PF

author: Budi Ang

PF (Packet Filter) adalah firewall yang dikembangkan pertama kali oleh Daniel Hartmeier untuk OpenBSD dan menggantikan IPF yang berhubungan dengan masalah lisensi [1]. Mulai dari OpenBSD 3.0, PF sudah tersedia pada `base system`, sekarang, FreeBSD dan DragonFlyBSD telah mengimport PF dalam `base system`, untuk NetBSD bisa diinstalasi melalui pkgsrc, sedangkan untuk `Linux`, dapat diambil di http://abstractvoid.se/pf4lin.html (experimental)

Aktivasi PF

```
$ sudo echo "pf=YES" > /etc/rc.conf.local
$ sudo reboot
```

atau

```
$ sudo pfctl -e
$ sudo ifconfig pflog0 up
```

untuk menonaktifkan pf di gunakan perintah berikut

```
pfctl -d
```

beberapa perintah pfctl yang sering digunakan

```
# pfctl -f /etc/pf.conf    Memuat file konfigurasi pf
# pfctl -nf /etc/pf.conf   Memparsing akan tetapi tidak menjalankanya
# pfctl -Nf /etc/pf.conf   Manya memuat rules nat
# pfctl -Rf /etc/pf.conf   Hanya memuat rules filter

# pfctl -sn                Menampilkan rules NAT
# pfctl -sr                Menampilkan rules filter
# pfctl -ss                Menampilkan tables stat
# pfctl -sa                Menampilkan semuanya yang bisa di tampilkan
```

Konsep Filtering di PF

```
dari PF host -> internet = out

dari internet -> PF host = in
```

Mohon maaf jika tidak ada fitur `forward`

Macro

`Macro` di PF digunakan seperti variable program dalam mendefinisi interface, alamat IP, dan port, ataupun `reserved word` di PF.

Penggunaan `Macro` dapat mengurangi `complex`nya ruleset PF

```
server_if = "fxp0"
udp_port = "{ 53 123 }"
pass in on $server_if inet proto udp from any to any port $udp_port keep
state
```

Ruleset di atas diexpand menjadi:

```
pass in on fxp0 inet proto udp from any to any port 53 keep state
pass in on fxp0 inet proto udp from any to any port 123 keep state
```

