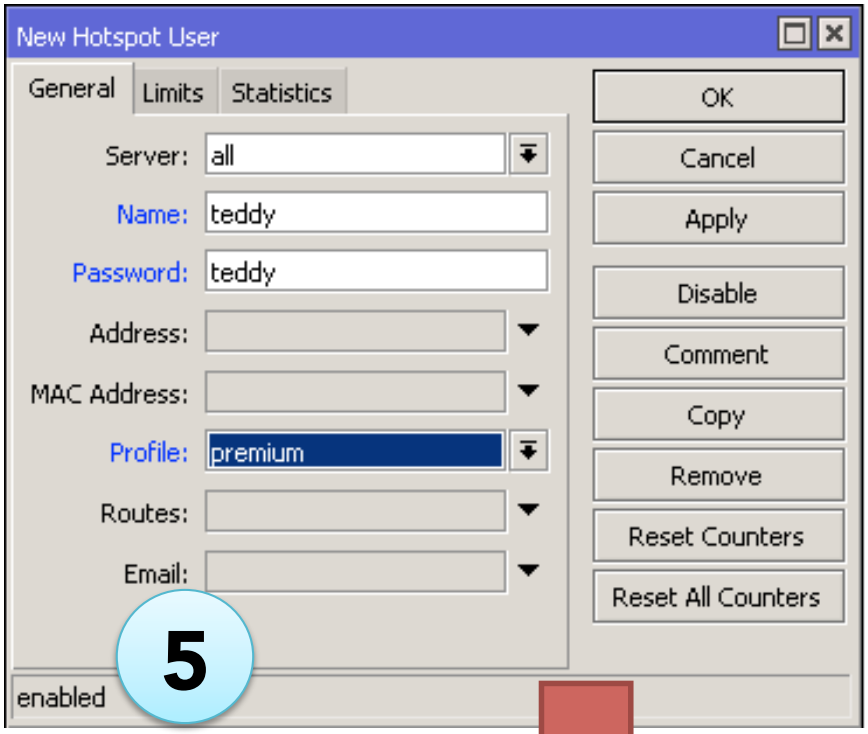
2. **Custom limitation** is the MikroTIk Hotspot Limit Bandwidth method that uses the **Incoming-packet-mark** and **outgoing-packet-mark** parameters In the **user-profile**. By using Custom Limitation you can implement HTB and make limitations based on more diverse connection criteria.

