
Subject: [RFC PATCH 2/5] use next syscall data to predefine ipc objects ids

Posted by [Nadia Derby](#) on Thu, 03 Jul 2008 14:40:15 GMT

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[PATCH 02/05]

This patch uses the value written into the next_syscall_data proc file as a target id for the next IPC object to be created.

The following syscalls have a new behavior if next_syscall_data is set:

- . mssget()
- . semget()
- . shmget()

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```
include/linux/next_syscall_data.h | 17 ++++++++
ipc/util.c                        | 38 ++++++++
2 files changed, 45 insertions(+), 10 deletions(-)
```

Index: linux-2.6.26-rc5-mm3/include/linux/next_syscall_data.h

```
=====
--- linux-2.6.26-rc5-mm3.orig/include/linux/next_syscall_data.h 2008-07-01 10:25:48.000000000
+0200
+++ linux-2.6.26-rc5-mm3/include/linux/next_syscall_data.h 2008-07-01 11:35:11.000000000
+0200
@@ -3,7 +3,8 @@
```

```
*
* Definitions to support fixed data for next syscall to be called. The
* following is supported today:
- * . object creation with a predefined id.
+ * . object creation with a predefined id
+ * . for a sysv ipc object
*
*/
```

```
@@ -16,13 +17,25 @@
```

```
* If this structure is pointed to by a task_struct, next syscall to be called
* by the task will have a non-default behavior.
* For example, it can be used to pre-set the id of the object to be created
- * by next syscall.
+ * by next syscall. The following syscalls support this feature:
+ * . msgget(), semget(), shmget()
*/
```

```
struct next_syscall_data {
    int ndata;
    long data[NDATA];
};
```

```

+/*
+ * Returns true if tsk has some data set in its next_syscall_data, 0 else
+ */
+#define next_data_set(tsk) ((tsk)->nsd \
+ ? ((tsk)->nsd->ndata ? 1 : 0) \
+ : 0)
+
+#define get_next_data(tsk) ((tsk)->nsd->data[0])
+
+
+extern ssize_t get_next_syscall_data(struct task_struct *, char *, size_t);
extern int set_next_syscall_data(struct task_struct *, char *);
extern int reset_next_syscall_data(struct task_struct *);
Index: linux-2.6.26-rc5-mm3/ipc/util.c
=====
--- linux-2.6.26-rc5-mm3.orig/ipc/util.c 2008-07-01 10:25:48.000000000 +0200
+++ linux-2.6.26-rc5-mm3/ipc/util.c 2008-07-01 10:41:36.000000000 +0200
@@ -266,20 +266,42 @@ 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;
+ if (next_data_set(current)) {
+     /* There is a target id specified, try to use it */
+     int next_id = get_next_data(current);
+     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;
+     reset_next_syscall_data(current);
+ } 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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