



# **QoS on Hotspot**

**Paul Darius**

**Mikrotik User Meeting**

**Kuala Lumpur - Malaysia**

**March 4th, 2016**

# Tentang Presenter :

## Paul Darius

- **Dari Padang - West Sumatra - Indonesia**
- **Pendiri & pemilik Sky Networks Solusindo (2007)**
- **Mengenal mikrotik pertama kali MikroTik @ 2004 with RB230+R52**
- **MTCNA (2011), MTCTCE (2012), MTCUME (2013), MTCRE (2014), MTCINE (2014)**

# MikroTik Certified Consultant



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# Padang - Kuala Lumpur



# West Sumatra



# **SKY NETWORKS SOLUSINDO**

- **Didirikan Jan 2007 dengan kapasitas 1xT1 (1.5Mbps link)**
- **Coverage Area Padang City**
- **Hancur total karena gempa besar pada 30 September 2009**
- **Namun mulai Januari 2008, kami sempat melihat Kepulauan Mentawai sebagai prospek besar dengan bisnis VSAT reseller.**

# SKY NETWORKS SOLUSINDO



**Setelah gempa besar pada September 2009**

# SKY NETWORKS SOLUSINDO

**Semua server  
dan peralatan  
pendukung  
hancur dan  
hilang.**



**Setelah gempa besar pada September 2009**














# Gambaran Umum

- **Presentasi ini adalah kelanjutan dari presentasi saya sebelumnya pada bulan Oktober 2015 di Yogyakarta, dengan judul “Hotspot on BGP-VPLS Network”**
- **Diimplementasikan pada sebuah hotel yang muncul setelah gempa besar September 2009.**
- **Sistem lama dibuat oleh syarikat lain yang mana menggunakan kecepatan yang sama untuk semuanya (staff and guests).**
- **Semua bandwidth yang tersedia habis digunakan oleh staff dan tak ada tersida untuk tamu / guest.**

# Gambaran Umum (cont.)

- **Managemen hotel memutuskan untuk membuat perbedaan kecepatan berdasarkan :**
  - **Jabatan / posisi pada hotel**
  - **Tipe kamar tamu**
- **Konfigurasi yang sama pada presentasi ini berjalan di atas network BGP-VPLS di tempat pelanggan (hotel).**
- **Konfigurasi pada presentasi ini adalah rekonstruksi pada router lab; yakni: RB952Ui-5ac2nD.**
- **Beberapa data (usermanager) disalin dari router pelanggan (hotel).**

# Persiapan

Package List				
	<input type="button" value="Check For Updates"/>	<input type="button" value="Enable"/>	<input type="button" value="Disable"/>	<input type="button" value="Uninstall"/>
Name	▲	Version	Build Time	
 advanced-tools		6.33.3	Dec/03/2015 16:08:10	
 dhcp		6.33.3	Dec/03/2015 16:08:10	
 hotspot		6.33.3	Dec/03/2015 16:08:10	
 mpls		6.33.3	Dec/03/2015 16:08:10	
 ppp		6.33.3	Dec/03/2015 16:08:10	
 routing		6.33.3	Dec/03/2015 16:08:10	
 security		6.33.3	Dec/03/2015 16:08:10	
 system		6.33.3	Dec/03/2015 16:08:10	
 user-manager		6.33.3	Dec/03/2015 16:08:10	
 wireless		6.33.3	Dec/03/2015 16:08:10	

# Configuration - Interface

```
[admin@MikroTik] > /system identity set name="SKYnet"  
[admin@SKYnet] > /interface bridge add name=loopback  
[admin@SKYnet] > /interface bridge add name=SKYnet protocol-mode=rstp arp=reply-only  
[admin@SKYnet] > /interface bridge port add bridge=SKYnet interface=ether4  
[admin@SKYnet] > /interface bridge port add bridge=SKYnet interface=ether5  
[admin@SKYnet] > /interface bridge port add bridge=SKYnet interface=wlan1  
[admin@SKYnet] > /interface bridge port add bridge=SKYnet interface=wlan2  
[admin@SKYnet] > /interface ethernet set [find name=ether3] master=ether2  
[admin@SKYnet] > /interface wireless set [find name=wlan1] mode=ap-bridge band=2ghz-b/g/n \  
\... frequency=2412 ssid="SKYnet" wireless-protocol=802.11 default-forwarding=no \  
\... rx-chains=0,1 tx-chains=0,1 ampdu-priorities=0,1,2,3,4,5,6,7  
[admin@SKYnet] > /interface wireless set [find name=wlan2] mode=ap-bridge band=5ghz-a/n/ac \  
\... frequency=5200 ssid="SKYnet" wireless-protocol=802.11 default-forwarding=no \  
\... ampdu-priorities=0,1,2,3,4,5,6,7  
[admin@SKYnet] > /interface set [find name=wlan1] disable=no  
[admin@SKYnet] > /interface set [find name=wlan2] disable=no
```

# Configuration - Ip Address

```
[admin@SKYnet] > /ip dhcp-client add interface=ether1 disabled=no  
[admin@SKYnet] > /ip address add address=192.168.88.1 interface=loopback  
[admin@SKYnet] > /ip address add address=192.168.88.9/30 interface=ether2  
[admin@SKYnet] > /ip address add address=192.168.88.65/26 interface=SKYnet
```

# Configuration - DHCP & DNS

```
[admin@SKYnet] > /ip pool add name=SKYnet ranges=192.168.88.66-192.168.88.126
[admin@SKYnet] > /ip dhcp-server network add address=192.168.88.64/26 \
... gateway=192.168.88.65 dns-server=192.168.88.65
[admin@SKYnet] > /ip dhcp-server add name=SKYnet interface=SKYnet lease-time=15m \
... address-pool=SKYnet add-arp=yes authoritative=yes \
... bootp-support=none disabled=no
[admin@SKYnet] > /ip dns set servers=180.131.144.144,180.131.145.145 \
... allow-remote-requests=yes cache-max-ttl=1d
```

