

MikroTik Centralized User Manager on Cloud

Presented by Michael Takeuchi

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About Michael Takeuchi

- Using MikroTik RouterOS (v5.20) Since 14 December 2014
 - RouterOS x86 at PC
- Was MikroTik Certified on MTCNA, MTCRE, MTCINE, MTCUME, MTCWE, MTCTCE, MTCIPv6E
- Student of Vocational High School Taruna Bhakti Depok
- MikroTik Certified Consultant

What is User Manager?

- User Manager or Userman is a RADIUS (**R**emote **A**uthentication **D**ial In **U**ser) Server
- User Manager can be installed on MikroTik Only using userman.npk
- RADIUS is a network protocol that provides centralized **authentication, authorization, accounting** or we can say Triple A (AAA)
 - Authentication = only registered user can access (username & password)
 - Authorization = define right or privileged for a user (access control & other policy)
 - Accounting = recording what user doing (useful for billing, log, usage, session & reporting)

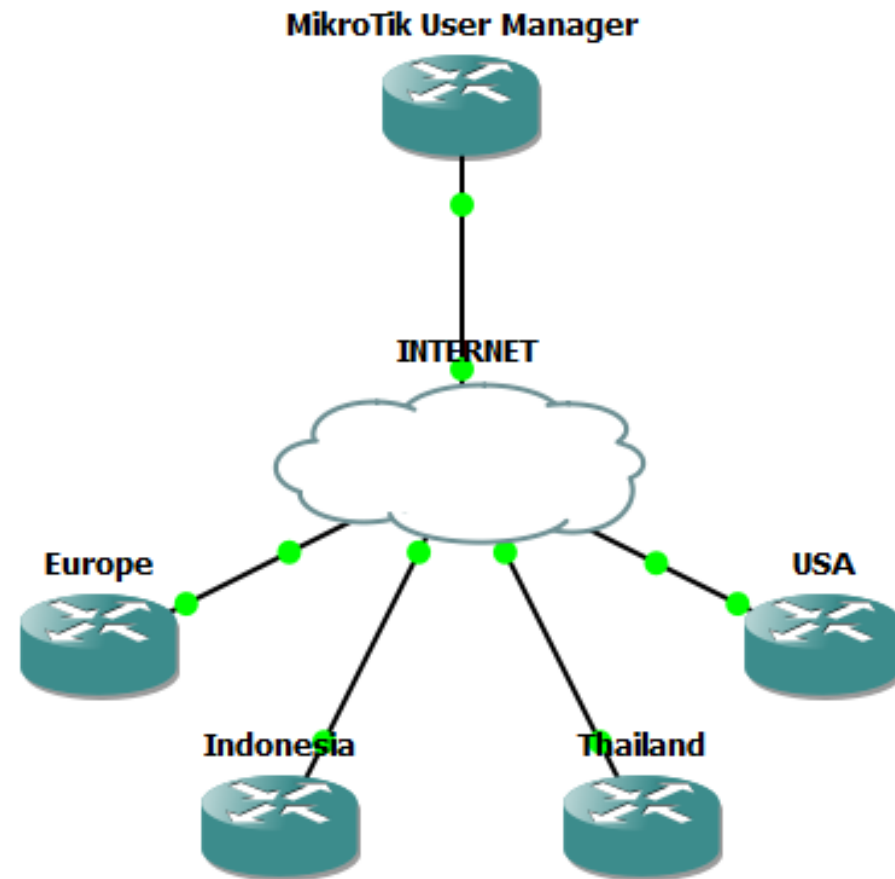
What is User Manager?

- User manager is a management system that can be used for:
 - HotSpot users (will be our focus)
 - PPP (PPtP/PPPoE) users
 - DHCP users
 - Wireless users
 - RouterOS users
- User Manager Requirement:
 - You should have the same version for RouterOS and the User Manager package.
 - The MikroTik User Manager works on x86, MIPS, PowerPC and TILE processor based routers and CHR devices
 - The router should have at least 32MB RAM and 2MB free HDD space.

What is Cloud (computing)?



Topology



The Story

- Once upon time Michael have a Internet Caffe on Europe, Indonesia, Thailand & USA
- Michael need to manage the hotspot user and monitor it easier and want it centralized
- And **MikroTik** come with a **solution** 😊 the solution called User Manager, now Michael can manage hotspot user easily with MikroTik
- How MikroTik Do That? See my presentation below 😊

1. Build Router Connectivity over VPN

- Every Router Got Private IP Address via VPN and configured with static IP on ppp profile, **but assume we have VPN Ready** 😊

```
[admin@USERMAN] > int pr
Flags: D - dynamic, X - disabled, R - running, S - slave
#      NAME                TYPE      ACTUAL-MTU L2MTU
0  R  ether1                ether      1500
1  R  ether2                ether      1500
2  R  ether3                ether      1500
3  R  ether4                ether      1500
4  R  ether5                ether      1500
5  DR <l2tp-user-europe>     l2tp-in    1450
6  DR <l2tp-user-indonesia> l2tp-in    1450
7  DR <l2tp-user-thailand>   l2tp-in    1450
8  DR <l2tp-user-usa>       l2tp-in    1450
[admin@USERMAN] > ip address print
Flags: X - disabled, I - invalid, D - dynamic
#      ADDRESS             NETWORK    INTERFACE
0  172.16.10.1/24           172.16.10.0 ether1
1  100.100.150.1/24         100.100.150.0 ether5
2  D 10.10.0.1/32           10.10.10.1 <l2tp-user-europe>
3  D 10.10.0.2/32           10.10.10.2 <l2tp-user-indonesia>
4  D 10.10.0.3/32           10.10.10.3 <l2tp-user-thailand>
5  D 10.10.0.4/32           10.10.10.4 <l2tp-user-usa>
[admin@USERMAN] >
```


