



# Introducing And Ideas In FastTrack Feature

## MUM 2019 LEBANON-BEIRUT

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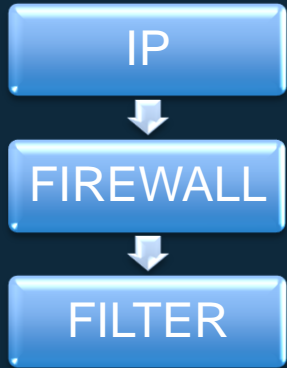
# FASTTRACK

- ◇ هذه الميزة متوفرة من الإصدار 6.29
- ◇ يعمل FastTrack بشكل تلقائي مع Connections المميزة
- ◇ يعمل على تسريع البايت ل Connection معين او كل البايت الموجودة في الراوتر
- ◇ يعمل ضمن الفايروول في Filter , Mangle
- ◇ تطبق على ال Connection التي تستخدم بروتوكول TCP – UDP
- ◇ يعتمد FastTrack على NAT (SNAT, DNAT or Both)
- ◇ يزيد من الأداء حتى 5x

# نتيجة تجربة هذه الميزة على راوتر بورد 2011

FastTrack	
Without	With
360Mbps	<b>890Mbps</b>
CPU 100%	<b>CPU 86%</b>
44% CPU on firewall	6% CPU on firewall
* tested on RB2011 with single TCP stream	





New Firewall Rule

General Advanced Extra Action Statistics

Chain: forward

Src. Address:

Dst. Address:

Protocol:

Src. Port:

Dst. Port:

Any. Port:

In. Interface:

Out. Interface:

In. Interface List:

Out. Interface List:

Packet Mark:

Connection Mark:

Routing Mark:

Routing Table:

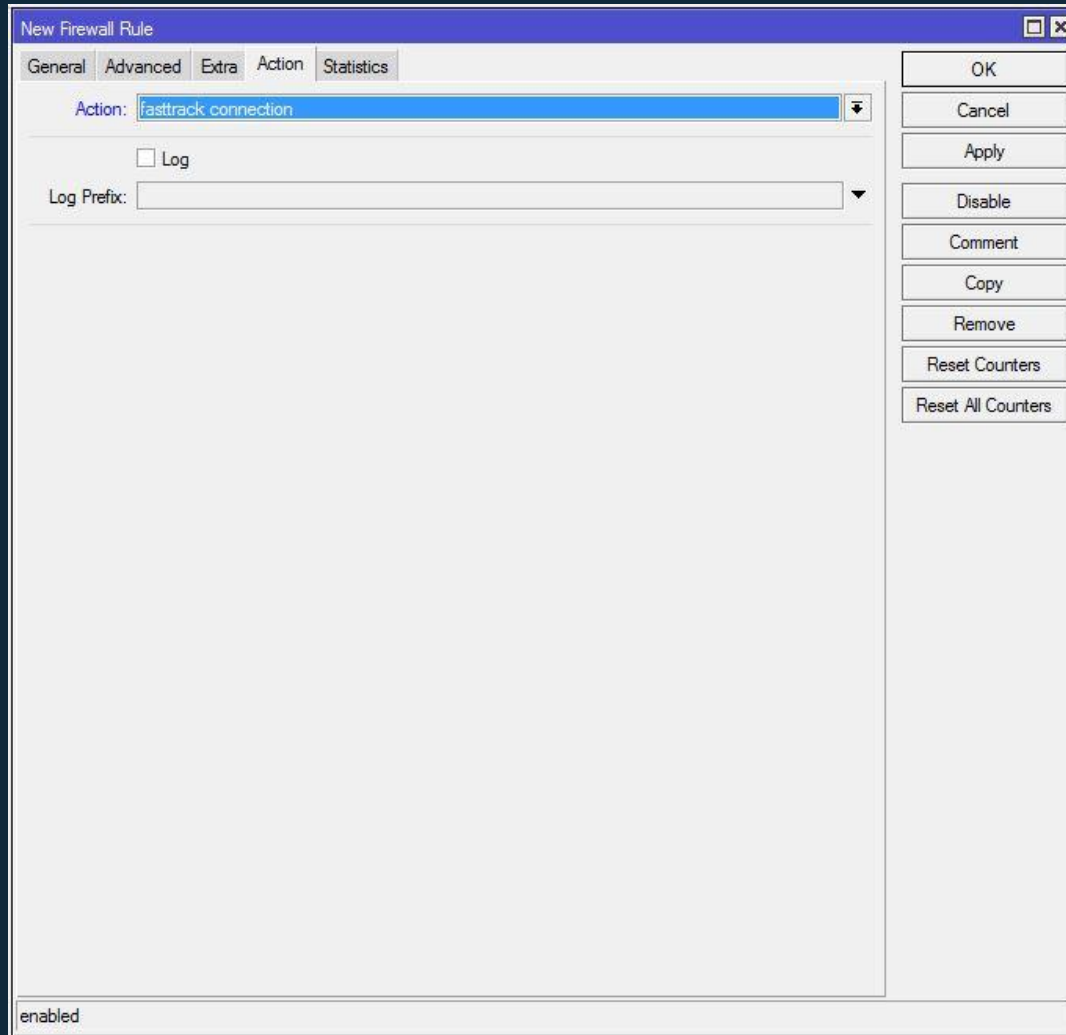
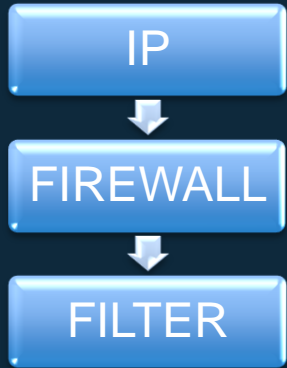
Connection Type:

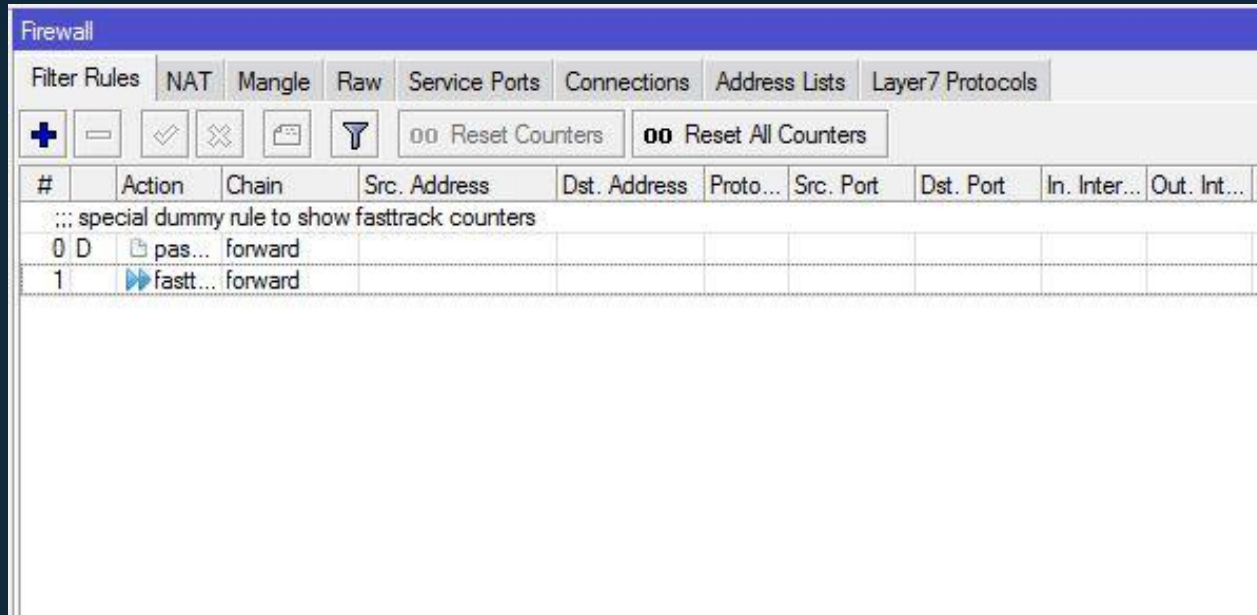
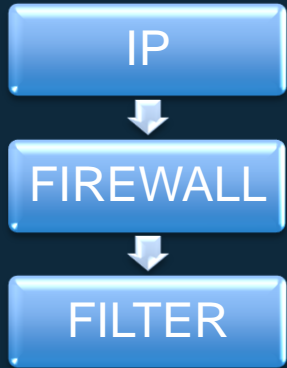
Connection State:  invalid  established  related  new  untracked

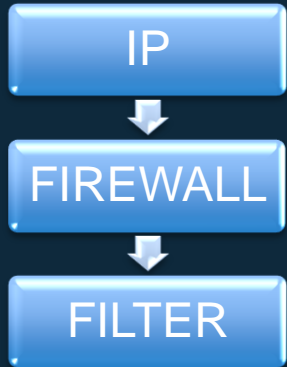
Connection NAT State:

enabled

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





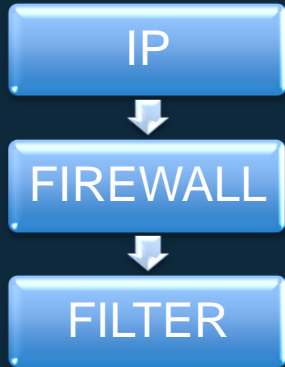


Firewall

Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Proto

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

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port
::: special dummy rule to show fasttrack counters							
0	D	pas...	prerouting				
::: special dummy rule to show fasttrack counters							
1	D	pas...	forward				
::: special dummy rule to show fasttrack counters							
2	D	pas...	postrouting				



New Firewall Rule

General Advanced Extra Action Statistics

Chain: forward

Src. Address:

Dst. Address:

Protocol:

Src. Port:

Dst. Port:

Any. Port:

In. Interface:

Out. Interface:

In. Interface List:

Out. Interface List:

Packet Mark:

Connection Mark:

Routing Mark:

Routing Table:

Connection Type:

Connection State:  invalid  established  related  new  untracked

Connection NAT State:

enabled

OK

Cancel

Apply

Disable

Comment

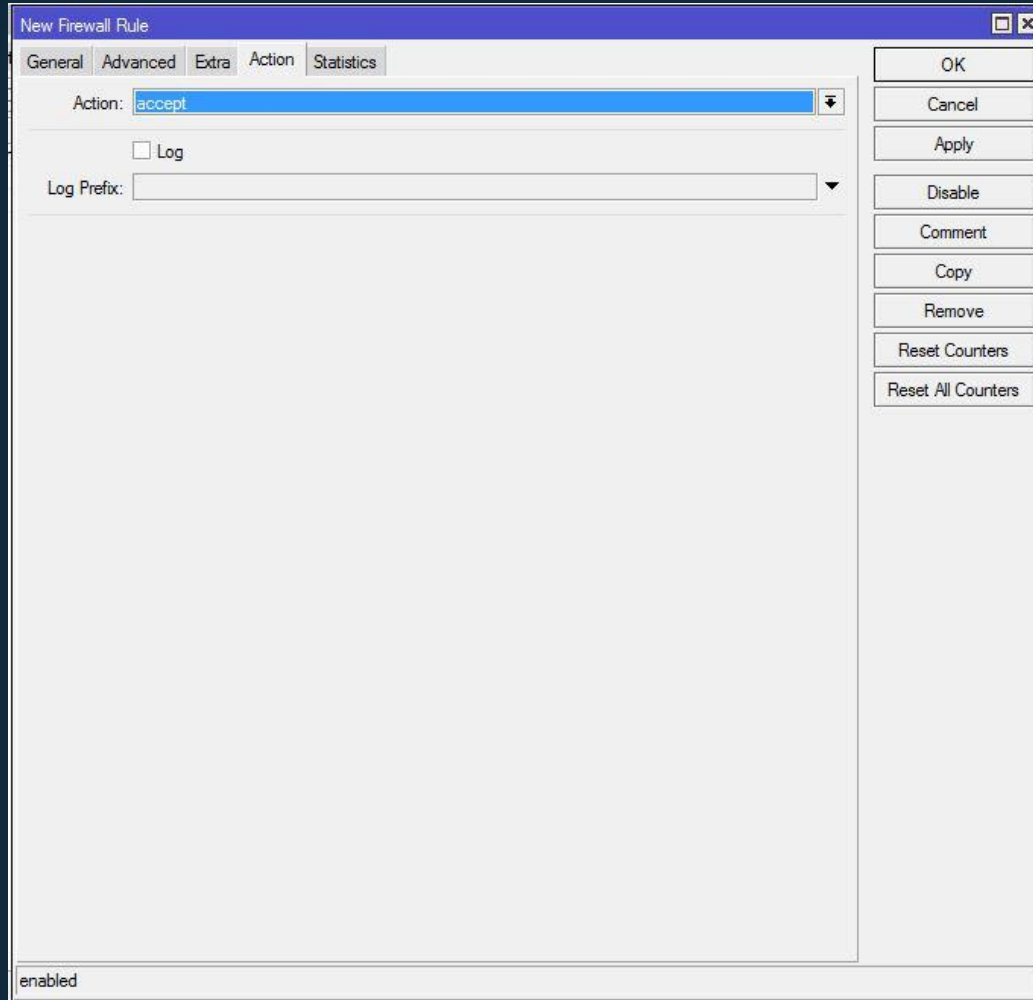
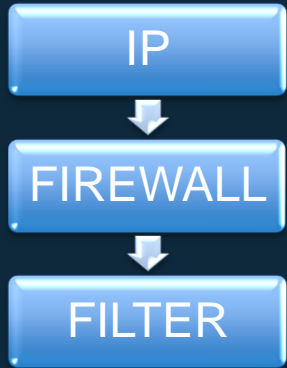
Copy

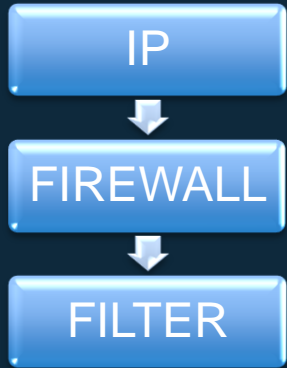
Remove

Reset Counters

Reset All Counters







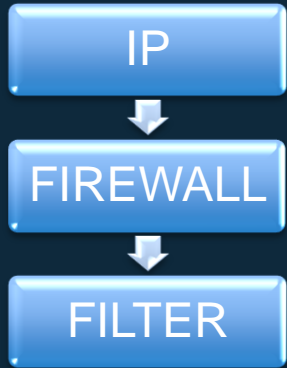
Firewall

Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols

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

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...
::: special dummy rule to show fasttrack counters									
0	D pas...	forward							
1	▶▶ fast...	forward							
2	✓ acc...	forward							





New Firewall Rule

General Advanced Extra Action Statistics

Chain:

Src. Address:

Dst. Address:

Protocol:

Src. Port:

Dst. Port:

Any. Port:

In. Interface:

Out. Interface:

In. Interface List:

Out. Interface List:

Packet Mark:

Connection Mark:

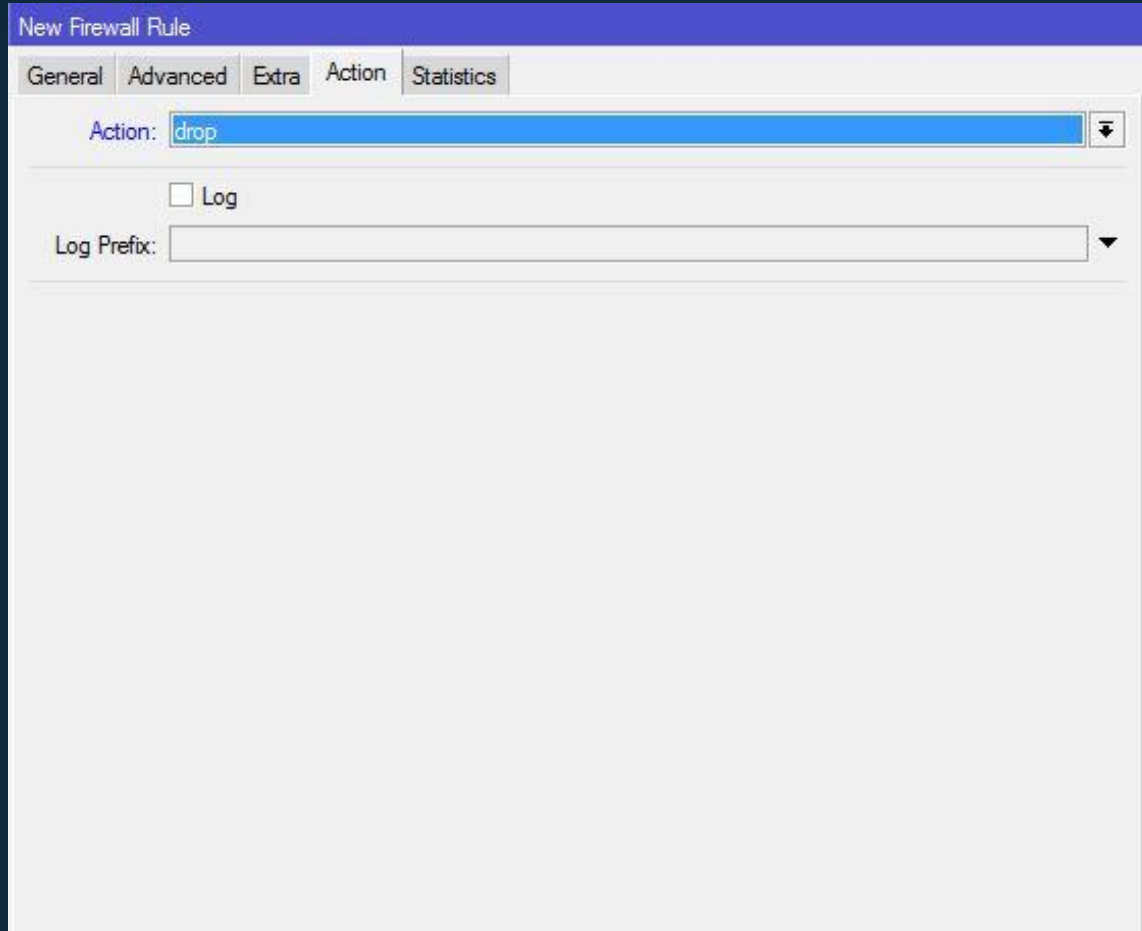
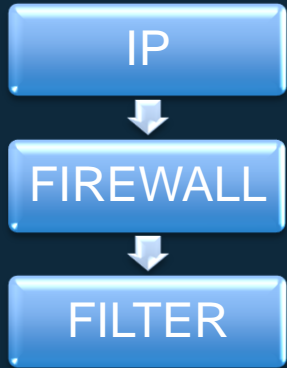
Routing Mark:

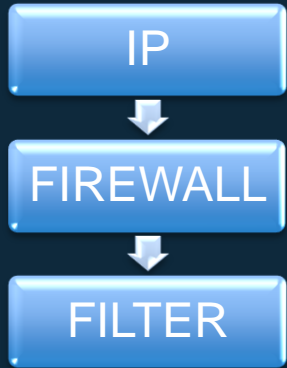
Routing Table:

Connection Type:

Connection State:  invalid  established  related  new  untracked

Connection NAT State:





Firewall

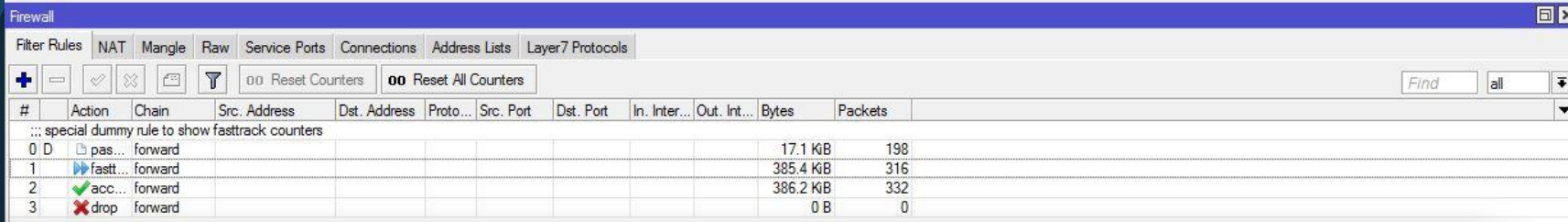
Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols

+ - [check] [x] [copy] [filter] [00] Reset Counters [00] Reset All Counters

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...
... special dummy rule to show fasttrack counters									
0	D pas...	forward							
1	fastt...	forward							
2	acc...	forward							
3	drop	forward							

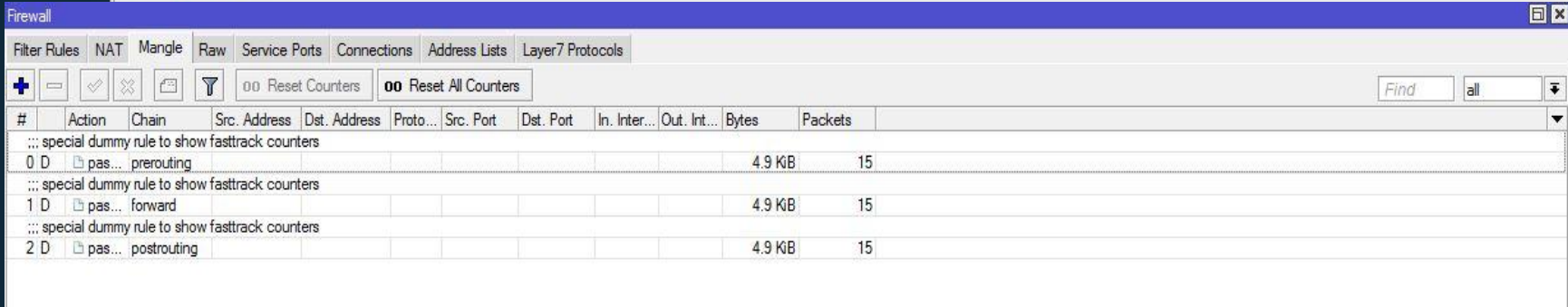
ملاحظة : عند استخدام هذه الميزة لن يتم تطبيق اي رول ضمن

## Queues ,firewall filter, mangle



Firewall Filter Rules Table:

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets
::: special dummy rule to show fasttrack counters											
0	D	pas...	forward							17.1 KiB	198
1		fastt...	forward							385.4 KiB	316
2		acc...	forward							386.2 KiB	332
3		drop	forward							0 B	0



Firewall Filter Rules Table:

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets
::: special dummy rule to show fasttrack counters											
0	D	pas...	prerouting							4.9 KiB	15
::: special dummy rule to show fasttrack counters											
1	D	pas...	forward							4.9 KiB	15
::: special dummy rule to show fasttrack counters											
2	D	pas...	postrouting							4.9 KiB	15

/ip firewall filter

```
add action=fasttrack-connection chain=forward connection-state=established,related
```

```
add action=accept chain=forward connection-state=established,related
```

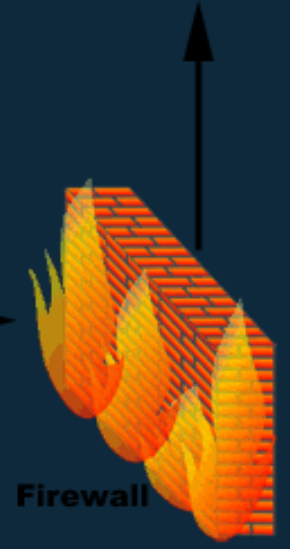
```
add action=drop chain=forward connection-state=invalid
```



**Fastrack overbruggt alle onderste procedures**



**Traditionele data pakket procedure**





بعض الافكار للاستفادة من هذه الميزة

لدى:

◊ مقدمي خدمة IPTV مع الانترنت

◊ مقدمي خدمة الانترنت





# خدمة IPTV مع الانترنت

## خدمة IPTV

اصبحت هذه الخدمة متداولة كثيرا في الانظمة الحديثة للشبكات ضمن المجمعات السكنية والسياحية .  
 واصبحت من الخدمات الضرورية التي تقدم للزبائن بالاضافة للانترنت وغيرها من الخدمات.  
 واصبحنا مضطرين للتعامل معها ضمن عملنا وتحتم علينا ايجاد افضل الحلول والوسائل لنقلها وايصالها  
 الى الزبائن.

ومن المشكلات التي تواجهنا في ادارتها :

- ◇ حجم الترافيك الكبير الذي يسبب حمل عالي على CPU
- ◇ حاجتها لسرعة نقل اقلها 10ميغابت لكل قناة والتي تكون على الاغلب اعلى من السرعة المعطاة للزبون
- ◇ استهلاكها الكبير للبيانات واحتسابها من اشتراك الزبون