# Configuration - Hotspot (1)

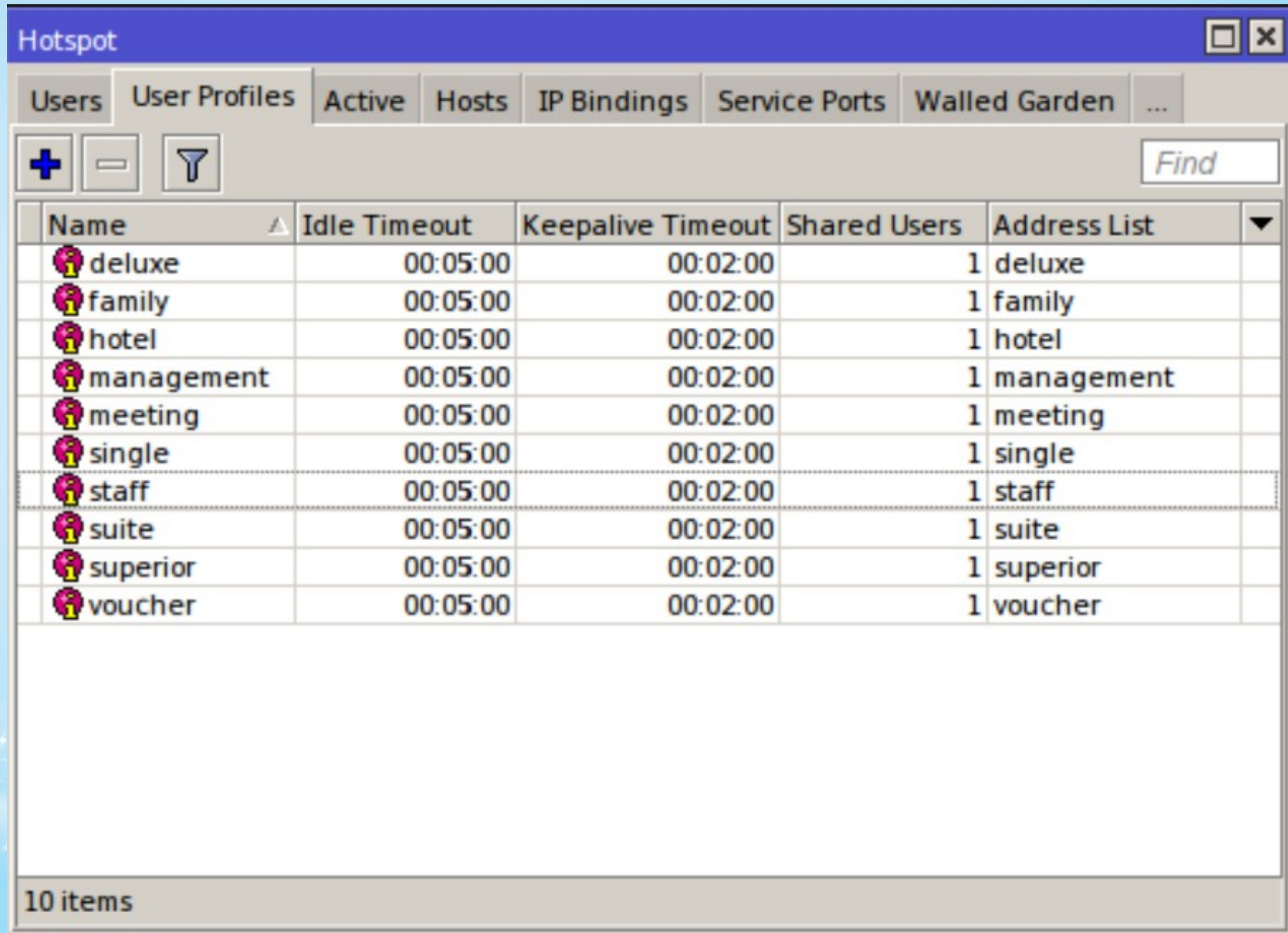
```
[admin@SKYnet] > /ip hotspot profile set default login-by=http-chap,http-pap \  
\... radius-default-domain=SKYnet split-user-domain=yes use-radius=yes  
[admin@SKYnet] > /ip hotspot walled-garden ip add action=accept \  
\... dst-address=192.168.88.0/25 disabled=no  
[admin@SKYnet] > /ip hotspot add name=SKYnet address-pool=SKYnet \  
\... interface=SKYnet profile=default disabled=no
```

# Configuration - Hotspot (2)

```
[admin@SKYnet] > /ip hotspot user profile set [find default=yes] address-list=staff \  
\... idle-timeout=5m name=staff transparent-proxy=yes  
[admin@SKYnet] > /ip hotspot user profile add name=hotel address-list=hotel \  
\... idle-timeout=5m transparent-proxy=yes  
[admin@SKYnet] > /ip hotspot user profile add name=management address-list=management \  
\... idle-timeout=5m transparent-proxy=yes  
[admin@SKYnet] > /ip hotspot user profile add name=single address-list=single \  
\... idle-timeout=5m transparent-proxy=yes  
[admin@SKYnet] > /ip hotspot user profile add name=superior address-list=superior \  
\... idle-timeout=5m transparent-proxy=yes  
[admin@SKYnet] > /ip hotspot user profile add name=deluxe address-list=deluxe \  
\... idle-timeout=5m transparent-proxy=yes  
[admin@SKYnet] > /ip hotspot user profile add name=suite address-list=suite \  
\... idle-timeout=5m transparent-proxy=yes  
[admin@SKYnet] > /ip hotspot user profile add name=family address-list=family \  
\... idle-timeout=5m transparent-proxy=yes  
[admin@SKYnet] > /ip hotspot user profile add name=meeting address-list=meeting \  
\... idle-timeout=5m transparent-proxy=yes  
[admin@SKYnet] > /ip hotspot user profile add name=voucher address-list=voucher \  
\... idle-timeout=5m transparent-proxy=yes
```



