
Subject: Re: [PATCH] Fix user struct leakage with locked IPC shmem segment
Posted by [Andrew Morton](#) on Mon, 16 Jul 2007 22:17:38 GMT
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On Mon, 16 Jul 2007 16:24:12 +0400
Pavel Emelianov <xemul@openvz.org> wrote:

> When user locks an ipc shmem segment with SHM_LOCK ctl and the
> segment is already locked the shmem_lock() function returns 0.
> After this the subsequent code leaks the existing user struct:

I'm curious. For the past few months, people@openvz.org have discovered
(and fixed) an ongoing stream of obscure but serious and quite
long-standing bugs.

How are you discovering these bugs?

```
> == ipc/shm.c: sys_shmctl() ==  
> ...  
> err = shmem_lock(shp->shm_file, 1, user);  
> if (!err) {  
>     shp->shm_perm.mode |= SHM_LOCKED;  
>     shp->mlock_user = user;  
> }  
> ...  
> ==  
>  
> Other results of this are:  
> 1. the new shp->mlock_user is not get-ed and will point to freed  
> memory when the task dies.
```

That sounds fairly serious - can this lead to memory corruption and crashes?

```
> 2. the RLIMIT_MEMLOCK is screwed on both user structs.  
>  
> The exploit looks like this:  
>  
> ==  
> id = shmget(...);  
> setresuid(uid, 0, 0);  
> shmctl(id, SHM_LOCK, NULL);  
> setresuid(uid + 1, 0, 0);  
> shmctl(id, SHM_LOCK, NULL);  
> ==  
>  
> My solution is to return 0 to the userspace and do not change the  
> segment's user.  
>
```

```
> Signed-off-by: Pavel Emelianov <xemul@openvz.org>
>
> ---
>
> --- ./ipc/shm.c.shlfix 2007-07-06 10:58:57.000000000 +0400
> +++ ./ipc/shm.c 2007-07-16 16:12:34.000000000 +0400
> @@ -715,7 +715,7 @@ asmlinkage long sys_shmctl (int shmid, i
>     struct user_struct * user = current->user;
>     if (!is_file_hugepages(shp->shm_file)) {
>         err = shmem_lock(shp->shm_file, 1, user);
> -     if (!err) {
> +     if (!err && !(shp->shm_perm.mode & SHM_LOCKED)){
>         shp->shm_perm.mode |= SHM_LOCKED;
>         shp->mlock_user = user;
>     }
```
