

Memisahkan Traffic Browsing dan Game Online Di Mikrotik

Untung Wahyudi
SMKN 1 Kota Bekasi

Tentang Saya :

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- Salah Satu Santri Pesantren Networkers IDN.
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About SMKN 1 Bekasi



Mikrotik Academy



About Pesantren Networkers



About Pesantren Networkers



Pemisahan Traffic Browsing & Game



Tujuan Pemisahan

- Agar ada skala prioritas antara Traffic Game dan Browsing
- Ketika ada yang Streaming maka Bandwidth Game tidak akan terganggu

Pemisahan Traffic

Untuk scenario ini , ada beberapa hal yang perlu dikonfigurasi , seperti :

- Marking Paket Game dan Browsing (Mangle)
- Management Bandwidth :
 - Konfigurasi PCQ Upload dan Download
 - Konfigurasi Queue Tree untuk Game dan Browsing (Download/Upload)

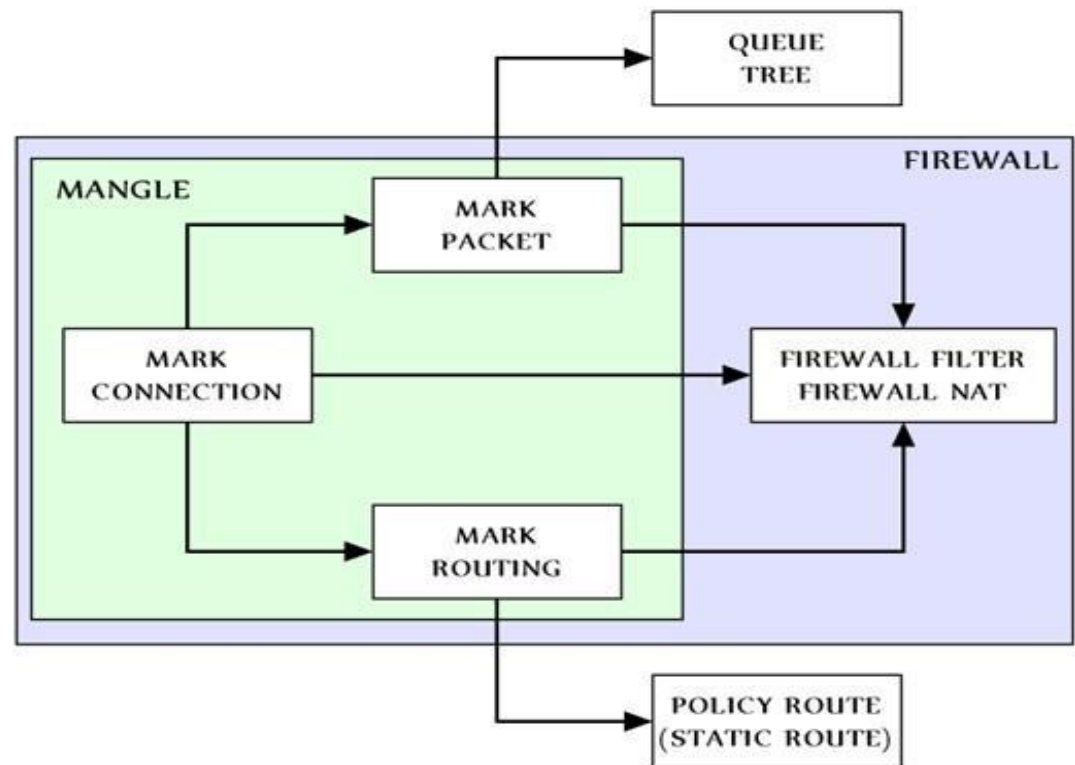
MANGLE

- Mangle adalah cara untuk menandai (marking) paket paket data tertentu. Tanda tersebut dapat diterapkan di fitur fitur mikrotik lainnya .
- Marking ini hanya bisa digunakan pada router yang sama dan tidak terbaca di router lain

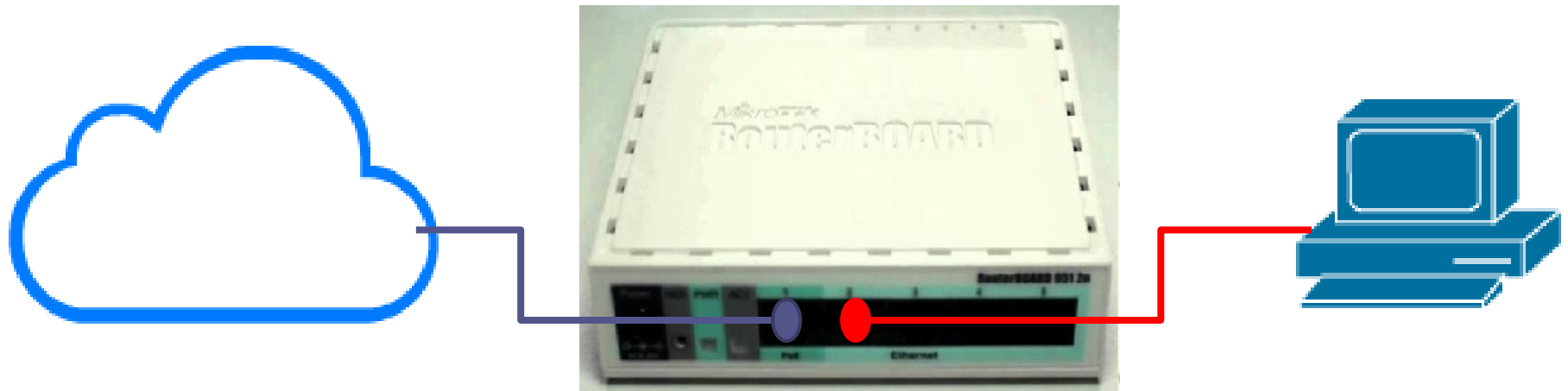
Penggunaan Mangle

- Ada 3 Jenis Marking yang dapat digunakan di Mikrotik , yaitu :