# Hotspot User Profile - GUI



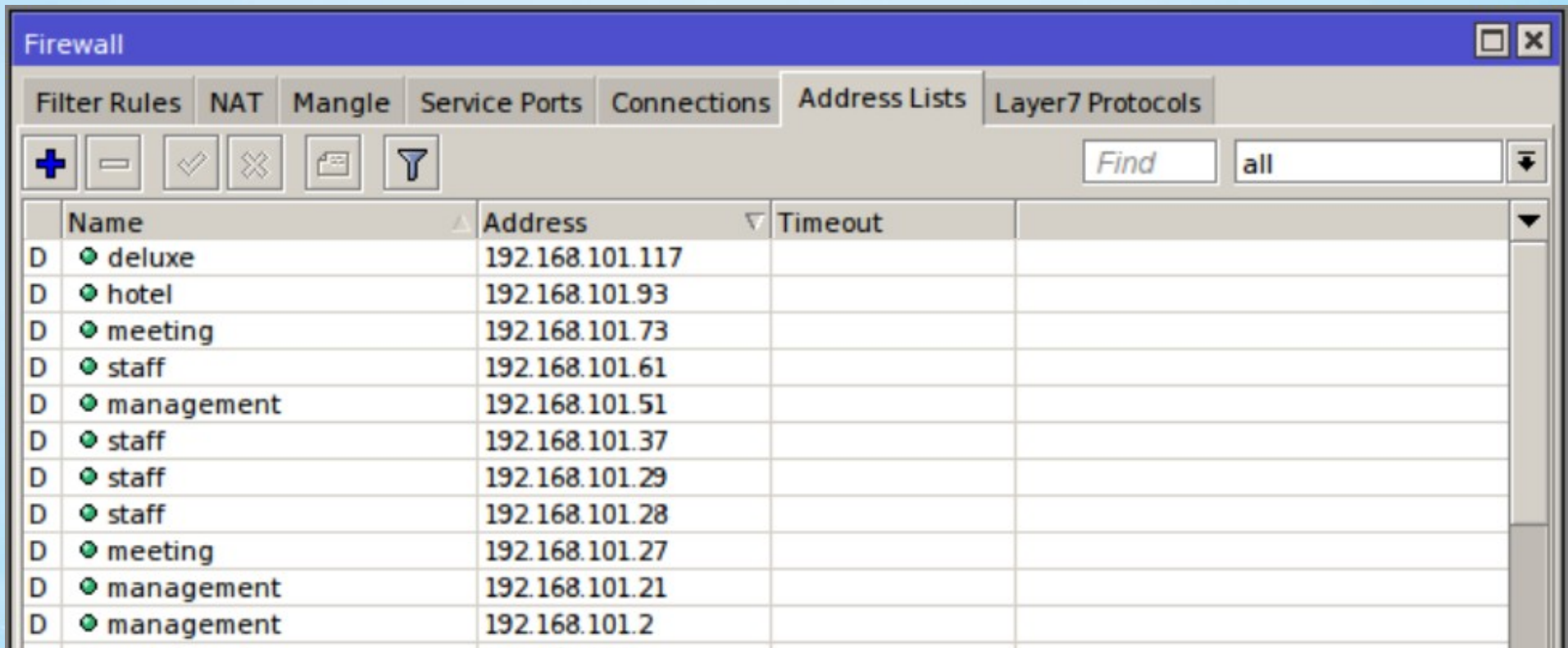
The screenshot shows a window titled "Hotspot" with a menu bar containing "Users", "User Profiles", "Active", "Hosts", "IP Bindings", "Service Ports", and "Walled Garden". Below the menu bar are three icons: a plus sign, a minus sign, and a funnel. To the right of these icons is a search box labeled "Find". The main area contains a table with the following columns: "Name", "Idle Timeout", "Keepalive Timeout", "Shared Users", and "Address List". The table lists ten user profiles, each with a key icon next to the name. The profiles are: deluxe, family, hotel, management, meeting, single, staff, suite, superior, and voucher. Each profile has an idle timeout of 00:05:00 and a keepalive timeout of 00:02:00. The "Shared Users" column shows a value of 1 for each profile. The "Address List" column shows the name of the profile. At the bottom of the window, it says "10 items".

Name	Idle Timeout	Keepalive Timeout	Shared Users	Address List
deluxe	00:05:00	00:02:00	1	deluxe
family	00:05:00	00:02:00	1	family
hotel	00:05:00	00:02:00	1	hotel
management	00:05:00	00:02:00	1	management
meeting	00:05:00	00:02:00	1	meeting
single	00:05:00	00:02:00	1	single
staff	00:05:00	00:02:00	1	staff
suite	00:05:00	00:02:00	1	suite
superior	00:05:00	00:02:00	1	superior
voucher	00:05:00	00:02:00	1	voucher

10 items

# Dynamic Address List

= dari router pelanggan / hotel =



The screenshot shows the Mikrotik WinBox Firewall configuration window, specifically the 'Address Lists' tab. The window title is 'Firewall'. The tabs include 'Filter Rules', 'NAT', 'Mangle', 'Service Ports', 'Connections', 'Address Lists', and 'Layer7 Protocols'. Below the tabs is a toolbar with icons for adding (+), removing (-), checking (✓), unchecking (✗), saving (floppy disk), and filtering (funnel). A search bar contains the text 'Find all'. The main area is a table with columns for Name, Address, and Timeout. The table lists 13 entries, each with a 'D' icon, a green status indicator, a name, an IP address, and a blank timeout field.

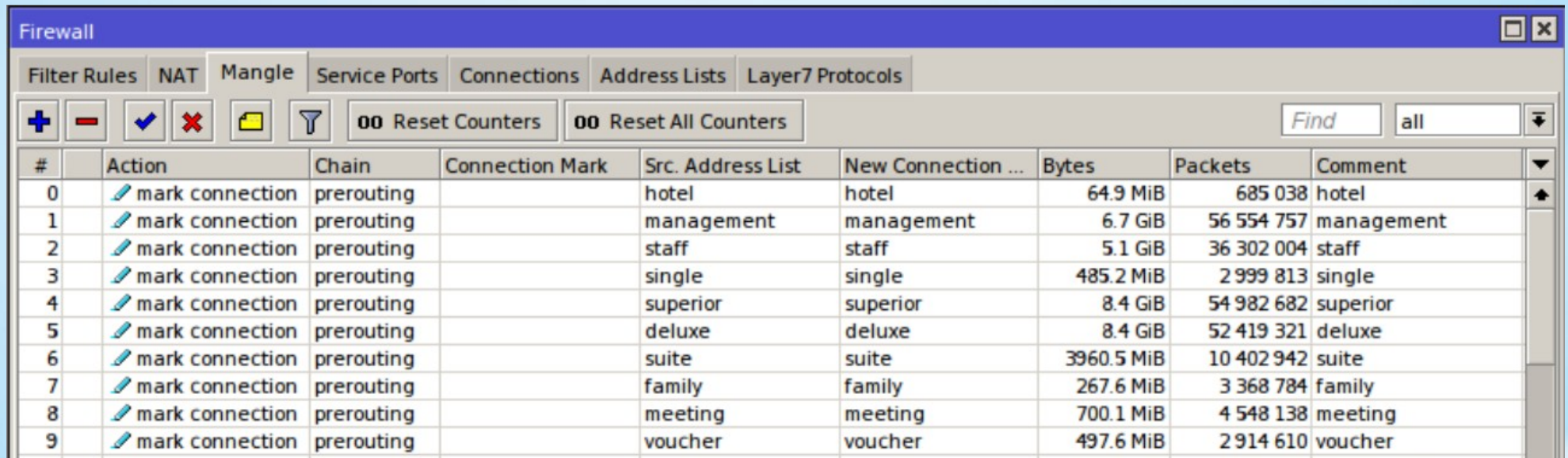
	Name	Address	Timeout
D	deluxe	192.168.101.117	
D	hotel	192.168.101.93	
D	meeting	192.168.101.73	
D	staff	192.168.101.61	
D	management	192.168.101.51	
D	staff	192.168.101.37	
D	staff	192.168.101.29	
D	staff	192.168.101.28	
D	meeting	192.168.101.27	
D	management	192.168.101.21	
D	management	192.168.101.2	