1. Build Router Connectivity over VPN

- You can compare what VPN type suitable with your network on:

<http://rickfreyconsulting.com/mikrotik-vpns/>

- But in this case you need Layer 3 VPN (I am using L2TP + IPSec Here) because RADIUS contact your router with IP Address

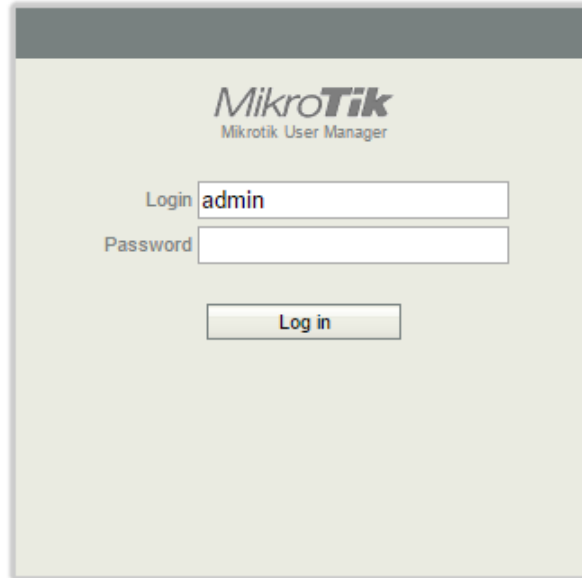
2. Download & Install Userman on MikroTik

- Download Extra Packages on <https://www.mikrotik.com/download>
- Adjust your router architecture
- Unzip extra packages and search for userman.npk
- Upload userman.npk to your router
- Reboot your router
- You're Done !

```
[admin@USERMAN] > sys pack print
Flags: X - disabled
#  NAME
0  user-manager
1  dude
2  routeros-x86
3  system
```

3. Accessing Userman

- <http://router-ip/userman>
- Default Username : admin
- Default Password : none (don't fill with none)



The screenshot shows the Mikrotik User Manager login interface. At the top, the Mikrotik logo is displayed with the text "Mikrotik User Manager" underneath. Below the logo, there are two input fields: "Login" and "Password". The "Login" field contains the text "admin". Below these fields is a "Log in" button.

Add Hotspot Router (For Authentication)

- Go To Routers Menu and Add Routers then Set:
 - Router IP
 - Router Log
 - Router Name
 - Router Password
 - Router Local Time Zone
- See Picture on Next Slide for Steps

Add Hotspot Router (For Authentication)

172.16.10.1/userman

MikroTik
Mikrotik User Manager

1. Routers

2. Add Edit

<input type="checkbox"/>	Name	IP address	Shared secret
<input type="checkbox"/>	Router Europe	10.10.10.1	europe
<input type="checkbox"/>	Router Indonesia	10.10.10.2	indonesia
<input type="checkbox"/>	Router Thailand	10.10.10.3	thailand
<input type="checkbox"/>	Router USA	10.10.10.4	usa

Per page [20]

Router details

▲ Main

Name: Router Europe

Owner: admin

IP address: 10.10.10.1

Shared secret: europe

Time zone: +01:00

Disabled: ☐

☒ Authorization success

☒ Authorization failure

Log events: ☒ Accounting success

☒ Accounting failure

▼ Radius incoming

Save

Router details

▼ Main

Name: Router Indonesia

Owner: admin

IP address: 10.10.10.2

Shared secret: indonesia

Time zone: +07:00

Disabled: ☐

☒ Authorization success

☒ Authorization failure

Log events: ☒ Accounting success

☒ Accounting failure

▼ Radius incoming

Save

Add Hotspot Router (For Authentication)

The screenshot displays the MikroTik User Manager web interface. On the left, a sidebar menu lists various functions: Routers, Users, Sessions, Customers, Logs, Payments, Profiles, Settings, Reports, 0 A sessions, 0 A users, Advanced search, Maintenance, and Logout. The main content area is titled 'Add' and 'Edit'. It features a table with columns for Name, IP address, and Shared secret. Below the table, two 'Router details' pop-up windows are shown, each with a 'Save' button. The first window is for 'Router Thailand' and the second is for 'Router USA'.

<input type="checkbox"/>	Name	IP address	Shared secret
<input type="checkbox"/>	Router Europe	10.10.10.1	europe
<input type="checkbox"/>	Router Indonesia	10.10.10.2	indonesia
<input type="checkbox"/>	Router Thailand	10.10.10.3	thailand
<input type="checkbox"/>	Router USA	10.10.10.4	usa

Router details (Router Thailand):

- Name: Router Thailand
- Owner: admin
- IP address: 10.10.10.3
- Shared secret: thailand
- Time zone: +07:00
- Disabled: ☐
- Log events: ☒ Authorization success, ☒ Authorization failure, ☒ Accounting success, ☒ Accounting failure

