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Subject: [PATCH 2.6.24-rc8-mm1 01/15] IPC/semaphores: code factorisation  
Posted by [Pierre Peiffer](#) on Tue, 29 Jan 2008 16:02:30 GMT  
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Trivial patch which adds some small locking functions and makes use of them  
to factorize some part of code and makes it cleaner.

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Acked-by: Serge Hallyn <serue@us.ibm.com>

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ipc/sem.c | 61 ++++++-----  
1 file changed, 31 insertions(+), 30 deletions(-)

Index: b/ipc/sem.c

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--- a/ipc/sem.c

+++ b/ipc/sem.c

@@ -181,6 +181,25 @@ static inline struct sem\_array \*sem\_lock  
return container\_of(ipcp, struct sem\_array, sem\_perm);  
}

+static inline void sem\_lock\_and\_putref(struct sem\_array \*sma)

+{  
+ ipc\_lock\_by\_ptr(&sma->sem\_perm);  
+ ipc\_rcu\_putref(sma);  
+}

+

+static inline void sem\_getref\_and\_unlock(struct sem\_array \*sma)

+{  
+ ipc\_rcu\_getref(sma);  
+ ipc\_unlock(&(sma)->sem\_perm);  
+}

+

+static inline void sem\_putref(struct sem\_array \*sma)

+{  
+ ipc\_lock\_by\_ptr(&sma->sem\_perm);  
+ ipc\_rcu\_putref(sma);  
+ ipc\_unlock(&(sma)->sem\_perm);  
+}

+

static inline void sem\_rmid(struct ipc\_namespace \*ns, struct sem\_array \*s)

{  
ipc\_rmid(&sem\_ids(ns), &s->sem\_perm);

@@ -700,19 +719,15 @@ static int semctl\_main(struct ipc\_namesp  
int i;

```

    if(nsems > SEMMSL_FAST) {
-   ipc_rcu_getref(sma);
-   sem_unlock(sma);
+   sem_getref_and_unlock(sma);

    sem_io = ipc_alloc(sizeof(ushort)*nsems);
    if(sem_io == NULL) {
-   ipc_lock_by_ptr(&sma->sem_perm);
-   ipc_rcu_putref(sma);
-   sem_unlock(sma);
+   sem_putref(sma);
    return -ENOMEM;
    }

-   ipc_lock_by_ptr(&sma->sem_perm);
-   ipc_rcu_putref(sma);
+   sem_lock_and_putref(sma);
    if (sma->sem_perm.deleted) {
        sem_unlock(sma);
        err = -EIDRM;
@@ -733,38 +748,30 @@ static int semctl_main(struct ipc_namesp
    int i;
    struct sem_undo *un;

-   ipc_rcu_getref(sma);
-   sem_unlock(sma);
+   sem_getref_and_unlock(sma);

    if(nsems > SEMMSL_FAST) {
        sem_io = ipc_alloc(sizeof(ushort)*nsems);
        if(sem_io == NULL) {
-   ipc_lock_by_ptr(&sma->sem_perm);
-   ipc_rcu_putref(sma);
-   sem_unlock(sma);
+   sem_putref(sma);
        return -ENOMEM;
        }
    }

    if (copy_from_user (sem_io, arg.array, nsems*sizeof(ushort))) {
-   ipc_lock_by_ptr(&sma->sem_perm);
-   ipc_rcu_putref(sma);
-   sem_unlock(sma);
+   sem_putref(sma);
        err = -EFAULT;
        goto out_free;
    }

```

```

    for (i = 0; i < nsems; i++) {
        if (sem_io[i] > SEMVMX) {
-       ipc_lock_by_ptr(&sma->sem_perm);
-       ipc_rcu_putref(sma);
-       sem_unlock(sma);
+       sem_putref(sma);
            err = -ERANGE;
            goto out_free;
        }
    }
-   ipc_lock_by_ptr(&sma->sem_perm);
-   ipc_rcu_putref(sma);
+   sem_lock_and_putref(sma);
    if (sma->sem_perm.deleted) {
        sem_unlock(sma);
        err = -EIDRM;
@@ -1044,14 +1051,11 @@ static struct sem_undo *find_undo(struct
    return ERR_PTR(PTR_ERR(sma));

    nsems = sma->sem_nsems;
-   ipc_rcu_getref(sma);
-   sem_unlock(sma);
+   sem_getref_and_unlock(sma);

    new = kzalloc(sizeof(struct sem_undo) + sizeof(short)*nsems, GFP_KERNEL);
    if (!new) {
-       ipc_lock_by_ptr(&sma->sem_perm);
-       ipc_rcu_putref(sma);
-       sem_unlock(sma);
+       sem_putref(sma);
        return ERR_PTR(-ENOMEM);
    }
    new->semadj = (short *) &new[1];
@@ -1062,13 +1066,10 @@ static struct sem_undo *find_undo(struct
    if (un) {
        spin_unlock(&ulp->lock);
        kfree(new);
-       ipc_lock_by_ptr(&sma->sem_perm);
-       ipc_rcu_putref(sma);
-       sem_unlock(sma);
+       sem_putref(sma);
        goto out;
    }
-   ipc_lock_by_ptr(&sma->sem_perm);
-   ipc_rcu_putref(sma);
+   sem_lock_and_putref(sma);
    if (sma->sem_perm.deleted) {

```

```
sem_unlock(sma);  
spin_unlock(&ulp->lock);
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Pierre Peiffer

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