Tables

`Tables` dapat digunakan untuk menyimpan alamat IP dan network. Penggunaan yang lain seperti `block` network bogon atau IIX, seperti contoh di bawah ini

```
table <iix> { 114.120.0.0/13, 125.166.0.0/15, 125.162.0.0/16,
125.163.0.0/16, 125.160.0.0/16, 125.161.0.0/16, 125.164.0.0/16,
125.165.0.0/16, 222.124.0.0/16, 61.94.0.0/16, 167.205.0.0/16,
202.158.0.0/17, 61.5.0.0/17, 124.195.0.0/17, 121.52.0.0/17, 119.11.128.0/17,
114.57.0.0/18, 117.102.64.0/18, 210.210.128.0/18, 207.209.192.0/18,
61.14.0.0/18, 206.182.192.0/18, 125.208.128.0/18, 203.130.192.0/18,
124.153.0.0/18, 152.118.128.0/18, 221.132.192.0/18, 152.118.192.0/18,
152.118.0.0/18, 152.118.64.0/18, 222.165.192.0/18, 202.152.0.0/18,
209.93.224.0/19, 202.173.64.0/19, 114.199.96.0/19, 202.171.0.0/19,
202.47.192.0/19, 202.169.32.0/19, 202.182.160.0/19, 117.102.224.0/19,
202.51.192.0/19, 202.149.128.0/19, 202.147.224.0/19, 202.146.224.0/19,
114.58.32.0/19, 114.58.0.0/19, 202.159.64.0/19, 202.95.128.0/19,
202.152.224.0/19, 61.247.0.0/19, 61.247.32.0/19, 114.57.64.0/19,
117.104.192.0/19, 118.98.160.0/19, 118.98.192.0/19, 118.136.0.0/19,
118.136.32.0/19, 118.136.64.0/19, 118.136.96.0/19, 118.136.128.0/19,
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118.137.32.0/19, 118.137.64.0/19, 118.137.96.0/19, 118.137.128.0/19,
118.137.160.0/19, 118.137.192.0/19, 118.137.224.0/19, 124.81.0.0/19,
124.81.32.0/19, 124.81.64.0/19, 124.81.96.0/19, 124.81.128.0/19,
124.81.192.0/19, 124.81.224.0/19, 202.10.32.0/19, 202.53.224.0/19,
202.57.0.0/19, 202.73.96.0/19, 202.77.96.0/19, 202.81.32.0/19,
202.137.0.0/19, 202.138.224.0/19, 202.148.0.0/19, 202.150.64.0/19,
202.153.128.0/19, 202.154.0.0/19, 202.154.32.0/19, 202.155.0.0/19,
202.155.32.0/19, 202.155.128.0/19, 202.159.0.0/19, 202.159.32.0/19,
202.162.192.0/19, 203.128.64.0/19, 219.83.0.0/19, 219.83.32.0/19,
219.83.64.0/19, 60.253.112.0/20, 61.8.64.0/20, 114.57.96.0/20,
114.57.160.0/20, 114.141.48.0/20, 114.199.80.0/20, 116.68.160.0/20,
```

```
117.20.48.0/20, 117.103.0.0/20, 118.98.240.0/20, 119.2.64.0/20,
119.110.64.0/20, 119.235.208.0/20, 119.252.160.0/20, 121.50.128.0/20,
122.129.96.0/20, 122.129.192.0/20, 122.200.0.0/20, 124.81.176.0/20,
202.3.208.0/20, 202.6.208.0/20, 202.6.224.0/20, 202.46.64.0/20,
202.46.144.0/20, 202.47.64.0/20, 202.51.224.0/20, 202.58.64.0/20,
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202.73.224.0/20, 202.77.64.0/20, 202.80.112.0/20, 202.80.208.0/20,
202.87.176.0/20, 202.93.16.0/20, 202.93.32.0/20, 202.93.128.0/20,
202.93.224.0/20, 202.123.224.0/20, 202.127.96.0/20, 202.133.80.0/20,
202.143.32.0/20, 202.145.0.0/20, 202.146.48.0/20, 202.147.192.0/20,
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202.155.64.0/20, 202.155.112.0/20, 202.159.112.0/20, 202.165.32.0/20,
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203.201.160.0/20, 207.83.112.0/20, 210.57.208.0/20, 210.79.208.0/20,
219.83.96.0/20, 220.157.96.0/20, 60.253.96.0/21, 61.45.224.0/21,
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117.103.32.0/21, 117.103.48.0/21, 117.103.168.0/21, 119.2.40.0/21,
119.10.176.0/21, 119.82.232.0/21, 119.82.240.0/21, 119.110.80.0/21,
119.160.200.0/21, 119.235.248.0/21, 120.29.152.0/21, 121.52.136.0/21,
121.58.184.0/21, 121.100.16.0/21, 121.101.128.0/21, 121.101.184.0/21,
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119.18.156.0/22, 119.82.224.0/22, 119.235.16.0/22, 119.252.132.0/22,
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202.75.16.0/22, 202.75.24.0/22, 202.78.196.0/22, 202.81.4.0/22,
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203.194.70.0/23, 203.223.90.0/23, 204.61.216.0/23, 206.73.208.0/23,
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32.234.175.0/24, 58.65.243.0/24, 58.145.173.0/24, 58.145.175.0/24,
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192.36.148.0/24, 192.92.81.0/24, 194.0.1.0/24, 194.0.2.0/24,
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```
202.135.248.0/24, 202.146.32.0/24, 202.146.34.0/24, 202.146.47.0/24,
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202.155.91.0/24, 202.155.102.0/24, 202.158.129.0/24, 202.160.254.0/24,
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203.173.90.0/24, 203.174.5.0/24, 203.194.90.0/24, 203.196.90.0/24,
205.248.57.0/24, 205.248.151.0/24, 205.248.158.0/24, 206.73.79.0/24,
206.73.80.0/24, 206.73.194.0/24, 206.73.203.0/24, 206.73.205.0/24,
206.73.222.0/24, 206.73.227.0/24, 206.73.228.0/24, 206.73.240.0/24,
206.73.244.0/24, 206.73.248.0/24, 206.182.36.0/24, 207.117.234.0/24,
218.100.32.0/24 }
```

will be continued

Packet Filtering

Filtering untuk `block` atau `pass` packet sesuai yang didefinisikan. `Ruleset` di file /etc/pf.conf (default), dibaca dari atas ke bawah.

`block` PF host dari satu host

```
block in from ip.add.re.ss
```

`block` satu subnet atau lebih

```
block in from sub.net.ho.st/mask
```

`block` satu host, dan `pass` host yang lain

```
block in from bad.ip
pass in from good.ip
```

`Default` deny adalah kebijakan yang direkomendasi sewaktu menyiapkan firewall apapun, hal ini berlaku untuk PF juga.

```
block in all
block out all
```

Tambahkan keyword `log`, sehingga dapat melihat packet mana yang diblock oleh PF, dengan menggunakan `tcpdump(8)`

```
block in  log all
block out log all
```

Dapat disederhanakan menjadi

```
block log all
```

Catatan: jika host mempunyai >=4 NIC, semua traffic in/out di block by default.

Contoh Kasus

<server> —– [switch] —– {router}

Server menyediakan service SMTP Relay dan POP3

Policy:

- default deny
- incoming ke port 25 dan 110
- outgoing bebas

```
# macro
server_if = "fxp0"
lo_if = "lo0"
tcp_port = "{ 25 110 }"
ks = "keep state"

# default deny
block log all

# untuk loopback
pass quick on $lo_if all

# incoming
pass in on $server_if inet proto tcp from any     to $server_if port
$tcp_port $ks
pass in on $server_if inet proto tcp from $admin to $server_if port
$adm_port $ks

# outgoing
pass out on $server_if all $ks
```

Referensi

- http://openbsd.cbn.net.id/faq/
- http://www.benzedrine.cx/pf.html
- http://openbsd.cbn.net.id/faq/pf/
- http://www.openbsd.org/cgi-bin/man.cgi?query=pf.conf&sektion=5&manpath=OpenBSD+3.7
- http://www.openbsd.org/cgi-bin/man.cgi?query=pfctl&sektion=8&manpath=OpenBSD+3.7
- https://solarflux.org/pf/
- http://www.thedeepsky.com/howto/newbie_pf_guide.php

[1]
http://slashdot.org/article.pl?sid=01/05/30/124255

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