
Subject: [RFC][PATCH 10/14] Use pid ns from pid_nrs list
Posted by [Sukadev Bhattiprolu](#) on Wed, 21 Mar 2007 03:21:27 GMT
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From: Sukadev Bhattiprolu <sukadev@us.ibm.com>
Subject: [RFC][PATCH 10/14] Use pid ns from pid_nrs list

We need to decouple pid namespace from nsproxy to allow getting and releasing pid namespace independently from other namespaces. This is required since a process's reference to its pid namespace must exist even after its references to other namespaces are dropped during process exit.

As stated in earlier patches, to support containers, a process can have different pid_t values in different pid namespaces and struct pid_nr and the pid->pid_nrs list provide this association of pid_t value with pid namespace for a process.

To find the pid namespace of a process, we can now use the pid namespace stored in the struct pid_nr rather than the one stored in nsproxy.

This patch defines a function, pid_ns(), which returns the "current" or "primary" pid namespace of the given struct pid and reimplements the task_pid_ns() and child_reaper() wrapper functions using the pid_ns()

Changelog:

- Rewrite from an earlier version which supported unshare() of pid namespace.

Signed-off-by: Sukadev Bhattiprolu <sukadev@us.ibm.com>

```
include/linux/pid_namespace.h | 5 +++--
kernel/pid.c                  | 37 ++++++++++++++++++++++++++++++++++++++
2 files changed, 40 insertions(+), 2 deletions(-)
```

Index: lx26-21-rc3-mm2/kernel/pid.c

```
=====
--- lx26-21-rc3-mm2.orig/kernel/pid.c 2007-03-20 15:55:52.000000000 -0700
+++ lx26-21-rc3-mm2/kernel/pid.c 2007-03-20 16:57:14.000000000 -0700
@@ -270,6 +270,43 @@ pid_t pid_nr(struct pid *pid)
 }
EXPORT_SYMBOL_GPL(pid_nr);

+/*
+ * Return the current pid-namespace of this pid.
+ *
+ * Processes initially exist only in the init-pid-ns. For such processes,
```

```

+ * their "current pid namespace" is just init-pid-ns.
+ *
+ * When a process in init-pid-ns clones using the CLONE_NEWPID flag, it
+ * creates a new child-pid-ns and a child process. This child process then
+ * exists in two namespaces - i.e it has a pid_t value in init pid namespace
+ * and another, usually different pid_t value in the newly-created child-pid-ns.
+ *
+ * For this child process, we treat child-pid-ns as its "current pid namespace".
+ *
+ * The "current pid namespace" is used:
+ * a. to determine which process will reap an orphaned process.
+ * b. by find_pid() to select the appropriate pid - note that since
+ *    there can be multiple processes with a given pid_t value (one
+ *    in each namespace) find_pid() returns the pid corresponding
+ *    to the current pid namespace.
+ *
+ * Processes inherit the current and all ancestor pid namespaces from their
+ * parent.
+ */
+struct pid_namespace *pid_ns(struct pid *pid)
+{
+ struct pid_nr* pid_nr;
+ struct hlist_node *head;
+
+ if (!pid)
+ return NULL;
+
+ head = pid->pid_nrs.first;
+ pid_nr = hlist_entry(head, struct pid_nr, node);
+
+ return pid_nr->pid_ns;
+}
+
+struct pid *alloc_pid(void)
+{
+ struct pid *pid;
Index: lx26-21-rc3-mm2/include/linux/pid_namespace.h
=====
--- lx26-21-rc3-mm2.orig/include/linux/pid_namespace.h 2007-03-20 15:55:52.000000000 -0700
+++ lx26-21-rc3-mm2/include/linux/pid_namespace.h 2007-03-20 15:55:52.000000000 -0700
@@ -31,6 +31,7 @@ static inline void get_pid_ns(struct pid

extern struct pid_namespace *copy_pid_ns(int flags, struct pid_namespace *ns);
extern void free_pid_ns(struct kref *kref);
+extern struct pid_namespace *pid_ns(struct pid * pid);

static inline void put_pid_ns(struct pid_namespace *ns)
{

```

```

@@ -39,12 +40,12 @@ static inline void put_pid_ns(struct pid

static inline struct pid_namespace *task_pid_ns(struct task_struct *tsk)
{
-     return tsk->nsproxy->pid_ns;
+ return pid_ns(task_pid(tsk));
}

static inline struct task_struct *child_reaper(struct task_struct *tsk)
{
- return init_pid_ns.child_reaper;
+ return task_pid_ns(tsk)->child_reaper;
}

#endif /* _LINUX_PID_NS_H */

```

Containers mailing list
Containers@lists.linux-foundation.org
<https://lists.linux-foundation.org/mailman/listinfo/containers>

Subject: Re: [RFC][PATCH 10/14] Use pid ns from pid_nrs list
Posted by [ebiederm](#) on Wed, 21 Mar 2007 08:04:33 GMT
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sukadev@us.ibm.com writes:

```

> From: Sukadev Bhattiprolu <sukadev@us.ibm.com>
> Subject: [RFC][PATCH 10/14] Use pid ns from pid_nrs list
>
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> releasing pid namespace independently from other namespaces. This is
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> task_pid_ns() and child_reaper() wrapper functions using the pid_ns()
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```

```

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> Signed-off-by: Sukadev Bhattiprolu <sukadev@us.ibm.com>
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> @@ -270,6 +270,43 @@ pid_t pid_nr(struct pid *pid)
> }
> EXPORT_SYMBOL_GPL(pid_nr);
>
> +/*
> + * Return the current pid-namespace of this pid.
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> + * their "current pid namespace" is just init-pid-ns.
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> + *    to the current pid namespace.
> + *
> + * Processes inherit the current and all ancestor pid namespaces from their
> + * parent.
> + */

```

Can we make this:

```

> +struct pid_namespace *pid_ns(struct pid *pid)
> +{

```

```

> + struct pid_nr* pid_nr;
> + struct hlist_node *head;
> +
> + if (!pid)
> + return NULL;
> +
> + head = pid->pid_nrs.first;
> + pid_nr = hlist_entry(head, struct pid_nr, node);
> +
> + return pid_nr->pid_ns;
> +}
> +

```

```

struct pid_namespace *primary_pid_ns(struct pid *pid)
{
    struct pid_namespace *ns = &init_pid_ns;
    struct pid_nr* pid_nr;
    struct hlist_node *head;

    if (unlikely(!pid))
        goto out;

    head = pid->pid_nrs.first;
    if (unlikely(!head))
        goto out;

    pid_nr = hlist_entry(head, struct pid_nr, node);
    ns = pid_nr->pid_ns;
out:
    return ns;
}

```

I think changing the name to `primary_pid_ns` is a little clearer.
(It implies that there are others).

Further I don't know if the return NULL when we don't have a pid buys us anything.

But returning `&init_pid_ns` instead allow us to drop the static initializer for `pid_nr` for the idle processes allowing those unhashed processes to have no hash table state at all.

Eric

Containers mailing list
 Containers@lists.linux-foundation.org
<https://lists.linux-foundation.org/mailman/listinfo/containers>
