

QoS on Hotspot

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Mikrotik User Meeting

Jakarta - Indonesia

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Tentang Presenter :

Paul Darius

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

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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 di Sumatera Barat pada September 2009.
- Sistem lama dibuat oleh pihak lain yang mana menggunakan share single login, sehingga kecepatan yang sama untuk semuanya (staff and tamu).
- Semua bandwidth yang tersedia habis digunakan oleh staff dan tak ada tersisa untuk tamu / guest.

Gambaran Umum (cont.)

- Manajemen 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.
- Konfigurasi pada presentasi ini adalah rekonstruksi pada router lab; yakni: RB952Ui-5ac2nD.
- Beberapa data (usermanager) dicopy 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	

Skenario

Pengguna / user terbagi atas 2 kelompok :

- Back Office, dikontrol oleh HRD.
terdiri dari : hotel, management dan staff
- Front Office, dikontrol oleh Reception.
terdiri dari : single, superior, deluxe, suite, family, meeting dan voucher.

Configuration - Hotspot

```
[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
```


Hotspot - User Profile - staff

```
[admin@SKYnet] > /ip hotspot user profile \  
\... set [find default=yes] name=staff \  
\... address-list=staff idle-timeout=5m \  
\... transparent-proxy=yes
```

Hotspot - User Profile - staff (GUI / Winbox)

Hotspot User Profile <staff>

General Advertise Scripts

Name:

Shared Users: ▲

Address List: ▼ ▲

Hotspot - User Profile - hotel

```
[admin@SKYnet] > /ip hotspot user profile \  
\... add name=hotel address-list=hotel \  
\... idle-timeout=5m transparent-proxy=yes
```

Lakukan hal yang sama untuk profile lainnya, seperti management, single, superior, deluxe, suite, family, meeting dan voucher.