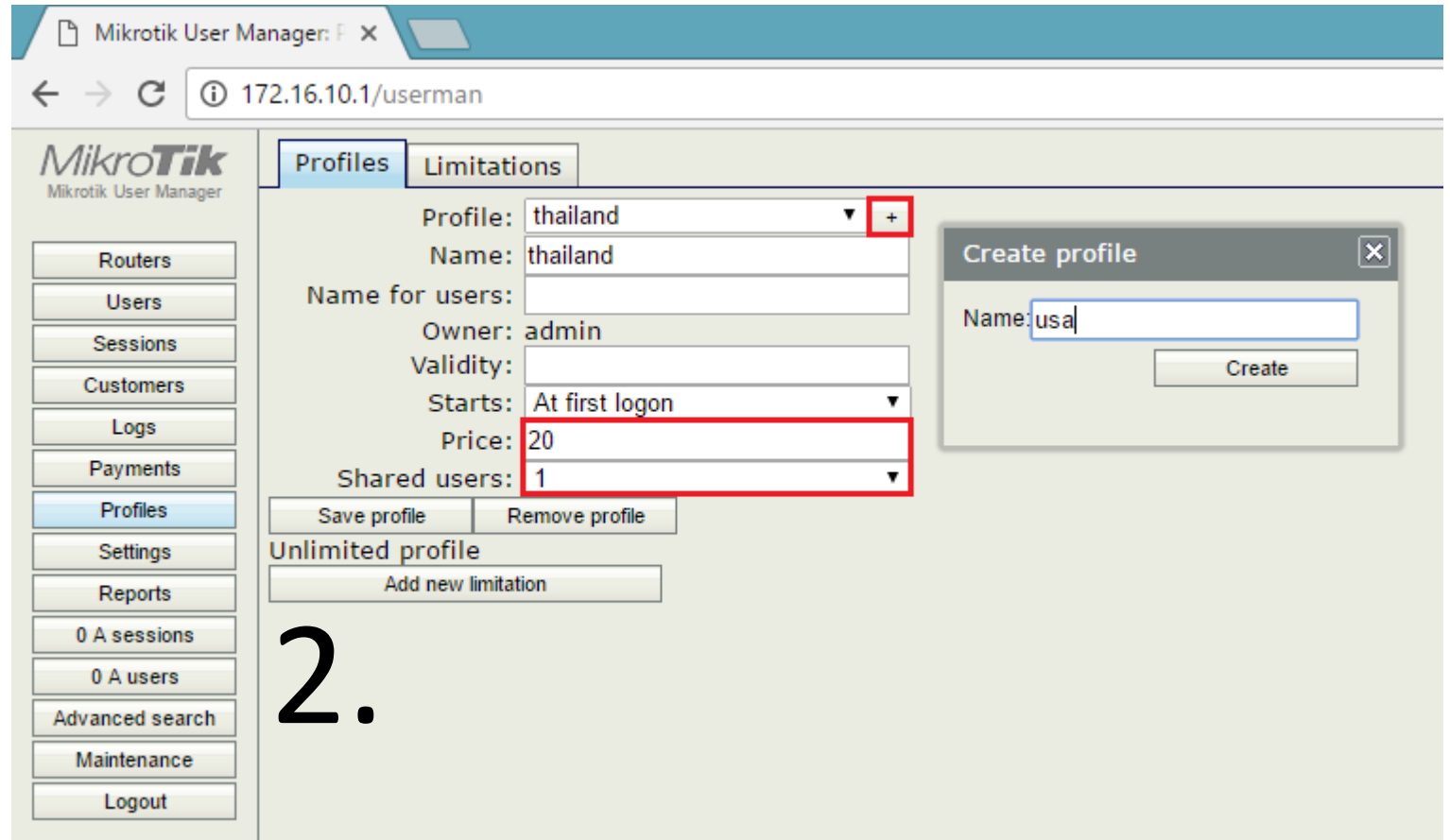
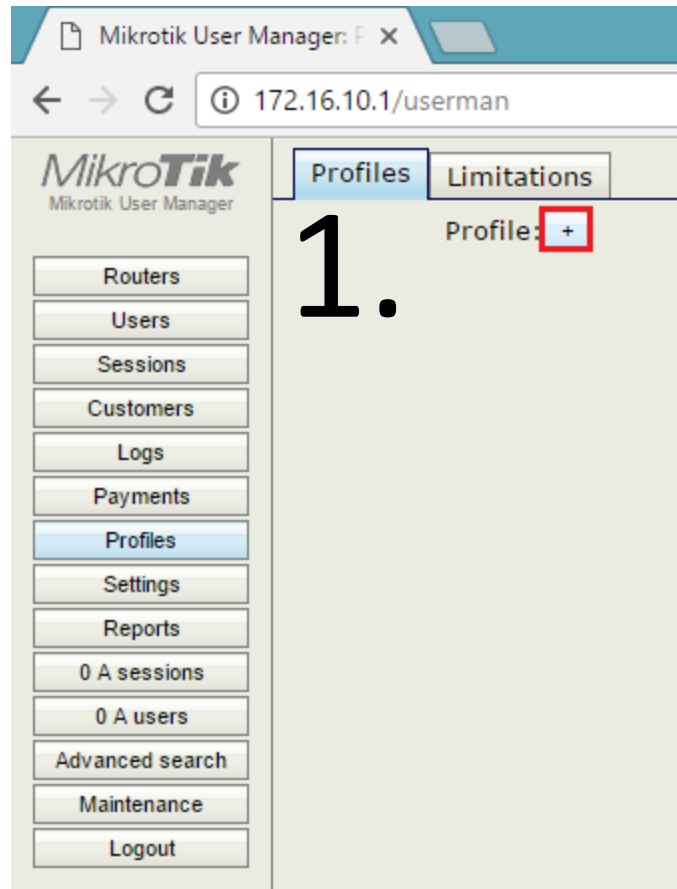
Router details (Router USA):

- Name: Router USA
- Owner: admin
- IP address: 10.10.10.4
- Shared secret: usa
- Time zone: -05:00
- Disabled: ☐
- Log events: ☒ Authorization success, ☒ Authorization failure, ☒ Accounting success, ☒ Accounting failure

