Subject: [RFC][PATCH 07/16] Move alloc_pid call to copy_process
Posted by Sukadev Bhattiprolu on Thu, 24 May 2007 01:11:24 GMT
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Subject: Move alloc_pid call to copy_process

From: Sukadev Bhattiprolu <sukadev@us.ibm.com>

Move alloc_pid() into copy_process(). This will keep all pid and pid
namespace code together and simplify error handling when we support
multiple pid namespaces.

Changelog:
 - [Eric Biederman] Move the check of copy_process_type to alloc_pid()/
   free_pid() and to avoid clutter in copy_process().

Signed-off-by: Sukadev Bhattiprolu <sukadev@us.ibm.com>
---
 include/linux/pid.h | 7 ++++++-
 kernel/fork.c | 21 +++++++++++++++++++--------
 kernel/pid.c | 10 +++++++++-
 3 files changed, 28 insertions(+), 10 deletions(-)

Index: lx26-21-mm2/include/linux/pid.h
===
--- lx26-21-mm2.orig/include/linux/pid.h 2007-05-22 16:59:40.000000000 -0700
+++ lx26-21-mm2/include/linux/pid.h 2007-05-22 17:06:48.000000000 -0700
@@ -3,6 +3,11 @@

 #include <linux/rcupdate.h>

+enum copy_process_type {
+ COPY_NON_IDLE_PROCESS,
+ COPY_IDLE_PROCESS,
+};
+
 enum pid_type
 {
  PIDTYPE_PID,
@@ -95,7 +100,7 @@ extern struct pid *FASTCALL(find_pid(int
 extern struct pid *find_get_pid(int nr);
 extern struct pid *find_ge_pid(int nr);

-extern struct pid *alloc_pid(void);
+extern struct pid *alloc_pid(enum copy_process_type);
 extern void FASTCALL(free_pid(struct pid *pid));

 static inline pid_t pid_to_nr(struct pid *pid)

```
Index: lx26-21-mm2/kernel/fork.c
===================================================================
--- lx26-21-mm2.orig/kernel/fork.c 2007-05-22 16:59:41.000000000 -0700
+++ lx26-21-mm2/kernel/fork.c 2007-05-22 17:06:48.000000000 -0700
@@ -961,10 +961,11 @@ static struct task_struct *copy_process(
      unsigned long stack_size,
      int __user *parent_tidptr,
      int __user *child_tidptr,
-     struct pid *pid)
+     enum copy_process_type copy_src)
 {
  int retval;
  struct task_struct *p = NULL;
+ struct pid *pid;

  if ((clone_flags & (CLONE_NEWNS|CLONE_FS)) == (CLONE_NEWNS|CLONE_FS))
   return ERR_PTR(-EINVAL);
@@ -1025,6 +1026,10 @@ static struct task_struct *copy_process(
  if (p->binfmt && !try_module_get(p->binfmt->module))
   goto bad_fork_cleanup_put_domain;

+ pid = alloc_pid(copy_src);
+ if (!pid)
+  goto bad_fork_put_binfmt_module;
+
  p->did_exec = 0;
  delayacct_tsk_init(p); /* Must remain after dup_task_struct() */
  copy_flags(clone_flags, p);
@@ -1305,6 +1310,8 @@ bad_fork_cleanup_cpuset:
 #endif
  cpuset_exit(p);
  delayacct_tsk_free(p);
+ free_pid(pid);
+bad_fork_put_binfmt_module:
  if (p->binfmt)
   module_put(p->binfmt->module);
 bad_fork_cleanup_put_domain:
@@ -1331,7 +1338,7 @@ struct task_struct * __cpuinit fork_idle
  struct pt_regs regs;

  task = copy_process(CLONE_VM, 0, idle_regs(&regs), 0, NULL, NULL,
-    &init_struct_pid);
+    COPY_IDLE_PROCESS);
  if (!IS_ERR(task))
   init_idle(task, cpu);

@@ -1369,19 +1376,16 @@ long do_fork(unsigned long clone_flags,
 {
```

```
  struct task_struct *p;
  int trace = 0;
- struct pid *pid = alloc_pid();
  long nr;

- if (!pid)
-  return -EAGAIN;
- nr = pid->nr;
  if (unlikely(current->ptrace)) {
   trace = fork_traceflag (clone_flags);
   if (trace)
    clone_flags |= CLONE_PTRACE;
  }

- p = copy_process(clone_flags, stack_start, regs, stack_size, parent_tidptr, child_tidptr, pid);
+ p = copy_process(clone_flags, stack_start, regs, stack_size,
+   parent_tidptr, child_tidptr, COPY_NON_IDLE_PROCESS);
  /*
   * Do this prior waking up the new thread - the thread pointer
   * might get invalid after that point, if the thread exits quickly.
@@ -1389,6 +1393,8 @@ long do_fork(unsigned long clone_flags,
  if (!IS_ERR(p)) {
   struct completion vfork;

+  nr = pid_to_nr(task_pid(p));
+
   if (clone_flags & CLONE_VFORK) {
    p->vfork_done = &vfork;
    init_completion(&vfork);
@@ -1422,7 +1428,6 @@ long do_fork(unsigned long clone_flags,
    }
   }
  } else {
-  free_pid(pid);
   nr = PTR_ERR(p);
  }
  return nr;
Index: lx26-21-mm2/kernel/pid.c
===================================================================
--- lx26-21-mm2.orig/kernel/pid.c 2007-05-22 16:59:46.000000000 -0700
+++ lx26-21-mm2/kernel/pid.c 2007-05-22 17:06:48.000000000 -0700
@@ -216,6 +216,10 @@ fastcall void free_pid(struct pid *pid)
  /* We can be called with write_lock_irq(&tasklist_lock) held */
  unsigned long flags;

+ /* check this here to keep copy_process() cleaner */
+ if (unlikely(pid == &init_struct_pid))
+  return;
```

```
+
  spin_lock_irqsave(&pidmap_lock, flags);
  hlist_del_rcu(&pid->pid_chain);
  spin_unlock_irqrestore(&pidmap_lock, flags);
@@ -224,12 +228,16 @@ fastcall void free_pid(struct pid *pid)
  call_rcu(&pid->rcu, delayed_put_pid);
 }

-struct pid *alloc_pid(void)
+struct pid *alloc_pid(enum copy_process_type copy_src)
 {
  struct pid *pid;
  enum pid_type type;
  int nr = -1;

+ /* check this here to keep copy_process() cleaner */
+ if (unlikely(copy_src == COPY_IDLE_PROCESS))
+  return &init_struct_pid;
+
  pid = kmem_cache_alloc(pid_cachep, GFP_KERNEL);
  if (!pid)
   goto out;
```