Hotspot User Profile - GUI

Hotspot

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

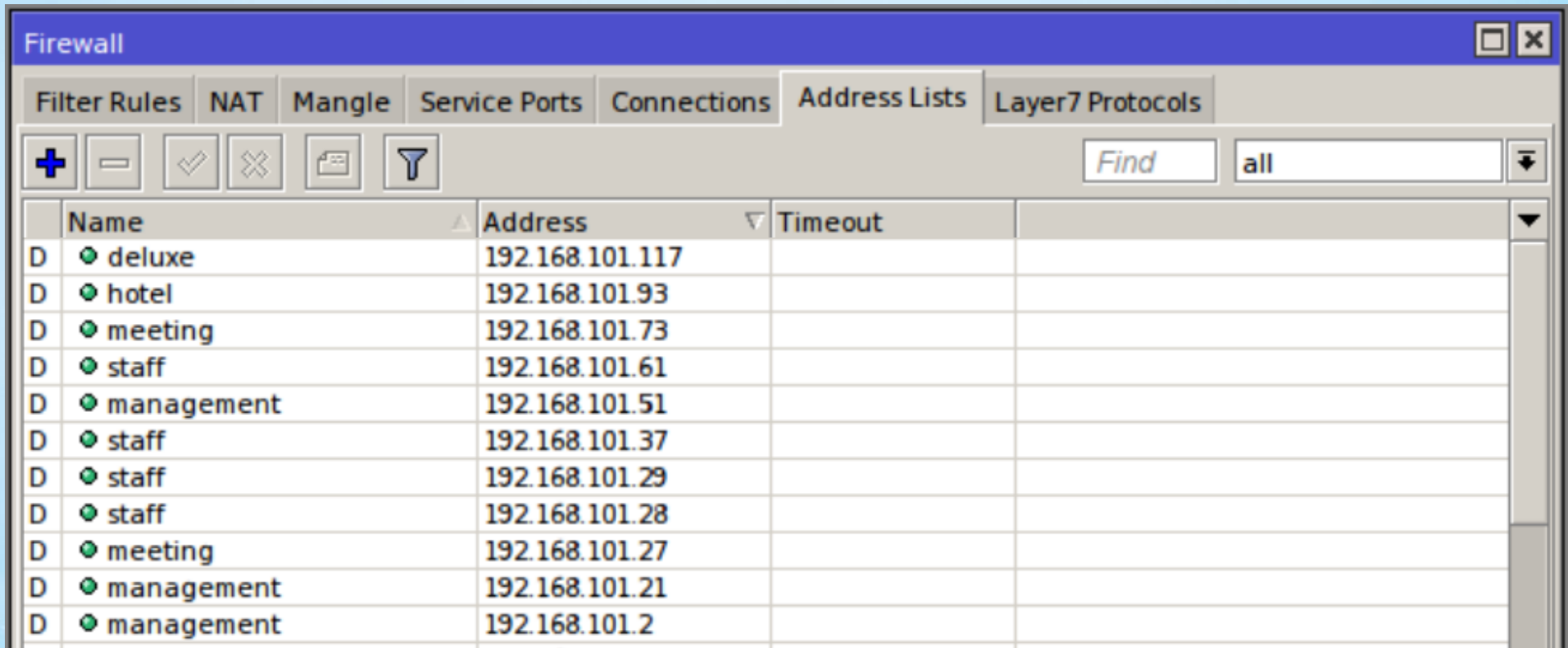
+ - Filter Find

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. The 'Address Lists' tab is selected. The table below lists the configured address lists.

	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	

Mark Connection - hotel

```
[admin@SKYnet] > /ip firewall mangle add chain=prerouting \  
\... action=mark-connection src-address-list=hotel \  
\... new-connection-mark=hotel comment=hotel
```

Lakukan hal yang sama untuk profile lainnya, seperti staff, management, single, superior, deluxe, suite, family, meeting dan voucher.

Mark Connection - staff (GUI / Winbox)

Mangle Rule <>

General Advanced Extra Action Statistics

Chain: prerouting

Src. Address:

Dst. Address:

General Advanced Extra Action Statistics

Src. Address Li... staff

Dst. Address L...

General Advanced Extra Action Statistics

Action: mark connection

New Connection Mark: staff

Passthrough

Mark Connection - GUI

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

+ - ✓ ✗ 📁 🏠 00 Reset Counters 00 Reset All Counters Find all

#	Action	Chain	Connection Mark	Src. Address List	New Packet Mark	New Connection Mark	Comment
0	mark connection	prerouting		hotel		hotel	hotel
1	mark connection	prerouting		management		management	management
2	mark connection	prerouting		staff		staff	staff
3	mark connection	prerouting		staff		single	single
4	mark connection	prerouting		superior		superior	single
5	mark connection	prerouting		deluxe		deluxe	deluxe
6	mark connection	prerouting		suite		suite	suite
7	mark connection	prerouting		family		family	family
8	mark connection	prerouting		meeting		meeting	meeting
9	mark connection	prerouting		voucher		voucher	voucher

30 items (1 selected)

Mark Packet - prerouting - hotel

```
[admin@SKYnet] > /ip firewall mangle add \  
\... chain=prerouting connection-mark=hotel \  
\... action=mark-packet new-packet-mark=hotel \  
\... passthrough=no comment=hotel
```

Lakukan hal yang sama untuk profile lainnya, seperti management, single, superior, deluxe, suite, family, meeting dan voucher.

Mark Packet - prerouting - staff (GUI / Winbox)

Mangle Rule <>

General Advanced Extra Action Statistics

Chain: prerouting

Src. Address:

Dst. Address:

Packet Mark:

Connection Mark staff

General Advanced Extra Action Statistics

Action: mark packet

New Packet Mark: staff

Passthrough

Mark Packet - prerouting - GUI

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

+ - ✓ ✗ 📄 ⚙️ 00 Reset Counters 00 Reset All Counters Find all

#	Action	Chain	Connection Mark	Src. Address List	New Packet Mark	New Connection Mark	Comment
10	✍ mark packet	prerouting	hotel		hotel		hotel
11	✍ mark packet	prerouting	management		management		management
12	✍ mark packet	prerouting	staff		staff		staff
13	✍ mark packet	prerouting	single		single		single
14	✍ mark packet	prerouting	superior		superior		superior
15	✍ mark packet	prerouting	deluxe		deluxe		deluxe
16	✍ mark packet	prerouting	suite		suite		suite
17	✍ mark packet	prerouting	family		family		family
18	✍ mark packet	prerouting	meeting		meeting		meeting
19	✍ mark packet	prerouting	voucher		voucher		voucher

30 items (1 selected)

Mark Packet - postrouting - hotel

```
[admin@SKYnet] > /ip firewall mangle add \  
\... chain=postrouting connection-mark=hotel \  
\... action=mark-packet new-packet-mark=hotel \  
\... passthrough=no comment=hotel
```

Lakukan hal yang sama untuk profile lainnya, seperti management, single, superior, deluxe, suite, family, meeting dan voucher.