Add Profile For Each Router

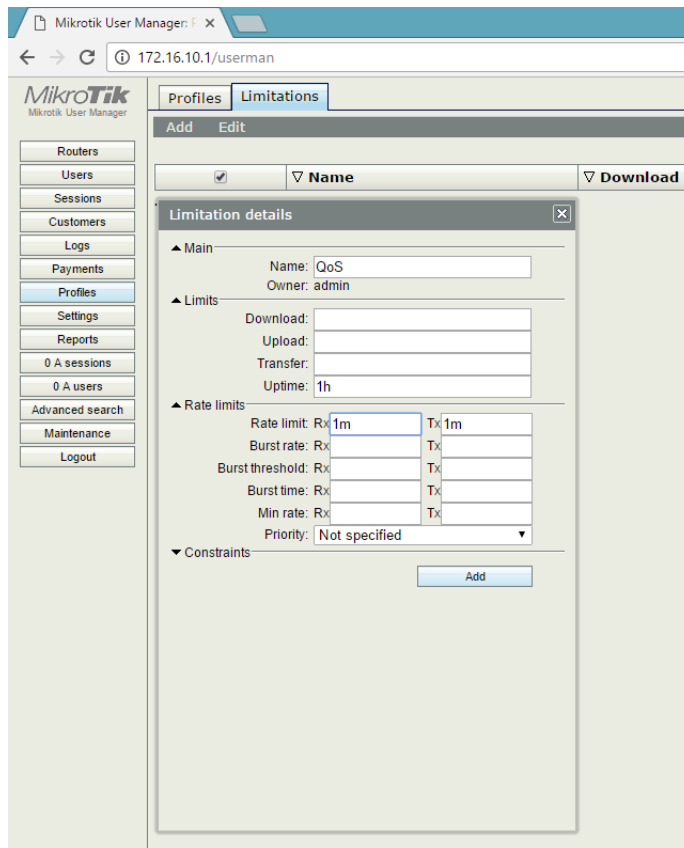
- Go To Profiles Menu and Add Profiles then Set:
 - Router Profile Name
 - Voucher Price
 - User Limit
 - QoS

Add Profile For Each Router (Name & Price)



Add Profile For Each Router (QoS & Uptime)

- Go to Limitations Tab and Add New Limitations



The screenshot shows the Mikrotik User Manager web interface. The browser address bar displays '172.16.10.1/userman'. The left sidebar contains a menu with options: Routers, Users, Sessions, Customers, Logs, Payments, Profiles (highlighted), Settings, Reports, 0 A sessions, 0 A users, Advanced search, Maintenance, and Logout. The main content area has tabs for 'Profiles' and 'Limitations', with 'Limitations' being the active tab. Below the tabs are 'Add' and 'Edit' buttons. A table with columns 'Name' and 'Download' is visible. A 'Limitation details' dialog box is open, showing the following fields: Name (QoS), Owner (admin), Download (empty), Upload (empty), Transfer (empty), Uptime (1h), Rate limit (Rx 1m, Tx 1m), Burst rate (Rx, Tx), Burst threshold (Rx, Tx), Burst time (Rx, Tx), Min rate (Rx, Tx), and Priority (Not specified). An 'Add' button is located at the bottom of the dialog box.

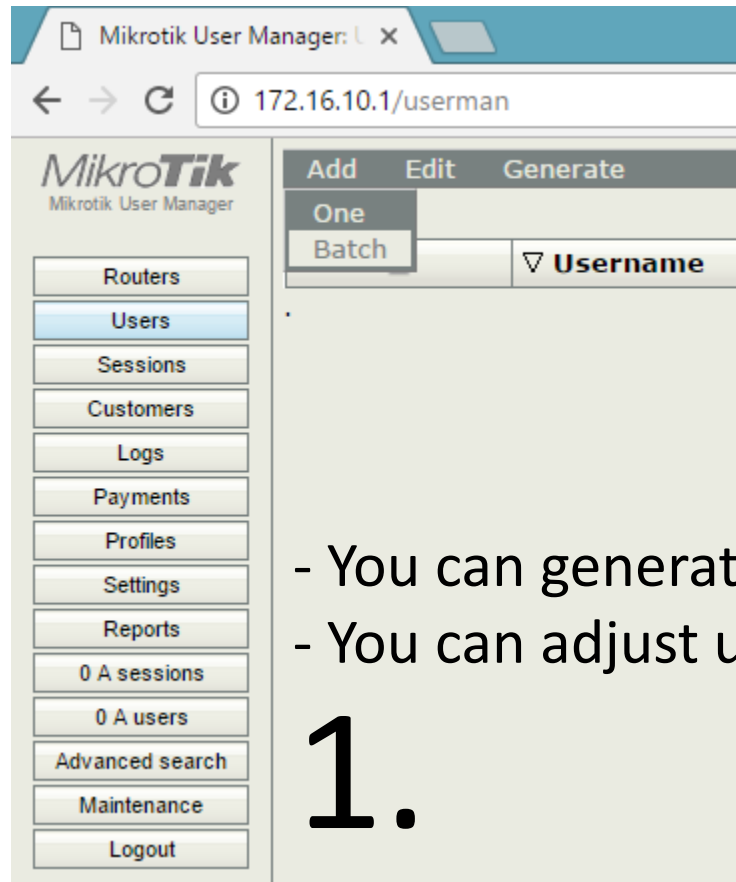
1. Each user will get 1mbps upload
2. Each user will get 1mbps download
3. Each user can use voucher for 1 hours

Apply The Limitations

The screenshot shows the Mikrotik User Manager web interface. The left sidebar contains navigation links: Routers, Users, Sessions, Customers, Logs, Payments, Profiles (selected), Settings, Reports, 0 A sessions, 0 A users, Advanced search, Maintenance, and Logout. The main content area has two tabs: Profiles and Limitations. The Profiles tab is active, showing a form for profile configuration. The form includes fields for Profile (usa), Name (usa), Name for users, Owner (admin), Validity, Starts (At first logon), Price (0.00), and Shared users (not used). Below the form are buttons for 'Save profile' and 'Remove profile'. A red box highlights the 'Add new limitation' link under the 'Unlimited profile' section, with a red '1.' next to it. A modal window titled 'Profile part' is open, showing a 'Period' section with checkboxes for days of the week (all checked) and a 'Time' range from 0:00:00 to 23:59:59. The 'Limits' section has a checkbox for 'QoS' checked, with a red '2.' next to it. At the bottom of the modal are buttons for 'New limit', 'Cancel', and 'Add'.

