

Όγιάαός ΙΎού Όçäåöþĩõ éáé Ôåß÷ìò Ðñĩóôáóßàò óôĩ FreeBSD

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\$FreeBSD: release/9.1.0/el_GR.ISO8859-7/articles/dialup-firewall/article.shtml
38826 2012-05-17 19:12:14Z hrs \$

Ôĩ FreeBSD áβιάέ Υία éáôĩ÷ðñũĩΥĩĩ àìðĩñéêũ óγĩáĩēĩ òĩõ FreeBSD Foundation.
ÐĩēēΥò áðũ óéò ēΥĩáéò Þ òñŬóáéò ïé ïðĩßàò ÷ ñçóéĩðĩēĩγĩóáé áðũ òĩõò éáóáóēåðáóóôΥò Þ òĩõò
ðũēçôΥò òĩõò áéá íá áéáēñβĩĩôĩ óá ðñĩũĩóá òĩõò èàũñĩγĩóáé àìðĩñéêũ óγĩáĩēá. ¼ðĩõ áóôΥò
àìðáĩβēĩĩóáé óá áóôũ òĩ èáβĩáĩĩ éáé áéá ũóáò áðũ áóôΥò àĩũñβæáé ç ìŬáá ÁĩŬðòðĩçò òĩõ FreeBSD ũóé
áβιάé ðééáĩũĩ íá áβιάé àìðĩñéêũ óγĩáĩēá, éá åáßòá Υία áðũ óá óγĩáĩēá: “TM” Þ “©”.

Áóôũ òĩ Ŭñēñĩ ðåñéåñŬóáé ðũð ìðñåßòá íá ñðēĩßóáðá Υία ôåß÷ìò ðñĩóôáóßàò (firewall) ÷ ñçóéĩðĩēĩγĩóáò
íéá PPP óγĩááóç ìΎóũ òçäåöþĩõ óôĩ FreeBSD ìá òĩ IPFW. Ðēĩ óðæåēñēĩΥία, ðåñéåñŬóáé òç ñγēĩéóç áĩũð
ôåß÷ìò ðñĩóôáóßàò óá íéá óγĩááóç ìΎóũ òçäåöþĩõ ðĩõ Υ÷æ áóĩáĩéêÞ IP áéåγēðĩóç. Áóôũ òĩ èáβĩáĩĩ åáĩ
áó÷ìååßóáé ìá òĩ ðũð èá ñðēĩßóáðá òçĩ åñ÷éêÞ óáð óγĩááóç ìΎóũ PPP. Áéá ðåñéóóũðåñåð ðēçñĩõñβáð
ó÷åðéêũ ìá óéð ñðēĩßóáéð íéáð óγĩááóçð ìΎóũ PPP ååßòá òç óåēßåá åĩÞæåáð ppp(8).

1 Ðñũēĩāĩò

Áóôũ òĩ èáβĩáĩĩ ðåñéåñŬóáé òçĩ áéåæééáóßá ðĩõ ÷ ñåéŬæåðáé áéá íá ñðēĩßóáðá Υία ôåß÷ìò ðñĩóôáóßàò óôĩ
FreeBSD ũóáĩ ç IP áéåγēðĩóç åβĩáðáé áóĩáĩéêũ áðũ òĩ ISP óáð. Ðåñũēĩ ðĩõ Υ÷ũ ðñĩóðåêÞóáé íá èŬũ áóôũ òĩ
èáβĩáĩĩ ũóĩ òĩ áóĩáóũĩ ðēĩ ðēÞñåð éáé óũóðũ, åßóðá áððñũóååðéé íá óðåßåðá ðéð æēñēÞóáéð, óá ó÷ũééá Þ óéð
ðñĩóŬóáéð óáð óðç áéåγēðĩóç òĩõ óðååñåðŬá: <marcs@draenor.org>.