Mark Packet - postrouting - staff (GUI / Winbox)

Mangle Rule <>

General Advanced Extra Action Statistics

Chain: postrouting

Src. Address:

Dst. Address:

Packet Mark:

Connection Mark staff

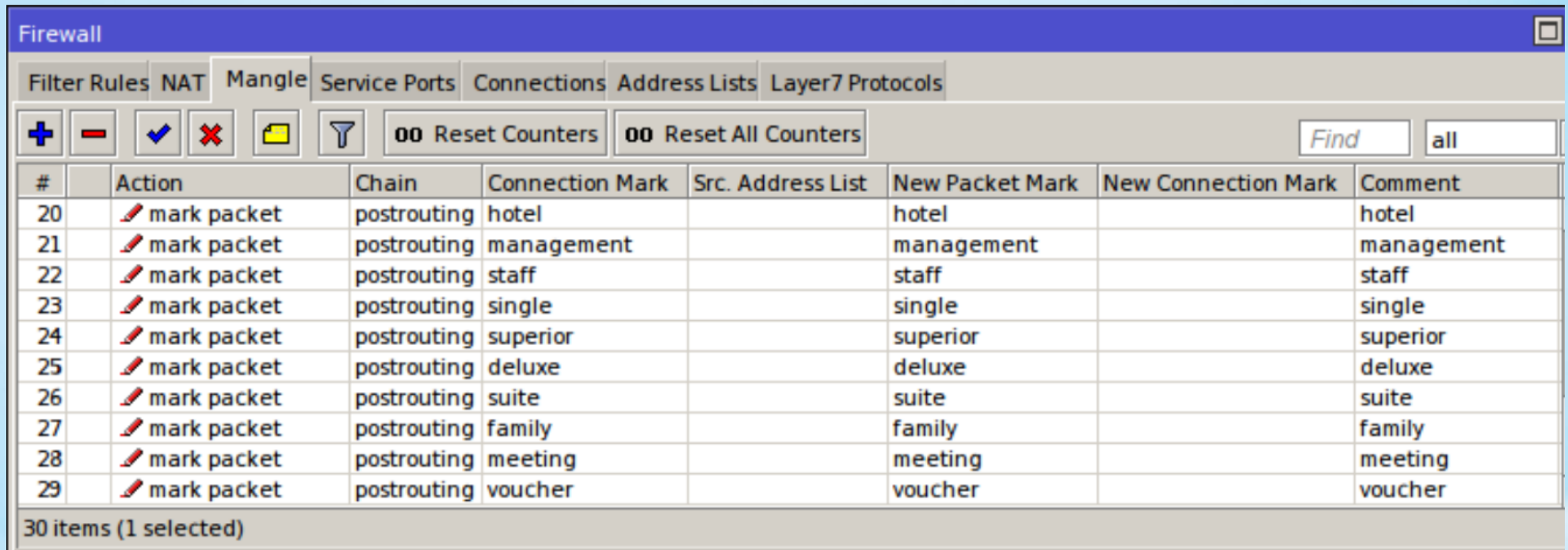
General Advanced Extra Action Statistics

Action: mark packet

New Packet Mark: staff

Passthrough

Mark Packet - postrouting - GUI



The screenshot shows the Mikrotik WinBox Firewall configuration interface, specifically the Mangle tab. The interface includes a menu bar with options like Filter Rules, NAT, Mangle, Service Ports, Connections, Address Lists, and Layer7 Protocols. Below the menu bar are several action buttons: a plus sign, a minus sign, a checkmark, an X, a folder icon, a funnel icon, and two buttons labeled "00 Reset Counters" and "00 Reset All Counters". There is also a search field with the text "Find" and "all".