- Connection Mark
- Packet Mark
- Route Mark



Topology Jaringan



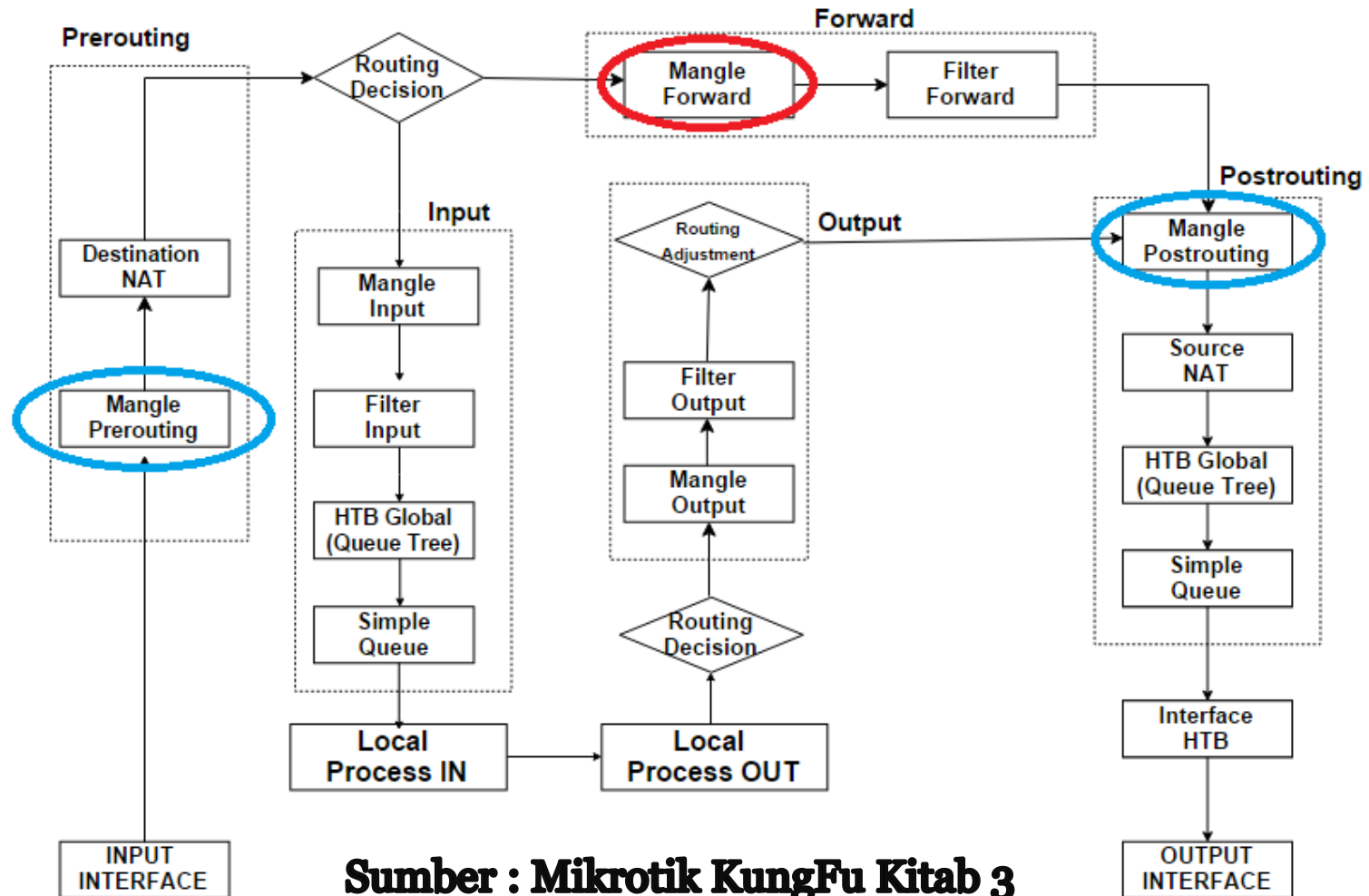
Langkah Konfigurasi

- Tandai Koneksi dan Packet dari setiap Game
- Untuk menandai Koneksi game bisa berpatokan pada Protocol dan Port Setiap Game
- Untuk mengecek Protocol dan Port Game bisa dilakukan secara manual dengan fitur Torch. Atau bisa di cari internet

Jenis Chain pada Mangle

- **Prerouting**
- **Input**
- **Forward**
- **Output**
- **Postrouting**

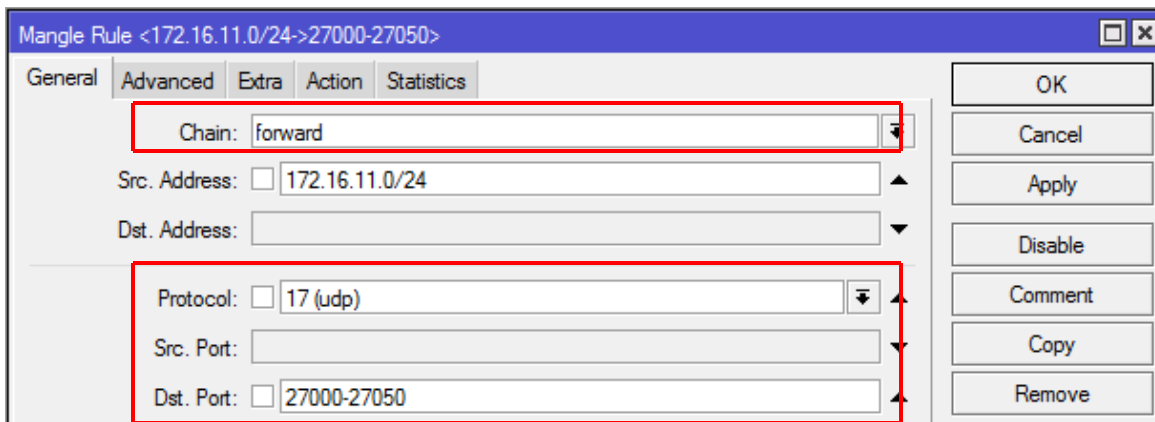
Pemilihan Chain pada Mangle



**Sumber : Mikrotik KungFu Kitab 3
Rendra Towidjojo**

Mangle Untuk Game.

Konfigurasi Mark-Connection untuk setiap Game



Mangle Rule <172.16.11.0/24->27000-27050>

General | Advanced | Extra | Action | Statistics

Chain: forward

Src. Address: 172.16.11.0/24

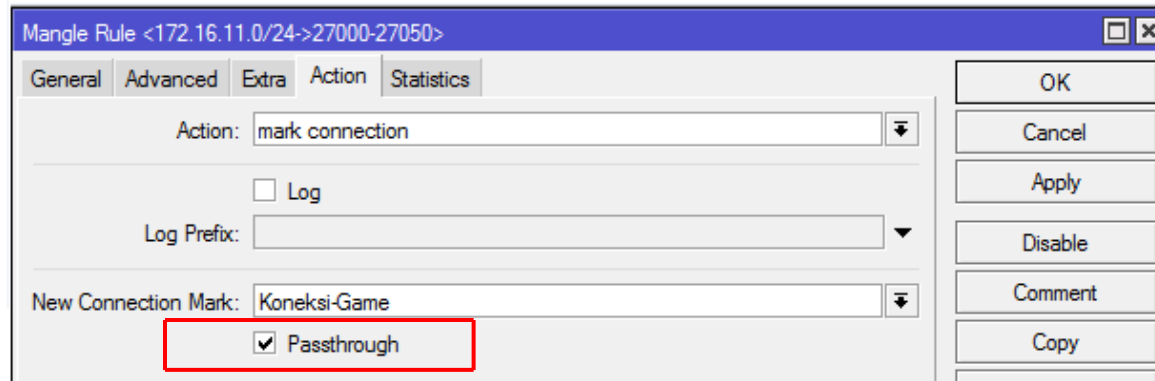
Dst. Address:

Protocol: 17 (udp)

Src. Port:

Dst. Port: 27000-27050

OK
Cancel
Apply
Disable
Comment
Copy
Remove



Mangle Rule <172.16.11.0/24->27000-27050>

General | Advanced | Extra | Action | Statistics

Action: mark connection

Log

Log Prefix:

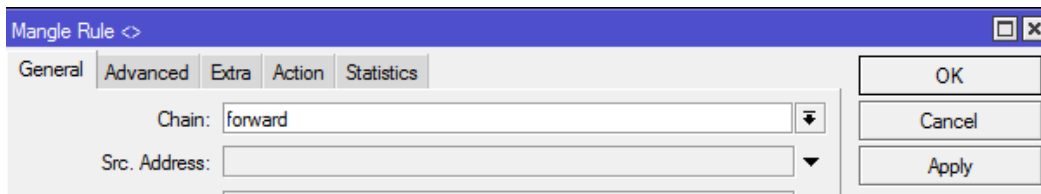
New Connection Mark: Koneksi-Game

Passthrough

OK
Cancel
Apply
Disable
Comment
Copy

Mangle Untuk Game.

Konfigurasi Mark-Packet untuk Koneksi-Game



Mangle Rule <>

General | Advanced | Extra | Action | Statistics

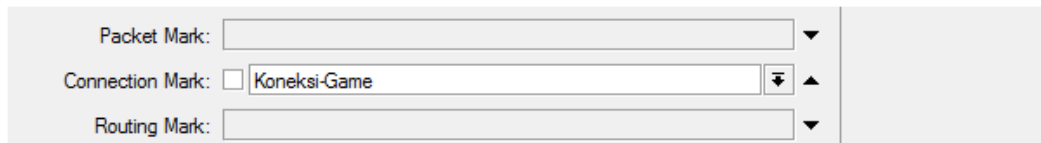
Chain: forward

Src. Address:

OK

Cancel

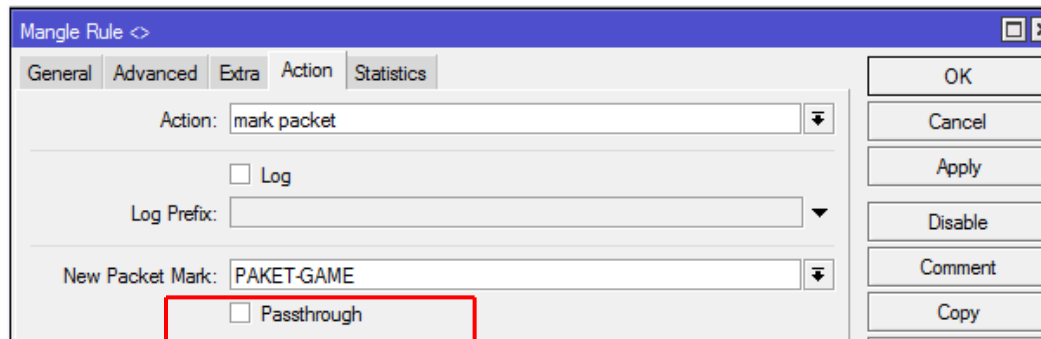
Apply



Packet Mark:

Connection Mark: Koneksi-Game

Routing Mark:



Mangle Rule <>

General | Advanced | Extra | Action | Statistics

Action: mark packet

Log

Log Prefix:

New Packet Mark: PAKET-GAME

Passthrough

OK

Cancel

Apply

Disable

Comment

Copy

Mangle Untuk Game.

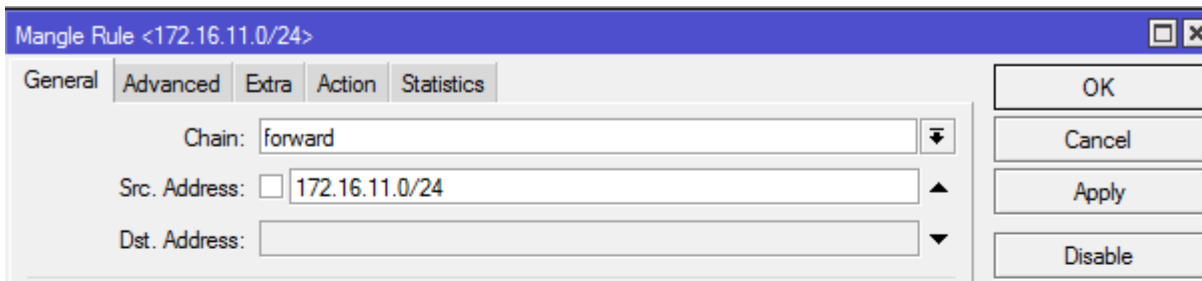
Firewall												
Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols												
+ - ✓ ✗ [] [] Reset Counters 00 Reset All Counters												
#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets	
::: AYO DANCE												
0	mar...	forward	172.16.11.0/24		6 (tcp)		18901-18909			0 B	0	
::: Counter Strike												
1	mar...	forward	172.16.11.0/24		6 (tcp)		36567,8001			0 B	0	
2	mar...	forward	172.16.11.0/24		17 (u...)		8001			0 B	0	
::: Dragon Nest												
3	mar...	forward	172.16.11.0/24		6 (tcp)		14300-14440			0 B	0	
4	mar...	forward	172.16.11.0/24		6 (tcp)		14400-14401			0 B	0	
5	mar...	forward	172.16.11.0/24		17 (u...)		15100-15150			0 B	0	
::: Lost Saga												
6	mar...	forward	172.16.11.0/24		17 (u...)		14009-14026			0 B	0	
7	mar...	forward	172.16.11.0/24		6 (tcp)		14009,14010			0 B	0	
::: Point Blank												
8	mar...	forward	172.16.11.0/24		6 (tcp)		39190			0 B	0	
9	mar...	forward	172.16.11.0/24		17 (u...)		40000-40010			0 B	0	
::: Dota 2												
10	mar...	forward	172.16.11.0/24		17 (u...)		27000-27050			0 B	0	
11	mar...	forward	172.16.11.0/24		17 (u...)		4380,3478,4...			0 B	0	
12	mar...	forward	172.16.11.0/24		6 (tcp)		27014-27050			0 B	0	
::: Chaos Online												
13	mar...	forward	172.16.11.0/24		6 (tcp)		30000-30050			0 B	0	
14	mar...	forward	172.16.11.0/24		17 (u...)		20000-20020			0 B	0	
::: PACKET GAME ONLINE												
15	mar...	forward								0 B	0	

Mangle Selain Game

- Untuk mangle selain game ini akan cukup mudah , tinggal membuat rule dari koneksi semua client selain dari mangle game diatas.