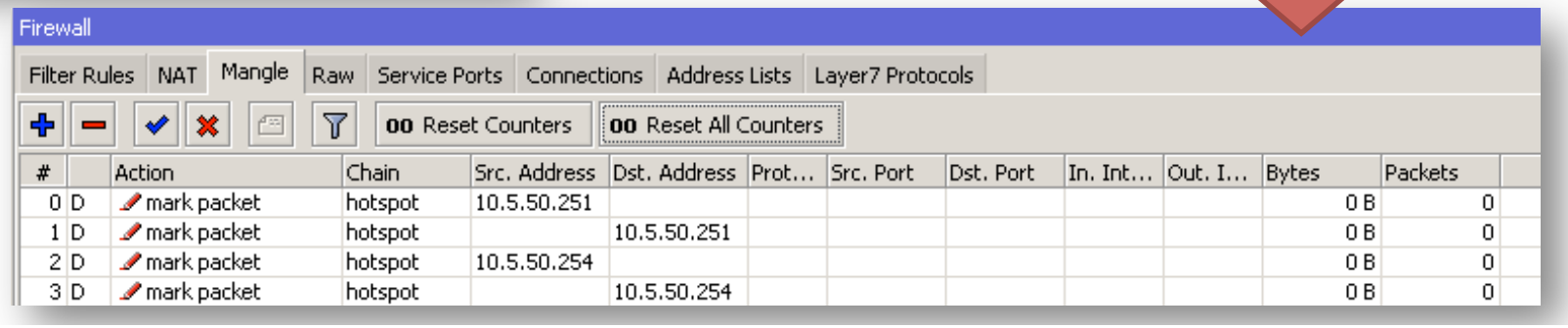
Case Study – Bandwidth Limitation



- Case Study – Bandwidth Limitation

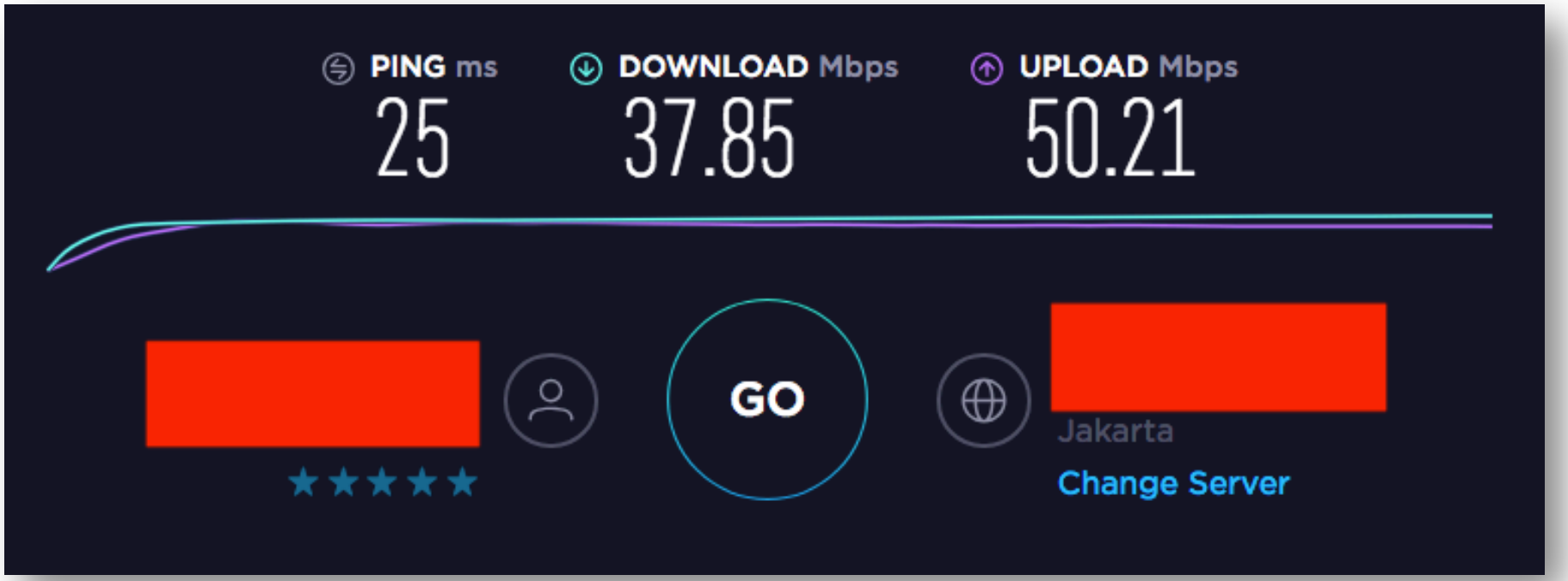






#		Action	Chain	Src. Address	Dst. Address	Prot...	Src. Port	Dst. Port	In. Int...	Out. I...	Bytes	Packets
0	D	mark packet	hotspot	10.5.50.251							0 B	0
1	D	mark packet	hotspot		10.5.50.251						0 B	0
2	D	mark packet	hotspot	10.5.50.254							0 B	0
3	D	mark packet	hotspot		10.5.50.254						0 B	0