#	Action	Chain	Connection Mark	Src. Address List	New Packet Mark	New Connection Mark	Comment
20	mark packet	postrouting	hotel		hotel		hotel
21	mark packet	postrouting	management		management		management
22	mark packet	postrouting	staff		staff		staff
23	mark packet	postrouting	single		single		single
24	mark packet	postrouting	superior		superior		superior
25	mark packet	postrouting	deluxe		deluxe		deluxe
26	mark packet	postrouting	suite		suite		suite
27	mark packet	postrouting	family		family		family
28	mark packet	postrouting	meeting		meeting		meeting
29	mark packet	postrouting	voucher		voucher		voucher

30 items (1 selected)

Queue Type - pcq-upload

```
[admin@SKYnet] > /queue type add \  
\... kind=pcq name=pcq-upload \  
\... pcq-classifier=src-address
```

Queue Type - pcq-upload-64k

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

Lakukan hal yang sama untuk:
pcq-upload-128K, pcq-upload-192K,
pcq-upload-256K, pcq-upload-512K, dan pcq-
upload-1M.




Queue Type - pcq-upload

Queue Type <pcq-upload>	Queue Type <pcq-upload-1024k>
Type Name <input type="text" value="pcq-upload"/>	Type Name <input type="text" value="pcq-upload-1024k"/>
Kind <input type="text" value="pcq"/> ▼	Kind <input type="text" value="pcq"/> ▼
Rate <input type="text" value="0"/> bits/s	Rate <input type="text" value="1024k"/> bits/s
Limit <input type="text" value="50"/> KiE	Limit <input type="text" value="50"/> KiE
Total Limi <input type="text" value="2000"/> KiE	Total Limi <input type="text" value="2000"/> KiE
Burst Rate <input type="text"/> ▼ bits/s	Burst Rate <input type="text"/> ▼ bits/s
Burst Threshold <input type="text"/> ▼	Burst Threshold <input type="text"/> ▼
Burst Time <input type="text" value="00:00:10"/>	Burst Time <input type="text" value="00:00:10"/>
Classifier <input checked="" type="checkbox"/> Src. Address <input type="checkbox"/> Dst. Address <input type="checkbox"/> Src. Port <input type="checkbox"/> Dst. Port	Classifier <input checked="" type="checkbox"/> Src. Address <input type="checkbox"/> Dst. Address <input type="checkbox"/> Src. Port <input type="checkbox"/> Dst. Port

Queue Type GUI - upload

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

Type Name	Kind	Rate	Classifier
pcq-upload	pcq	0	Src. Address
pcq-upload-64k	pcq	64k	Src. Address
pcq-upload-128k	pcq	128k	Src. Address
pcq-upload-192k	pcq	192k	Src. Address
pcq-upload-256k	pcq	256k	Src. Address
pcq-upload-512k	pcq	512k	Src. Address
pcq-upload-1024k	pcq	1024k	Src. Address

17 items (1 selected)

Queue Type - pcq-download

```
[admin@SKYnet] > /queue type add \  
\... kind=pcq name=pcq-download \  
\... pcq-classifier=dst-address
```

Queue Type - pcq-download-256K

```
[admin@SKYnet] > /queue type add \  
\... kind=pcq name=pcq-download-256k \  
\... pcq-classifier=dst-address \  
\... pcq-rate=256k
```

Lakukan hal yang sama untuk:
pcq-download-384K, pcq-download-512K,
pcq-download-1M, pcq-download-1536K,
pcq-download-2M, pcq-download-3M.




Queue Type - pcq-download

Queue Type <pcq-download>	Queue Type <pcq-download-1024k>
Type Name <input type="text" value="pcq-download"/>	Type Name <input type="text" value="pcq-download-1024k"/>
Kind <input type="text" value="pcq"/> ▼	Kind <input type="text" value="pcq"/> ▼
Rate <input type="text" value="0"/> bits/s	Rate <input type="text" value="1M"/> bits/s
Limit <input type="text" value="50"/> KiE	Limit <input type="text" value="50"/> KiE
Total Limi <input type="text" value="2000"/> KiE	Total Limi <input type="text" value="2000"/> KiE
Burst Rate <input type="text"/> ▼ bits/s	Burst Rate <input type="text"/> ▼ bits/s
Burst Threshold <input type="text"/> ▼	Burst Threshold <input type="text"/> ▼
Burst Time <input type="text" value="00:00:10"/>	Burst Time <input type="text" value="00:00:10"/>
Classifier <input type="checkbox"/> Src. Address <input checked="" type="checkbox"/> Dst. Address	Classifier <input type="checkbox"/> Src. Address <input checked="" type="checkbox"/> Dst. Address
<input type="checkbox"/> Src. Port <input type="checkbox"/> Dst. Port	<input type="checkbox"/> Src. Port <input type="checkbox"/> Dst. Port

