
Subject: [PATCH 09/17] Pid-NS(V3) Use pid ns from pid->upid_list
Posted by [Sukadev Bhattiprolu](#) on Sat, 16 Jun 2007 23:01:50 GMT
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Subject: [PATCH 09/17] Pid-NS(V3) Use pid ns from pid->upid_list

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

We drop a process's references to other namespaces during the process exit.
But we must hold a reference to pid namespace until the task is reaped.
For instance, we flush the procfs dentries of the process only in
release_task(), long after dropping references to other namespaces.
So we decouple 'nproxy' from the 'pid_namespace' allowing us to free
them independently.

With multiple pid namespaces, a process can have different pid_t values in
different pid namespaces and 'struct upid' and the pid->upid_list list
provide this association of pid_t value with pid namespace for a process.

Use pid->upid_list list to find the active pid namespace of a process and
remove nsproxy->pid_namespace.

TODO:

- Include pid_namespace in pid_hash() so processes with same pid_t
in different namespaces are on different hash lists.

Changelog:

2.6.21-mm2-pidns3:

- 'struct upid' used to be called 'struct pid_nr' and a list of these
were hanging off of 'struct pid'. So, we renamed 'struct pid_nr'
and now hold them in a statically sized array in 'struct pid' since
the number of 'struct upid's for a process is known at process-
creation time.

[2.6.21-rc3-mm2]

- Drop support for unshare() of pid namespace which simplifies cloning
of pid namespace and reorganize several functions.

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

```
include/linux/init_task.h | 1 -
include/linux/nsproxy.h   | 2 --
include/linux/pid.h       | 19 ++++++
include/linux/pid_namespace.h | 6 +++-
kernel/nsproxy.c          | 10 -----
kernel/pid.c              | 7 -----
6 files changed, 22 insertions(+), 23 deletions(-)
```

Index: lx26-22-rc4-mm2/include/linux/init_task.h

```
=====
--- lx26-22-rc4-mm2.orig/include/linux/init_task.h 2007-06-15 19:47:58.000000000 -0700
+++ lx26-22-rc4-mm2/include/linux/init_task.h 2007-06-15 19:48:22.000000000 -0700
@@ -72,7 +72,6 @@
```

```
extern struct nsproxy init_nsproxy;
#define INIT_NS_PROXY(nsproxy) { \
- .pid_ns = &init_pid_ns, \
  .count = ATOMIC_INIT(1), \
  .nslock = __SPIN_LOCK_UNLOCKED(nsproxy.nslock), \
  .uts_ns = &init_uts_ns, \
```

Index: lx26-22-rc4-mm2/include/linux/nsproxy.h

```
=====
--- lx26-22-rc4-mm2.orig/include/linux/nsproxy.h 2007-06-15 19:47:58.000000000 -0700
+++ lx26-22-rc4-mm2/include/linux/nsproxy.h 2007-06-15 19:48:22.000000000 -0700
@@ -7,7 +7,6 @@
```

```
struct mnt_namespace;
struct uts_namespace;
struct ipc_namespace;
-struct pid_namespace;
```

```
/*
 * A structure to contain pointers to all per-process
```

```
@@ -27,7 +26,6 @@ struct nsproxy {
  struct uts_namespace *uts_ns;
  struct ipc_namespace *ipc_ns;
  struct mnt_namespace *mnt_ns;
- struct pid_namespace *pid_ns;
};
extern struct nsproxy init_nsproxy;
```

Index: lx26-22-rc4-mm2/include/linux/pid_namespace.h

```
=====
--- lx26-22-rc4-mm2.orig/include/linux/pid_namespace.h 2007-06-15 19:47:58.000000000 -0700
+++ lx26-22-rc4-mm2/include/linux/pid_namespace.h 2007-06-16 02:08:32.000000000 -0700
@@ -42,7 +42,6 @@ static inline struct pid_namespace *get_
  return ns;
}
```

```
-extern struct pid_namespace *copy_pid_ns(int flags, struct pid_namespace *ns);
extern void free_pid_ns(struct kref *kref);
```

```
static inline void put_pid_ns(struct pid_namespace *ns)
@@ -50,14 +49,15 @@ static inline void put_pid_ns(struct pid
  kref_put(&ns->kref, free_pid_ns);
}
```

```
+extern struct pid_namespace *pid_active_pid_ns(struct pid *pid);
static inline struct pid_namespace *task_active_pid_ns(struct task_struct *tsk)
{
- return tsk->nsproxy->pid_ns;
+ return pid_active_pid_ns(task_pid(tsk));
}
```

