
Subject: [PATCH 3/4] - v2 - IPC: use the target ID specified in procs
Posted by [Nadia Derby](#) on Fri, 18 Apr 2008 05:45:02 GMT
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[PATCH 03/04]

This patch makes use of the target id specified by a previous write into /proc/self/task/<tid>/next_id as the id to use to allocate the next IPC object.

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include/linux/sysids.h | 7 +++++++
ipc/util.c | 41 +++++++++++++++++++++++++++++++++++++-----
kernel/nextid.c | 2 +-
3 files changed, 41 insertions(+), 9 deletions(-)

Index: linux-2.6.25-rc8-mm2/include/linux/sysids.h

```
=====
--- linux-2.6.25-rc8-mm2.orig/include/linux/sysids.h 2008-04-17 16:03:07.000000000 +0200
+++ linux-2.6.25-rc8-mm2/include/linux/sysids.h 2008-04-17 17:05:54.000000000 +0200
@@ -37,9 +37,16 @@ struct sys_id {
    long *blocks[0];
};
```

```
+#define next_ipcid(tsk) ((tsk)->next_id \
+ ? ((tsk)->next_id->nids \
+ ? ID_AT((tsk)->next_id, 0) \
+ : -1) \
+ : -1)
+
extern ssize_t get_nextid(struct task_struct *, char *, size_t);
extern int set_nextid(struct task_struct *, char *);
extern int reset_nextid(struct task_struct *);
+extern void id_blocks_free(struct sys_id *);
```

```
static inline void exit_nextid(struct task_struct *tsk)
{
```

Index: linux-2.6.25-rc8-mm2/kernel/nextid.c

```
=====
--- linux-2.6.25-rc8-mm2.orig/kernel/nextid.c 2008-04-17 16:54:30.000000000 +0200
+++ linux-2.6.25-rc8-mm2/kernel/nextid.c 2008-04-17 17:06:43.000000000 +0200
@@ -49,7 +49,7 @@ out_undo_partial_alloc:
    return NULL;
}
```

```
-static void id_blocks_free(struct sys_id *ids)
```

```

+void id_blocks_free(struct sys_id *ids)
{
    if (ids == NULL)
        return;
Index: linux-2.6.25-rc8-mm2/ipc/util.c
=====
--- linux-2.6.25-rc8-mm2.orig/ipc/util.c 2008-04-17 12:50:37.000000000 +0200
+++ linux-2.6.25-rc8-mm2/ipc/util.c 2008-04-17 17:09:37.000000000 +0200
@@ -260,6 +260,7 @@ int ipc_get_maxid(struct ipc_ids *ids)
int ipc_addid(struct ipc_ids* ids, struct kern_ipc_perm* new, int size)
{
    int id, err;
+ int next_id;

    if (size > IPCMNI)
        size = IPCMNI;
@@ -267,20 +268,44 @@ int ipc_addid(struct ipc_ids* ids, struc
    if (ids->in_use >= size)
        return -ENOSPC;

- err = idr_get_new(&ids->ipcs_idr, new, &id);
- if (err)
-     return err;
+ next_id = next_ipcid(current);
+
+ if (next_id >= 0) {
+     /* There is a target id specified, try to use it */
+     int new_lid = next_id % SEQ_MULTIPLIER;
+
+     if (next_id !=
+         (new_lid + (next_id / SEQ_MULTIPLIER) * SEQ_MULTIPLIER))
+         return -EINVAL;
+
+     err = idr_get_new_above(&ids->ipcs_idr, new, new_lid, &id);
+     if (err)
+         return err;
+     if (id != new_lid) {
+         idr_remove(&ids->ipcs_idr, id);
+         return -EBUSY;
+     }
+
+     new->id = next_id;
+     new->seq = next_id / SEQ_MULTIPLIER;
+     id_blocks_free(current->next_id);
+     current->next_id = NULL;
+ } else {
+     err = idr_get_new(&ids->ipcs_idr, new, &id);
+     if (err)

```

```
+ return err;
+
+ new->seq = ids->seq++;
+ if (ids->seq > ids->seq_max)
+   ids->seq = 0;
+ new->id = ipc_buildid(id, new->seq);
+ }

ids->in_use++;

new->cuid = new->uid = current->euid;
new->gid = new->cgid = current->egid;

- new->seq = ids->seq++;
- if(ids->seq > ids->seq_max)
-   ids->seq = 0;
-
- new->id = ipc_buildid(id, new->seq);
  spin_lock_init(&new->lock);
  new->deleted = 0;
  rcu_read_lock();
```

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