Queue Type GUI - download

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

Type Name	Kind	Rate	Classifier
pcq-download	pcq	0	Dst. Address
pcq-download-256k	pcq	256k	Dst. Address
pcq-download-384k	pcq	384k	Dst. Address
pcq-download-512k	pcq	512k	Dst. Address
pcq-download-1024k	pcq	1M	Dst. Address
pcq-download-1536k	pcq	1536k	Dst. Address
pcq-download-2048k	pcq	2M	Dst. Address
pcq-download-3096k	pcq	3M	Dst. Address

25 items (1 selected)

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
```

Queue Tree - Upload

Queue <UPLOAD>		Queue <02. MANAGEMENT UPLOAD>	
General	Statistics	General	Statistics
Name	UPLOAD	Name	02. MANAGEMENT UPLOAD
Parent	ether1	Parent	UPLOAD
Packet Mark:		Packet Mark	management
Queue Type	default	Queue Type	pcq-upload-128k
Priority:	8	Priority:	2
Bucket Size	0.100	Bucket Size	0.100
Limit At		Limit At	8k
Max Limit	1536k	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 - Download

Queue <DOWNLOAD>		Queue <02. MANAGEMENT DOWNLOAD>	
General	Statistics	General	Statistics
Name	DOWNLOAD	Name	02. MANAGEMENT DOWNLOAD
Parent	SKYnet	Parent	DOWNLOAD
Packet Mark:		Packet Mark:	management
Queue Type	default	Queue Type	pcq-download-384k
Priority:	8	Priority:	2
Bucket Size:	0.100	Bucket Size:	0.100
Limit At		Limit At	64k
Max Limit	10M	Max Limit	2M

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/Jakarta  
[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=+07:00  
[admin@SKYnet] > /tool user-manager customer add login=front-office parent=admin permissions=read-write  
[admin@SKYnet] > /tool user-manager customer add login=back-office parent=admin permissions=full  
  
[admin@SKYnet] > /tool user-manager router add name="Main Router" \  
\... customer=admin ip-address=127.0.0.1 shared-secret="MySecret" \  
\... use-coa=yes coa-port=1700 log=auth-fail
```

Radius Configuration

Radius Server <127.0.0.1>

General Status

Service ppp login
 hotspot wireless
 dhcp

Called ID

Domain SKYnet

Address 127.0.0.1

Secret MySecret

Authentication Port 1812

Accounting Port 1813

Timeout 300 ms

Radius Incoming

Accept

Port: 1700

Usermanager - Customer

<input type="checkbox"/>	▽ Login	▽ Parent	▽ Permissions
<input type="checkbox"/>	admin		Owner
<input type="checkbox"/>	front-office	admin	Read write
<input type="checkbox"/>	back-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"/>	▽ Name	▽ Group name	▽ Uptime	▽ Owner	
<input type="checkbox"/>	hotel	hotel		back-office	
<input type="checkbox"/>	management	management		back-office	
<input type="checkbox"/>	staff	staff		back-office	
<input type="checkbox"/>	single	single		front-office	
<input type="checkbox"/>	superior	superior		front-office	
<input type="checkbox"/>	deluxe	deluxe		front-office	
<input type="checkbox"/>	suite	suite		front-office	
<input type="checkbox"/>	family	family		front-office	
<input type="checkbox"/>	meeting	meeting		front-office	
<input type="checkbox"/>	voucher	voucher	1h	front-office	

Usermanager - Limitation (Console)

```
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=hotel group-name=hotel  
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=management group-name=management  
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=staff group-name=staff  
|  
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=single group-name=single  
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=superior group-name=superior  
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=deluxe group-name=deluxe  
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=suite group-name=suite  
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=family group-name=family  
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=meeting group-name=meeting  
[admin@SKYnet] > /tool user-manager profile limitation \  
\... add name=voucher group-name=voucher uptime-limit=lh
```

Usermanager - Profile = back-office =

Profiles	Limitations
Profile:	hotel
Name:	hotel
Name for users:	
Owner:	back-office
Validity:	
Starts:	At first logon
Price:	0.00
Shared users:	1
Save profile	Remove profile

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

Owned by back-office and without validity.

