

Memisahkan Traffic Browsing dan Game Online Di Mikrotik

Untung Wahyudi
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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)

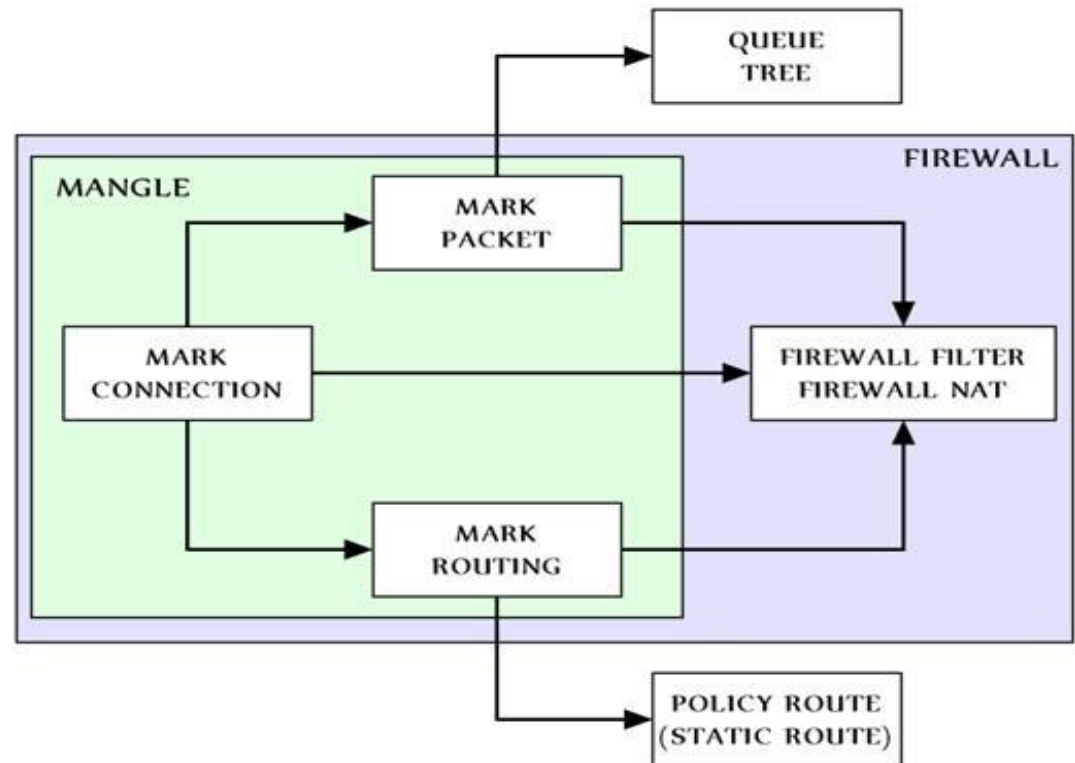
MANGLE

- 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

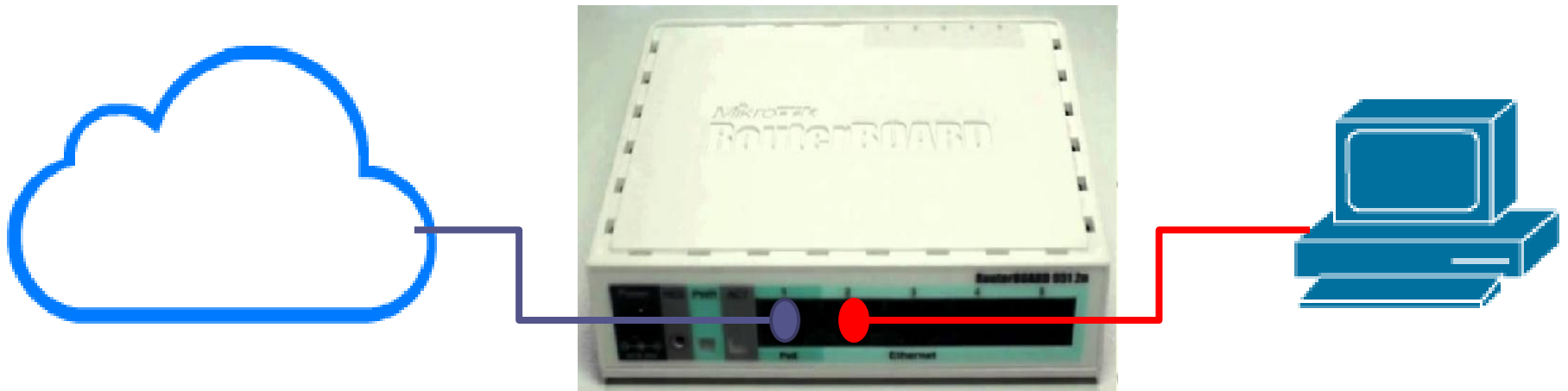
Penggunaan Mangle

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

- Connection Mark
- Packet Mark
- Route Mark



Topology Jaringan



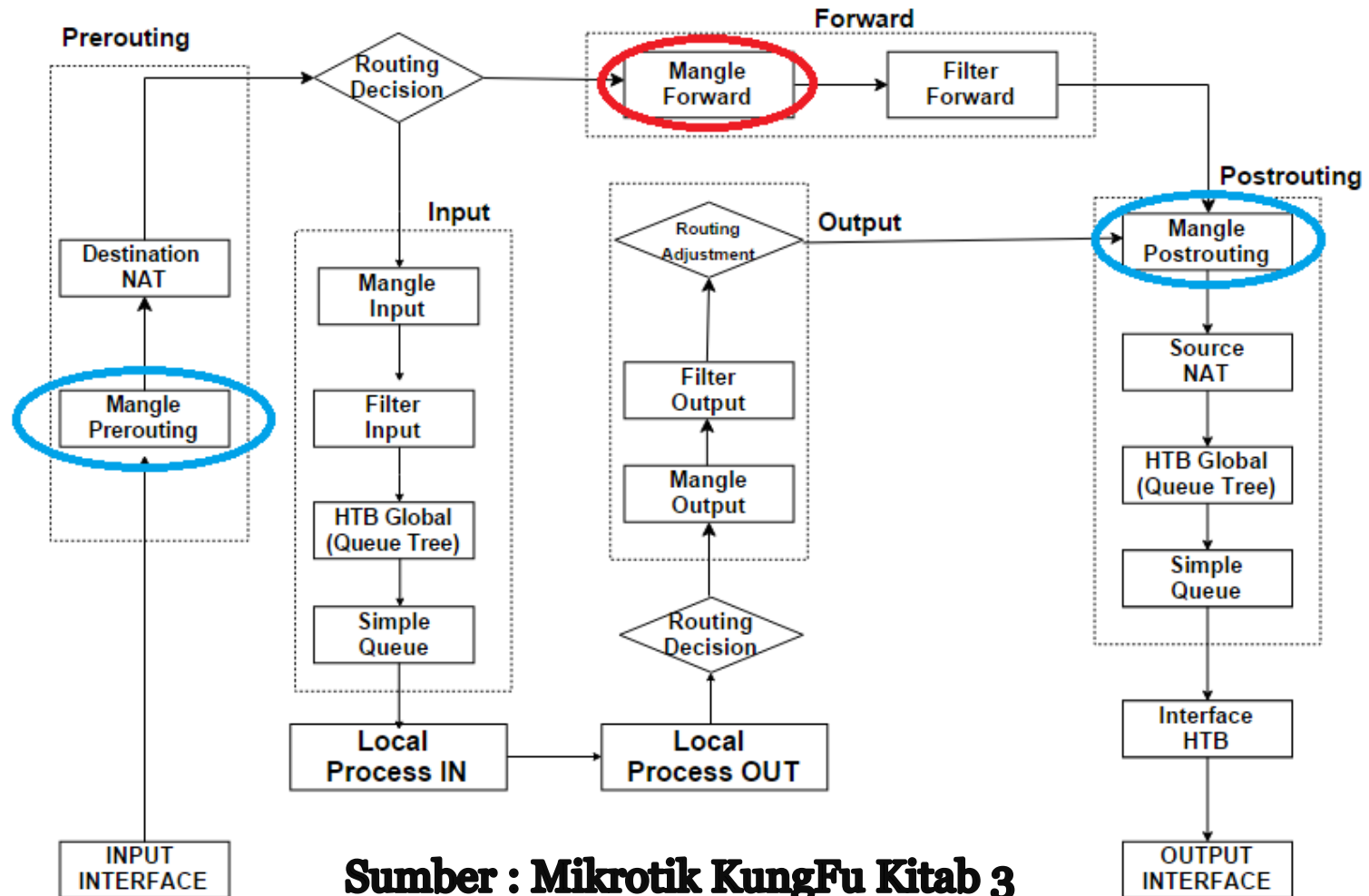
Langkah Konfigurasi

- 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

