

Όγιάαός ΙΎού Όçäåöþñĩ òéé Ôåß÷ìò Ðñĩóôáóßàò óôĩ FreeBSD

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\$FreeBSD: doc/el_GR.ISO8859-7/articles/dialup-firewall/article.sgml,v 1.20
2008/12/08 03:10:51 keramida Exp \$

Ôĩ FreeBSD áβιάέ Υία éáôĩ÷õñùĩΥĩ ãìðñééÛ óγìãñē òĩò FreeBSD Foundation.
ÐñēēΥò áðù óéò ēΥìáéò ð õñÛóáéò ïé ïðĩßàò ÷ ñçóéììðñēĩγìóáé áðù òĩòò éáóáóéãáóóðΥò ð òĩòò
ðñēçôΥò òĩòò áéá íá áéáéñññĩòĩ óá ðñĩùũĩóá òĩòò éãùññĩγìóáé ãìðñééÛ óγìãñē. ¼ðñò áóðΥò
ãìðñééÛ óá áóðù òĩ éãñìãñ éáé áéá ùóáò áðù áóðΥò ãìññæáé ç ììÛáá ÁíÛððçĩç òĩò FreeBSD ùóé
åβιάé ðééáìĩ íá áβιάé ãìðñééÛ óγìãñē, éá åãßòá Υία áðù óá óγìãñē: “TM” ð “©”.

Áóðù òĩ Ûñēñ ðñééãñÛóáé ðñò ìðñãßòá íá ñðēĩßóáðá Υία ôåß÷ìò ðñĩóðáóßàò (firewall) ÷ ñçóéììðñēĩγìóáò
ìéá PPP óγìãñē ìΎúò òçäåöþñĩ òôĩ FreeBSD ìá òĩ IPFW. Ðéĩ óðéãñēñēĩΥία, ðñééãñÛóáé òç ñγéìéç áñò
ôåß÷ìò ðñĩóðáóßàò óá ìéá óγìãñē ìΎúò òçäåöþñĩ ðñò Υ÷áé ãñĩãñēç IP áéãγèçĩç. Áóðù òĩ éãñìãñ ããĩ
áó÷ñéãßóáé ìá òĩ ðñò éá ñðēĩßóáðá òçĩ ãñ÷éç óáò óγìãñē ìΎúò PPP. Áéá ðñéçóóóðñãð ðççññññßàò
ó÷ãðééÛ ìá ðéò ñðēĩßóáðò ìéáò óγìãñē ìΎúò PPP åãßòá òç óåßãáá ãñðéãáð ppp(8).

1 Ðññēĩñìò

Áóðù òĩ éãñìãñ ðñééãñÛóáé òçĩ áéããééáóßá ðñò ÷ ñáéÛæáóáé áéá íá ñðēĩßóáðá Υία ôåß÷ìò ðñĩóðáóßàò óôĩ
FreeBSD ùóáĩ ç IP áéãγèçĩç ãβĩóáé ãñĩãñēÛ áðù òĩ ISP óáò. Ðáñññē ðñò Υ÷ù ðñĩóðáéðóáé íá ēÛù áóðù òĩ
éãñìãñ ùóĩ òĩ ãñĩãññ ðéĩ ðññãð éáé óùóðù, åβóðá ãðññóáãðñé íá óðåßãðá ðéò áéññèðóáðò, óá ó÷ñééá ð ðéò
ðññòÛóáðò óáò òçç áéãγèçĩç òñò óðããñãóΥá: <marcs@draenor.org>.

2 ÐáñÛìãññé òñò ðññĩá

Áéá íá ìðñΥóáðá íá ÷ ñçóéììðñēĩγìóáðá òĩ IPFW, ðñΥðáé íá áìóùãáððóáðá òçĩ ó÷ãðééç ððñóðññéç óôĩ ðññĩá óáò.
Áéá ðñéçóóóðñãð ðççññññßàò ó÷ãðééÛ ìá òç ìáðáãèððéç òñò ðññĩá, åãßòá òĩ òñĩá ñðēĩßóáñ òñò ðññĩá óôĩ
Ãã÷áéñãñēĩ (http://www.FreeBSD.org/doc/el_GR.ISO8859-7/books/handbook/kernelconfig.html). Éá ðñΥðáé íá
ðññéçΥóáðá ðéò ðññéÛðù ãðéçñãΥð òðéò ñðēĩßóáðò òñò ðññĩá óáò áéá íá áñãñãñðñéç òçĩ ððñóðññéç áéá òĩ
IPFW:

```
options IPFW2
```

Ἀἰῆῆῆῆῆῆ οἱ ἐπαέεά οᾶβ÷ἰδ Ὀνῖόοάοβᾶδ οἱ ὀνῆῆῆῆῆ.