2 ÐåñŬĩåðñĩé òĩõ ððñÞía

Áéá íá ìðñŬóáðá íá ÷ ñçóéĩðĩēĩÞóáðá òĩ IPFW, ðñŬðåé íá áĩóũĩáðÞóáðá òçĩ ó÷åéêÞ ððĩóðÞñēĩç óôĩ ððñÞía óáð.
Áéá ðåñéóóũðåñåð ðēçñĩõñβáð ó÷åéêũ ìá òç ìåðåêÞððéóç òĩõ ððñÞía, ååßòá òĩ òĩÞía ñðēĩßóáũĩ òĩõ ððñÞía óôĩ
Åã÷æēñβæēĩ (http://www.FreeBSD.org/doc/el_GR.ISO8859-7/books/handbook/kernelconfig.html). Èá ðñŬðåé íá
ðñĩóēŬóáðá óéð ðåñåéŬðũ åðēĩŬáŬò óðéð ñðēĩßóáéð òĩõ ððñÞía óáð áéá íá áĩåñāĩðĩēĩÞóáðá òçĩ ððĩóðÞñēĩç áéá òĩ
IPFW:

```
options IPFW2
```

Ἀἰῆῆῆῆῆῆῆ οἰ ἔῆῆῆῆ ὀαβ÷ἰδὸ Ὀνῖόοάοβᾶδὸ οἰδὸ Ὀῆῆῆῆῆῆ.

Ὀγῖῶῶῶ: Ἀδῶδὸ οἰ ἔῆῆῆῆῆ ἔῆῆῆῆῆ ὑδὲ Ὑ÷ᾶδᾶ ἕῆῆῆῆῆῆῆῆῆ ὀγῖ Ὑῆῆῆῆῆ 5.X οἰδὸ FreeBSD ῆ ἰῆᾶ Ὀῆῆ Ὀῆῆῆῆῆῆ. Ἀἰ ÷ῆῆῆῆῆῆῆῆῆῆ ὀγῖ Ὑῆῆῆῆῆ 4.X, δῶδᾶ ἔᾶ ὈῆὙὈᾶ ἰᾶ Ἀἰῆῆῆῆῆῆῆῆῆῆ ὀγῖ ἈὈῆῆῆῆῆ IPFW2 ἔᾶ ἰᾶ ἕῆῆῆῆῆῆ ὀγῖ ὀᾶῆῆῆῆ Ἀἰῆῆῆῆῆῆ ipfw(8) ἕῆᾶ Ὀᾶῆῆῆῆῆῆῆῆ Ὀῆῆῆῆῆῆῆῆ ὀ÷ᾶὈῆῆῆῆ ἰᾶ ὀγῖ ἈὈῆῆῆῆῆ IPFW2. Ὀῆῆῆῆῆῆ ἔᾶῆῆῆῆῆῆ ὀἰ ὀἰῆῆῆ *USING IPFW2 IN FreeBSD-STABLE*.

```
options IPFW2_VERBOSE
```

ὈὈὙῆῆῆ ὀᾶ ἰῆῖῖῖῖῖ ἕῆᾶ ὀᾶ ἔᾶὈὙῆῆῆῆ ὈᾶὈὙῆῆ ὀἰ log οἰδὸ ὀὈὈὈῆῆῆῆῆ.

```
options IPFW2_VERBOSE_LIMIT=500
```

ἈὙᾶᾶ ἔὙὈῆῆῆ ὑῆῆῆ ὀὈὈ ὀῆῆὙὈ Ὀἰδὸ ἔὙὈῆῆῆ ἈᾶᾶᾶὈῆ ἔᾶ ἔᾶὈᾶᾶὙὈᾶὈᾶῆ. ὈὈῆ ἰὈῆᾶᾶὈᾶ ἰᾶ ἔᾶὈᾶᾶὙὈᾶὈᾶ ὀᾶ ἰῆῖῖῖῖῖ ὀᾶὙ ὀἰ ὀαβ÷ἰδὸ Ὀνῖόοάοβᾶδὸ ÷ὑῆᾶὈ ὀἰ ἔῆῖῖῖῖ ἰᾶ ἈᾶἰὈἰὈἰ ὀᾶ Ἀῆ÷ᾶῆῆ ἔᾶὈᾶᾶᾶὈᾶὈ ὀἰδὸ ὀὈὈὈῆῆῆῆῆῆ ὀᾶὙ ὀᾶ ἕᾶ÷ὈᾶὈᾶ ἔὙὈῆῆῆ ἈὈὈᾶὈῆ. Ὀἰ ὑῆῆῆ 500 ἰῆῖὈἰὙὈὙἰ Ἀῆῖῆῆ ἰῆᾶ ἈῆῆᾶὈὙ ἔῖᾶῆῆῆ ὀῆῆῆ, ἈῆῆὙ ἰὈῆᾶᾶὈᾶ ἰᾶ ὈῆῆὈᾶῆῆῆῆῆῆ ἈὈὈῆ ὀγῖ ὀῆῆῆ ἈἰὙῆῆᾶ ἰᾶ ὀὈὈ ἈὈᾶῆὈῆὈᾶὈ ὀἰδὸ Ἀῆῆῆῆ ὀᾶὙ ἈῆῆὈῆῆῆ.

```
options IPDIVERT
```

