Subject: [PATCH -mm] utrace: fix double free re __rcu_process_callbacks()
Posted by Alexey Dobriyan on Tue, 24 Apr 2007 09:02:15 GMT
View Forum Message <> Reply to Message

The following patch fixes double free manifesting itself as crash in
__rcu_process_callbasks():
 http://marc.info/?l=linux-kernel&m=117518764517017&w =2
https://bugzilla.redhat.com/bugzilla/show_bug.cgi?id=229112

The problem is with check_dead_utrace() conditionally scheduling
"struct utrace" for freeing but not cleaning struct task_struct::utrace
pointer leaving it reachable:

```
 tsk->utrace_flags = flags;
 if (flags)
  spin_unlock(&utrace->lock);
 else
  rcu_utrace_free(utrace);
```

OTOH, utrace_release_task() first clears ->utrace pointer, then frees
struct utrace itself:

Roland inserted some debugging into 2.6.21-rc6-mm1 so that aforementined
double free couldn't be reproduced without seeing
BUG at kernel/utrace.c:176 first. It triggers if one struct utrace were
passed to rcu_utrace_free() second time.

2-way P3, 8-way ia64, Core 2 Duo boxes. Testcase is at the first link.

I _think_ it adds leak if utrace_reap() takes branch without freeing
but, well, I hope Roland will give me some clue on how to fix it too.

Signed-off-by: Alexey Dobriyan <adobriyan@sw.ru>

```
 kernel/utrace.c |    6 +-----
 1 file changed, 1 insertion(+), 5 deletions(-)
```

```
  but weren't easily reproducable without hitting double-free first.
  FWIW, it's
   BUG_ON(!list_empty(&tsk->ptracees));
 oops at the beginning of remove_engine()
 NULL ->report_quiesce call which is absent in ptrace utrace ops
 BUG_ON(tracehook_check_released(p));
```

--- a/kernel/utrace.c

```
+++ b/kernel/utrace.c
@@ -205,7 +205,6 @@ utrace_clear_tsk(struct task_struct *tsk
  if (utrace->u.live.signal == NULL) {
   task_lock(tsk);
   if (likely(tsk->utrace != NULL)) {
-   rcu_assign_pointer(tsk->utrace, NULL);
    tsk->utrace_flags &= UTRACE_ACTION_NOREAP;
   }
   task_unlock(tsk);
@@ -305,10 +304,7 @@ check_dead_utrace(struct task_struct *ts
  }

  tsk->utrace_flags = flags;
- if (flags)
-  spin_unlock(&utrace->lock);
- else
-  rcu_utrace_free(utrace);
+ spin_unlock(&utrace->lock);

  /*
   * Now we're finished updating the utrace state.
```

Subject: Re: [PATCH -mm] utrace: fix double free re __rcu_process_callbacks()
Posted by Alexey Dobriyan on Tue, 24 Apr 2007 10:32:43 GMT
View Forum Message <> Reply to Message

On Tue, Apr 24, 2007 at 01:10:23PM +0400, Alexey Dobriyan wrote:

> but weren't easily reproducable without hitting double-free first.
> FWIW, it's
> BUG_ON(!list_empty(&tsk->ptracees));

mmm, pretty easily reproduced with:

```
 while true; do
  killall -9 expl_ptratt 2>/dev/null;
  killall -9 exe 2>/dev/null;
  sleep 2;
 done
vs
 while true; do ./expl_ptratt; done
```