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

```
#endif /* _LINUX_PID_NS_H */
```

```
Index: lx26-22-rc4-mm2/kernel/nsproxy.c
```

```
=====
```

```
--- lx26-22-rc4-mm2.orig/kernel/nsproxy.c 2007-06-15 19:47:58.000000000 -0700
```

```
+++ lx26-22-rc4-mm2/kernel/nsproxy.c 2007-06-16 02:08:32.000000000 -0700
```

```
@@ -19,7 +19,6 @@
```

```
#include <linux/init_task.h>
```

```
#include <linux/mnt_namespace.h>
```

```
#include <linux/utsname.h>
```

```
-#include <linux/pid_namespace.h>
```

```
struct nsproxy init_nsproxy = INIT_NSPROXY(init_nsproxy);
```

```
@@ -75,15 +74,8 @@ static struct nsproxy *create_new_namesp
```

```
if (IS_ERR(new_nsp->ipc_ns))
```

```
goto out_ipc;
```

```
- new_nsp->pid_ns = copy_pid_ns(flags, tsk->nsproxy->pid_ns);
```

```
- if (IS_ERR(new_nsp->pid_ns))
```

```
- goto out_pid;
```

```
-
```

```
return new_nsp;
```

```
-out_pid:
```

```
- if (new_nsp->ipc_ns)
```

```
- put_ipc_ns(new_nsp->ipc_ns);
```

```
out_ipc:
```

```
if (new_nsp->uts_ns)
```

```
put_uts_ns(new_nsp->uts_ns);
```

```
@@ -138,8 +130,6 @@ void free_nsproxy(struct nsproxy *ns)
```

```
put_uts_ns(ns->uts_ns);
```

```
if (ns->ipc_ns)
```

```
put_ipc_ns(ns->ipc_ns);
```

```
- if (ns->pid_ns)
```

```
- put_pid_ns(ns->pid_ns);
  kfree(ns);
}
```

Index: lx26-22-rc4-mm2/kernel/pid.c

```
=====
--- lx26-22-rc4-mm2.orig/kernel/pid.c 2007-06-15 19:48:11.000000000 -0700
+++ lx26-22-rc4-mm2/kernel/pid.c 2007-06-16 02:08:32.000000000 -0700
@@ -461,13 +461,6 @@ struct pid *find_ge_pid(int nr)
}
EXPORT_SYMBOL_GPL(find_get_pid);
```

```
-struct pid_namespace *copy_pid_ns(int flags, struct pid_namespace *old_ns)
-{
- BUG_ON(!old_ns);
- get_pid_ns(old_ns);
- return old_ns;
-}
```

```
-
void free_pid_ns(struct kref *kref)
{
  struct pid_namespace *ns;
Index: lx26-22-rc4-mm2/include/linux/pid.h
```

```
=====
--- lx26-22-rc4-mm2.orig/include/linux/pid.h 2007-06-15 19:47:58.000000000 -0700
+++ lx26-22-rc4-mm2/include/linux/pid.h 2007-06-16 02:08:32.000000000 -0700
@@ -133,6 +133,25 @@ extern pid_t pid_to_nr(struct pid *pid);
#define while_each_pid_task(pid, type, task) \
    { \
    } while (0)
+/*
+ * Return the active upid of the process @pid.
+ *
+ * Note: At present, there is only one upid corresponding to init_pid_ns.
+ */
+static inline struct upid *pid_active_upid(struct pid *pid)
+{
+ return &pid->upid_list[0];
+}
+
+/*
+ * Return the active pid namespace of the process @pid.
+ *
+ * Note: At present, there is only one pid namespace (init_pid_ns).
+ */
+static inline struct pid_namespace *pid_active_pid_ns(struct pid *pid)
+{
+ return pid_active_upid(pid)->pid_ns;
```

+}

/*

* Return the pid_t by which the process @pid is known in the pid

--

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Containers@lists.linux-foundation.org

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