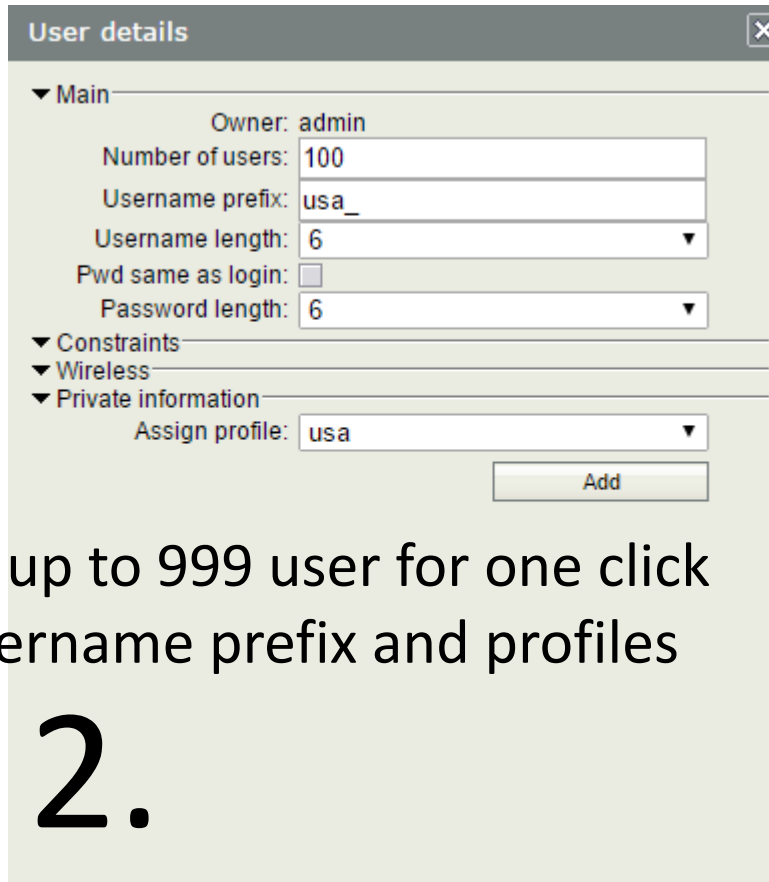
I was apply the limitations to usa profiles, you can apply the limitations on other profile too and customize your limitations, it's depends on your policy

Generate Batch User



- You can generate up to 999 user for one click
- You can adjust username prefix and profiles

1.



2.

