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Subject: [PATCH v4 0/9] IPC: checkpoint/restore in userspace enhancements  
Posted by [Stanislav Kinsbursky](#) on Mon, 13 Aug 2012 12:31:30 GMT  
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v4:

- 1) If MSG\_COPY flag is specified, then "mtype" is not a type, but message number to copy.
- 2) MSG\_SET\_COPY logic for sys\_msgctl() was removed.

v3:

- 1) Copy messages to user-space under spinlock was replaced by allocation of dummy message before queue lock and then copy of desired message to the dummy one instead of unlinking it from queue list.  
I.e. the message queue copy logic was changed: messages can be retrived one by one (instead of receiving of the whole list at once).

This patch set is aimed to provide additional functionality for all IPC objects, which is required for migration of these objects by user-space checkpoint/restore utils (CRIU).

The main problem here was impossibility to set up object id. This patch set solves the problem in two steps:

- 1) Makes it possible to create new object (shared memory, semaphores set or messages queue) with ID, equal to passed key.
- 2) Makes it possible to change existent object key.

Another problem was to peek messages from queues without deleting them. This was achived by introducing of new MSG\_COPY flag for sys\_msgrcv() and MSG\_SET\_COPY command for sys\_msgctl() (which can be used to select message number to copy).

The following series implements...

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Stanislav Kinsbursky (9):

- ipc: remove forced assignment of selected message
- ipc: "use key as id" functionality for resource get system call introduced
- ipc: segment key change helper introduced
- ipc: add new SHM\_SET command for sys\_shmctl() call
- ipc: add new MSG\_SET command for sys\_msgctl() call
- ipc: add new SEM\_SET command for sys\_semctl() call
- IPC: message queue receive cleanup
- IPC: message queue copy feature introduced
- test: IPC message queue migration test

arch/tile/kernel/compat.c | 29 +++++++

```

include/linux/compat.h      | 2
include/linux/ipc.h         | 1
include/linux/msg.h         | 7 +-
include/linux/sem.h         | 1
include/linux/shm.h         | 1
ipc/compat.c                | 42 ++++++---
ipc/msg.c                   | 110 ++++++-----
ipc/msgutil.c               | 38 ++++++++
ipc/sem.c                   | 11 ++
ipc/shm.c                   | 14 +++
ipc/util.c                  | 59 ++++++-----
ipc/util.h                  | 4 +
security/selinux/hooks.c    | 3 +
security/smack/smack_lsm.c  | 3 +
tools/testing/selftests/ipc/msgque.c | 151 ++++++-----
16 files changed, 424 insertions(+), 52 deletions(-)
create mode 100644 tools/testing/selftests/ipc/msgque.c

```

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