# Configuration - NAT & Mark Connection

```
[admin@SKYnet] > /ip firewall nat add chain=srcnat out-interface=ether1 \  
\... action=masquerade disabled=no  
[admin@SKYnet] >  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=hotel \  
\... action=mark-connection new-connection-mark=hotel comment=hotel  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=management \  
\... action=mark-connection new-connection-mark=management comment=management  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=staff \  
\... action=mark-connection new-connection-mark=staff comment=staff  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=staff \  
\... action=mark-connection new-connection-mark=single comment=single  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=superior \  
\... action=mark-connection new-connection-mark=superior comment=single  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=deluxe \  
\... action=mark-connection new-connection-mark=deluxe comment=deluxe  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=suite \  
\... action=mark-connection new-connection-mark=suite comment=suite  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=family \  
\... action=mark-connection new-connection-mark=family comment=family  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=meeting \  
\... action=mark-connection new-connection-mark=meeting comment=meeting  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting src-address-list=voucher \  
\... action=mark-connection new-connection-mark=voucher comment=voucher
```

# Connection Mark - GUI

= dari router pelanggan / hotel =



The screenshot shows the Mikrotik WinBox Firewall configuration interface, specifically the Mangle tab. The interface includes a toolbar with icons for adding, deleting, and applying rules, as well as buttons for 'Reset Counters' and 'Reset All Counters'. A search bar is located on the right side of the toolbar. Below the toolbar is a table listing the configured mangle rules.

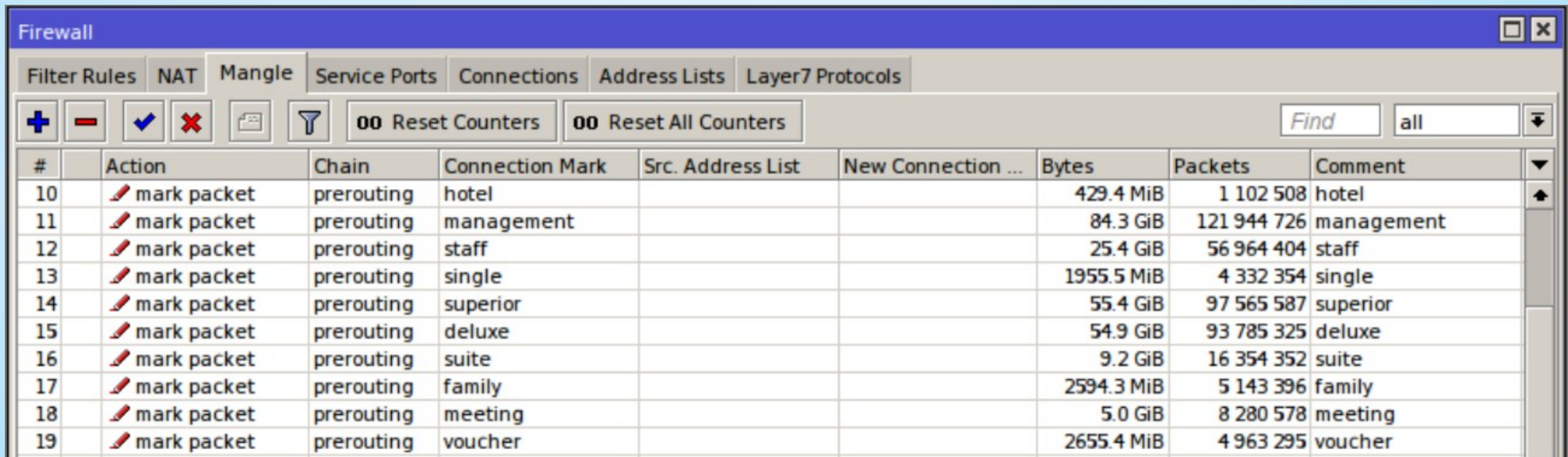
#	Action	Chain	Connection Mark	Src. Address List	New Connection ...	Bytes	Packets	Comment
0	mark connection	prerouting		hotel	hotel	64.9 MiB	685 038	hotel
1	mark connection	prerouting		management	management	6.7 GiB	56 554 757	management
2	mark connection	prerouting		staff	staff	5.1 GiB	36 302 004	staff
3	mark connection	prerouting		single	single	485.2 MiB	2 999 813	single
4	mark connection	prerouting		superior	superior	8.4 GiB	54 982 682	superior
5	mark connection	prerouting		deluxe	deluxe	8.4 GiB	52 419 321	deluxe
6	mark connection	prerouting		suite	suite	3960.5 MiB	10 402 942	suite
7	mark connection	prerouting		family	family	267.6 MiB	3 368 784	family
8	mark connection	prerouting		meeting	meeting	700.1 MiB	4 548 138	meeting
9	mark connection	prerouting		voucher	voucher	497.6 MiB	2 914 610	voucher

# Configuration - Mark Package on prerouting

```
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=hotel \  
\... action=mark-packet new-packet-mark=hotel passthrough=no comment=hotel  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=management \  
\... action=mark-packet new-packet-mark=management passthrough=no comment=management  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=staff \  
\... action=mark-packet new-packet-mark=staff passthrough=no comment=staff  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=single \  
\... action=mark-packet new-packet-mark=single passthrough=no comment=single  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=superior \  
\... action=mark-packet new-packet-mark=superior passthrough=no comment=superior  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=deluxe \  
\... action=mark-packet new-packet-mark=deluxe passthrough=no comment=deluxe  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=suite \  
\... action=mark-packet new-packet-mark=suite passthrough=no comment=suite  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=family \  
\... action=mark-packet new-packet-mark=family passthrough=no comment=family  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=meeting \  
\... action=mark-packet new-packet-mark=meeting passthrough=no comment=meeting  
[admin@SKYnet] > /ip firewall mangle add chain=prerouting connection-mark=voucher \  
\... action=mark-packet new-packet-mark=voucher passthrough=no comment=voucher
```

# Mark Package (1) - GUI

= dari router pelanggan / hotel =



The screenshot shows the Mikrotik WinBox Firewall configuration interface, specifically the Mangle tab. The interface includes a toolbar with icons for adding, deleting, enabling, and disabling rules, as well as buttons for resetting counters and all counters. A search bar is also present. Below the toolbar is a table listing 10 mangle rules, each with a unique ID, an action of 'mark packet', a chain of 'prerouting', and a connection mark. The table also displays statistics for each rule, including bytes and packets, and a comment field.

