
Subject: [PATCH 2/5] Fix race between rmmod and cat /proc/kallsyms
Posted by [Alexey Dobriyan](#) on Mon, 02 Apr 2007 14:55:42 GMT
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module_get_kallsym() leaks "struct module *" outside of module_mutex
which is no-no, because module can dissapear right after mutex unlock.

Copy all needed information from inside module_mutex into caller-supplied
space.

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```
include/linux/module.h | 14 ++++++-----
kernel/kallsyms.c      | 30 ++++++-----
kernel/module.c        | 10 ++++++-----
3 files changed, 28 insertions(+), 26 deletions(-)
```

--- a/include/linux/module.h

+++ b/include/linux/module.h

```
@@ -370,10 +370,10 @@ struct module *module_text_address(unsigned
 struct module *__module_text_address(unsigned long addr);
 int is_module_address(unsigned long addr);
```

```
/* Returns module and fills in value, defined and namebuf, or NULL if
```

```
/* Returns 0 and fills in value, defined and namebuf, or -ERANGE if
   symnum out of range. */
```

```
-struct module *module_get_kallsym(unsigned int symnum, unsigned long *value,
-  char *type, char *name);
```

```
+int module_get_kallsym(unsigned int symnum, unsigned long *value, char *type,
+  char *name, char *module_name, int *exported);
```

```
/* Look for this name: can be of form module:name. */
```

```
unsigned long module_kallsyms_lookup_name(const char *name);
```

```
@@ -527,11 +527,11 @@ static inline const char *module_address
   return NULL;
}
```

```
-static inline struct module *module_get_kallsym(unsigned int symnum,
```

```
-  unsigned long *value,
-  char *type, char *name)
```

```
+static inline int module_get_kallsym(unsigned int symnum, unsigned long *value,
+  char *type, char *name,
+  char *module_name, int *exported)
```

```
{
- return NULL;
+ return -ERANGE;
}
```

```

static inline unsigned long module_kallsyms_lookup_name(const char *name)
--- a/kernel/kallsyms.c
+++ b/kernel/kallsyms.c
@@ -295,25 +295,20 @@ void __print_symbol(const char *fmt, unsigned long
struct kallsym_iter
{
    loff_t pos;
- struct module *owner;
    unsigned long value;
    unsigned int nameoff; /* If iterating in core kernel symbols */
    char type;
    char name[KSYM_NAME_LEN+1];
+ char module_name[MODULE_NAME_LEN + 1];
+ int exported;
};

static int get_ksymbol_mod(struct kallsym_iter *iter)
{
- iter->owner = module_get_kallsym(iter->pos - kallsyms_num_syms,
-    &iter->value, &iter->type,
-    iter->name);
- if (iter->owner == NULL)
+ if (module_get_kallsym(iter->pos - kallsyms_num_syms, &iter->value,
+    &iter->type, iter->name, iter->module_name,
+    &iter->exported) < 0)
    return 0;
-
- /* Label it "global" if it is exported, "local" if not exported. */
- iter->type = is_exported(iter->name, iter->owner)
-    ? toupper(iter->type) : tolower(iter->type);
-
    return 1;
}

@@ -322,7 +317,7 @@ static unsigned long get_ksymbol_core(struct kallsym_iter *iter)
{
    unsigned off = iter->nameoff;

- iter->owner = NULL;
+ iter->module_name[0] = '\0';
    iter->value = kallsyms_addresses[iter->pos];

    iter->type = kallsyms_get_symbol_type(off);
@@ -386,12 +381,12 @@ static int s_show(struct seq_file *m, void *v)
if (!iter->name[0])
    return 0;

```

```

- if (iter->owner)
+ if (iter->module_name[0]) {
+ char type;
+
+ /* Label it "global" if it is exported,
+  * "local" if not exported. */
+ type = iter->exported ? toupper(iter->type) :
+   tolower(iter->type);
+ seq_printf(m, "%0*lx %c %s\t[%s]\n",
+   (int)(2*sizeof(void*)),
+   iter->value, iter->type, iter->name,
+   module_name(iter->owner));
- else
+   iter->value, type, iter->name, iter->module_name);
+ } else
+   seq_printf(m, "%0*lx %c %s\n",
+   (int)(2*sizeof(void*)),
+   iter->value, iter->type, iter->name);
--- a/kernel/module.c
+++ b/kernel/module.c
@@ -2120,8 +2120,8 @@ const char *module_address_lookup(unsigned
return NULL;
}

-struct module *module_get_kallsym(unsigned int symnum, unsigned long *value,
- char *type, char *name)
+int module_get_kallsym(unsigned int symnum, unsigned long *value, char *type,
+ char *name, char *module_name, int *exported)
{
struct module *mod;

@@ -2132,13 +2132,15 @@ struct module *module_get_kallsym(unsigned
 *type = mod->symtab[symnum].st_info;
strncpy(name, mod->strtab + mod->symtab[symnum].st_name,
KSYM_NAME_LEN + 1);
+ strncpy(module_name, mod->name, MODULE_NAME_LEN + 1);
+ *exported = is_exported(name, mod);
+ mutex_unlock(&module_mutex);
- return mod;
+ return 0;
}
symnum -= mod->num_symtab;
}
mutex_unlock(&module_mutex);
- return NULL;
+ return -ERANGE;
}

```

```
static unsigned long mod_find_symname(struct module *mod, const char *name)
```