Mangle Untuk Selain Game

Konfigurasi Mark-Connection untuk SELAIN Game



Mangle Rule <172.16.11.0/24>

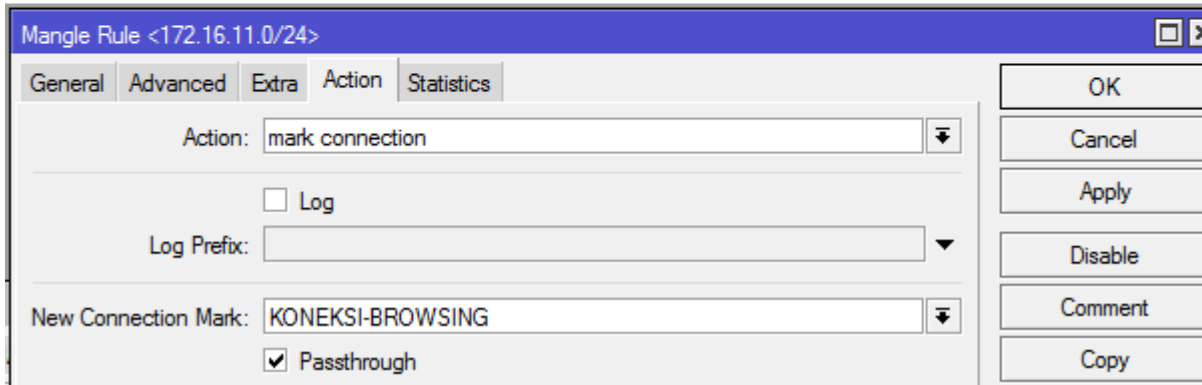
General | Advanced | Extra | Action | Statistics

Chain: forward

Src. Address: 172.16.11.0/24

Dst. Address:

OK
Cancel
Apply
Disable



Mangle Rule <172.16.11.0/24>

General | Advanced | Extra | Action | Statistics

Action: mark connection

Log

Log Prefix:

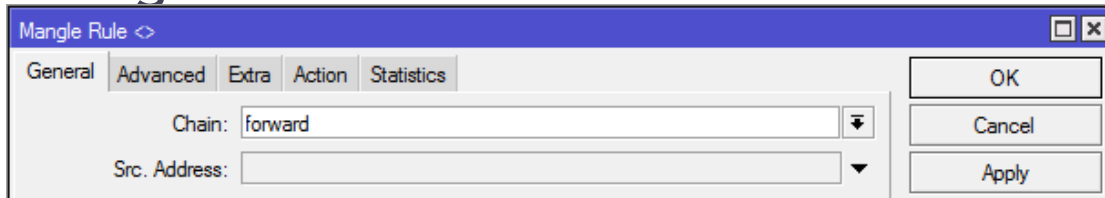
New Connection Mark: KONEKSI-BROWSING

Passthrough

OK
Cancel
Apply
Disable
Comment
Copy

Mangle Untuk Selain Game

Konfigurasi Mark-Packet untuk Koneksi-Browsing



Mangle Rule <>

General Advanced Extra Action Statistics

Chain: forward

Src. Address:

OK

Cancel

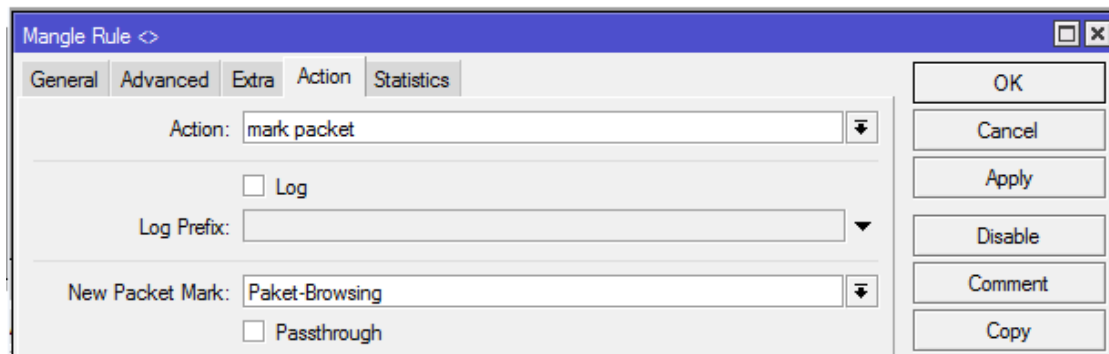
Apply



Packet Mark:

Connection Mark: KONEKSI-BROWSING

Routing Mark:



Mangle Rule <>

General Advanced Extra Action Statistics

Action: mark packet

Log

Log Prefix:

New Packet Mark: Paket-Browsing

Passthrough

OK

Cancel

Apply

Disable

Comment

Copy

Hasil Akhir Marking .

Firewall												
Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols												
00 Reset All Counters												
#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets	
::: AYO DANCE												
0	mar...	forward	172.16.11.0/24		6 (tcp)		18901-18909			0 B	0	
::: Counter Strike												
1	mar...	forward	172.16.11.0/24		6 (tcp)		36567,8001			0 B	0	
2	mar...	forward	172.16.11.0/24		17 (u...		8001			0 B	0	
::: Dragon Nest												
3	mar...	forward	172.16.11.0/24		6 (tcp)		14300-14440			0 B	0	
4	mar...	forward	172.16.11.0/24		6 (tcp)		14400-14401			0 B	0	
5	mar...	forward	172.16.11.0/24		17 (u...		15100-15150			0 B	0	
::: Lost Saga												
6	mar...	forward	172.16.11.0/24		17 (u...		14009-14026			0 B	0	
7	mar...	forward	172.16.11.0/24		6 (tcp)		14009,14010			0 B	0	
::: Point Blank												
8	mar...	forward	172.16.11.0/24		6 (tcp)		39190			0 B	0	
9	mar...	forward	172.16.11.0/24		17 (u...		40000-40010			0 B	0	
::: Dota 2												
10	mar...	forward	172.16.11.0/24		17 (u...		27000-27050			0 B	0	
11	mar...	forward	172.16.11.0/24		17 (u...		4380,3478,4...			0 B	0	
12	mar...	forward	172.16.11.0/24		6 (tcp)		27014-27050			0 B	0	
::: Chaos Online												
13	mar...	forward	172.16.11.0/24		6 (tcp)		30000-30050			0 B	0	
14	mar...	forward	172.16.11.0/24		17 (u...		20000-20020			0 B	0	
::: PACKET GAME ONLINE												
15	mar...	forward								0 B	0	
::: BROWSING												
16	mar...	forward	172.16.11.0/24							0 B	0	
17	mar...	forward								0 B	0	

