

## Re: duplicate read/write locks in net/pfil.c and netinet/ip\_fw2.c

**Source:** <http://unix.derkeiler.com/Mailing-Lists/FreeBSD/arch/2005-08/0143.html>

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**From:** Max Laier (*max\_at\_love2party.net*)

**Date:** 08/17/05

To: Luigi Rizzo <rizzo@icir.org>

Date: Wed, 17 Aug 2005 04:35:19 +0200

On Wednesday 17 August 2005 02:05, Luigi Rizzo wrote:

- > [*apologies for the cross post but it belongs both to arch and net.*]
- >
- > *I notice that net/pfil.c and netinet/ip\_fw2.c have two copies of*
- > *aisimilar but slightly different implementation of*
- > *multiple-reader/single-writer locks, which brings up the question(s):*
- >
- > *1. should we rather put this code in the generic kernel code so that other*
- > *subsystems could make use of it ? E.g. the routing table is certainly*
- > *a candidate,*

I have asked this several time on -arch and IRC, but never found anyone willing to pursue it. However, the problem is ...

- > *and especially*
- >
- > *2. should we implement it right ?*
- >
- > *Both implementations are subject to starvation for the writers*
- > *(which is indeed a problem here, because we might want to modify*
- > *a ruleset and be prevented from doing it because of incoming traffic*
- > *that keeps readers active).*
- > *Also the PFIL\_TRY\_WLOCK will in fact be blocking if a writer*
- > *is already in - i have no idea how problematic is this in the*
- > *way it is actually used.*

... really this. I didn't find a clean way out of the starvation issue. What I do for pfil is that I set a flag and simply stop serving[2] shared requests once a writer waits for the lock. If a writer can't sleep[1] then we return EBUSY and don't. However, for pfil it's almost ever safe to assume that a write may sleep (as it is for most instances of this kind of sx-lock where you have `BIGNUMxreads:1xwrite`).

[1] Note that there is a \*big\* difference between blocking and sleeping. These two are usually confused. While it is almost always okay to block it

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is seldom okay to sleep. The existing sx(9) api has the problem that it \*sleeps\* in the shared path which renders it unusable for this usecase (as we might be holding other locks and must not sleep in the shared path). However, sleeping in the shared path is one (?the only?) way out of the starvation problem – other than a problem specific as done for pfil.

[2] See pfil(9) BUGS.

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/"\ Best regards, | mlaier@freebsd.org  
\ / Max Laier | ICQ #67774661  
X http://pf4freebsd.love2party.net/ | mlaier@EFnet  
/ \ ASCII Ribbon Campaign | Against HTML Mail and News
```

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- application/pgp-signature attachment: stored