
Subject: [PATCH v5 08/10] IPC: message queue receive cleanup
Posted by [Stanislav Kinsbursky](#) on Wed, 19 Sep 2012 16:06:10 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.

Signed-off-by: Stanislav Kinsbursky <skinsbursky@parallels.com>

```
---
include/linux/msg.h | 5 +++--
ipc/compat.c        | 36 ++++++-----
ipc/msg.c           | 44 ++++++-----
3 files changed, 45 insertions(+), 40 deletions(-)
```

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

```
index 6689e73..9411b76 100644
```

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

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

```
@@ -105,8 +105,9 @@ 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 /* __KERNEL__ */
```

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

```
index 84d8efd..b879d50 100644
```

```
--- a/ipc/compat.c
```

```
+++ b/ipc/compat.c
```

```
@@ -341,13 +341,23 @@ long compat_sys_msgsnd(int first, int second, int third, void __user
*uptr)
    return do_msgsnd(first, type, up->mtext, second, third);
}
```

```
+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;
+}
+
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)
@@ -355,23 +365,14 @@ 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)
@@ -394,7 +395,8 @@ long compat_sys_msgrcv(int msqid, struct compat_msgbuf __user
*msgp,
{
    long err, mtype;

- err = do_msgrcv(msqid, &mtype, msgp->mtext, (ssize_t)msgsz, msgtyp, msgflg);

```

```

+ err = do_msgrcv(msqid, &mtype, msgp->mtext, (ssize_t)msgsz, msgtyp,
+ msgflg, compat_do_msg_fill);
+ if (err < 0)
+ goto out;

diff --git a/ipc/msg.c b/ipc/msg.c
index ef4f118..d8168a7 100644
--- a/ipc/msg.c
+++ b/ipc/msg.c
@@ -763,15 +763,30 @@ static inline int convert_mode(long *msgtyp, int msgflg)
+ return SEARCH_EQUAL;
+ }

-long do_msgrcv(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_msgrcv(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;
@@ -814,7 +829,7 @@ 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;
}
@@ -841,7 +856,7 @@ 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(msg);
@@ -904,29 +919,16 @@ 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

```