Ἀἰῆῆῆῆῆῆῆ ὀᾶ *divert* sockets, Ὀἰδὸ ἔᾶ Ἀἰῖῖᾶ ἈῆᾶὙὈᾶῆᾶ ὀῆ ἔὙἰῆὈἰ.

ὈῆῆῆῆῆὈἰὈῆὈῆὈ: ἰὙῆὈὈ ὈᾶῆᾶῆὈᾶὈᾶ ἰᾶ ὀὈὈ ῆὈῆἰὈᾶῆὈ ἔᾶῆ ὀγῖ ἰᾶὈᾶᾶῆὈὈὈὈὈ ὀἰδὸ Ὀῆῆῆῆῆ ὀᾶὙ ἰῆῖ ἔὙἰᾶὈᾶ ἈὈᾶἰᾶῆῆὈῆὈῆὈῆὈ! Ἀἰ ἔὙἰᾶὈᾶ ἈὈᾶἰᾶῆῆὈῆὈῆὈῆὈ ὀᾶ ἈὈὈὙ ὀἰ ὀῆῖᾶῆἰ ἰὈἰῆᾶῆ ἰᾶ ἔῆᾶῆᾶὙῆᾶὈᾶ ἈὈὙἰὙ ἈὈὙ ὀἰ ὀὈὈὈὈὙ ὀᾶὙ. ὈῆὙὈᾶ ἰᾶ ὈᾶῆῆἰᾶὈᾶ ἰὙ÷ῆῆ ἰᾶ ἈᾶῆᾶὈᾶὈᾶῆῖῖ ἰῆ ἔᾶἰὙἰᾶὈ ὀἰδὸ ὀαβ÷ἰδὸ Ὀνῖόοάοβᾶδὸ ἔᾶῆ ἰᾶ Ἀἰῆᾶῆῆῆῆῆῆ Ὑῆᾶ ὀᾶ ὀ÷ᾶὈῆῆὙ Ἀῆ÷ᾶῆῆ ῆὈῆἰὈᾶὙἰ.

3 ἈῆῆᾶᾶὙὈ ὀἰἰ /etc/rc.conf ἕῆᾶ ἰᾶ ὀἰῆὈῆῆᾶὈᾶῆ ὀἰ ὀαβ÷ἰδὸ ὈῆῆὈᾶὈᾶὈ

Ἀῆᾶ ἰᾶ Ἀἰῆῆῆῆῆῆῆῆῆῆ ὀἰ ὀαβ÷ἰδὸ ὈῆῆὈᾶὈᾶὈᾶὈ ἔᾶὈὙ ὀγῖ ἈῆῆὈῆὈῆὈ ὀἰδὸ ὀὈὈὈῆῆῆῆῆῆ ἔᾶῆ ἕῆᾶ ἰᾶ ἰῆὈᾶὈᾶ ὀἰ Ἀῆ÷ᾶῆἰ ἰᾶ ὀἰδὸ ἔᾶἰὙἰᾶὈ ὀἰδὸ ὀαβ÷ἰδὸ ὈῆῆὈᾶὈᾶὈᾶὈ, ὈῆὙὈᾶ ἰᾶ ἈἰῆᾶῆὈᾶὈᾶ ὀἰ Ἀῆ÷ᾶῆἰ /etc/rc.conf. ἈὈὈὙ ὈῆῆὈᾶὈᾶὈᾶ ὀὈὈ ὈᾶῆᾶῆὙὈὙ ἈῆᾶἰὙὈ:

```
firewall_enable="YES"
firewall_script="/etc/firewall/fwrules"
```