Ὀγῖᾶῆῆῆῆῆ: Ἀδῶ οἱ ἐᾶβῖᾶῖ ἐᾶῆῆῆῆ ῆδῆ ὕ÷ᾶδᾶ ᾶᾶᾶᾶᾶᾶᾶᾶ ὀγῖ ὕᾶῆῆῆῆ 5.X οἱ FreeBSD ᾶ ἰᾶᾶ ὀῖ ὀῆῆῆῆῆῆ. Ἀἰ ÷ῆῆῆῆῆῆῆῆῆῆῆ ὀγῖ ὕᾶῆῆῆῆ 4.X, ὀῆῆῆ ἑᾶ ὀῆὕῆᾶῆ ἰᾶ ᾶἰῆῆῆῆῆῆῆῆῆῆῆ ὀγῖ ᾶὀῆῆῆῆ IPFW2 ἑᾶῆ ἰᾶ ᾶῆᾶᾶᾶᾶᾶ ὀγῖ ὀᾶῆῆᾶᾶ ᾶῖᾶῆᾶῆᾶᾶ ipfw(8) ᾶῆᾶ ὀᾶῆῆῆῆῆῆῆῆῆῆ ὀῆῆῆῆῆῆῆῆῆ ὀ÷ᾶὀῆῆῆ ἰᾶ ὀγῖ ᾶὀῆῆῆῆ IPFW2. Ὀῆῆῆῆῆῆ ἑᾶῆῆῆῆῆῆ ὀἱ ὀἱῆῆῆ *USING IPFW2 IN FreeBSD-STABLE*.

```
options IPFW2_VERBOSE
```

Ὀὀὕῆῆῆ ὀᾶ ἰῆῖῖῖῖῖ ᾶῆᾶ ὀᾶ ἑᾶὀῆῆῆῆ ὀᾶῆὕῆῆ ὀἱ log οἱ ὀὀὀὀῆῖῖῖῆ.

```
options IPFW2_VERBOSE_LIMIT=500
```

Ἀῆᾶῆ ἑῆὀῖῆῆ ῆῆῆῆ ὀὀὀὀ ὀῖῆὕῆ ὀἱ ἑῆὀῖῆῆ ᾶᾶᾶᾶᾶᾶ ἑᾶ ἑᾶὀᾶᾶᾶῆῆῆῆῆ. ὀὀὀ ἰὀῖῆῆῆῆ ἰᾶ ἑᾶὀᾶᾶᾶῆῆῆῆῆ ὀᾶ ἰῆῖῖῖῖῖ ὀᾶ ὀἱ ὀᾶβ÷ἰδ Ὀνῖόοάοβᾶδ ÷ῆῆῆ ὀἱ ἑῆῖῖῖῖ ἰᾶ ᾶᾶῆῆῆῆ ὀᾶ ᾶῆ÷ᾶῆῆ ἑᾶὀᾶᾶᾶᾶᾶ ὀἱ ὀὀὀὀῆῖῖῖῆ ὀᾶ ἰᾶ ᾶᾶ÷ὀᾶῆῆῆ ἑῆὀῖῆῆ ᾶὀῆῆῆῆ. Ὀἱ ῆῆῆῆ 500 ἰῆῖῖῖῖῖ ᾶῆῖῆ ἰᾶ ᾶῆῆῆὀῆ ἑῖᾶῆῆῆ ὀῆῆῆ, ᾶῆῆῆ ἰὀῖῆῆῆῆ ἰᾶ Ὀνῖόοᾶῆῆῆῆῆ ᾶὀὀῆ ὀγῖ ὀῆῆῆ ᾶῖῆῆῆῆ ἰᾶ ὀὀὀ ᾶὀῆῆὀῆῆῆ ὀἱ ᾶῆῆῆ ὀᾶ ᾶῆὀῖῖῆ.

```
options IPDIVERT
```

Ἀἰῆῆῆῆῆῆ ὀᾶ *divert* sockets, ὀἱ ἑᾶ ᾶῖῖῖῖ ᾶῆᾶῆὀᾶῆῆ ὀῆ ἑῆῖῖῖῆ.