Generate Batch User

Mikrotik User Manager: L x

← → ↺

172.16.10.1/userman

MikroTik

Mikrotik User Manager

Routers

Users

Sessions

Customers

Logs

Payments

Profiles

Settings

Reports

0 A sessions

0 A users

Advanced search

Maintenance

Logout

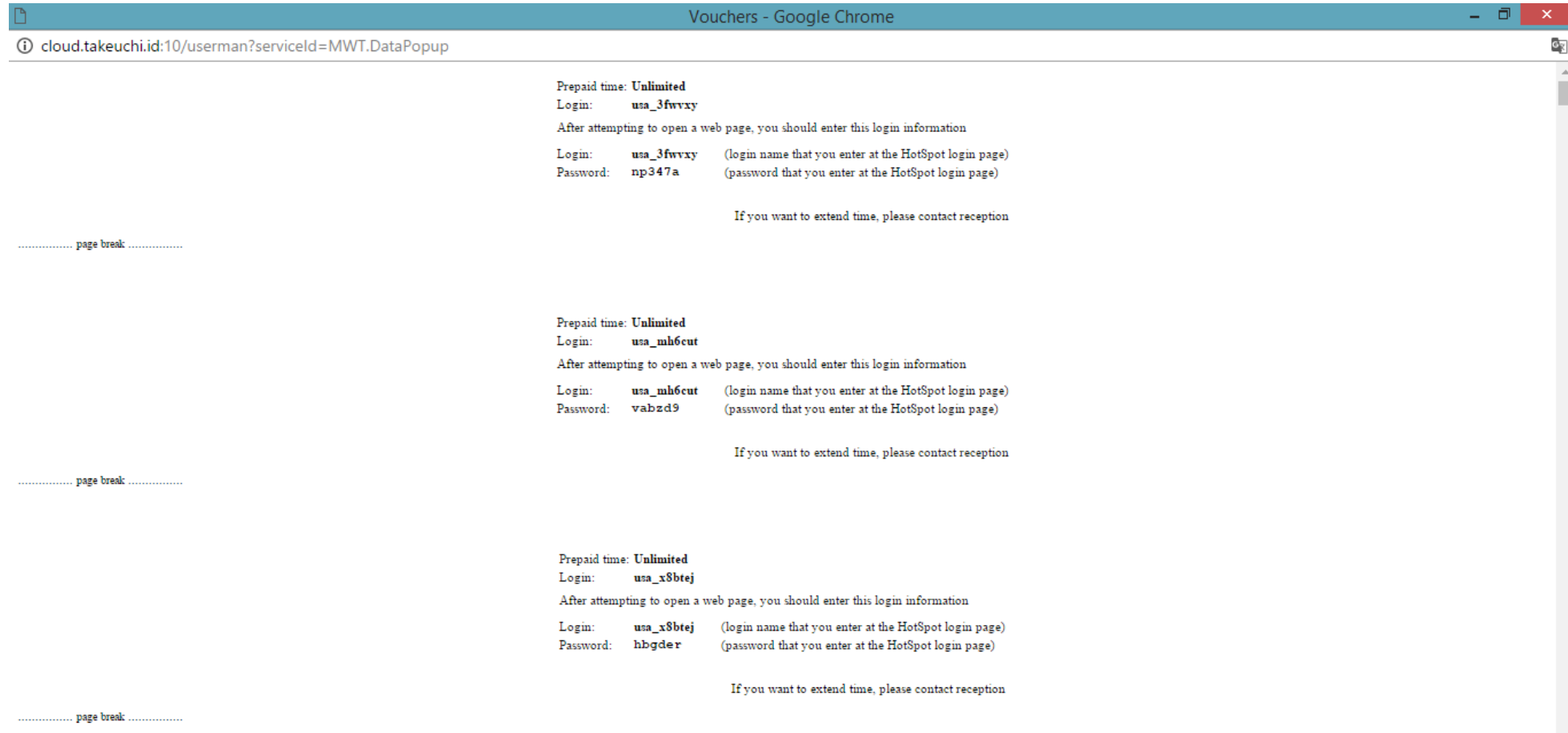
AddEditGenerate

12345page 1 of 5

<input type="checkbox"/>	Username
<input type="checkbox"/>	usa_utn7hy
<input type="checkbox"/>	usa_umgzq8
<input type="checkbox"/>	usa_emt7sv
<input type="checkbox"/>	usa_hvxx5g
<input type="checkbox"/>	usa_nfvi2k
<input type="checkbox"/>	usa_ri2xbd
<input type="checkbox"/>	usa_fg5s8a
<input type="checkbox"/>	usa_v3pbeg
<input type="checkbox"/>	usa_exk7tx
<input type="checkbox"/>	usa_cvgt42
<input type="checkbox"/>	usa_rn3mhy
<input type="checkbox"/>	usa_xsuf9c
<input type="checkbox"/>	usa_k7cht7
<input type="checkbox"/>	usa_pp9qij
<input type="checkbox"/>	usa_ewaffj
<input type="checkbox"/>	usa_henxxe
<input type="checkbox"/>	usa_tfdv3n
<input type="checkbox"/>	usa_yaufih
<input type="checkbox"/>	usa_wupg5k
<input type="checkbox"/>	usa_2bdubc

USER GENERATED !