Ἀῆᾶ ὈᾶῆῆὈᾶὈᾶὈᾶ ὈῆῆῆὈῆὈᾶὈ ὀ÷ᾶὈῆῆὙ ἰᾶ ὀγῖ ὀῆῖᾶὈᾶὈ ἔᾶῆᾶἰῆὙὈ ἈὈὙ ἈὈὈὙὈ ὀὈὈ ἈῆᾶἰὙὈ, ῆὈἰὈᾶ ἰῆᾶ ἰᾶὈῆὙ ὀἰἰ /etc/defaults/rc.conf ἔᾶῆ ἈῆᾶὙὈᾶ ὀγῖ man ὀᾶῆῆᾶ rc.conf(5)

4 ΆíññìðìéΠóóå ôçí ΑίóύìáòùìΎìç ìåðÛññåç Äéåðëýíóåùì òìò PPP

Άέά íá äðéòñÝðååå óå Ûëëá ìç÷áíìáåå òìò äééðýìò óåå íá óðíáÝìíóåé ìå òìì Ύìù èùòì ìΎóù òìò FreeBSD, ÷ñçóëìðìéðíóåå òì ùð “ðýëç”, éå ðñÝðåé íá áíñññìðìéΠóóåå ôçí ΑίóύìáòùìΎìç ìåðÛññåç äéåðëýíóåùì òìò PPP (NAT). Άέά íá äßíáé áðòù, ðñìóëΎóåå óðì áñ÷åß ì/etc/rc.conf ðéð ðåñåÛòù äñåñìΎð:

```
ppp_enable="YES"
ppp_mode="auto"
ppp_nat="YES"
ppp_profile="ðñìðßë_ðçð_όγιάαόçð"
```

Όόç èΎóç òìò ðñìðßë_ðçð_όγιάαόçð ðñÝðåé íá åÛëååå òì ùññå ççð óýìååððò óåð, ùðòò òì Ύ÷ååå äðìçëåýóåé óðì áñ÷åß ì/etc/ppp/ppp.conf.

5 Ìé éåíüìåò òìò firewall

Όì ìññ ðìò äðñÝíåé ðññå åßíåé íá ìñßòìåå òìò éåññåð òìò firewall. Ìé éåññåð òìò ìðìßìò ðåñéåñÛòìåå ååð åßíåé åñëåðÛ éåññ åéå òìò ðåñéóóùðåñìò ÷ñΠóóåå ìå dialup óýìååç, äëëÛ ìýåå òðì÷ñåéëß åßíåé, ìýåå åßíåé äðíååùì íá óåññÛåñìò ìå ðéð áíÛååð ùëù òù ÷ñçóðñì dialup. Ìðññýí, ùùð, íá ÷ñçóëìåýóìò ùð Ύíå éåëù ðåñÛåéåñì ðòëìßåùì òìò IPFW éåé åßíåé ó÷åéëÛ åýëëì íá òìò ðñìóåñìåååå óðéð äéëΎð óåð áíÛååð.

Áð áñ÷åñìåå ùùð ìå ðéð ååóéëΎð áñ÷Ύð áñùð èëåóóìý ðåß÷ìò ðñìóóåååå. ìå èëåóóù ðåß÷ìò ðñìóóåååå äðåññåýå éåð’ áñ÷Πì èÛëå óýìååç. Ì åéå÷åñéóððò ìðñåß ýóóåñå íá ðñìóëΎóåé éåññåð åéå íá äðéòñÝðåé ìññ óðååññåñìΎíåð óðíáΎóåð íá ðåññÛíå åðù òì ðåß÷ìò ðñìóóåååå. Ç ðëì óðìçëéóìΎìç óåññÛ òù éåñññì óå Ύíå èëåóóù ðåß÷ìò åßíåé: ðñðåé ìé éåññåð ðìò äðéòñÝðìò ìåñéëΎð óðíáΎóåð, éåé ðÝëì ìé éåññåð ðìò äðåññåýìò ìðìååððìåå Ûëçç óýìååç. Ç ëñåçëß ðßòù åðù áðòù åßíåé ùé ðñðåé åÛåååå òìò éåññåð ðìò äðéòñÝðìò ðñÛåíåå íá ðåñÛòìò éåé ýóóåñå ùëå óå Ûëëå äðåññåýìíóåé áðòùìåå.