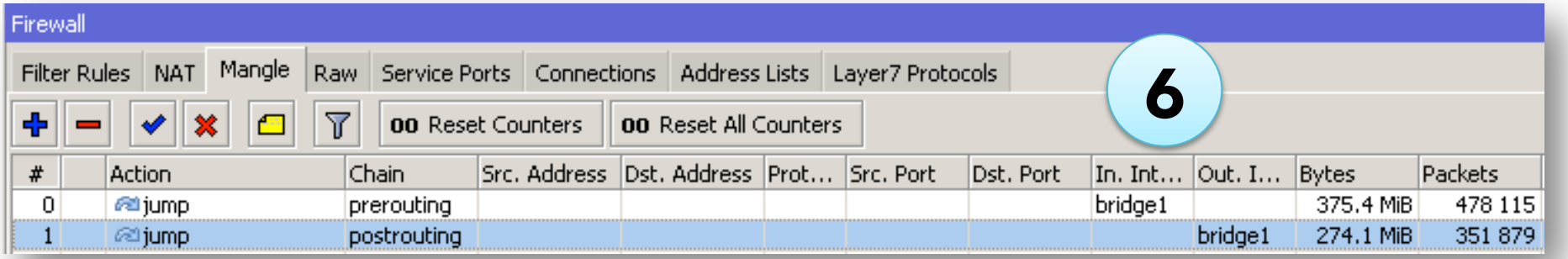
Case Study – Bandwidth Limitation



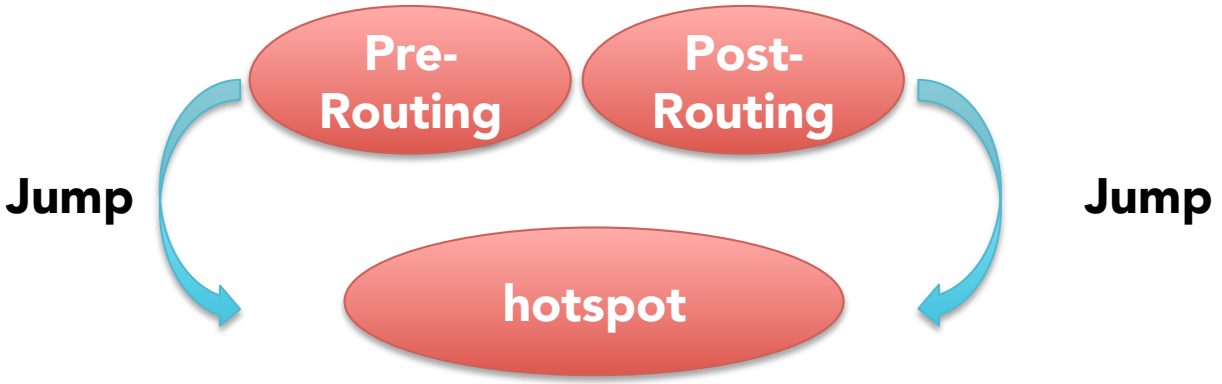
Unmetered & Unlimited Bandwidth

Case Study – Bandwidth Limitation

Important..!




```
/ip firewall mangle
add action=jump chain=prerouting in-interface=bridge1 jump-target=hotspot
add action=jump chain=postrouting jump-target=hotspot out-interface=bridge1
```