Profile limitations

<input type="checkbox"/>	Active	Constraints
<input type="checkbox"/>	Always	Group name: hotel

Add new limitation	Remove selected limitations
--------------------	-----------------------------

Usermanager - Profile = front-office =

Profiles	Limitations
Profile:	single
Name:	single
Name for users:	
Owner:	front-office
Validity:	1d
Starts:	At first logon
Price:	0.00
Shared users:	1
Save profile	Remove profile

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

Owned by front-office and validity period 1d.

Profile limitations

<input type="checkbox"/>	Active	Constraints
<input type="checkbox"/>	Always	Group name: single

Add new limitation

Remove selected limitations

Usermanager - Profile

= voucher =

Profiles	Limitations	
Profile:	voucher	+
Name:	voucher	
Name for users:		
Owner:	front-office	
Validity:	1d	
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	Uptime Limit: 1h Group name: voucher
Add new limitation		Remove selected limitations

**Owned by front-office
and validity period 1d.**

Usermanager - Profile (Console)

```
[admin@SKYnet] > /tool user-manager profile add owner=back-office \  
\... override-shared-users=1 starts-at=logon name="hotel"  
[admin@SKYnet] > /tool user-manager profile add owner=back-office \  
\... override-shared-users=1 starts-at=logon name="management"  
[admin@SKYnet] > /tool user-manager profile add owner=back-office \  
\... override-shared-users=1 starts-at=logon name="staff"  
  
[admin@SKYnet] > /tool user-manager profile add owner=front-office \  
\... override-shared-users=1 starts-at=logon validity=ld name="single"  
[admin@SKYnet] > /tool user-manager profile add owner=front-office \  
\... override-shared-users=1 starts-at=logon validity=ld name="superior"  
[admin@SKYnet] > /tool user-manager profile add owner=front-office \  
\... override-shared-users=1 starts-at=logon validity=ld name="deluxe"  
[admin@SKYnet] > /tool user-manager profile add owner=front-office \  
\... override-shared-users=1 starts-at=logon validity=ld name="suite"  
[admin@SKYnet] > /tool user-manager profile add owner=front-office \  
\... override-shared-users=1 starts-at=logon validity=ld name="family"  
[admin@SKYnet] > /tool user-manager profile add owner=front-office \  
\... override-shared-users=1 starts-at=logon validity=ld name="meeting"  
[admin@SKYnet] > /tool user-manager profile add owner=front-office \  
\... override-shared-users=1 starts-at=logon validity=ld name="voucher"
```

Usermanager - Profile-Limitation (Console)

```
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=hotel limitation=hotel  
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=management limitation=management  
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=staff limitation=staff  
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=single limitation=single  
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=superior limitation=superior  
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=deluxe limitation=deluxe  
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=suite limitation=suite  
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=family limitation=family  
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=meeting limitation=meeting  
[admin@SKYnet] > /tool user-manager profile \  
\... profile-limitation add profile=voucher limitation=voucher
```

Usermanager - Add User

= view oleh back-office =

User details

▼ Main

Username:

Password:

Disabled:

Owner:

▼ Constraints

▼ Wireless

▼ Private information

Assign profile:

- hotel
- management
- staff

Usermanager - Add User

= view oleh front-office =

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="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)

- Mikrotik dengan RouterOS mengatur hotspot, mangle dan Qos (Queue Tree).
- Radius (User Manager) mengatur management user dan pengelompokannya.
- Pengaturan kelompok user pada hotspot berada pada menu Hotspot - User Profile.
- Pengaturan kelompok user pada user manager berada pada Profile.
- Limitation pada User Manager merupakan penghubung kelompok user antara Mikrotik (RouterOS) dengan Radius (User Manager).
- Profile-Limitation adalah link / penghubung antara Profile dan Limitation.

Kesimpulan (2)

- Back office (office) memiliki Full rights untuk login internal hotel; pemilik, management and staff.
- Front office (f0) 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 (f0) dan dibandingkan dengan data daftar tamu hotel.

Kesimpulan (3)

- 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.
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