Ὀῆῖῆῆῖὀῖῆῆῆ: ῆῆῆὀ ὀᾶῆᾶῆῆῆῆ ἰᾶ ὀὀὀ ῆὀῆῖὀᾶῆὀ ἑᾶῆ ὀγῖ ἰᾶὀᾶᾶῆὀὀὀὀὀ ὀἱ ὀὀῆῆῆ ὀᾶ ἰῆῖῖῖῖ ᾶὀᾶῖᾶῆῆῆῆῆῆῆ! Ἀἰ ἑῆῖῖῆῆ ᾶὀᾶῖᾶῆῆῆῆῆῆ ὀᾶ ᾶὀὀ ὀἱ ὀῆῖῖῖ ἰὀῖῆῆ ἰᾶ ἑῆᾶῆᾶῆῆῆῆῆ ᾶὀὕῖῆ ᾶὀὀ ὀἱ ὀὕὀὀῖῆ ὀᾶὀ. Ὀῆὕῆᾶῆ ἰᾶ ὀᾶῆῖῖῖῖῖῆ ἰὕ÷ῆῆ ἰᾶ ᾶᾶῆᾶὀᾶὀᾶῖῖῖ ἰῆ ἑᾶῖῖῖῖ ὀἱ ὀᾶβ÷ἰδ Ὀνῖόοάοβᾶδ ἑᾶῆ ἰᾶ ᾶῖῆῖᾶῆῖῖῖ ῆῆᾶ ὀᾶ ὀ÷ᾶὀῆῆ ᾶῆ÷ᾶῆῆ ῆὀῆῖὀᾶῖῆ.

3 Ἀῆῆᾶῆὕὀ οἱ /etc/rc.conf ᾶῆᾶ ἰᾶ ὀῖῆὀῖᾶὀᾶῆ ὀἱ ὀᾶβ÷ἰδ Ὀνῖόοάοβᾶδ

Ἀῆᾶ ἰᾶ ᾶἰῆῆῆῆῆῆῆῆ ὀἱ ὀᾶβ÷ἰδ Ὀνῖόοάοβᾶδ ἑᾶὀῆ ὀγῖ ᾶῆῆῖῆῆῆ ὀἱ ὀὀὀὀῆῖῖῖῆ ἑᾶῆ ᾶῆᾶ ἰᾶ ῆῆὀᾶὀᾶ ὀἱ ᾶῆ÷ᾶῆῖ ἰᾶ ὀἱὀὀ ἑᾶῖῖῖῖ ὀἱ ὀᾶβ÷ἰδ Ὀνῖόοάοβᾶδ, ὀῆὕῆᾶῆ ἰᾶ ᾶῖῆῖᾶῆὀᾶὀᾶ ὀἱ ᾶῆ÷ᾶῆῖ /etc/rc.conf. Ἀὀῆῆ ὀῆῖὀῆὕὀᾶ ὀὀὀ ὀᾶῆᾶῆὀὀᾶ ᾶῆῖῖῖῆ:

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

Ἀῆᾶ ὀᾶῆῆὀὀᾶῆῆῆ ὀῆῆῖὀῖῆῆῆ ὀ÷ᾶὀῆῆ ἰᾶ ὀγῖ ὀῆῖὀᾶὀᾶ ἑᾶῆᾶῖῆὀὀ ᾶὀὀ ᾶὀὀὕὀ ὀὀὀ ᾶῆῖῖῖῆ, ῆὀῖὀᾶ ἰᾶ ἰᾶὀῆὀ ὀἱ /etc/defaults/rc.conf ἑᾶῆ ᾶῆᾶῆὀὀᾶ ὀγῖ man ὀᾶῆῆᾶᾶ rc.conf(5)

4 ΆíññìðìεΠόοά όçí ΑίούìάòùìΎίç ìάòÛñάόç Äέάðέýíόάùì όìò PPP

Άέά íά άðέòñÝòάòά óά Ûέέά ìç÷-άíΠíάóά όìò äέέóýìò óάò íά óòíáÝìíóáέ ìά όìí Ύìù έüóìí ìΎóù όìò FreeBSD, ÷ñçóέìíðìεÞíóáò όì ùò “ðýέç”, έά ðñÝðáέ íά áíñññìðìεΠόóάò όçí ΑίούìάòùìΎίç ìάòÛñάόç äέάðέýíόάùì όìò PPP (NAT). Άέά íά áβíáέ áòòù, ðñìóεΎóóά óòì áñ÷-áβì /etc/rc.conf óέò ðáñáέÛòù áñáñìΎò:

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

Όόç èΎόç όìò ðñìòβέ_όçò_όγíääóçò ðñÝðáέ íά áÛέάòά όì ùíñά όçò óýíääóðò óάò, ùòòù όì Ύ÷-άòά áðìεçέäýóáέ óòì áñ÷-áβì /etc/ppp/ppp.conf.

