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Subject: [PATCH 6/20] Introduce struct upid  
Posted by [Pavel Emelianov](#) on Tue, 07 Aug 2007 09:29:46 GMT  
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Since task will be visible from different pid namespaces each of them have to be addressed by multiple pids. struct upid is to store the information about which id refers to which namespace.

The constuciton looks like this. Each struct pid carried the reference counter and the list of tasks attached to this pid. At its end it has a variable length array of struct upid-s. Each struct upid has a numerical id (pid itself), pointer to the namespace, this ID is valid in and is hashed into a pid\_hash for searching the pids.

The nr and pid\_chain fields are kept in struct pid for a while to make kernel still work (no patch initialize the upids yet), but it will be removed at the end of this series when we switch to upids completely.

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Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

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```
init_task.h | 6 ++++++
pid.h       | 16 ++++++
2 files changed, 22 insertions(+)
```

```
diff -upr linux-2.6.23-rc1-mm1.orig/include/linux/init_task.h
linux-2.6.23-rc1-mm1-7/include/linux/init_task.h
--- linux-2.6.23-rc1-mm1.orig/include/linux/init_task.h 2007-07-26 16:34:45.000000000 +0400
+++ linux-2.6.23-rc1-mm1-7/include/linux/init_task.h 2007-07-26 16:36:36.000000000 +0400
@@ -93,6 +93,12 @@ extern struct group_info init_groups;
 { .first = &init_task.pids[PIDTYPE_SID].node }, \
 }, \
 .rcu = RCU_HEAD_INIT, \
+ .level = 0, \
+ .numbers = { { \
+ .nr = 0, \
+ .ns = &init_pid_ns, \
+ .pid_chain = { .next = NULL, .pprev = NULL }, \
+ }, } \
}

#define INIT_PID_LINK(type) \
diff -upr linux-2.6.23-rc1-mm1.orig/include/linux/pid.h linux-2.6.23-rc1-mm1-7/include/linux/pid.h
--- linux-2.6.23-rc1-mm1.orig/include/linux/pid.h 2007-07-26 16:34:45.000000000 +0400
```

```

+++ linux-2.6.23-rc1-mm1-7/include/linux/pid.h 2007-07-26 16:36:37.000000000 +0400
@@ -40,6 +40,20 @@ enum pid_type
 * processes.
 */

+
+/*
+ * struct upid is used to get the id of the struct pid, as it is
+ * seen in particular namespace. Later the struct pid is found with
+ * find_pid_ns() using the int nr and struct pid_namespace *ns.
+ */
+
+
+struct upid {
+ /* Try to keep pid_chain in the same cacheline as nr for find_pid */
+ int nr;
+ struct pid_namespace *ns;
+ struct hlist_node pid_chain;
+};
+
+
+struct pid
+{
+ atomic_t count;
@@ -50,6 +50,8 @@ struct pid
 /* lists of tasks that use this pid */
 struct hlist_head tasks[PIDTYPE_MAX];
 struct rcu_head rcu;
+ int level;
+ struct upid numbers[1];
+};

extern struct pid init_struct_pid;

```

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