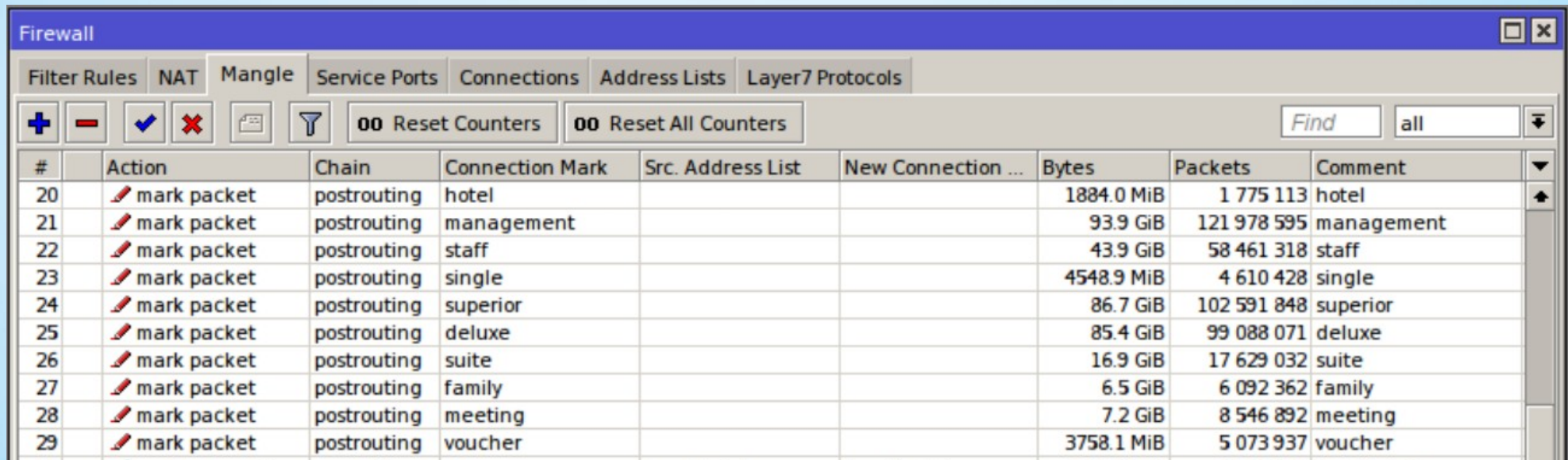
#	Action	Chain	Connection Mark	Src. Address List	New Connection ...	Bytes	Packets	Comment
10	mark packet	prerouting	hotel			429.4 MiB	1 102 508	hotel
11	mark packet	prerouting	management			84.3 GiB	121 944 726	management
12	mark packet	prerouting	staff			25.4 GiB	56 964 404	staff
13	mark packet	prerouting	single			1955.5 MiB	4 332 354	single
14	mark packet	prerouting	superior			55.4 GiB	97 565 587	superior
15	mark packet	prerouting	deluxe			54.9 GiB	93 785 325	deluxe
16	mark packet	prerouting	suite			9.2 GiB	16 354 352	suite
17	mark packet	prerouting	family			2594.3 MiB	5 143 396	family
18	mark packet	prerouting	meeting			5.0 GiB	8 280 578	meeting
19	mark packet	prerouting	voucher			2655.4 MiB	4 963 295	voucher

# Configuration - Mark Package on postrouting

```
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=hotel \  
\... action=mark-packet new-packet-mark=hotel passthrough=no comment=hotel  
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=management \  
\... action=mark-packet new-packet-mark=management passthrough=no comment=management  
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=staff \  
\... action=mark-packet new-packet-mark=staff passthrough=no comment=staff  
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=single \  
\... action=mark-packet new-packet-mark=single passthrough=no comment=single  
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=superior \  
\... action=mark-packet new-packet-mark=superior passthrough=no comment=superior  
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=deluxe \  
\... action=mark-packet new-packet-mark=deluxe passthrough=no comment=deluxe  
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=suite \  
\... action=mark-packet new-packet-mark=suite passthrough=no comment=suite  
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=family \  
\... action=mark-packet new-packet-mark=family passthrough=no comment=family  
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=meeting \  
\... action=mark-packet new-packet-mark=meeting passthrough=no comment=meeting  
[admin@SKYnet] > /ip firewall mangle add chain=postrouting connection-mark=voucher \  
\... action=mark-packet new-packet-mark=voucher passthrough=no comment=voucher
```

# Mark Package (2) - GUI

= from customer router =



The screenshot shows the Mikrotik WinBox Firewall configuration window, specifically the Mangle tab. The window title is "Firewall". The tabs at the top are "Filter Rules", "NAT", "Mangle", "Service Ports", "Connections", "Address Lists", and "Layer7 Protocols". The "Mangle" tab is selected. Below the tabs, there are several icons for actions: a plus sign, a minus sign, a checkmark, a cross, a document, and a funnel. There are also two buttons: "00 Reset Counters" and "00 Reset All Counters". A search bar with the text "Find" and "all" is visible. The main area contains a table with the following columns: "#", "Action", "Chain", "Connection Mark", "Src. Address List", "New Connection ...", "Bytes", "Packets", and "Comment". The table lists 10 rules, all with the action "mark packet" and chain "postrouting". The connection marks are "hotel", "management", "staff", "single", "superior", "deluxe", "suite", "family", "meeting", and "voucher". The bytes and packets columns show the volume of traffic for each rule.

#	Action	Chain	Connection Mark	Src. Address List	New Connection ...	Bytes	Packets	Comment
20	mark packet	postrouting	hotel			1884.0 MiB	1 775 113	hotel
21	mark packet	postrouting	management			93.9 GiB	121 978 595	management
22	mark packet	postrouting	staff			43.9 GiB	58 461 318	staff
23	mark packet	postrouting	single			4548.9 MiB	4 610 428	single
24	mark packet	postrouting	superior			86.7 GiB	102 591 848	superior
25	mark packet	postrouting	deluxe			85.4 GiB	99 088 071	deluxe
26	mark packet	postrouting	suite			16.9 GiB	17 629 032	suite
27	mark packet	postrouting	family			6.5 GiB	6 092 362	family
28	mark packet	postrouting	meeting			7.2 GiB	8 546 892	meeting
29	mark packet	postrouting	voucher			3758.1 MiB	5 073 937	voucher



# Configuration - Queue Type (1)

```
[admin@SKYnet] > /queue type add kind=pcq name=pcq-upload \  
\... pcq-classifier=src-address  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-upload-64k \  
\... pcq-classifier=src-address pcq-rate=64k  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-upload-128k \  
\... pcq-classifier=src-address pcq-rate=128k  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-upload-192k \  
\... pcq-classifier=src-address pcq-rate=192k  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-upload-256k \  
\... pcq-classifier=src-address pcq-rate=256k  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-upload-512k \  
\... pcq-classifier=src-address pcq-rate=512k  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-upload-1024k \  
\... pcq-classifier=src-address pcq-rate=1024k
```

# Configuration - Queue Type (2)

```
[admin@SKYnet] > /queue type add kind=pcq name=pcq-download \  
\... pcq-classifier=dst-address  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-download-256k \  
\... pcq-classifier=dst-address pcq-rate=256k  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-download-384k \  
\... pcq-classifier=dst-address pcq-rate=384k  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-download-512k \  
\... pcq-classifier=dst-address pcq-rate=512k  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-download-1024k \  
\... pcq-classifier=dst-address pcq-rate=1M  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-download-1536k \  
\... pcq-classifier=dst-address pcq-rate=1536k  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-download-2048k \  
\... pcq-classifier=dst-address pcq-rate=2M  
[admin@SKYnet] > /queue type add kind=pcq name=pcq-download-3096k \  
\... pcq-classifier=dst-address pcq-rate=3M
```