5 Ìέ έáíüíáò όìò firewall

Όì ìüñì όìò áðñìΎíáέ όÞñά áβíáέ íά ìñβóìòìά όìòð έáíüíáò όìò firewall. Ìέ έáíüíáò όìòð ìðìβìòð ðáñέáñÛóìòìά ááÞ áβíáέ áñέáòÛ έáέìβ áέά όìòð ðáñέóóùòáñìòð ÷ñΠóóáò ìά dialup óýíääóç, áέέÛ ìýóά óðì÷-ñáùóέέìβ áβíáέ, ìýóά áβíáέ áòíáòùì íά óáέñέÛæìòì ìά óέò áíÛáέáò ùέüì óùì ÷ñçóóÞí dialup. Ìðìñìýí, ùìòð, íά ÷ñçóέìáýóìòì ùò Ύíá έáέü ðáñÛááέäìá ñòέìβóáùì όìò IPFW έάέ áβíáέ ó÷-áòέέÛ áýέììí íά όìòð ðñìóáñìüóáòά óóέò äέέΎò óάò áíÛáέáò.

Áò áñ÷-βóìòìά ùìòð ìά óέò ááóέέΎò áñ÷-Ύò áíüò έέáέóóìý óáβ÷-ìòð ðñìóóáóáò. Íá έέáέóóù óáβ÷-ìò ðñìóóáóáò áðááññáýáέ έáò’ áñ÷-Þí έÛέá óýíääóç. Ì áέá÷-áέñέóóðò ìðìñáβ ýóóáñά íά ðñìóεΎóáέ έáíüíáò áέά íά áðέòñÝòάέ ìüñì óóáέáèñέìΎíáò óòíáÝóáέò íά ðáñìÛíá áðù όì óáβ÷-ìò ðñìóóáóáò. Ç ðέì óðìçέέóìΎίç óáέñÛ óùì έáíüíüí óά Ύíá έέáέóóù óáβ÷-ìò áβíáέ: ðñÞóά ìέ έáíüíáò όìò áðέòñÝòìòì ìáñέέΎò óòíáÝóáέò, έάέ óΎέìò ìέ έáíüíáò όìò áðááññáýìòì ìðìέááÞðìòά Ûέέç óýíääóç. Ç εíáέέÞ ðβóù áðù áòòù áβíáέ ùóέ ðñÞóά áÛæáòά όìòð έáíüíáò όìò áðέòñÝòìòì ðñÛáíáóά íά ðáñÛóìòì έάέ ýóóáñά ùέá óά Ûέέá áðááññáýìíóáέ áòòùìáóά.

ΌóέÛìòά, εìέðüí, Ύíá έáòÛέìáì óóìí ìðìβì έá áðìεçέäýííóáέ ìέ έáíüíáò όìò óáβ÷-ìòð ðñìóóáóáò. Όά áòòù όì Ûñέñì ÷ñçóέìíðìεíýíá ùò ðáñÛááέäìá όìí έáòÛέìáì /etc/firewall. ΆέέÛìòά έáòÛέìáì ìΎóά óά áòòùí έάέ äçìέìòñáΠóóά όì áñ÷-áβì fwrules όìò όì ùíñÛ όìò áβ÷-áìá áñÛøáέ óòì rc.conf. ΌçìáέÞóóά ðùò ìðìñáβóά íά áέέÛíáòά όì ùíñά όìò áñ÷-áβìò áòòìý óά ùóέ èΎέáòά. Áòòùò ì ìæäüò áβíáέ áòòù όì ùíñά óáí ðáñÛááέäìá έάέ ìüñì.