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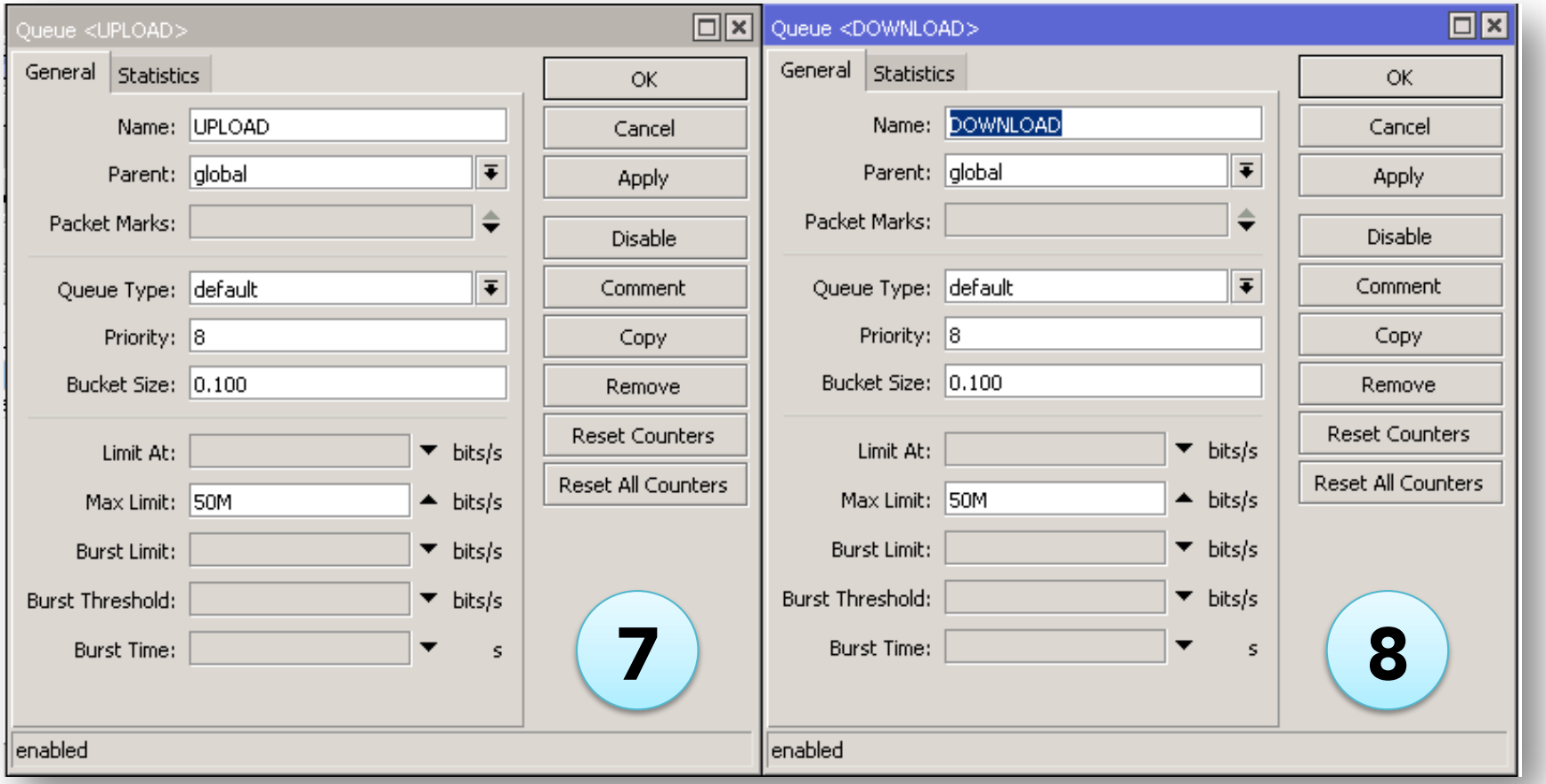