# IPTV IN FASTTRACK

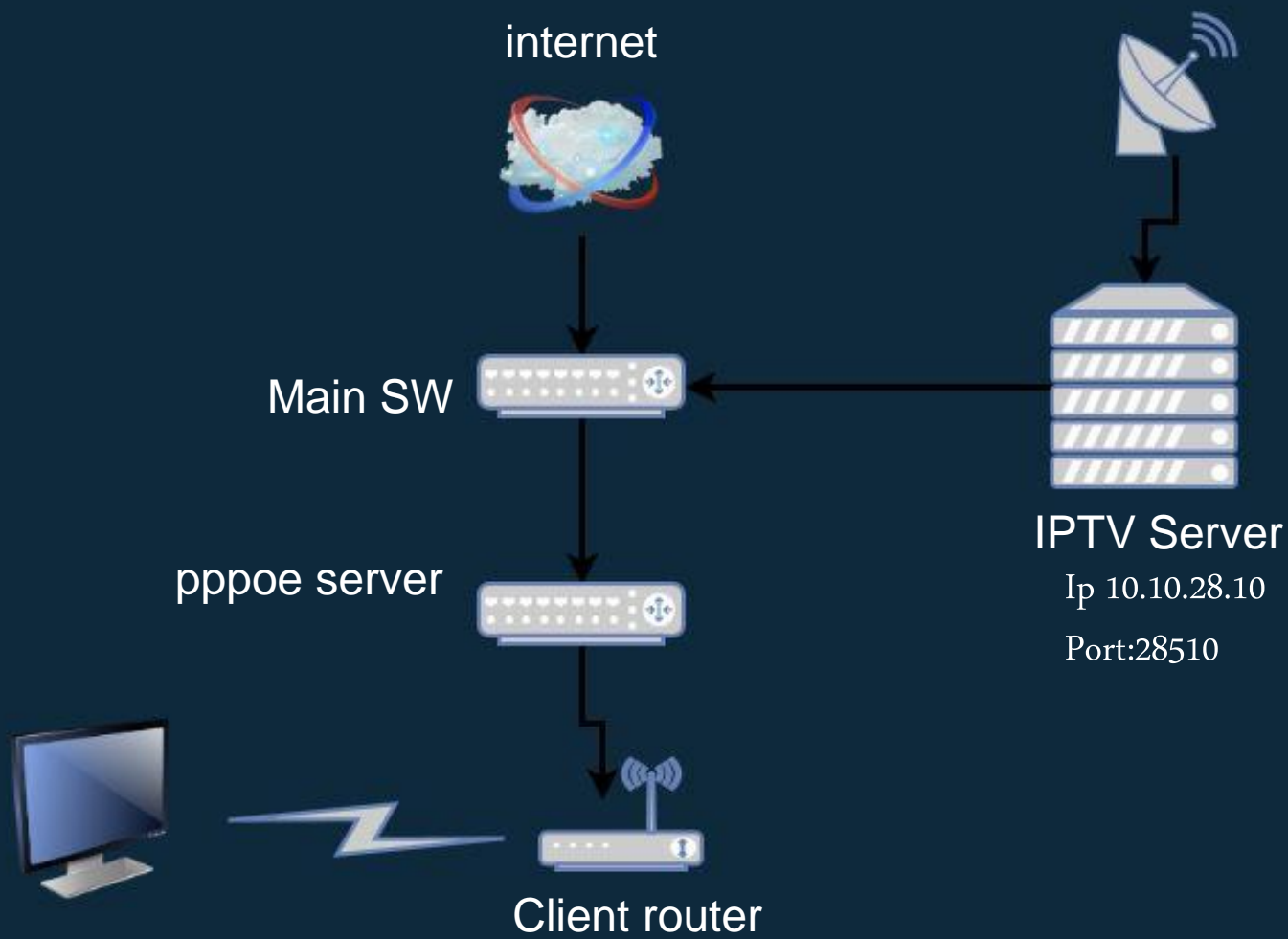
بافتراض ان لدينا شبكة ضمن مجمع سكني

ونقوم بتقديم خدمة IPTV مع الانترنت ونريد :

◇ مرورها بسلاسة وبدون ان تسبب حمل على CPU

◇ ان لا تدخل في حساب استهلاك البيانات من اشتراك الزبون

◇ خروجها بسرعة غير السرعة المحددة للزبون



Simple Queue <<pppoe-runnet050>>

General Advanced Statistics Traffic Total Total Statistics

Target Upload: Rate: 98.9 kbps  
 Target Download: 2.0 Mbps

Packet Rate: 271 p/s  
 443 p/s

Upload: 98.9 kbps  
 Download: 2.0 Mbps

Upload Packets: 271 p/s  
 Download Packets: 443 p/s

dynamic

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

Reset Counters Reset All Counters

Name: contains 050

#	Name	Target	Upload Max Limit	Download Max Limit	Packet Mar
6	<pppoe-runnet050>	<pppoe-runnet050>	2M	2M	

OK  
 Copy  
 Remove  
 Reset Counters



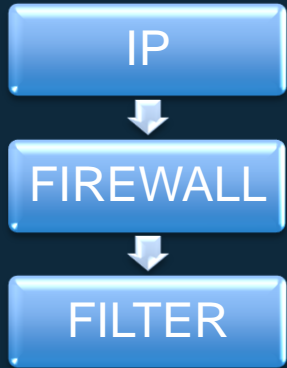


**Fasttrack overbrugt alle onderste procedures**



**Traditionele data pakket procedure**





Firewall Rule <10.10.28.10:28510>

General | Advanced | Extra | Action | Statistics

Chain:

Src. Address:

Dst. Address:

Protocol:

Src. Port:

Dst. Port:

Any. Port:

In. Interface:

Out. Interface:

In. Interface List:

Out. Interface List:

Packet Mark:

Connection Mark:

Routing Mark:

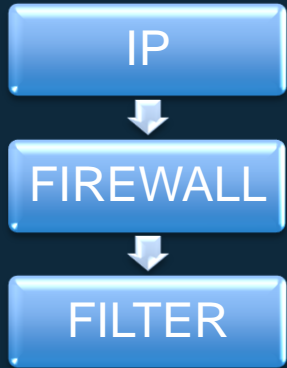
Routing Table:

Connection Type:

Connection State:  invalid  established  related  new  untracked

Connection NAT State:





New Firewall Rule

General Advanced Extra Action Statistics

Action: **fasttrack connection**

Log

Log Prefix: \_\_\_\_\_

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

enabled



Firewall

Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols

+ - ✓ ✗ 📄 🔍 00 Reset Counters 00 Reset All Counters

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter..
::: special dummy rule to show fasttrack counters								
0	D pas...	forward						
1	▶▶ fastt...	forward		10.10.28.10	6 (tcp)		28510	

Firewall

Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols

+ - ✓ ✗ 📄 🔍 00 Reset Counters 00 Reset All Counters

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port
::: special dummy rule to show fasttrack counters							
0	D pas...	prerouting					
::: special dummy rule to show fasttrack counters							
1	D pas...	forward					
::: special dummy rule to show fasttrack counters							
2	D pas...	postrouting					

/ip firewall filter

add action=fasttrack-connection chain=forward connection-state=established,related  
dst-address=10.10.28.10 dst-port=28510 protocol=tcp