Generate Voucher



Create The Hotspot Service

```
[admin@MikroTik] > ip address add address=192.168.1.1/24 interface=wlan1
[admin@MikroTik] > ip dns set servers=8.8.8.8,8.8.4.4 allow-remote-requests=yes
[admin@MikroTik] > ip hotspot setup
Select interface to run HotSpot on

hotspot interface: wlan1
Set HotSpot address for interface

local address of network: 192.168.1.1/24
masquerade network: no
Set pool for HotSpot addresses

address pool of network: 192.168.1.2-192.168.1.254
Select hotspot SSL certificate

select certificate: none
Select SMTP server

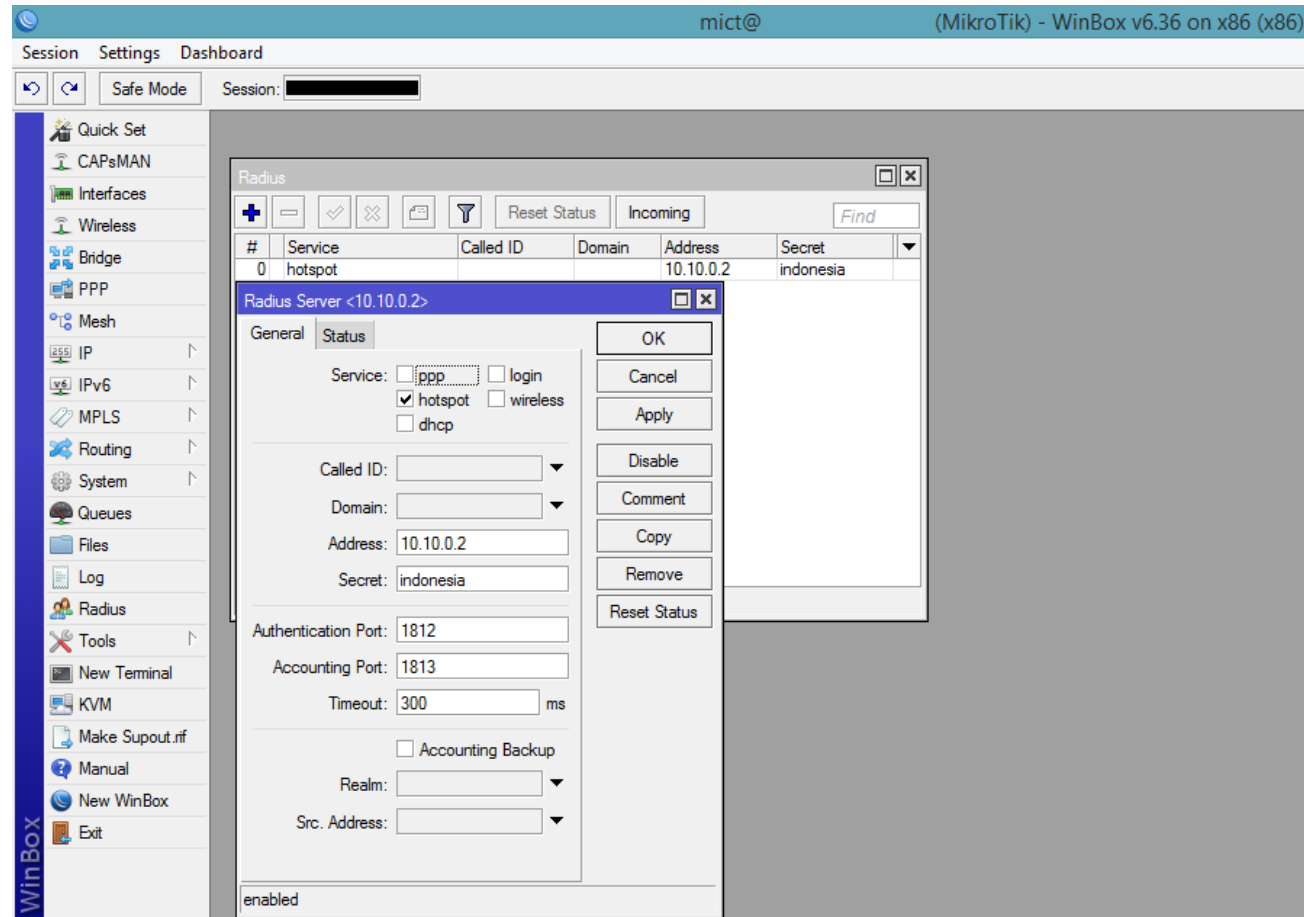
ip address of smtp server: 0.0.0.0
Setup DNS configuration

dns servers: 192.168.1.1,8.8.8.8
DNS name of local hotspot server

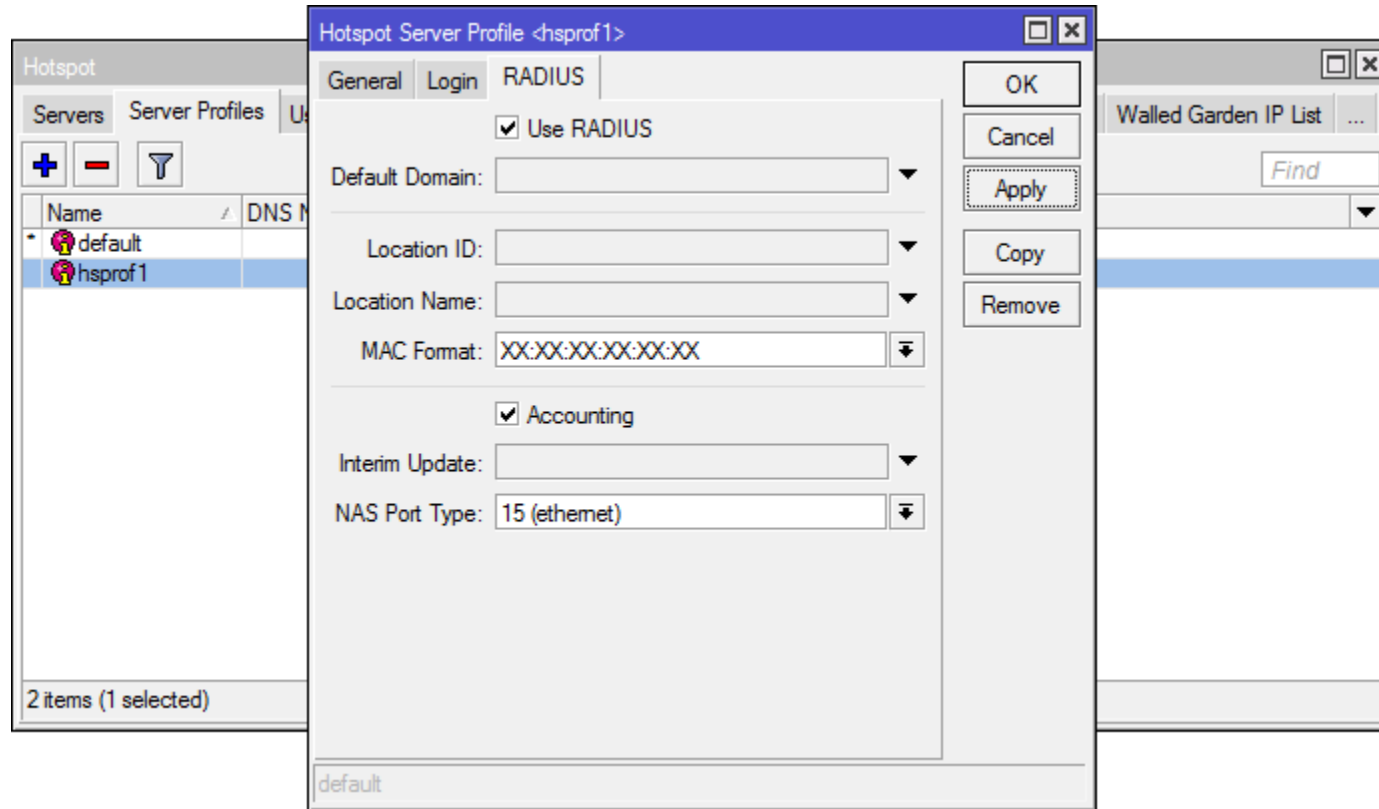
dns name: id-hotspot.takeuchi.id
Create local hotspot user

name of local hotspot user: admin
password for the user: michael_takeuchi
[admin@MikroTik] > interface wireless set wlan1 mode=ap-bridge ssid=MikroTik-Hotspot band=2ghz-b/g/n disabled=no
```

Apply RADIUS to Hotspot Router



Apply RADIUS to Hotspot Router



Testing ! – Login

The screenshot shows a web browser with two tabs. The first tab, titled 'internet hotspot > login', displays the login page for 'hotspot.takeuchi.id'. The address bar shows the URL 'hotspot.takeuchi.id/login?dst=http%3A%2F%2Fgoogle.'. The page content includes a message 'Please log on to use the internet hotspot service', a login form with 'login' and 'password' fields and an 'OK' button, and the text 'HOTSPOT GATEWAY powered by Mikrotik'. The second tab, titled 'mikrotik hotspot > status', displays the status page for 'hotspot.takeuchi.id/status'. The page content includes a welcome message 'Welcome usa_3fwvxy!', a table with connection statistics, and a 'log off' button.

Latviski

Please log on to use the internet hotspot service

login

password

OK

HOTSPOT GATEWAY
powered by **MikroTik**

Powered by MikroTik RouterOS

Welcome usa_3fwvxy!