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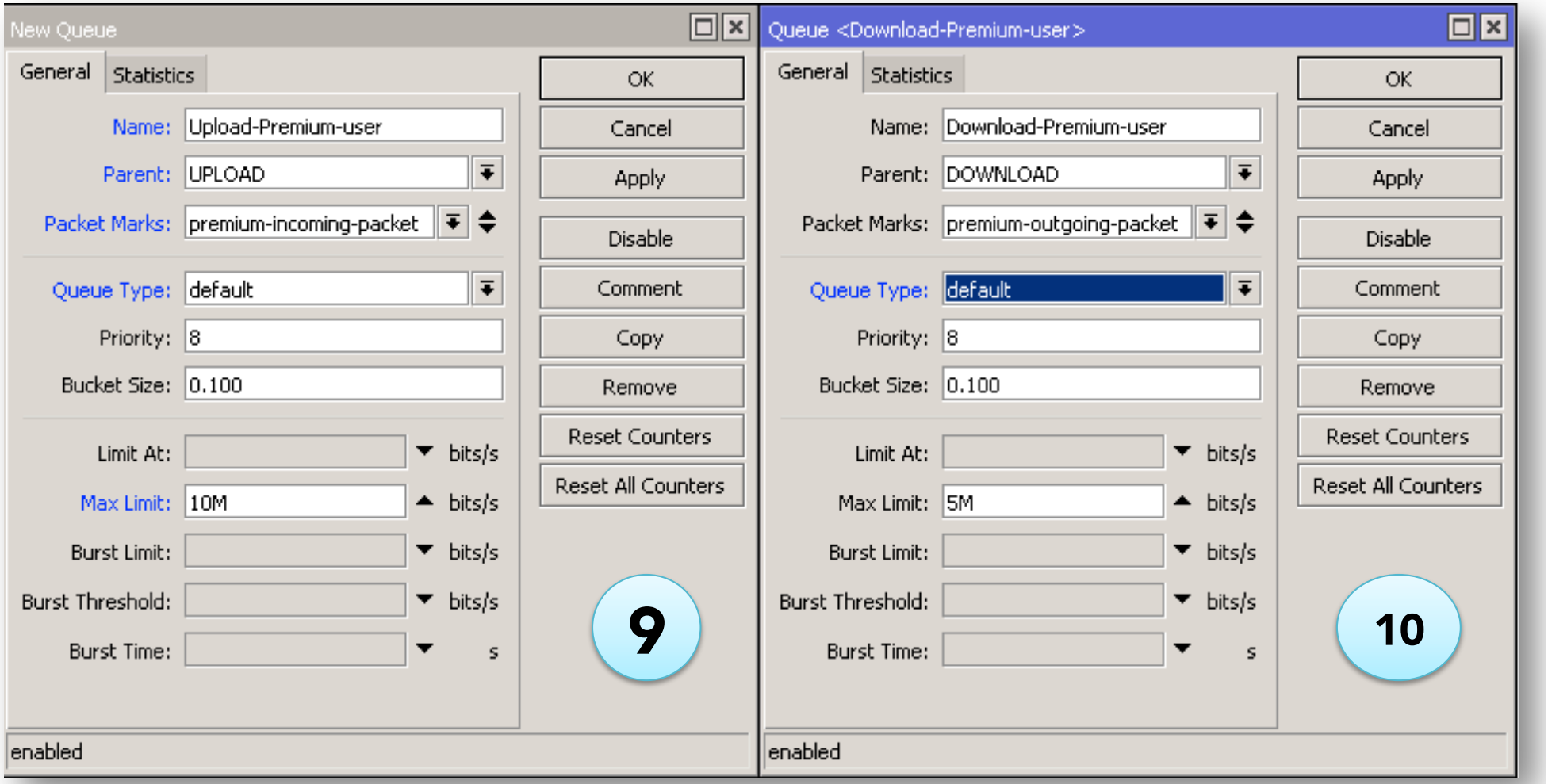
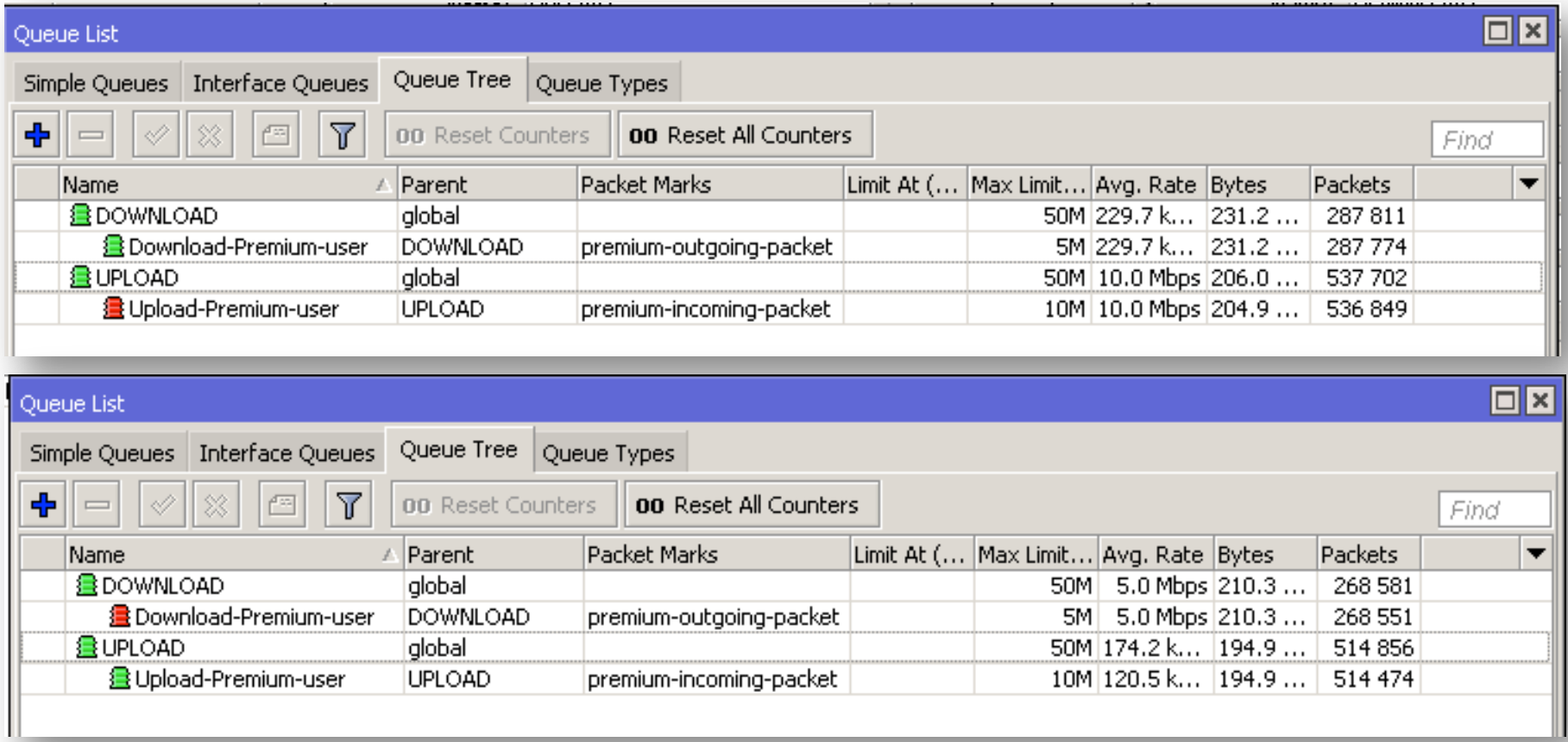