# Configuration - Queue Tree (1)

```
[admin@SKYnet] > /queue tree add name=UPLOAD parent=etherl1 queue=default max-limit=1536k
[admin@SKYnet] > /queue tree add name="01. HOTEL UPLOAD" packet-mark=hotel parent=UPLOAD \
... priority=1 queue=pcq-upload limit-at=8k max-limit=1536k
[admin@SKYnet] > /queue tree add name="02. MANAGEMENT UPLOAD" packet-mark=management parent=UPLOAD \
... priority=2 queue=pcq-upload-128k limit-at=8k max-limit=512k
[admin@SKYnet] > /queue tree add name="03. STAFF UPLOAD" packet-mark=staff parent=UPLOAD \
... priority=8 queue=pcq-upload-64k limit-at=8k max-limit=512k
[admin@SKYnet] > /queue tree add name="04. SINGLE UPLOAD" packet-mark=single parent=UPLOAD \
... priority=7 queue=pcq-upload-128k limit-at=8k max-limit=1M
[admin@SKYnet] > /queue tree add name="05. SUPERIOR UPLOAD" packet-mark=superior parent=UPLOAD \
... priority=6 queue=pcq-upload-192k limit-at=8k max-limit=1M
[admin@SKYnet] > /queue tree add name="06. DELUXE UPLOAD" packet-mark=deluxe parent=UPLOAD \
... priority=5 queue=pcq-upload-256k limit-at=8k max-limit=1M
[admin@SKYnet] > /queue tree add name="07. SUITE UPLOAD" packet-mark=suite parent=UPLOAD \
... priority=4 queue=pcq-upload-512k limit-at=8k max-limit=1M
[admin@SKYnet] > /queue tree add name="08. FAMILY UPLOAD" packet-mark=family parent=UPLOAD \
... priority=3 queue=pcq-upload-1024k limit-at=8k max-limit=1M
[admin@SKYnet] > /queue tree add name="09. MEETING UPLOAD" packet-mark=meeting parent=UPLOAD \
... priority=2 queue=pcq-upload-256k limit-at=8k max-limit=1M
[admin@SKYnet] > /queue tree add name="10. VOUCHER UPLOAD" packet-mark=voucher parent=UPLOAD \
... priority=7 queue=pcq-upload-128k limit-at=8k max-limit=512k
```

# Configuration - Queue Tree (2)

```
[admin@SKYnet] > /queue tree add name=DOWNLOAD parent=SKYnet queue=default max-limit=10M
[admin@SKYnet] > /queue tree add name="01. HOTEL DOWNLOAD" packet-mark=hotel parent=DOWNLOAD \
... priority=1 queue=pcq-download limit-at=64k max-limit=10M
[admin@SKYnet] > /queue tree add name="02. MANAGEMENT DOWNLOAD" packet-mark=management parent=DOWNLOAD \
... priority=2 queue=pcq-download-384k limit-at=64k max-limit=2M
[admin@SKYnet] > /queue tree add name="03. STAFF DOWNLOAD" packet-mark=staff parent=DOWNLOAD \
... priority=8 queue=pcq-download-256k limit-at=64k max-limit=1536k
[admin@SKYnet] > /queue tree add name="04. SINGLE DOWNLOAD" packet-mark=single parent=DOWNLOAD \
... priority=7 queue=pcq-download-512k limit-at=64k max-limit=8M
[admin@SKYnet] > /queue tree add name="05. SUPERIOR DOWNLOAD" packet-mark=superior parent=DOWNLOAD \
... priority=6 queue=pcq-download-1024k limit-at=64k max-limit=8M
[admin@SKYnet] > /queue tree add name="06. DELUXE DOWNLOAD" packet-mark=deluxe parent=DOWNLOAD \
... priority=5 queue=pcq-download-1536k limit-at=64k max-limit=8M
[admin@SKYnet] > /queue tree add name="07. SUITE DOWNLOAD" packet-mark=suite parent=DOWNLOAD \
... priority=4 queue=pcq-download-2048k limit-at=64k max-limit=8M
[admin@SKYnet] > /queue tree add name="08. FAMILY DOWNLOAD" packet-mark=family parent=DOWNLOAD \
... priority=3 queue=pcq-download-3096k limit-at=64k max-limit=8M
[admin@SKYnet] > /queue tree add name="09. MEETING DOWNLOAD" packet-mark=meeting parent=DOWNLOAD \
... priority=2 queue=pcq-download-512k limit-at=64k max-limit=8M
[admin@SKYnet] > /queue tree add name="10. VOUCHER DOWNLOAD" packet-mark=voucher parent=DOWNLOAD \
... priority=7 queue=pcq-download-384k limit-at=64k max-limit=8M
```