Interface <<pppoe-runnet050>>

General Status Traffic

Tx/Rx Rate: 12.0 Mbps / 576.6 kbps

Tx/Rx Packet Rate: 2 396 p/s / 1 324 p/s

FP Tx/Rx Rate: 0 bps / 0 bps

FP Tx/Rx Packet Rate: 0 p/s / 0 p/s

Tx/Rx Bytes: 494.1 MiB / 22.9 MiB

Tx/Rx Packets: 858 701 / 479 055

Tx/Rx Drops: 0

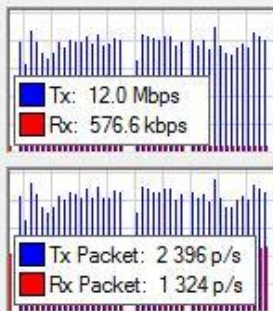
Tx/Rx Errors: 0

OK

Copy

Remove

Torch



dynamic enabled

Simple Queue <<pppoe-runnet050>>

General Advanced Statistics Traffic Total Total Statistics

Target Upload Target Download

Rate: 28.8 kbps / 1453.9 kbps

Packet Rate: 72 p/s / 134 p/s

Upload: 28.8 kbps

Download: 1453.9 kbps

Upload Packets: 72 p/s

Download Packets: 134 p/s

OK

Copy

Remove

Reset Counters

Reset All Counters

Torch

dynamic

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

+ - ✓ ✗ 📧 🔍 ☰ Reset Counters ☑ Reset All Counters

Name contains 050

#	Name	Target	Upload Max Limit	Download Max Limit
6	<<pppoe-runnet050>>	<pppoe-runnet050>	2M	2M

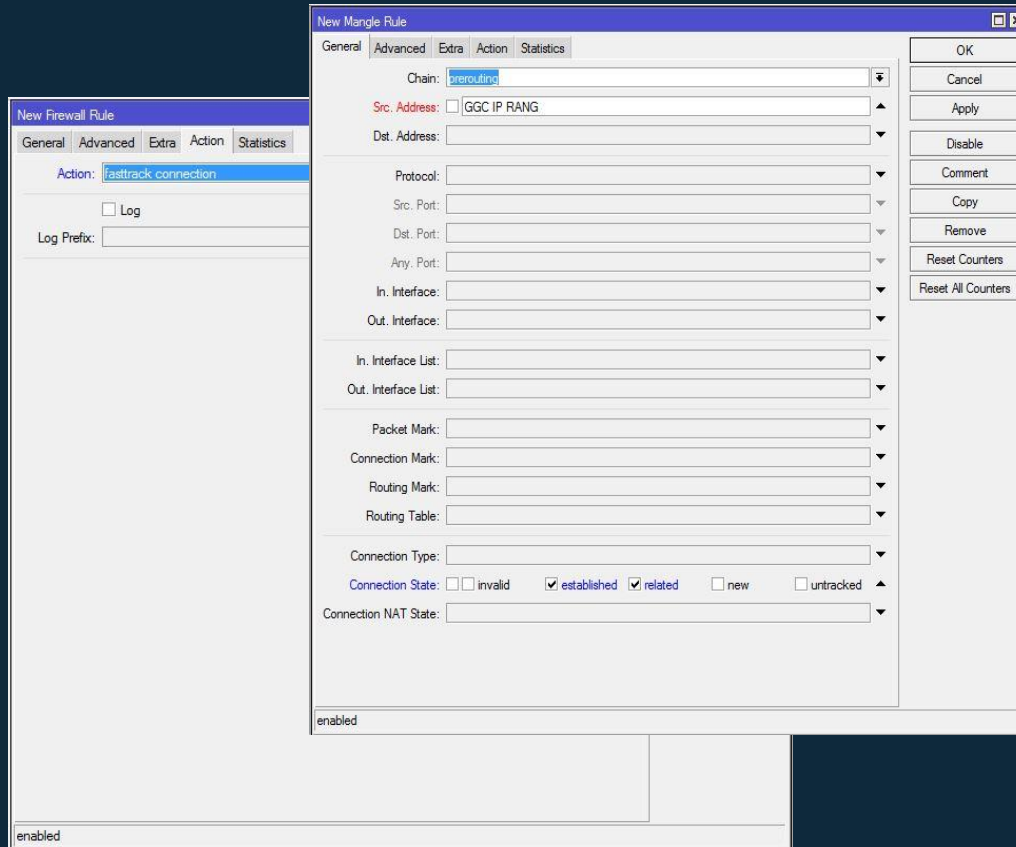


# ISP'S AND FASTTRACK

اعتقد ان هذه الميزة ستفيد شركات الانترنت بشكل كبير.  
فيمكنهم استخدامها لتحسين جودة الخدمات المقدمة للزبائن  
وتقليل الضغط على روتراتهم.  
فمثلا:

- ◇ استخدامها لتمير Cache Service بدون التقيد بسرعة معينة وبدون احتسابها من اشتراك الزبون.
- ◇ استخدامها بتعيين فترات مجانية لخدمات معينة او لكل الخدمة المقدمة.

# لتحرير Cache Service بدون التقييد بسرعة معينة وبدون احتسابها من اشتراك الزبون.



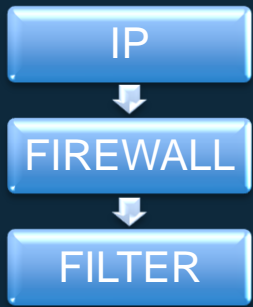
The image shows two overlapping screenshots of Mikrotik WinBox. The top screenshot is the 'New Mangle Rule' dialog box, and the bottom screenshot is the 'New Firewall Rule' dialog box.

**New Mangle Rule Configuration:**

- Chain: prerouting
- Src. Address: GGC IP RANG
- Protocol: (empty)
- Src. Port: (empty)
- Dst. Port: (empty)
- Any. Port: (empty)
- In. Interface: (empty)
- Out. Interface: (empty)
- In. Interface List: (empty)
- Out. Interface List: (empty)
- Packet Mark: (empty)
- Connection Mark: (empty)
- Routing Mark: (empty)
- Routing Table: (empty)
- Connection Type: (empty)
- Connection State:  invalid  established  related  new  untracked
- Connection NAT State: (empty)

**New Firewall Rule Configuration:**

- Action: fasttrack connection
- Log:  Log
- Log Prefix: (empty)

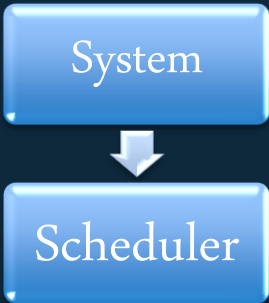


# تعيين فترات مجانية لخدمات معينة او لكل الخدمة المقدمة

يمكن الاستفادة من هذه الميزة بتحديد فترة استهلاك مجانية لخدمة معينة مع استخدام الرادايوس او بدونه وذلك باستخدام FastTrack مع Scheduler



The screenshot displays the Mikrotik WinBox interface for configuring a Firewall Rule. The 'New Firewall Rule' dialog is the primary focus, with the 'General' tab selected. The 'Action' is set to 'fasttrack connection', and the 'Log' checkbox is checked. A 'Comment for New Firewall Rule' dialog is open, allowing the user to enter a comment, with 'FreeTime' entered in the text field. In the background, the 'New Mangle Rule' dialog is also visible, showing the 'Chain' set to 'prerouting' and the 'Src. Address' set to 'GGC IP RANG'. The 'Connection State' options are checked for 'established' and 'related', and 'new' and 'untracked' are unchecked. The 'Connection NAT State' is set to 'enabled'.



Schedule <FreeTime Enable>

Name: FreeTime Enable

Start Date: Jan/01/2019

Start Time: 00:30:00

Interval: 1d 00:00:00

Owner: supporty

Policy:  ftp  reboot  
 read  write  
 policy  test  
 password  sniff  
 sensitive  romon  
 dude

Run Count: 0

Next Run: Jan/26/2019 00:30:00

On Event:

/ip firewall filter enable [find comment=Free Time]

enabled

Schedule <FreeTime Disable>

Name: FreeTime Disable

Start Date: Jan/01/2019

Start Time: 12:30:00

Interval: 1d 00:00:00

Owner: supporty

Policy:  ftp  reboot  
 read  write  
 policy  test  
 password  sniff  
 sensitive  romon  
 dude

Run Count: 0

Next Run: Jan/26/2019 12:30:00

On Event:

/ip firewall filter disable [find comment=Free Time]

enabled

Buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove

```
/system scheduler
#add interval=1d name="FreeTime Disable" on-event="/ip firewall filter disable [find comment=FreeTime]" policy=read,write start-date=jan/01/2019 start-time=12:30:00
#add interval=1d name="FreeTime Enable" on-event="/ip firewall filter enable [find comment=FreeTime]" policy=read,write start-date=jan/01/2019 start-time=12:30:00
```



# الختام..

Sami Haddad

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systemtik



SYSTEM.TIK