Result– Bandwidth Limitation



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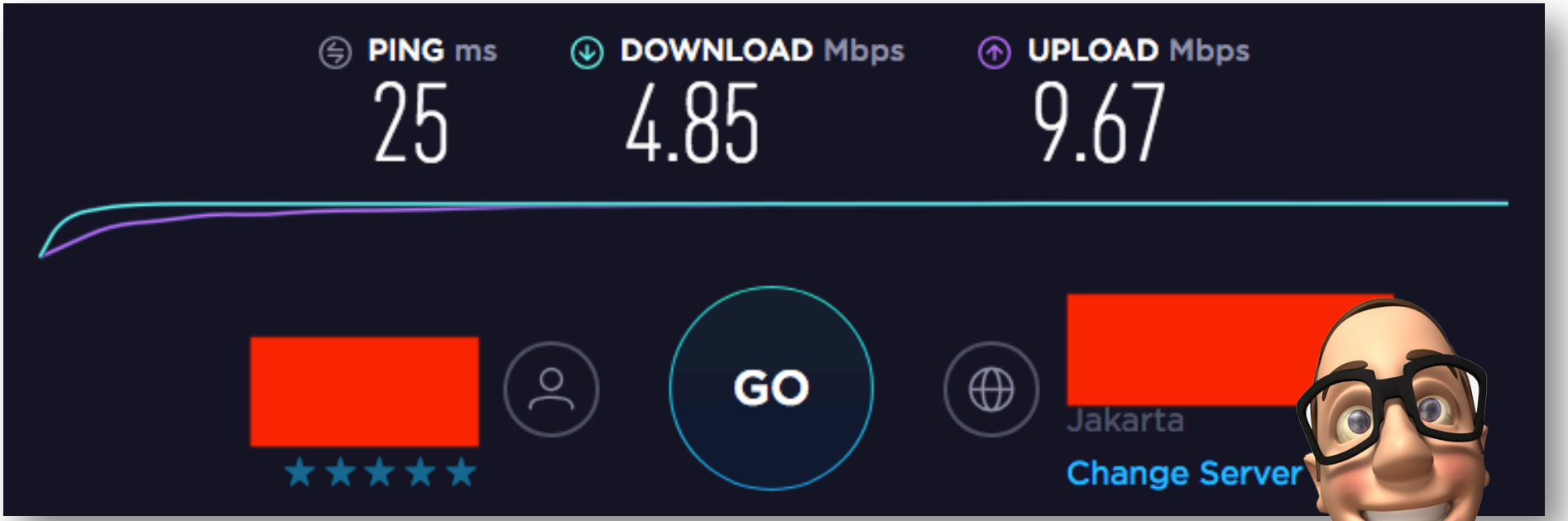
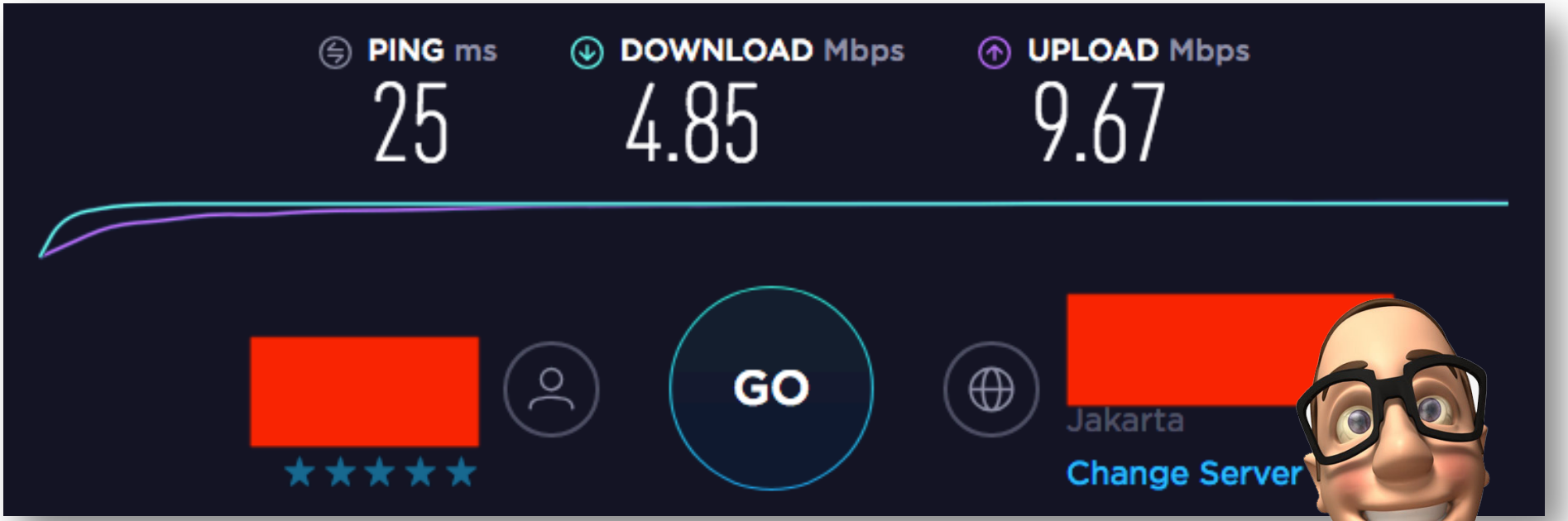


Testing result with just 1 user active, will be Shared bandwidth if more than 1 user active

Result– Bandwidth Limitation



Testing result with just 1 user active, will be
Shared bandwidth if more than 1 user active

1. If Hotspot on Bridge, configure server on **bridge interface** not on the **bridge port**
2. Make correct **DNS name** for HotSpot server
3. **arp=enabled** for the interface

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Get Presentation material and source code in :
https://github.com/teddyyuliswar/

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