# Queue Tree - GUI

= dari router pelanggan / hotel =

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

+ - [Icons] [Filter] [Reset Counters] [00 Reset All Counters] Find

Name	Parent	Packet Marks	Queue Type	Priority	Limi...	Max Li...	Avg. Rate	Bytes	Packets
DOWNLOAD	hotspot		default	8		10M	360.1 kbps	311.0 GiB	270 414 968
01. HOTEL DOWNLOAD	DOWNLOAD	hotel	pcq-download	1	64k	10M	0 bps	1856.8 MiB	1 486 355
02. MANAGEMENT DOWNLOAD	DOWNLOAD	management	pcq-download-384k	2	64k	2M	14.1 kbps	84.9 GiB	72 370 496
03. STAFF DOWNLOAD	DOWNLOAD	staff	pcq-download-256k	8	64k	1536k	264.9 kbps	37.8 GiB	36 202 412
04. SINGLE DOWNLOAD	DOWNLOAD	single	pcq-download-512k	7	64k	8M	0 bps	4056.1 MiB	3 251 250
05. SUPERIOR DOWNLOAD	DOWNLOAD	superior	pcq-download-1024k	6	64k	8M	0 bps	76.9 GiB	66 423 945
06. DELUXE DOWNLOAD	DOWNLOAD	deluxe	pcq-download-1536k	5	64k	8M	0 bps	76.7 GiB	65 602 583
07. SUITE DOWNLOAD	DOWNLOAD	suite	pcq-download-2048k	4	64k	8M	0 bps	13.2 GiB	11 805 948
08. FAMILY DOWNLOAD	DOWNLOAD	family	pcq-download-3096k	3	64k	8M	0 bps	6.4 GiB	4 861 060
09. MEETING DOWNLOAD	DOWNLOAD	meeting	pcq-download-512k	2	64k	3M	89.1 kbps	6.3 GiB	5 419 602
10. VOUCHER DOWNLOAD	DOWNLOAD	voucher	pcq-download-384k	7	64k	2M	0 bps	3152.9 MiB	2 991 403
UPLOAD	pppoe-indihome		default	8		1536k	84.4 kbps	58.3 GiB	238 332 288
01. HOTEL UPLOAD	UPLOAD	hotel	pcq-upload	1	8k	1536k	0 bps	39.2 MiB	282 157
02. MANAGEMENT UPLOAD	UPLOAD	management	pcq-upload-128k	2	8k	512k	1760 bps	5.7 GiB	46 011 328
03. STAFF UPLOAD	UPLOAD	staff	pcq-upload-64k	8	8k	512k	10.7 kbps	3939.0 MiB	19 910 450
04. SINGLE UPLOAD	UPLOAD	single	pcq-upload-128k	7	8k	1M	0 bps	274.2 MiB	1 154 168
05. SUPERIOR UPLOAD	UPLOAD	superior	pcq-upload-192k	6	8k	1M	0 bps	6.5 GiB	32 497 520
06. DELUXE UPLOAD	UPLOAD	deluxe	pcq-upload-256k	5	8k	1M	0 bps	6.7 GiB	31 139 403
07. SUITE UPLOAD	UPLOAD	suite	pcq-upload-512k	4	8k	1M	0 bps	3567.5 MiB	5 534 389
08. FAMILY UPLOAD	UPLOAD	family	pcq-upload-1024k	3	8k	1M	0 bps	137.2 MiB	1 180 654
09. MEETING UPLOAD	UPLOAD	meeting	pcq-upload-256k	2	8k	1M	5.9 kbps	537.2 MiB	2 837 006
10. VOUCHER UPLOAD	UPLOAD	voucher	pcq-upload-128k	7	8k	512k	0 bps	384.7 MiB	1 863 839

# Configuration - Radius, Clock and Usermanager

```
[admin@SKYnet] > /radius add address=127.0.0.1 domain=SKYnet \  
\... secret="MySecret" service=hotspot disabled=no  
[admin@SKYnet] > /radius incoming set accept=yes port=1700
```

```
[admin@SKYnet] > /system clock set time-zone-name=Asia/Kuala_Lumpur  
[admin@SKYnet] > /system ntp client set enabled=yes \  
\... server-dns-names=216.110.36.245,198.72.72.10  
[admin@SKYnet] > /tool user-manager customer set [find login=admin] time-zone=+08:00  
[admin@SKYnet] > /tool user-manager router add ip-address=127.0.0.1 log=auth-fail \  
\... name="Main Router" shared-secret="MySecret" customer=admin
```

# Usermanager - Customer

<input type="checkbox"/>	<input type="checkbox"/> Login	<input type="checkbox"/> Parent	<input type="checkbox"/> Permissions
<input type="checkbox"/>	admin		Owner
<input type="checkbox"/>	fo	admin	Read write
<input type="checkbox"/>	office	admin	Full

# Usermanager - Router = dibuat by admin =

Router details ✕

▲ Main

Name:

Owner:

IP address:

Shared secret:

Time zone:

Disabled:

Log events:

- Authorization success
- Authorization failure
- Accounting success
- Accounting failure

▼ Radius incoming


CoA support:

CoA port:

▼ Request statistics



# Usermanager - Limitation

Profiles		Limitations			
Add		Edit			
				<input type="text"/>	
<input type="checkbox"/>	▽ Owner	▽ Name	▽ Group name	▽ Uptime	
<input type="checkbox"/>	office	hotel	hotel		
<input type="checkbox"/>	office	management	management		
<input type="checkbox"/>	office	staff	staff		
<input type="checkbox"/>	fo	single	single		
<input type="checkbox"/>	fo	superior	superior		
<input type="checkbox"/>	fo	deluxe	deluxe		
<input type="checkbox"/>	fo	suite	suite		
<input type="checkbox"/>	fo	family	family		
<input type="checkbox"/>	fo	meeting	meeting		
<input type="checkbox"/>	fo	voucher	voucher	1h	

# Usermanager - Profile = management =

Profiles	Limitations	
Profile:	management	+
Name:	management	
Name for users:		
Owner:	office	
Validity:		
Starts:	At first logon	
Price:	0.00	
Shared users:	1	
Save profile	Remove profile	
Profile limitations		
<input type="checkbox"/>	Active	Constraints
<input type="checkbox"/>	Always	Group name: management
Add new limitation	Remove selected limitations	

**Tambahkan profile hotel dan staff dengan setting yang sama dan limitation masing-masing.**

**Owned by office and no validity period**

# Usermanager - Profile = deluxe =

Profiles	Limitations
Profile:	deluxe
Name:	deluxe
Name for users:	
Owner:	fo
Validity:	1d
Starts:	At first logon
Price:	0.00
Shared users:	1
Save profile	Remove profile

**Tambahkan profile single, superior, suite, family, and meeting dengan setting yang sama dan limitation masing-masing.**

**Owned by fo and validity period one day.**

## Profile limitations

<input type="checkbox"/>	Active	Constraints
<input type="checkbox"/>	Always	Group name: deluxe
Add new limitation	Remove selected limitations	

# Usermanager - Profile = voucher =

Profiles	Limitations	
Profile:	<input type="text" value="voucher"/>	
Name:	<input type="text" value="voucher"/>	
Name for users:	<input type="text"/>	
Owner:	<input type="text" value="fo"/>	
Validity:	<input type="text" value="1d"/>	
Starts:	<input type="text" value="At first logon"/>	
Price:	<input type="text" value="0.00"/>	
Shared users:	<input type="text" value="1"/>	
<input type="button" value="Save profile"/>	<input type="button" value="Remove profile"/>	
<b>Profile limitations</b>		
<input type="checkbox"/>	Active	Constraints
<input type="checkbox"/>	Always	Uptime Limit: 1h Group name: voucher
<input type="button" value="Add new limitation"/>		<input type="button" value="Remove selected limitations"/>

**Owned by fo and  
validity period one day.**

# Usermanager - Add User

= view oleh backoffice =

User details

▼ Main

Username:

Password:

Disabled:

Owner:

▼ Constraints

▼ Wireless

▼ Private information

Assign profile:

- hotel
- management
- staff

# Usermanager - Add User

= view oleh frontoffice =

User details ✕

▼ Main

Username:

Password:

Disabled:

Owner:

▼ Constraints

▼ Wireless

▼ Private information

Assign profile:

- deluxe
- family
- meeting
- single
- suite
- superior
- voucher

# Usermanager - Add User

= view oleh admin =

User details ✕

▼ Main

Username:

Password:

Disabled:

Owner:

▼ Constraints

▼ Wireless

▼ Private information

Assign profile:

- deluxe
- family
- hotel
- management
- meeting
- single
- staff
- suite
- superior
- voucher

# Usermanager – Userlist

= view oleh backoffice – dari router pelanggan =

Add Edit Generate					
1	2	page 1 of 2			<input type="text"/>
<input type="checkbox"/>	▼ Username	▼ Uptime Used	▼ Last used IP	▼ Last used MAC	▼ Actual profile
<input type="checkbox"/>	s	10h20m8s	192.168.101.46	5C:96:9D:79:C8:1D	hotel
<input type="checkbox"/>	s	3w14h55m51s	192.168.101.93	34:23:BA:84:E5:D8	hotel
<input type="checkbox"/>	j	3w4d14h51m39s	192.168.101.102	A8:1B:5A:B0:A4:93	management
<input type="checkbox"/>	e	5w3d55m54s	192.168.101.51	E8:BB:A8:89:3F:05	management
<input type="checkbox"/>	s	15h35m18s	192.168.101.67	00:03:7E:E8:02:E9	management
<input type="checkbox"/>	r	2w4d19h43m29s	192.168.101.47	14:DD:A9:5B:B6:D6	management
<input type="checkbox"/>	e	1w2d11h22m25s	192.168.101.7	90:F6:52:46:E6:E0	management
<input type="checkbox"/>	r	8w6d13h55m5s	192.168.101.2	20:16:D8:50:00:BF	management
<input type="checkbox"/>	r	1d35m32s	192.168.101.125	BC:6E:64:8B:A9:64	management
<input type="checkbox"/>	r	5w9h26m43s	192.168.101.61	A0:93:47:2B:48:F0	staff
<input type="checkbox"/>	r	3w5d1h28m12s	192.168.101.28	14:DD:A9:A6:98:79	staff
<input type="checkbox"/>	c	3w4d22h56m56s	192.168.101.41	A8:1B:5A:0C:AE:D2	staff
<input type="checkbox"/>	t	2h4m18s	192.168.101.126	30:AA:BD:C0:F1:60	staff
<input type="checkbox"/>	r	2d18h53m52s	192.168.101.36	CC:07:E4:60:98:FB	staff
<input type="checkbox"/>	t	3w5d2h45m9s	192.168.101.126	C8:7D:65:02:1B:53	staff
<input type="checkbox"/>	r	1w16h34m4s	192.168.101.2	20:16:D8:50:00:BF	staff
<input type="checkbox"/>	r	3w1d3h49m57s	192.168.101.19	BC:20:10:45:24:7C	staff
<input type="checkbox"/>	r	3w1d14h10m23s	192.168.101.44	14:DD:A9:A6:40:31	staff
<input type="checkbox"/>	t	2w4d15h10m35s	192.168.101.45	B0:9F:BA:D7:57:B4	staff
<input type="checkbox"/>	t	4d10h13m26s	192.168.101.58	E4:EC:10:DD:1B:7A	staff



# Usermanager – Userlist

= view oleh fontoffice – dari router pelanggan =

Add Edit Generate									
1 2 3 4 ... 6 page 1 of 6									
<input type="checkbox"/>	▼ Username	▼ Password	▼ Uptime Used	▼ Last used IP	▼ Last used MAC	▼ Time left	▼ Till time	▼ Total time left	▼ Actual profile
<input type="checkbox"/>	andri1	107	4h7m46s	192.168.101.124	E4:F8:EF:89:0B:31		Unknown		
<input type="checkbox"/>	fanny1	212	1h46m14s	192.168.101.8	E8:2A:EA:BD:E5:AC		Unknown		
<input type="checkbox"/>	fanny2	212	2h32m11s	192.168.101.8	E8:2A:EA:BD:E5:AC		Unknown		
<input type="checkbox"/>	febri1	306	20m8s	192.168.101.38	E0:CB:EE:B5:2E:23		Unknown		deluxe
<input type="checkbox"/>	andri2	107	5h15m18s	192.168.101.41	A8:1B:5A:0C:AE:D2		Unknown		superior
<input type="checkbox"/>	loan	102	6h54m55s	192.168.101.86	D8:CF:9C:57:4A:74		Unknown		superior
<input type="checkbox"/>	angga	205	6h59m	192.168.101.56	7C:0B:C6:00:99:FC		Unknown		superior
<input type="checkbox"/>	jose	209	4h50m1s	192.168.101.66	08:62:66:B2:00:F6		Unknown		superior
<input type="checkbox"/>	al hafri	206	6h58m7s	192.168.101.99	04:1B:BA:BD:FF:E5		Unknown		superior
<input type="checkbox"/>	ROL6sr	vyz		0.0.0.0		Unknown	Unknown	1d	voucher
<input type="checkbox"/>	ELDKjf	v9s		0.0.0.0			01/09/2016 05:02:52		voucher
<input type="checkbox"/>	ELDJrs	rtr		0.0.0.0		Unknown	Unknown	1d	voucher
<input type="checkbox"/>	ELDDm5	wxq		0.0.0.0		Unknown	Unknown	1d	voucher
<input type="checkbox"/>	ELDHzg	nub		0.0.0.0		Unknown	Unknown	1d	voucher
<input type="checkbox"/>	EDL98x	r2h		0.0.0.0		Unknown	Unknown	1d	voucher
<input type="checkbox"/>	EDL443	zsw		0.0.0.0			Unknown		voucher
<input type="checkbox"/>	KOj7w	ndt		0.0.0.0		Unknown	Unknown	1d	voucher
<input type="checkbox"/>	KOd6k	x67		0.0.0.0		Unknown	Unknown	1d	voucher
<input type="checkbox"/>	KOnhr	e3k		0.0.0.0		Unknown	Unknown	1d	voucher
<input type="checkbox"/>	KOz9h	787		0.0.0.0		Unknown	Unknown	1d	voucher

# Kesimpulan (1)

- **Back office (office) memiliki Full rights untuk login internal hotel; pemilik, management and staff.**
- **Front office (fo) memiliki Read-Write rights untuk seluruh login tamu hotel, tapi tidak memiliki kuasa untuk menghapus.**
- **Admin punya satu tugas baru; menghapus login yang tidak terpakai yang pernah dibuat oleh front office (fo) dan dibandingkan dengan data daftar tamu hotel.**

## **Kesimpulan (2)**

- **Login yang dibuat oleh admin bisa dilihat oleh front office maupun back office. Oleh karena itu admin tidak disarankan untuk membuat login.**
- **Untuk alasan keamanan, disarankan untuk :**
  - **Menambah firewall; seperti menutup tcp & udp 53, 3128, dan 8080 dari luar / internet.**
  - **Proteksi port 20-23, 80 dan 8129 dari luar / internet, misalnya dengan knock.**

**Saran dan atau pertanyaan ?**

**Thank you for watching this presentation.**  
**For any other further enquiries, please email to :**  
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