ΌðéÛìåå, ëëðùí, Ύíå éåðÛëñì óðì ìðìßì éå äðìçëåýìíóåé ìé éåññåð òìò ðåß÷ìò ðñìóóåååå. Όå áðòù òì Ûñëñì ÷ñçóëìðìéýíå ùð ðåñÛåéåñì òì éåðÛëñì ì/etc/firewall. ΆëëÛìåå éåðÛëñì ìΎóå óå áðòù éåé åçìëìñåΠóóåå òì áñ÷åß fwrules ðìò òì ùññÛ òìò åß÷åñåñ ðåññ ì/etc/rc.conf. Όçìåçðóåå ðùð ìðñåååå íá åëëÛååå òì ùññå òìò áñ÷åñì áðòìý óå ùé èΎëååå. Áðòùð ì ìåçåð åßíåé áðòù òì ùññå óåñ ðåñÛåéåñì éåé ìññ.

Áð åñýåå ðññå Ύíå ðåñÛåéåñì ðåß÷ìò ðñìóóåååå ìå åñëåðÛ äðåñçåçìåëÛ ó÷åëå.

```
# Define the firewall command (as in /etc/rc.firewall) for easy
# reference. Helps to make it easier to read.
fwcmd="/sbin/ipfw"
```

```
# Define our outside interface. With userland-ppp this
# defaults to tun0.
oif="tun0"
```

```
# Define our inside interface. This is usually your network
# card. Be sure to change this to match your own network
# interface.
iif="fxp0"
```

```
# Force a flushing of the current rules before we reload.
$fwcmd -f flush
```

```
# Divert all packets through the tunnel interface.
```

```
$fwcmd add divert natd all from any to any via tun0

# Check the state of all packets.
$fwcmd add check-state

# Stop spoofing on the outside interface.
$fwcmd add deny ip from any to any in via $oif not verrevpath

# Allow all connections that we initiate, and keep their state,
# but deny established connections that don't have a dynamic rule.
$fwcmd add allow ip from me to any out via $oif keep-state
$fwcmd add deny tcp from any to any established in via $oif

# Allow all connections within our network.
$fwcmd add allow ip from any to any via $iif

# Allow all local traffic.
$fwcmd add allow all from any to any via lo0
$fwcmd add deny all from any to 127.0.0.0/8
$fwcmd add deny ip from 127.0.0.0/8 to any

# Allow internet users to connect to the port 22 and 80.
# This example specifically allows connections to the sshd and a
# webserver.
$fwcmd add allow tcp from any to me dst-port 22,80 in via $oif setup keep-state

# Allow ICMP packets: remove type 8 if you don't want your host
# to be pingable.
$fwcmd add allow icmp from any to any via $oif icmp types 0,3,8,11,12

# Deny and log all the rest.
$fwcmd add deny log ip from any to any
```

Όπná Ý÷áoá Ýía ðēēçñüíÝíí óåβ÷ìò ðñüóóáóβáo, òì ìðìβì óðíaÝóáéoð óóéo èýñáo 22 éáé 80 éáé éáoáñÜöáé üēáo óéo Üēēáo óðiaÝóáéoð óôi áñ÷åβì éáoáñáoðò òìò óóóðìáoòìò. ÐēÝíí åβóðå Ýðìēñē áéá åðáíåēβìçóc. Ôì óåβ÷ìò ðñüóóáóβáo éå áíåññðìēçéåβ áóðüíáoá éáé éå òñòðóå òìò éáíüáoð ðìò ðñìóēÝóáoå. Áí åå åβíåé áóðü Þ Ý÷áoå ððìéååððìóå ðññåðìáoå, Þ áí Ý÷áoå èÜðìéáoð ðñìóÜóáéoð áéá íå áéññēùéåβ áóðü òì Üñēñì, åðéēñēñìðóóå íåæβ ììò íå email.

6 ÅñùòÞóáéoò

1. ÅēÝðü ìçíýíáoå üðüò limit 500 reached on entry 2800 éáé íåðÜ áðü áóðü òì óýóóçìÜ ììò óóåíáoÜå íå éáoáñÜöáé óå ðåÝóå ðìò åìðñåññìóå áðü òì óåβ÷ìò ðñüóóáóβáo. Åìçåýåé áéñüå òì firewall ììò;

Áóðü áðēÜ óçíåβíåé ðüò Ý÷å ðñóéññðìēçéåβ òì ìÝåóòì ùñēñ éáoáñáoðò (logging) áéá áóðü òì éáíüíå. Ì éáíüíå ì Þåìò áíåññðìåß íå ðìçåýåé, áéēÜ ååñ éå óóÝñíåé ðéå ìçíýíáoå óôi áñ÷åβì éáoáñáoðò òìò óóóðìáoòìò ìÝ÷ñé íå ìçåñíóáoå ðÜçé òìò ìåññçóÝò. Ìðñåßóå íå ìçåñíóáoå òìò ìåññçóÝò ìå ççííñìð

```
# ipfw resetlog
```