The image shows the 'General' tab of a Mangle Rule configuration window. The title bar reads 'Mangle Rule <172.16.11.0/24->27000-27050>'. The tabs are 'General', 'Advanced', 'Extra', 'Action', and 'Statistics'. The 'Chain' is set to 'forward'. The 'Src. Address' is '172.16.11.0/24'. The 'Dst. Address' is empty. The 'Protocol' is '17 (udp)'. The 'Src. Port' is empty. The 'Dst. Port' is '27000-27050'. On the right, there are buttons for 'OK', 'Cancel', 'Apply', 'Disable', 'Comment', 'Copy', and 'Remove'. Red boxes highlight the 'Chain' and 'Protocol' fields.



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

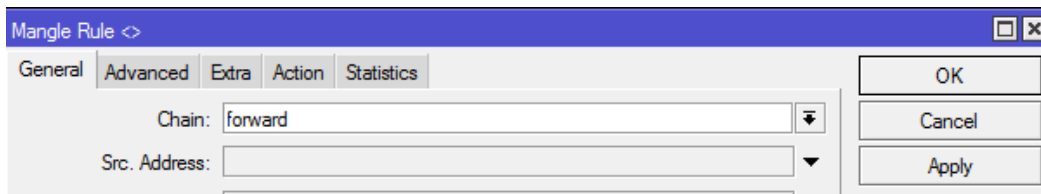
☒ Passthrough

OK Cancel Apply Disable Comment Copy

The image shows the 'Action' tab of the same Mangle Rule configuration window. The title bar and tabs are the same. The 'Action' is set to 'mark connection'. The 'Log' checkbox is unchecked. The 'Log Prefix' is empty. The 'New Connection Mark' is 'Koneksi-Game'. The 'Passthrough' checkbox is checked. On the right, there are buttons for 'OK', 'Cancel', 'Apply', 'Disable', 'Comment', and 'Copy'. A red box highlights the 'Passthrough' checkbox.

Mangle Untuk Game.

Konfigurasi Mark-Packet untuk Koneksi-Game



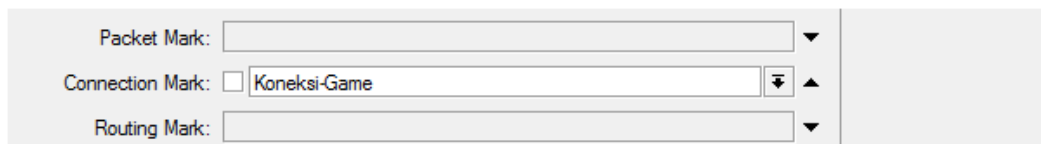
Mangle Rule <>

General Advanced Extra Action Statistics

Chain: forward

Src. Address:

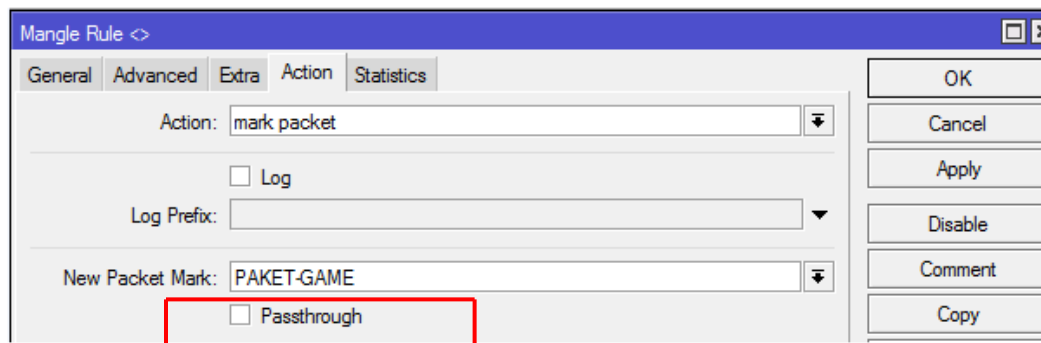
OK Cancel Apply



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

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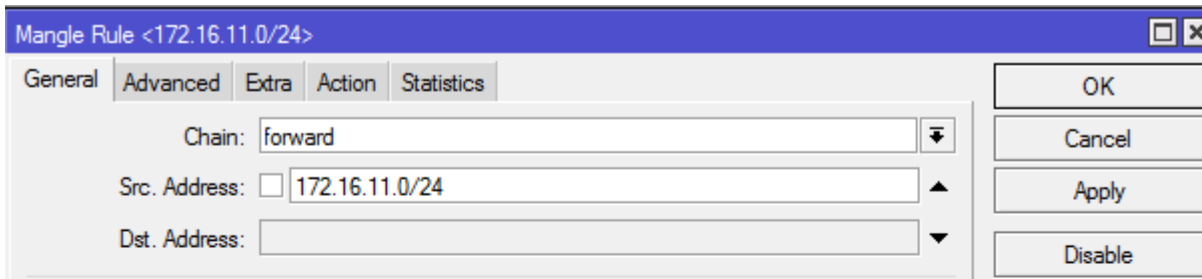
Firewall												
Filter Rules		NAT	Mangle	Service Ports	Connections	Address Lists	Layer7 Protocols					
#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets	
::: AYO DANCE												
0	mar...	forward	172.16.11.0/24		6 (tcp)		18901-18909			0 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>

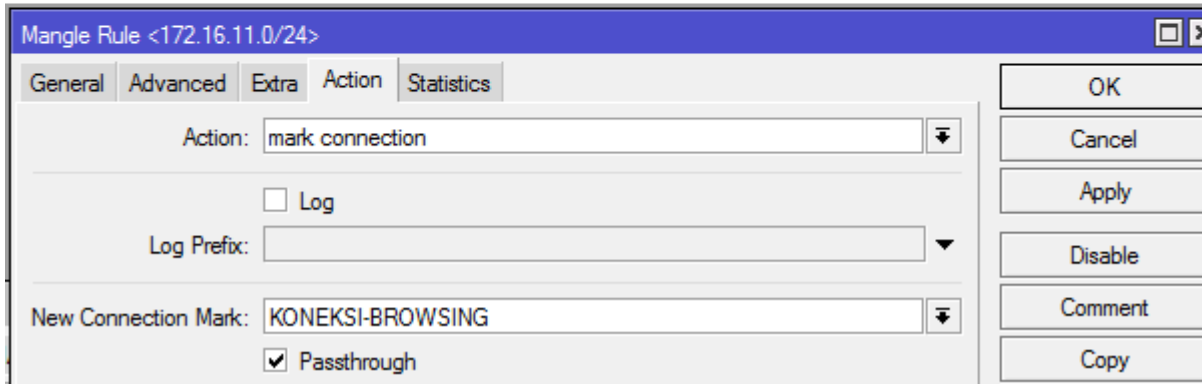
General Advanced Extra Action Statistics

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:

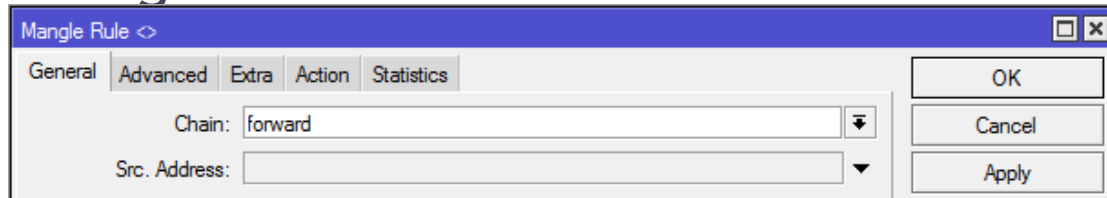
New Connection Mark: KONEKSI-BROWSING

☒ 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:

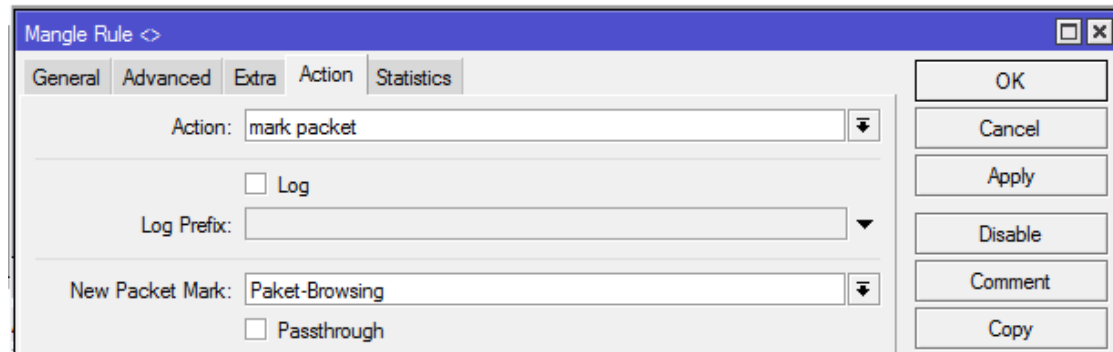
OK Cancel Apply



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					
#	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] [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

Mark= Koneksi Game

Mark= Packet Game

Passthrough = No

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	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...				17 (u...		4380,3478,4...			0 B	0	
12	mar...				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...		20000-20026			0 B	0	
... PACKET GAME ONLINE												
15	mar...	forward										
... BROWSING												
16	mar...	forward	172.16.11.0/24							0 B	0	
17	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