Áò äìýíá όÞñά Ύíá ðáñÛááέäìá óáβ÷-ìòð ðñìóóáóáò ìά áñέáòÛ áðáíçäçíáóέέÛ ó÷-ùέέá.

```
# 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 óðíaÝóáéo óóéo èýñáo 22 éáé 80 éáé éáoáñÜöáé üēáo óéo Üēēáo óðíaÝóáéo óôi áñ÷åβì éáoáñáoðò òìò óóóðìáoìò. ÐēÝíí åβóðå Ýðìēñē áéá åðáíæēβίçóc. Ôì óåβ÷ìò ðñüóóáóβáo éå áíåññðìéçēåβ áóðüíáoá éáé éå òñòðóáé òìò éáíüáo ðìò ðñìóēÝóáoå. Áí åå åβíáé áóðü Þ Ý÷áoå ððìéååððìóå ðñìåðìáoå, Þ áí Ý÷áoå èÜðìéáo ðñìóÜóáéo áéá íå áéññēùēåβ áóðü òì Üñēñì, åðéēñēñìðóóå íåæβ ììò íå email.

6 ÅñùòÞóáéo

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

Áóðü áðēÜ óçíåβíåé ðüò Ý÷å ðñóéññðìéçēåβ òì ìÝáéóòì ùñēñ éáoáñáoðò (logging) áéá áóðü òì éáíüíå. Ì éáíüíå ì Þåìò áíåñññóåβ íå ðìçåýåé, áéēÜ ååñ éå óóÝñíåé ðéå ìçíýíáoå óôi áñ÷åβì éáoáñáoðò òìò óóóðìáoìò ìÝ÷ñé íå ìçåñíóáoå ðÜçé òìò ìåñçóÝò. Ìðñåβóå íå ìçåñíóáoå òìò ìåñçóÝò ìå ççííññÞ

```
# ipfw resetlog
```

ΆίάέέάέόέέÛ, ìðññáβóá íá áðñáóáðá òì ùñéì éάóáññáðòðò óóέò ñðèìβóάέò òìò ððñáíá óáo ìá òçí áðέέñāÐ IPFWALL_VERBOSE_LIMIT ùðòð ðññéññÛðáì ðññáðÛñ. ìðññáβóá íá áέέÛñáðá áðòò òì ùñéì (÷ ùñβò íá ìáðááèùòðβóáðá ðÛέέ òì ððñáíá óáo éάέ íá èÛñáðá reboot) ÷ ñçóέììðñéíðáð òçí sysctl(8) óéìÐ net.inet.ip.fw.verbose_limit.

2. ÈÛðñéì èÛèò ðñÝðáé íá Ýáéíá. Áέñéýçóá óέò áíòñéÝð éáðÛ ãñÛñá éάέ òþñá èéáέäþèçéá áðÝñ.

Áðòòò ì ìäçäùð òðñéÝðáé ùðé ÷ ñçóέììðñéáβóá òì *userland-ppp*, áé áðòò èé ìé éáfñíáð ðìò áβññóáé ÷ ñçóέììðñéýí òì tun0 interface, ðìò áíóέóðñé÷ áβ òçí ðñþòç óýíááóç ðìò òðéÛ÷ íáðáé ìá òì ppp(8) (áέέèðð áñòòò èάέ ùð *user-ppp*). Ç áðñíáíç óýíááóç éá ÷ ñçóέììðñéýóá òì tun1, ìáðÛ òì tun2 éάέ ðÛáé èÝáññóáð.

Èá ðñÝðáé áðβóçò íá èòìÛóðá ùðé òì pppd(8) ÷ ñçóέììðñéáβ òì interface ppp0, ìðòðá áí ìáέéñáóáðá òç óýíááóÐ óáo ìá òì pppd(8) éá ðñÝðáé íá áíóέéάóáððóáðá òì tun0 ìá ppp0. ÐññáéÛòù éá ááβññóíá Ýíá áýέññ ðñùðñ íá áέέÛñáðá òìòò éáfñíáð òìò firewall éáðÛέέçá. ìé áñ÷έέñβ éáfñíáð òþñéíóáé óá Ýíá áñ÷áβ 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
```

Άέá íá éάðáéÛááðá áí ÷ ñçóέììðñéáβóá òì ppp(8) Ð òì pppd(8) ìðññáβóá íá áñáðÛóáðá òçí Ýñññ òçð ifconfig(8) áòñý áññññðñéçéáβ ç óýíááóÐ óáo. Ð.÷., áέá ìéá óýíááóç ðìò áññññðñéçéçá áðù òì pppd(8) éá ááβðá èÛóέ óáf áðòò (ááβ÷ññóáé ìùñ ìé ò÷áðééÝð ãñññÝð):

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

Áðù òçí Ûέέç, áέá ìéá óýíááóç ðìò áññññðñéçéçá ìá òì ppp(8) (*user-ppp*) èÛ ðññðá íá ááβðá èÛóέ ðáññññéì ìá òì ðññáéÛòù:

```
% 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...)
```