
Subject: [PATCH] saa7134-tvaudio: Convert to kthread API.

Posted by [ebiederm](#) on Thu, 19 Apr 2007 07:58:58 GMT

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From: Eric W. Biederman <ebiederm@xmission.com>

It is my goal to replace all kernel code that handles signals from user space, calls `kernel_thread` or calls `daemonize`. All of which the `kthread_api` makes unnecessary. Handling signals from user space is a maintenance problem because using a kernel thread is an implementation detail and if user space cares it does not allow us to change the implementation. Calling `daemonize` is a problem because it has to undo a continually changing set of state generated by user space, requiring the implementation to change continually. `kernel_thread` is a problem because it returns a `pid_t` value. Numeric pids are inherently racy and in the presence of a pid namespace they are no longer global making them useless for general use in the kernel.

So this patch renames the pid member of struct `saa7134_thread` started and changes its type from `pid_t` to `int`. All it has ever been used for is to detect if the kernel thread is has been started so this works.

`allow_signal(SIGTERM)` and the calls to `signal_pending` have been removed they are needed for the driver to operation.

The startup of `tvaudio_thread` and `tvaudio_thread_dep` have been modified to use `kthread_run` instead of a combination of `kernel_thread` and `daemonize`.

The result is code that is slightly simpler and more maintainable.

Cc: Hartmut Hackmann <hartmut.hackmann@t-online.de>

Cc: Mauro Carvalho Chehab <mchehab@infradead.org>

Signed-off-by: Eric W. Biederman <ebiederm@xmission.com>

```
drivers/media/video/saa7134/saa7134-tvaudio.c | 27 ++++++++-----
drivers/media/video/saa7134/saa7134.h         | 2 +-
2 files changed, 14 insertions(+), 15 deletions(-)
```

```
diff --git a/drivers/media/video/saa7134/saa7134-tvaudio.c
b/drivers/media/video/saa7134/saa7134-tvaudio.c
index 7b56041..b636cb1 100644
--- a/drivers/media/video/saa7134/saa7134-tvaudio.c
+++ b/drivers/media/video/saa7134/saa7134-tvaudio.c
@@ -27,6 +27,7 @@ @@
```

```

#include <linux/kernel.h>
#include <linux/slab.h>
#include <linux/delay.h>
#include <linux/kthread.h>
#include <asm/div64.h>

#include "saa7134-reg.h"
@@ -505,11 +506,9 @@ static int tvaudio_thread(void *data)
    unsigned int i, audio, nscan;
    int max1,max2,carrier,rx,mode,lastmode,default_carrier;

- daemonize("%s", dev->name);
- allow_signal(SIGTERM);
    for (;;) {
        tvaudio_sleep(dev,-1);
- if (dev->thread.shutdown || signal_pending(current))
+ if (dev->thread.shutdown)
        goto done;

restart:
@@ -618,7 +617,7 @@ static int tvaudio_thread(void *data)
    for (;;) {
        if (tvaudio_sleep(dev,5000))
            goto restart;
- if (dev->thread.shutdown || signal_pending(current))
+ if (dev->thread.shutdown)
        break;
        if (UNSET == dev->thread.mode) {
            rx = tvaudio_getstereo(dev,&tvaudio[i]);
@@ -782,9 +781,6 @@ static int tvaudio_thread_ddep(void *data)
    struct saa7134_dev *dev = data;
    u32 value, norms, clock;

- daemonize("%s", dev->name);
- allow_signal(SIGTERM);
-
    clock = saa7134_boards[dev->board].audio_clock;
    if (UNSET != audio_clock_override)
        clock = audio_clock_override;
@@ -796,7 +792,7 @@ static int tvaudio_thread_ddep(void *data)

    for (;;) {
        tvaudio_sleep(dev,-1);
- if (dev->thread.shutdown || signal_pending(current))
+ if (dev->thread.shutdown)
        goto done;

restart:

```

```

@@ -986,14 +982,17 @@ int saa7134_tvaudio_init2(struct saa7134_dev *dev)
    break;
}

- dev->thread.pid = -1;
+ dev->thread.started = 0;
    if (my_thread) {
+ struct task_struct *task;
    /* start tvaudio thread */
    init_waitqueue_head(&dev->thread.wq);
    init_completion(&dev->thread.exit);
- dev->thread.pid = kernel_thread(my_thread, dev, 0);
- if (dev->thread.pid < 0)
- printk(KERN_WARNING "%s: kernel_thread() failed\n",
+ task = kthread_run(my_thread, dev, "%s", dev->name);
+ if (!IS_ERR(task))
+ dev->thread.started = 1;
+ else
+ printk(KERN_WARNING "%s: kthread_create() failed\n",
        dev->name);
    saa7134_tvaudio_do_scan(dev);
}
@@ -1005,7 +1004,7 @@ int saa7134_tvaudio_init2(struct saa7134_dev *dev)
int saa7134_tvaudio_fini(struct saa7134_dev *dev)
{
    /* shutdown tvaudio thread */
- if (dev->thread.pid >= 0) {
+ if (dev->thread.started) {
    dev->thread.shutdown = 1;
    wake_up_interruptible(&dev->thread.wq);
    wait_for_completion(&dev->thread.exit);
@@ -1020,7 +1019,7 @@ int saa7134_tvaudio_do_scan(struct saa7134_dev *dev)
    dprintk("sound IF not in use, skipping scan\n");
    dev->automute = 0;
    saa7134_tvaudio_setmute(dev);
- } else if (dev->thread.pid >= 0) {
+ } else if (dev->thread.started) {
    dev->thread.mode = UNSET;
    dev->thread.scan2++;
    wake_up_interruptible(&dev->thread.wq);
diff --git a/drivers/media/video/saa7134/saa7134.h b/drivers/media/video/saa7134/saa7134.h
index 62224cc..3a10ce7 100644
--- a/drivers/media/video/saa7134/saa7134.h
+++ b/drivers/media/video/saa7134/saa7134.h
@@ -324,7 +324,7 @@ struct saa7134_pgtable {

    /* tvaudio thread status */
    struct saa7134_thread {

```

```
- pid_t      pid;
+ int      started;
  struct completion      exit;
  wait_queue_head_t      wq;
  unsigned int      shutdown;
```

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1.5.0.g53756

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