
Subject: [PATCH v8 3/5] ipc: message queue receive cleanup
Posted by [Stanislav Kinsbursky](#) on Wed, 24 Oct 2012 15:35:15 GMT
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This patch moves all message related manipulation into one function msg_fill().
Actually, two functions because of the compat one.

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```
include/linux/msg.h | 5 +++--
ipc/compat.c        | 45 +++++++++++++++++++++++++++++++++++++-----
ipc/msg.c           | 44 +++++++++++++++++++++++++++++++++++++-----
3 files changed, 45 insertions(+), 49 deletions(-)
```

diff --git a/include/linux/msg.h b/include/linux/msg.h

index 7a4b9e9..f38edba 100644

--- a/include/linux/msg.h

+++ b/include/linux/msg.h

```
@@ -34,7 +34,8 @@ struct msg_queue {
/* Helper routines for sys_msgsnd and sys_msgrcv */
extern long do_msgsnd(int msqid, long mtype, void __user *mtext,
    size_t msgsz, int msgflg);
-extern long do_msgrcv(int msqid, long *pmtyp, void __user *mtext,
-    size_t msgsz, long msgtyp, int msgflg);
+extern long do_msgrcv(int msqid, void __user *buf, size_t bufsz, long msgtyp,
+    int msgflg,
+    long (*msg_fill)(void __user *, struct msg_msg *, size_t ));
```

```
#endif /* _LINUX_MSG_H */
```

diff --git a/ipc/compat.c b/ipc/compat.c

index ad9518e..eb3ea16 100644

--- a/ipc/compat.c

+++ b/ipc/compat.c

```
@@ -306,6 +306,20 @@ static long do_compat_semctl(int first, int second, int third, u32 pad)
    return err;
}
```

```
+long compat_do_msg_fill(void __user *dest, struct msg_msg *msg, size_t bufsz)
```

```
+{
+    struct compat_msgbuf __user *msgp = dest;
+    size_t msgsz;
+
+    if (put_user(msg->m_type, &msgp->mtype))
+        return -EFAULT;
+
+    msgsz = (bufsz > msg->m_ts) ? msg->m_ts : bufsz;
+    if (store_msg(msgp->mtext, msg, msgsz))
+        return -EFAULT;
```

```

+ return msgsz;
+}
+
#ifdef CONFIG_ARCH_WANT_OLD_COMPAT_IPC
long compat_sys_semctl(int first, int second, int third, void __user *uptr)
{
@@ -337,10 +351,6 @@ long compat_sys_msgsnd(int first, int second, int third, void __user
*uptr)
long compat_sys_msgrcv(int first, int second, int msgtyp, int third,
    int version, void __user *uptr)
{
- struct compat_msgbuf __user *up;
- long type;
- int err;
-
if (first < 0)
return -EINVAL;
if (second < 0)
@@ -348,23 +358,14 @@ long compat_sys_msgrcv(int first, int second, int msgtyp, int third,

if (!version) {
    struct compat_ipc_kludge ipck;
- err = -EINVAL;
    if (!uptr)
- goto out;
- err = -EFAULT;
+ return -EINVAL;
    if (copy_from_user (&ipck, uptr, sizeof(ipck)))
- goto out;
+ return -EFAULT;
    uptr = compat_ptr(ipck.msgp);
    msgtyp = ipck.msgtyp;
}
- up = uptr;
- err = do_msgrcv(first, &type, up->mtext, second, msgtyp, third);
- if (err < 0)
- goto out;
- if (put_user(type, &up->mtype))
- err = -EFAULT;
-out:
- return err;
+ return do_msgrcv(first, uptr, second, msgtyp, third, compat_do_msg_fill);
}
#else
long compat_sys_semctl(int semid, int semnum, int cmd, int arg)
@@ -385,16 +386,8 @@ long compat_sys_msgsnd(int msqid, struct compat_msgbuf __user
*msgp,
long compat_sys_msgrcv(int msqid, struct compat_msgbuf __user *msgp,

```