About Passthrough

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

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

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets
::: AYO DANCE											
0	mar...	forward	172.16.11.0/24		6 (tcp)		18901-18909			0 B	0
::: Counter Strike											
1	mar...	forward	172.16.11.0/24		6 (tcp)		36567,8001			0 B	0
2	mar...	forward	172.16.11.0/24		17 (u...)		8001			0 B	0
::: Dragon Nest											
3	mar...	forward	172.16.11.0/24		6 (tcp)		14300-14440			0 B	0
4	mar...	forward	172.16.11.0/24		6 (tcp)		14400-14401			0 B	0
5	mar...	forward	172.16.11.0/24		17 (u...)		15100-15150			0 B	0
::: Lost Saga											
6	mar...	forward	172.16.11.0/24		17 (u...)		14009-14026			0 B	0
7	mar...	forward	172.16.11.0/24		6 (tcp)		14009,14010			0 B	0
8	mar...	forward	172.16.11.0/24		6 (tcp)		39190			0 B	0
9	mar...	forward	172.16.11.0/24		17 (u...)		40000-40010			0 B	0
::: Dota 2											
10	mar...	forward	172.16.11.0/24		17 (u...)		27000-27050			0 B	0
11	mar...	forward	172.16.11.0/24		17 (u...)		4380,3478,4...			0 B	0
12	mar...	forward	172.16.11.0/24		6 (tcp)		27014-27050			0 B	0
::: Chaos Online											
13	mar...	forward	172.16.11.0/24		6 (tcp)		30000-30050			0 B	0
14	mar...	forward	172.16.11.0/24		17 (u...)		20000-20020			0 B	0
::: PACKET GAME ONLINE											
15	mar...	forward								0 B	0
::: BROWSING											
16	mar...	forward	172.16.11.0/24							0 B	0
17	mar...	forward								0 B	0

Passthrough = Yes (indicated by a red arrow pointing to rule 10)

Passthrough = No (indicated by a red arrow pointing to rule 15)

Mark= Koneksi Game (indicated by a black callout pointing to rule 6)

Mark= Packet Game (indicated by a black callout pointing to rule 11)

About Passthrough

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

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

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets
::: AYO DANCE											
0	[pencil] mar...	forward	172.16.11.0/24		6 (tcp)		18901-18909			0 B	0
::: Counter Strike											
1	[pencil] mar...	forward	172.16.11.0/24		6 (tcp)		36567,8001			0 B	0
2	[pencil] mar...	forward	172.16.11.0/24		17 (u...)		8001			0 B	0
::: Dragon Nest											
3	[pencil] mar...	forward	172.16.11.0/24		6 (tcp)		14300-14440			0 B	0
4	[pencil] mar...	forward	172.16.11.0/24		6 (tcp)		14400-14401			0 B	0
5	[pencil] mar...	forward	172.16.11.0/24		17 (u...)		15100-15150			0 B	0
::: Lost Saga											
6	[pencil] mar...	forward	172.16.11.0/24		17 (u...)		14009-14026			0 B	0
7	[pencil] mar...	forward	172.16.11.0/24		6 (tcp)		14009,14010			0 B	0
::: Point Blank											
8	[pencil] mar...	forward	172.16.11.0/24		6 (tcp)		39190			0 B	0
9	[pencil] mar...	forward	172.16.11.0/24		17 (u...)		40000-40010			0 B	0
::: Dota 2											
10	[pencil] mar...	forward	172.16.11.0/24		17 (u...)		27000-27050			0 B	0
11	[pencil] mar...	forward	172.16.11.0/24		17 (u...)		4380,3478,4...			0 B	0
12	[pencil] mar...	forward	172.16.11.0/24		6 (tcp)		27014-27050			0 B	0
::: Chaos Online											
13	[pencil] mar...	forward	172.16.11.0/24		6 (tcp)		30000-30050			0 B	0
14	[pencil] mar...	forward	172.16.11.0/24		17 (u...)		20000-20026			0 B	0
::: PACKET GAME ONLINE											
15	[pencil] mar...	forward									
::: BROWSING											
16	[pencil] mar...	forward	172.16.11.0/24							0 B	0
17	[pencil] mar...	forward								0 B	0

Passthrough = Yes

Mark= Packet Game

Mark= Packet Browsing

Management Bandwidth

- Untuk contoh disini saya menggunakan Akses Internet sebesar 5Mb
- Akan dibagi mejadi :
- 4 Mb Browsing
- 1 Mb Game