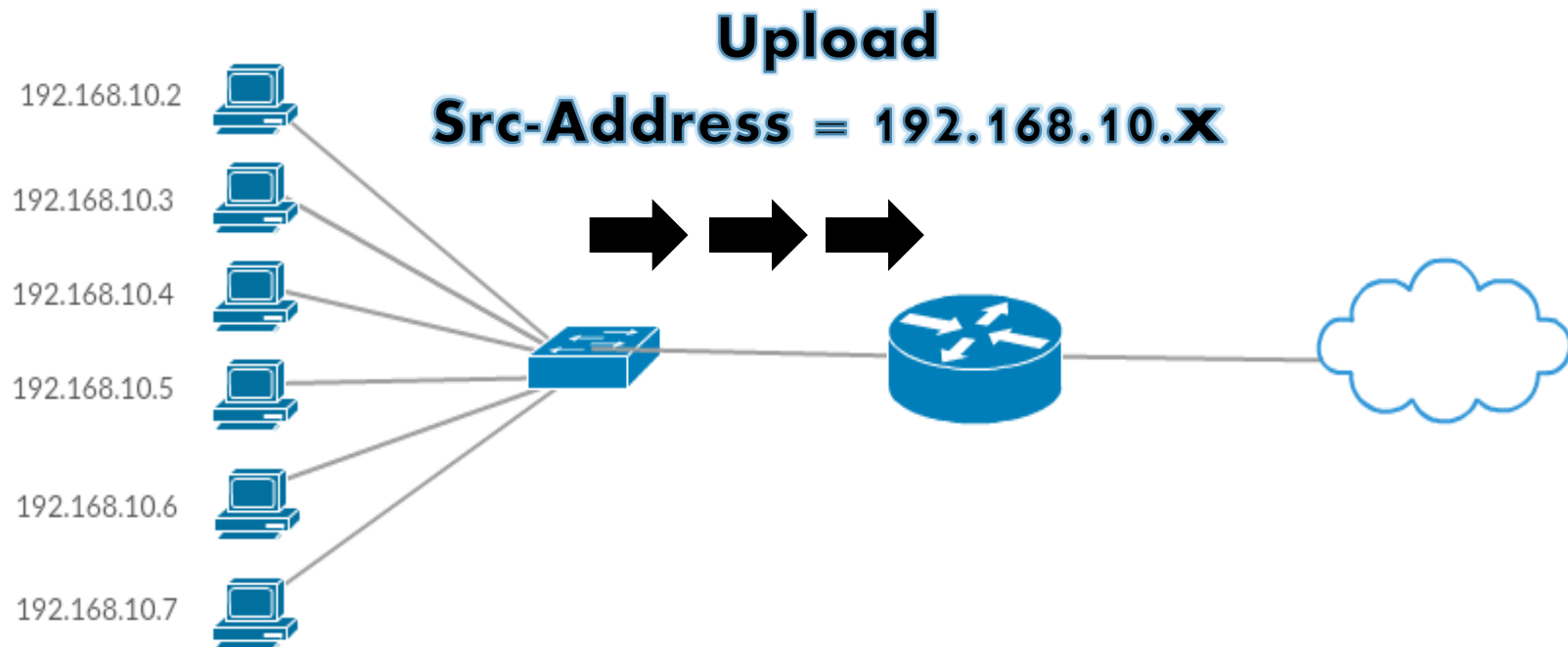
Src. Address Mask: 32

Dst. Address Mask: 32

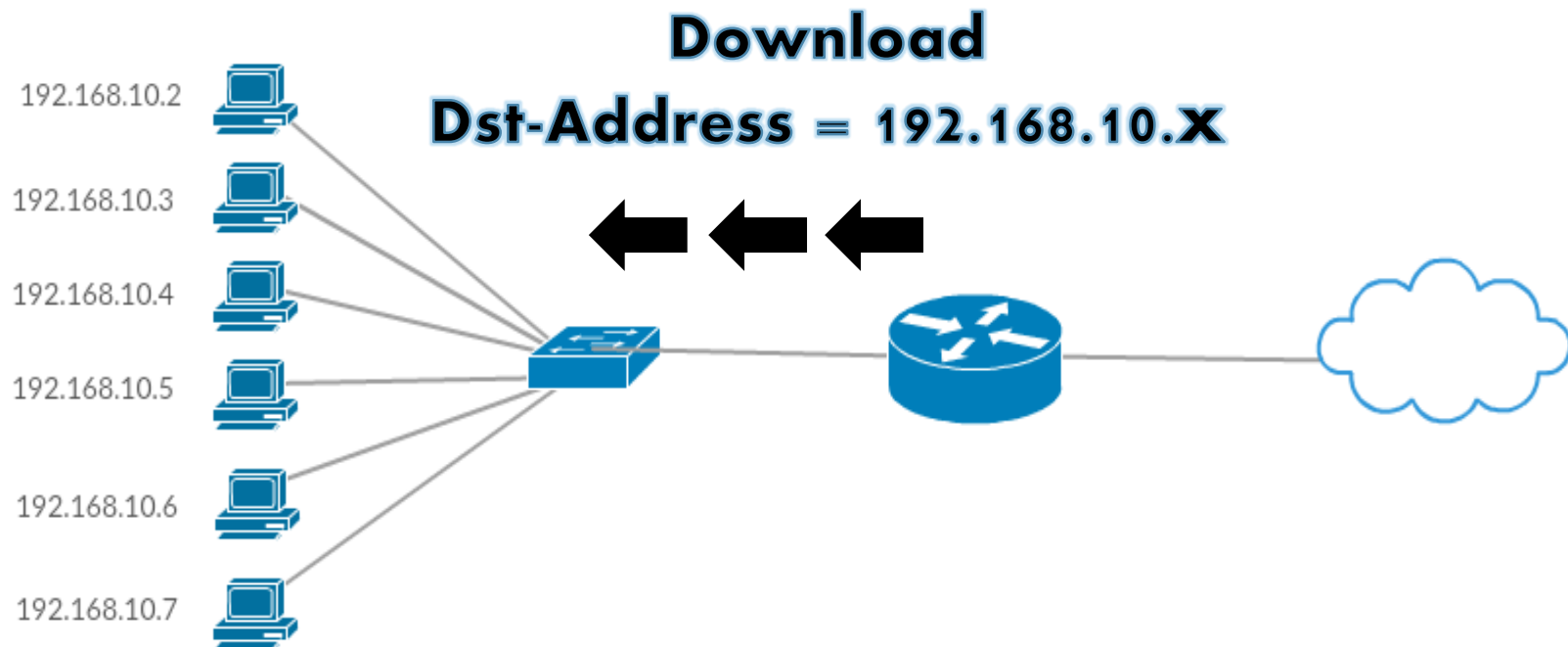
Src. Address6 Mask: 64

Dst. Address6 Mask: 64

PCQ-Classfier



PCQ-Classfier



QUEUE TREE

Pemberian Total Download dan Upload

The screenshot displays the Mikrotik Queue Manager interface. At the top, the 'Queue List' window is open, showing tabs for 'Simple Queues', 'Interface Queues', 'Queue Tree', and 'Queue Types'. Below this, two configuration windows are visible: 'Queue <Total Download>' and 'Queue <Total-Upload>'. Both windows have 'General' and 'Statistics' tabs. In the 'Queue <Total Download>' window, the 'Parent' field is set to 'ether2' and is highlighted with a red rectangle. In the 'Queue <Total-Upload>' window, the 'Parent' field is set to 'ether1' and is also highlighted with a red rectangle. Both queues are configured with 'Queue Type: default' and 'Priority: 8'. The 'Total Download' queue has a 'Max Limit' of 5M, while the 'Total Upload' queue has a 'Max Limit' of 1M. Both queues are marked as 'enabled' at the bottom of their respective windows.

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

Queue <Total Download>

General Statistics

Name: Total Download

Parent: ether2

Packet Marks:

Queue Type: default

Priority: 8

Limit At: bits/s

Max Limit: 5M bits/s

Burst Limit: bits/s

Burst Threshold: bits/s

Burst Time: s

OK Cancel Apply Disable Comment Copy Remove Reset Counters Reset All Counters

enabled

Queue <Total-Upload>

General Statistics

Name: Total-Upload

Parent: ether1

Packet Marks:

Queue Type: default

Priority: 8

Limit At: bits/s

Max Limit: 1M bits/s

Burst Limit: bits/s

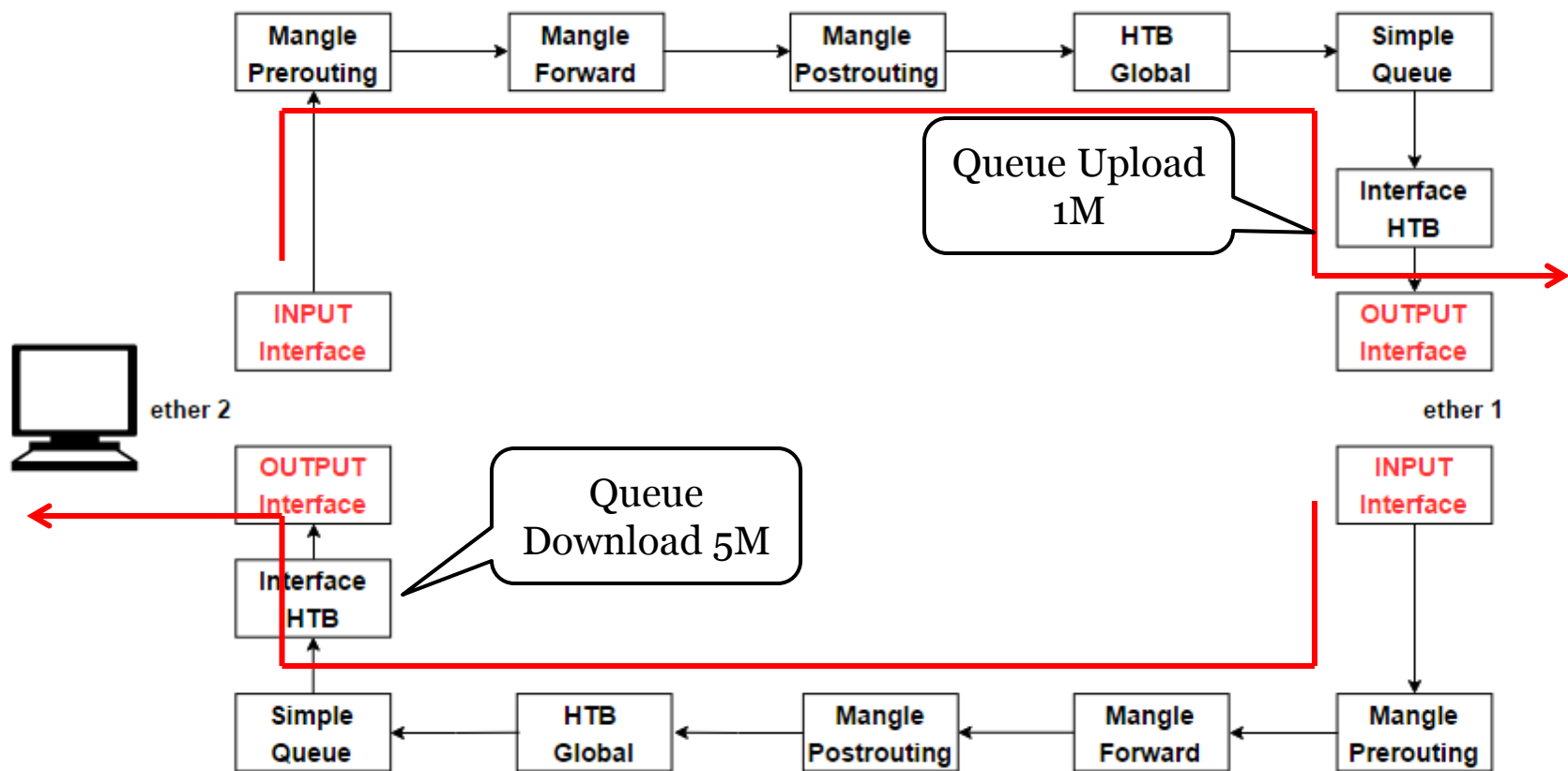
Burst Threshold: bits/s

Burst Time: s

OK Cancel Apply Disable Comment Copy Remove Reset Counters Reset All Counters

enabled

Parent Untuk Upload dan Download



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

QUEUE TREE

Pemberian Bandwidth DOWNLOAD untuk Game dan Browsing

The image displays two side-by-side screenshots of the Mikrotik Queue Manager configuration interface, specifically the 'General' tab for two different download queues.

Left Window: Queue <Browsing-Download>

- Name:** Browsing-Download
- Parent:** Total Download
- Packet Marks:** Paket-Browsing (highlighted with a red box)
- Queue Type:** PCQ-Download
- Priority:** 8
- Limit At:** (empty) bits/s
- Max Limit:** 4M bits/s
- Burst Limit:** (empty) bits/s
- Burst Threshold:** (empty) bits/s
- Burst Time:** (empty) s
- Status:** enabled

Right Window: Queue <Game-Download>

- Name:** Game-Download
- Parent:** Total Download
- Packet Marks:** PAKET-GAME (highlighted with a red box)
- Queue Type:** PCQ-Download
- 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
- Status:** enabled

QUEUE TREE

Pemberian Bandwidth UPLOAD untuk Game dan Browsing

Queue <Game-Upload>

General Statistics

Name: Game-Upload

Parent: Total-Upload

Packet Marks: PAKET-GAME

Queue Type: PCQ-Upload

Priority: 8

Limit At: 512k ▲ bits/s

Max Limit: 1M ▲ bits/s

Burst Limit: ▼ bits/s

Burst Threshold: ▼ bits/s

Burst Time: ▼ s

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

enabled

Queue <Browsing-Upload>

General Statistics

Name: Browsing-Upload

Parent: Total-Upload

Packet Marks: Paket-Browsing

Queue Type: PCQ-Upload

Priority: 8

Limit At: 512k ▲ bits/s

Max Limit: 1M ▲ bits/s

Burst Limit: ▼ bits/s

Burst Threshold: ▼ bits/s

Burst Time: ▼ s

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

enabled

HASIL AKHIR QUEUE TREE

The screenshot shows the "Queue List" window from Mikrotik WinBox. The "Simple Queues" tab is selected. Below the tabs are icons for adding (+), removing (-), checking (✓), deleting (✗), printing (🖨️), and filtering (funnel). There are also buttons for "Reset Counters" and "Reset All Counters". A search bar labeled "Find" is on the right.

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

+ - ✓ ✗ [Icon] [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								

24 items (1 selected)

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

+ - ✓ ✗ [Icon] [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



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