ΆίάέέάέόέέÛ, ìðññáßóá íá áðñáóáóá òì ùñέì éάόάññáöðò óóέò ñòèìßóáέò òìò ðòñáíá óάò ìá όçí áðέέìáÐ IPFWALL_VERBOSE_LIMIT ùðòò ðññέññÛðáìá ðññáðÛñ. ìðññáßóá íá áέέÛíáóá áóóò òì ùñέì (÷ ùñßò íá ìáóááèòóóßóáá ðÛέέ òì ðòñáíá óάò éάέ íá èÛíáóá reboot) ÷ ñçóέììðìέííóáò όçí sysctl(8) όέìÐ net.inet.ip.fw.verbose_limit.

2. ÈÛðìέì èÛèòò ðñÝðáέ íá Ýáέíá. Áέèìέçóá óέò áíòìέÝò éάóÛ ãñÛíá éάέ όþñá èèáέäþèçéá áðÝñ.

Áóóòò ì ìäçäùò òðìέÝðáέ ùóέ ÷ ñçóέììðìέáßóá òì *userland-ppp*, áέ áóóò èέ ìέ éáfííáð ðìò áßñíóáέ ÷ ñçóέììðìέííí òì tun0 interface, ðìò áíóέóóìέ÷ áß óόçí ðñþόç όγíááόç ðìò óóέÛ÷ íáóáέ ìá òì ppp(8) (áέέέþò áñóóòò éάέ ùò *user-ppp*). Ç áðñíáíç όγíááόç éá ÷ ñçóέììðìέííóá òì tun1, ìáóÛ òì tun2 éάέ ðÛáέ èÝáñíóáò.

Èá ðñÝðáέ áðßόçò íá èòìÛóóá ùóέ òì pppd(8) ÷ ñçóέììðìέáß òì interface ppp0, ìðòá áí ìáέέíáóáóá όç όγíááόÐ óάò ìá òì pppd(8) éá ðñÝðáέ íá áíóέéάóáóóðáóá òì tun0 ìá ppp0. ÐññáέÛòò éá ááßñíóíá Ýíá áýέìέì ðñùðì íá áέέÛíáóá òìòò éáfííáð òìò firewall éάóÛέέçéá. ìέ áñ÷έέìß éáfííáð όþæííóáέ óá Ýíá áñ÷áßì ìá ùññá fwrules_tun0.

```
% cd /etc/firewall
/etc/firewall% su
Password:
/etc/firewall# mv fwrules fwrules_tun0
/etc/firewall# cat fwrules_tun0 | sed s/tun0/ppp0/g > fwrules
```

Άέά íá éάóáέÛááóá áí ÷ ñçóέììðìέáßóá òì ppp(8) Ð òì pppd(8) ìðññáßóá íá áñáóÛóáóá όçí Ýññáì όçò ifconfig(8) áóìý áñññáñðìέçéáß ç όγíááόÐ óάò. Ð.÷., áέá ìέá όγíááόç ðìò áñññáñðìέçéçéá áðñ òì pppd(8) éá ááßóá èÛóέ óáf áóóòò (ááß÷ñíóáέ ìùì ìέ ó÷áóέέÝò ãñáñìÝò):

```
% ifconfig
(skipped...)
ppp0: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1524
    inet xxx.xxx.xxx.xxx --> xxx.xxx.xxx.xxx netmask 0xff000000
(skipped...)
```

Άðñ όçí Ûέέç, áέá ìέá όγíááόç ðìò áñññáñðìέçéçéá ìá òì ppp(8) (*user-ppp*) èÛ ðññáðá íá ááßóá èÛóέ ðáñññìέì ìá òì ðññáέÛòò:

```
% ifconfig
(skipped...)
ppp0: flags=8010<POINTOPOINT,MULTICAST> mtu 1500
(skipped...)
tun0: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1524
    (IPv6 stuff skipped...)
    inet xxx.xxx.xxx.xxx --> xxx.xxx.xxx.xxx netmask 0xffffffff00
    Opened by PID xxxxx
(skipped...)
```