```

        compat_ssize_t msgsz, long msgtyp, int msgflg)
{
- long err, mtype;
-
- err = do_msgsgrcv(msqid, &mtype, msgp->mtext, (ssize_t)msgsz, msgtyp, msgflg);
- if (err < 0)
- goto out;
-
- if (put_user(mtype, &msgp->mtype))
- err = -EFAULT;
- out:
- return err;
+ return do_msgsgrcv(msqid, msgp, (ssize_t)msgsz, msgtyp, msgflg,
+   compat_do_msg_fill);
}
#endif

```

diff --git a/ipc/msg.c b/ipc/msg.c

index 2f272fa..532ebc3 100644

--- a/ipc/msg.c

+++ b/ipc/msg.c

@@ -755,15 +755,30 @@ static inline int convert_mode(long *msgtyp, int msgflg)

return SEARCH_EQUAL;

}

```

-long do_msgsgrcv(int msqid, long *pmtyp, void __user *mtext,
- size_t msgsz, long msgtyp, int msgflg)
+static long do_msg_fill(void __user *dest, struct msg_msg *msg, size_t bufsz)
+{
+ struct msgbuf __user *msgp = dest;
+ size_t msgsz;
+
+ if (put_user(msg->m_type, &msgp->mtype))
+ return -EFAULT;
+
+ msgsz = (bufsz > msg->m_ts) ? msg->m_ts : bufsz;
+ if (store_msg(msgp->mtext, msg, msgsz))
+ return -EFAULT;
+ return msgsz;
+}
+
+long do_msgsgrcv(int msqid, void __user *buf, size_t bufsz, long msgtyp,
+ int msgflg,
+ long (*msg_handler)(void __user *, struct msg_msg *, size_t ))
{
    struct msg_queue *msq;
    struct msg_msg *msg;
    int mode;

```

```

struct ipc_namespace *ns;

- if (msqid < 0 || (long) msgsz < 0)
+ if (msqid < 0 || (long) bufsz < 0)
    return -EINVAL;
    mode = convert_mode(&msgtyp, msgflg);
    ns = current->nsproxy->ipc_ns;
@@ -804,7 +819,7 @@ long do_msgrcv(int msqid, long *pmtyp, void __user *mtext,
    * Found a suitable message.
    * Unlink it from the queue.
    */
- if ((msgsz < msg->m_ts) && !(msgflg & MSG_NOERROR)) {
+ if ((bufsz < msg->m_ts) && !(msgflg & MSG_NOERROR)) {
    msg = ERR_PTR(-E2BIG);
    goto out_unlock;
}
@@ -831,7 +846,7 @@ long do_msgrcv(int msqid, long *pmtyp, void __user *mtext,
    if (msgflg & MSG_NOERROR)
        msr_d.r_maxsize = INT_MAX;
    else
- msr_d.r_maxsize = msgsz;
+ msr_d.r_maxsize = bufsz;
    msr_d.r_msg = ERR_PTR(-EAGAIN);
    current->state = TASK_INTERRUPTIBLE;
    msg_unlock(msq);
@@ -894,29 +909,16 @@ out_unlock:
    if (IS_ERR(msg))
        return PTR_ERR(msg);

- msgsz = (msgsz > msg->m_ts) ? msg->m_ts : msgsz;
- *pmtyp = msg->m_type;
- if (store_msg(mtext, msg, msgsz))
- msgsz = -EFAULT;
-
+ bufsz = msg_handler(buf, msg, bufsz);
    free_msg(msg);

- return msgsz;
+ return bufsz;
}

SYSCALL_DEFINE5(msgrcv, int, msqid, struct msgbuf __user *, msgp, size_t, msgsz,
    long, msgtyp, int, msgflg)
{
- long err, mtype;
-
- err = do_msgrcv(msqid, &mtype, msgp->mtext, msgsz, msgtyp, msgflg);
- if (err < 0)

```

```
- goto out;
-
- if (put_user(mtype, &msgp->mtype))
- err = -EFAULT;
-out:
- return err;
+ return do_msgrcv(msqid, msgp, msgsz, msgtyp, msgflg, do_msg_fill);
}
```

```
#ifdef CONFIG_PROC_FS
```