IP address:	192.168.1.254
bytes up/down:	14.2 KiB / 215.9 KiB
connected:	7s
status refresh:	1m

log off

2:35 PM
3/21/2017

2:36 PM
3/21/2017

Testing ! – Monitoring

cloud.takeuchi.id:10/userman

MikroTik
Mikrotik User Manager

Edit

<input type="checkbox"/>	▼ Username	▼ Status	▼ User IP	▼ From time	▼ Till time	▼ Uptime	▼ Download	▼ Upload	▼ Calling station ID
<input type="checkbox"/>	usa_3fwvxy	Start	192.168.1.254	03/21/2017 14:36:29	03/21/2017 14:36:29				08:00:27:C1:95:52

Per page [20] ▼

Session Settings Dashboard

Safe Mode Session: 172.16.10.1

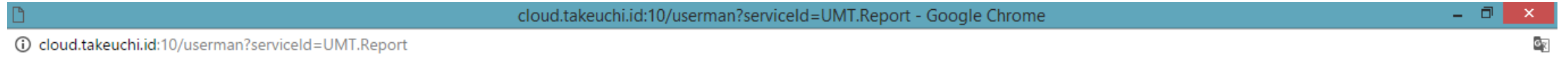
Queue List

Simple Queues Interface Queues Queue Tree Queue Types

+ - ✓ ✗ [icon] [icon] 00 Reset Counters 00 Reset All Counters Find

#	Name	Target	Upload Max Limit	Download Max Limit	Upload Avg. Rate	Download Avg. Rate	Total Uploaded Bytes	Total Downloaded Bytes
0 D	hotspot-usa_3fwvxy>	192.168.1.254	262144	262144			949.7 KiB	7.5 MiB

Testing ! – Reporting

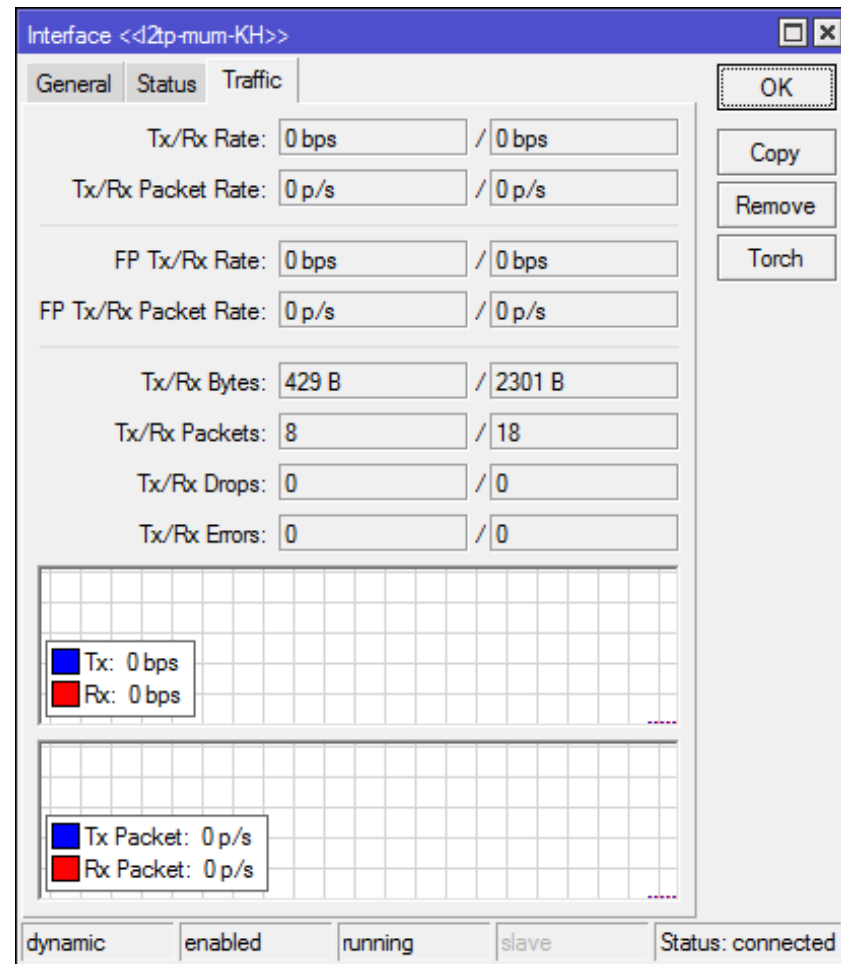


Report

02/21/2017 03/21/2017

User	Profile Price	From	Until	Session From	Session Until	Uptime	Download	Upload
usa_3fwvxy	usa	03/21/2017 07:36:29	Unlimited	03/21/2017 07:36:29	03/21/2017 07:54:12	17m43s	7.6 MiB	1001.4 KiB
	Total:	03/21/2017 07:36:29	Unlimited	03/21/2017 07:36:29	03/21/2017 07:54:12	17m44s	7.6 MiB	1001.4 KiB
	Total:	03/21/2017 07:36:29	Unlimited	03/21/2017 07:36:29	03/21/2017 07:54:12	17m44s	7.6 MiB	1001.4 KiB

Testing ! – Data Usage (10 Minutes)



Summary Step

1. Build VPN Connectivity
2. Download & Install userman on cloud
3. Add Hotspot Router to User Manager For Authentication
4. Add Hotspot Router Profile to User Manager for Pricing & User Limit
5. Apply QoS or Your Policy to Profiles
6. Apply RADIUS to Hotspot Router
7. Generate Batch User
8. Make Money 😊

Feel So Hard To Build This Awesome Things?

Let Me Help You !

michael@takeuchi.id

<http://www.facebook.com/mict404>

Question & Answer



Question
&
Answer

Thank
you