Konfigurasi PCQ

Queue List

Simple Queues | Interface Queues | Queue Tree | Queue Types

+ - Filter Find

Queue Type <PCQ-Download>

Type Name: PCQ-Download OK

Kind: pcq Cancel

Rate: 0 Apply

Limit: 50 Copy

Total Limit: 2000 Remove

Burst Rate: ▾

Burst Threshold: ▾

Burst Time: 00:00:10

- Classifier

Src. Address Dst. Address

Src. Port Dst. Port

Src. Address Mask: 32

Dst. Address Mask: 32

Src. Address6 Mask: 64

Dst. Address6 Mask: 64

Queue Type <PCQ-Upload>

Type Name: PCQ-Upload OK

Kind: pcq Cancel

Rate: 0 Apply

Limit: 50 Copy

Total Limit: 2000 Remove

Burst Rate: ▾

Burst Threshold: ▾

Burst Time: 00:00:10

- Classifier

Src. Address Dst. Address

Src. Port Dst. Port

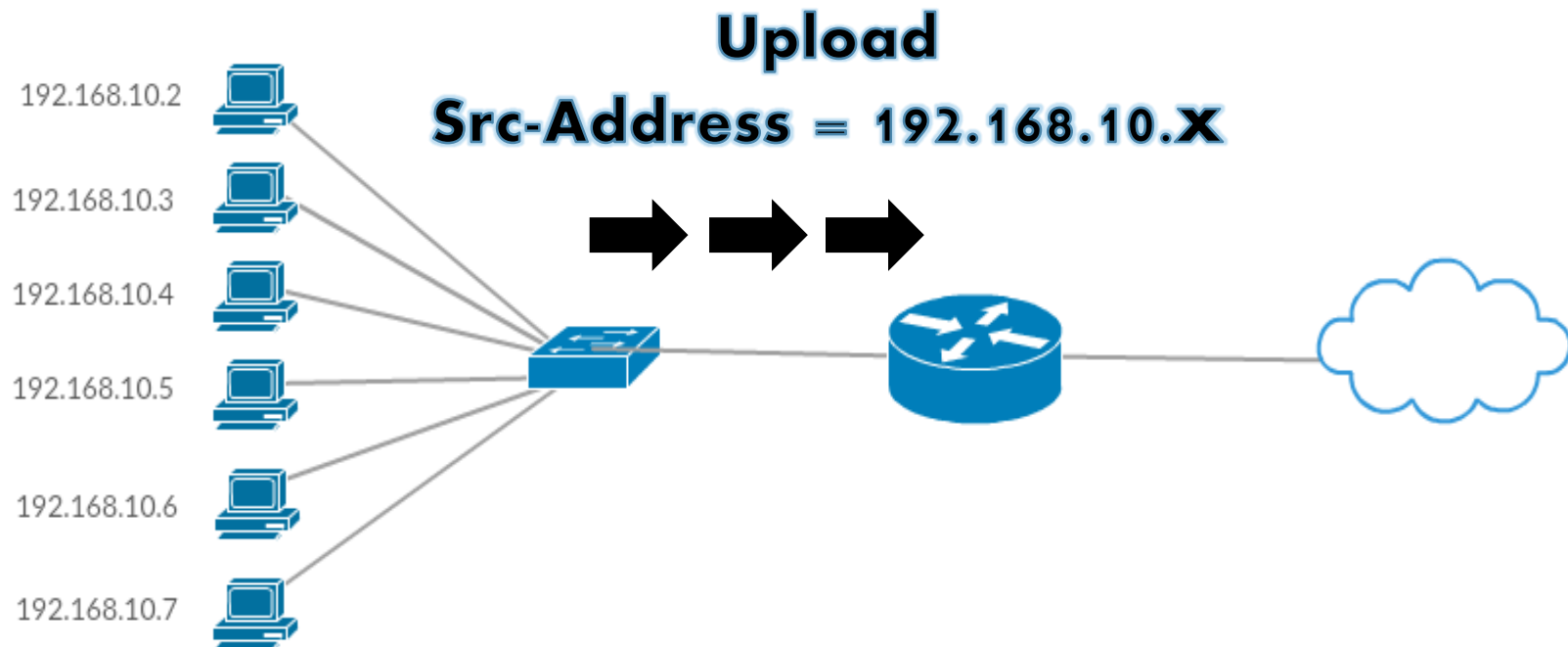
Src. Address Mask: 32

Dst. Address Mask: 32

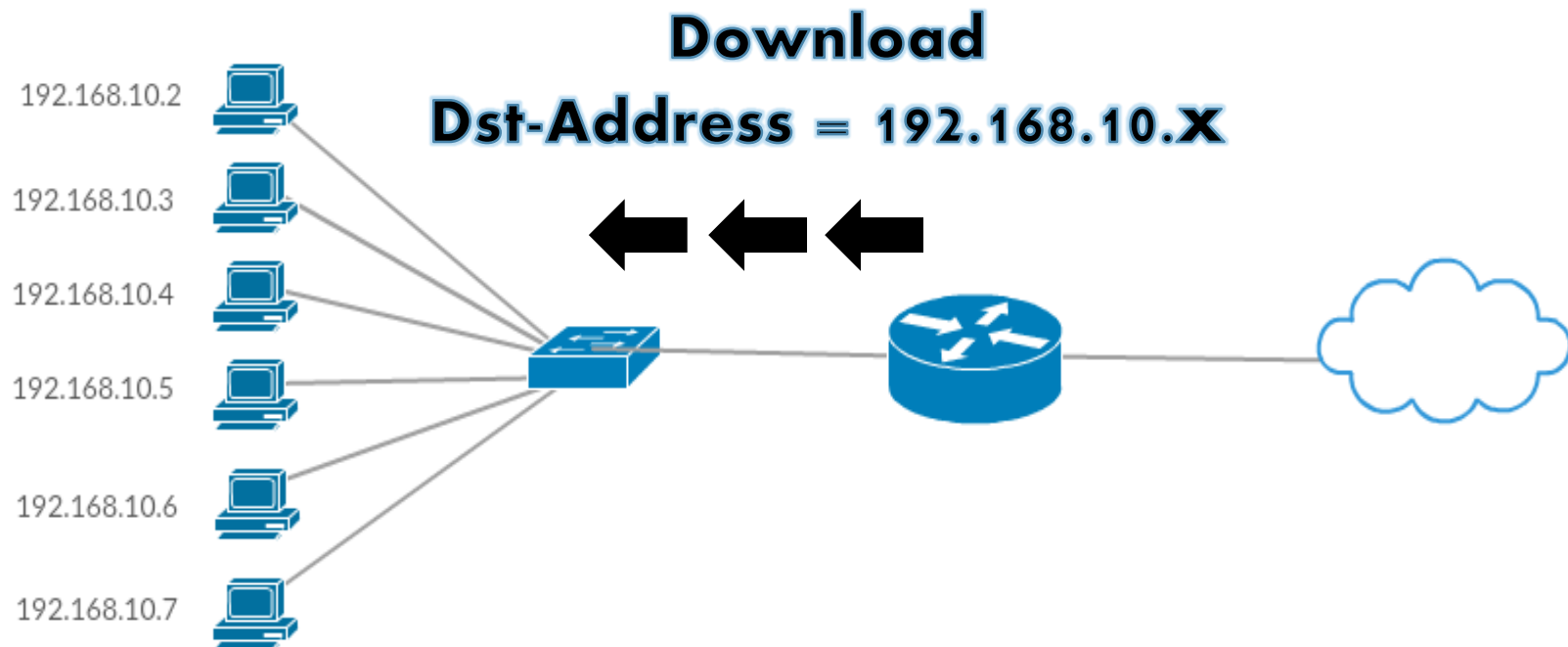
Src. Address6 Mask: 64

Dst. Address6 Mask: 64

PCQ-Classfier



PCQ-Classfier



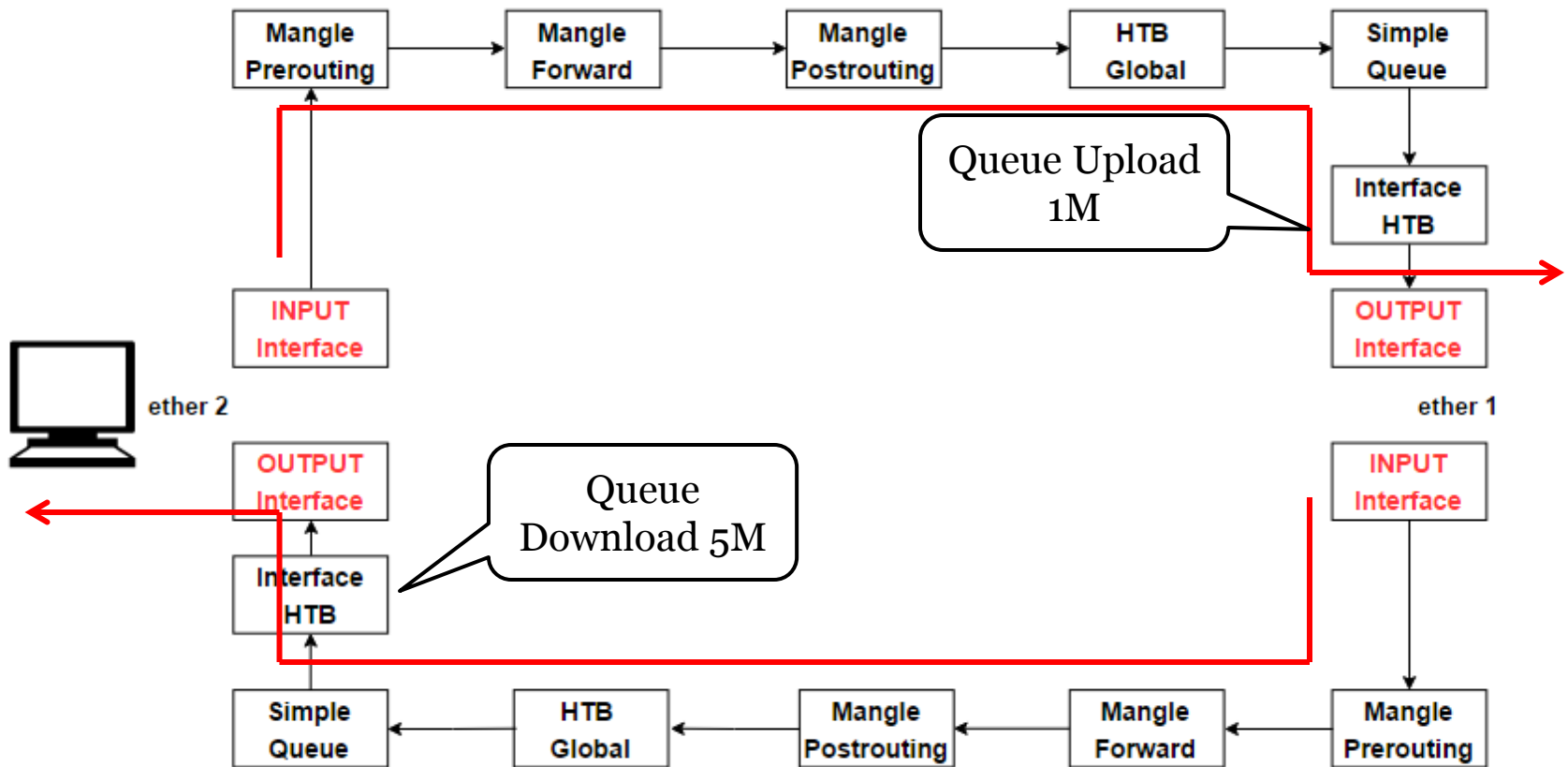
QUEUE TREE

Pemberian Total Download dan Upload

The image shows a screenshot of the Mikrotik Queue List configuration interface. The main window is titled 'Queue List' and has tabs for 'Simple Queues', 'Interface Queues', 'Queue Tree', and 'Queue Types'. Two configuration windows are open:

- Queue <Total Download>**:
 - General tab selected.
 - Name: Total Download
 - Parent: ether2 (highlighted with a red box)
 - Packet Marks: (empty)
 - Queue Type: default
 - Priority: 8
 - Limit At: (empty) bits/s
 - Max Limit: 5M bits/s
 - Burst Limit: (empty) bits/s
 - Burst Threshold: (empty) bits/s
 - Burst Time: (empty) s
 - Buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove, Reset Counters, Reset All Counters.
 - Status: enabled
- Queue <Total-Upload>**:
 - General tab selected.
 - Name: Total-Upload
 - Parent: ether1 (highlighted with a red box)
 - Packet Marks: (empty)
 - Queue Type: default
 - Priority: 8
 - Limit At: (empty) bits/s
 - Max Limit: 1M bits/s
 - Burst Limit: (empty) bits/s
 - Burst Threshold: (empty) bits/s
 - Burst Time: (empty) s
 - Buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove, Reset Counters, Reset All Counters.
 - Status: enabled

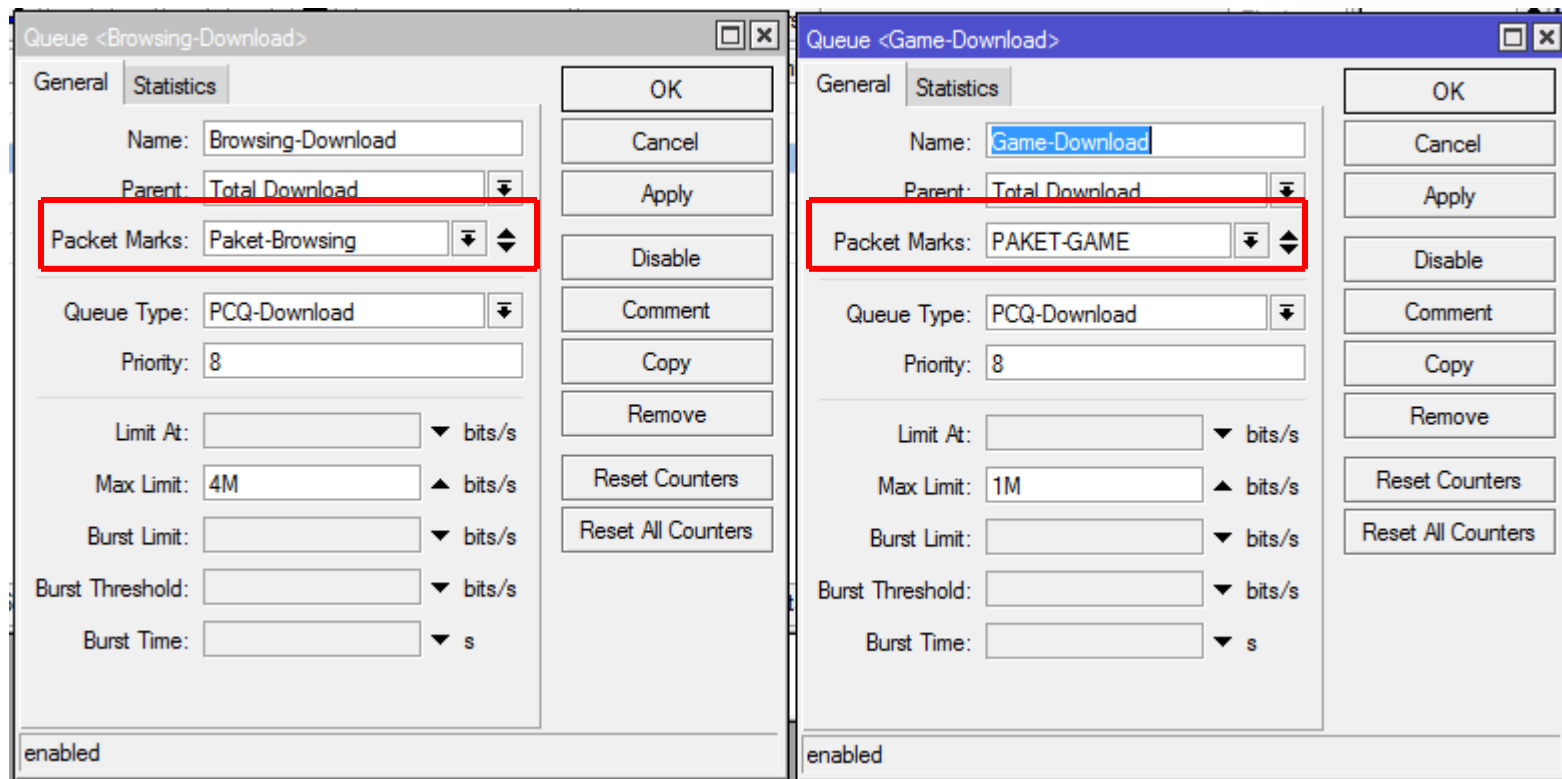
Parent Untuk Upload dan Download



**Sumber : Mikrotik KungFu Kitab 3
Rendra Towidjojo**

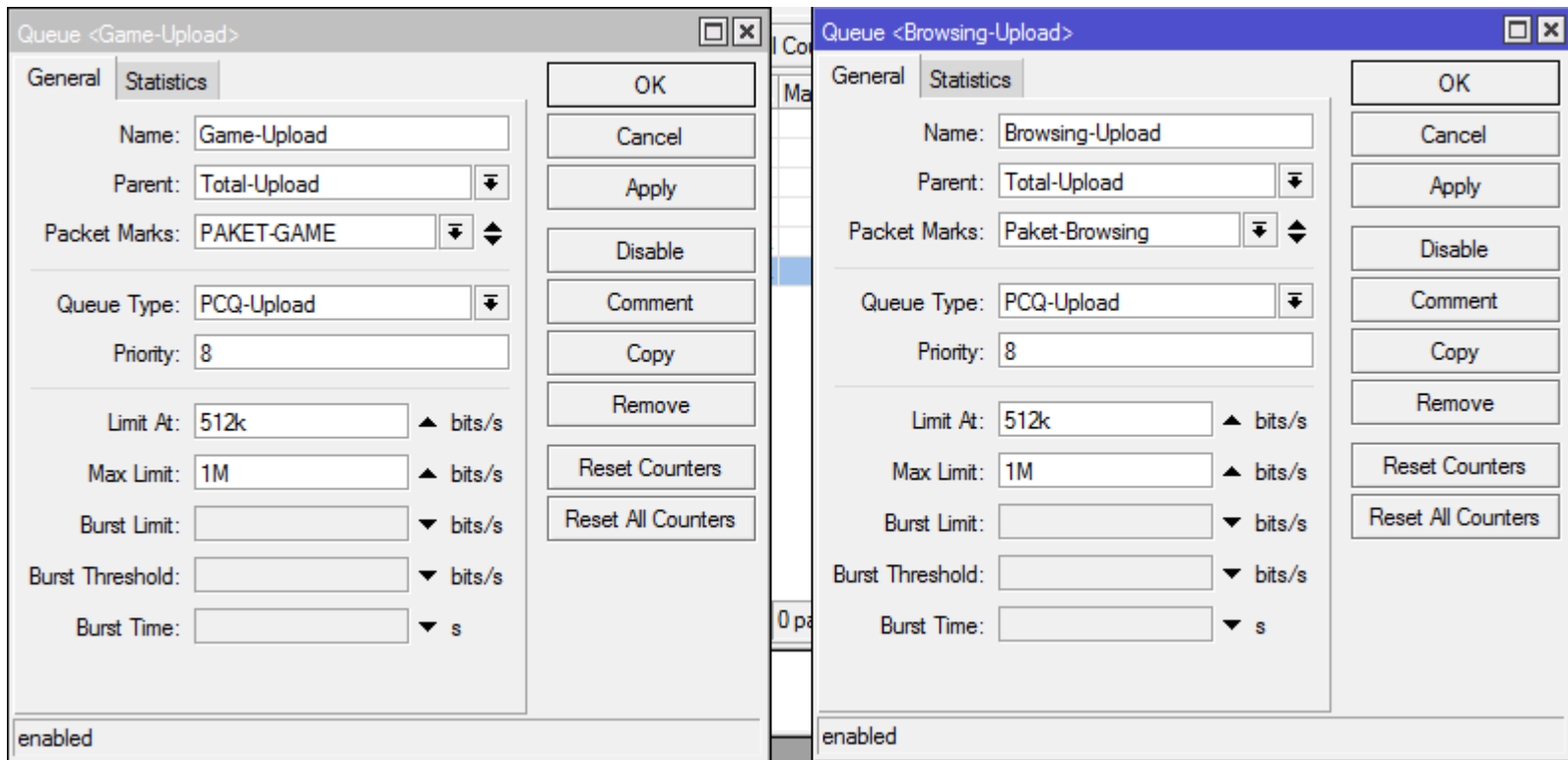
QUEUE TREE

Pemberian Bandwidth DOWNLOAD untuk Game dan Browsing



QUEUE TREE

Pemberian Bandwidth UPLOAD untuk Game dan Browsing



HASIL AKHIR QUEUE TREE

Name	Parent	Packet Marks	Limit At...	Max Limit ...	Avg. Rate	Queued Bytes	Bytes	F
Total Download	ether2			5M	0 bps	0 B	0 B	
Browsing-Download	Total Download	Paket-Browsing		4M	0 bps	0 B	0 B	
Game-Download	Total Download	PAKET-GAME		1M	0 bps	0 B	0 B	
Total-Upload	ether1			1M	0 bps	0 B	0 B	
Browsing-Upload	Total-Upload	Paket-Browsing	512k	1M	0 bps	0 B	0 B	
Game-Upload	Total-Upload	PAKET-GAME	512k	1M	0 bps	0 B	0 B	

PENGUJIAN

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

+ - ✓ ✗ [Filter Icon] 00 Reset Counters 00 Reset All Counters Find all

#	Action	Chain	Src. Address	Dst. Address	Protocol	Src. Port	Dst. Port	In. Inter...	Bytes	Packets
13	mar...	forward	172.16.11.0/24		6 (tcp)		7201-7208		0 B	0
14	mar...	forward								
15	mar...	forward								
... Anime Fighter										
16	mar...	forward								
... Chaos Online										
17	mar...	forward								
18	mar...	forward								
... FIFA Online 3										
19	mar...	forward								
20	mar...	forward								
21	mar...	forward								
... BROWSING										
22	mar...	forward								
23	mar...	forward								

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

+ - ✓ ✗ [Filter Icon] Reset Counters 00 Reset All Counters Find

Name	Parent	Packet Marks	Limit At...	Max Limit ...	Avg. Rate	Queued Bytes	Bytes	Packets
Total Download	ether2			5M	86.0 kbps	0 B	34.2 MiB	38 330
Browsing-Download	Total Download	Paket-Browsing		4M	86.0 kbps	0 B	34.2 MiB	38 321
Game-Download	Total Download	PAKET-GAME		1M	0 bps	0 B	0 B	0
Total-Upload	ether1			1M	3.4 kbps	0 B	2932.8 ...	22 048
Browsing-Upload	Total-Upload	Paket-Browsing	512k	1M	3.4 kbps	0 B	2932.8 ...	22 048
Game-Upload	Total-Upload	PAKET-GAME	512k	1M	0 bps	0 B	0 B	0

24 items (1 selected)



TERIMA KASIH