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Subject: [PATCH 12/20] Make proc hav emultiple superblocks - one for each namespace

Posted by [Pavel Emelianov](#) on Tue, 07 Aug 2007 09:29:58 GMT

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Each pid namespace have to be visible through its own proc mount.  
Thus we need to have per-namespace proc trees with their own superblocks.

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

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```
fs/proc/inode.c      | 2 -
fs/proc/root.c       | 67 ++++++
include/linux/pid_namespace.h | 3 +
include/linux/proc_fs.h | 3 +
4 files changed, 69 insertions(+), 6 deletions(-)
```

--- ./fs/proc/inode.c.ve12 2007-08-06 14:54:42.000000000 +0400

+++ ./fs/proc/inode.c 2007-08-06 14:58:51.000000000 +0400

@@ -427,7 +428,7 @@ out\_mod:

```
    return NULL;
```

```
}
```

```
-int proc_fill_super(struct super_block *s, void *data, int silent)
```

```
+int proc_fill_super(struct super_block *s)
```

```
{
```

```
    struct inode * root_inode;
```

--- ./fs/proc/root.c.ve12 2007-08-06 14:54:42.000000000 +0400

+++ ./fs/proc/root.c 2007-08-06 14:58:51.000000000 +0400

@@ -18,32 +18,90 @@

```
#include <linux/bitops.h>
```

```
#include <linux/smp_lock.h>
```

```
#include <linux/mount.h>
```

```
+#include <linux/pid_namespace.h>
```

```
#include "internal.h"
```

```
struct proc_dir_entry *proc_net, *proc_net_stat, *proc_bus, *proc_root_fs, *proc_root_driver;
```

```
+static int proc_test_super(struct super_block *sb, void *data)
```

```
+{
```

```
+    return sb->s_fs_info == data;
```

```
+}
```

```
+
```

```
+static int proc_set_super(struct super_block *sb, void *data)
```

```

+{
+ struct pid_namespace *ns;
+
+ ns = (struct pid_namespace *)data;
+ sb->s_fs_info = get_pid_ns(ns);
+ return set_anon_super(sb, NULL);
+}
+
static int proc_get_sb(struct file_system_type *fs_type,
int flags, const char *dev_name, void *data, struct vfsmount *mnt)
{
+ int err;
+ struct super_block *sb;
+ struct pid_namespace *ns;
+ struct proc_inode *ei;
+
if (proc_mnt) {
/* Seed the root directory with a pid so it doesn't need
* to be special in base.c. I would do this earlier but
* the only task alive when /proc is mounted the first time
* is the init_task and it doesn't have any pids.
*/
- struct proc_inode *ei;
ei = PROC_I(proc_mnt->mnt_sb->s_root->d_inode);
if (!ei->pid)
ei->pid = find_get_pid(1);
}
- return get_sb_single(fs_type, flags, data, proc_fill_super, mnt);
+
+ if (flags & MS_KERNMOUNT)
+ ns = (struct pid_namespace *)data;
+ else
+ ns = current->nsproxy->pid_ns;
+
+ sb = sget(fs_type, proc_test_super, proc_set_super, ns);
+ if (IS_ERR(sb))
+ return PTR_ERR(sb);
+
+ if (!sb->s_root) {
+ sb->s_flags = flags;
+ err = proc_fill_super(sb);
+ if (err) {
+ up_write(&sb->s_umount);
+ deactivate_super(sb);
+ return err;
+ }
+
+ ei = PROC_I(sb->s_root->d_inode);

```

```

+ if (!ei->pid) {
+   rcu_read_lock();
+   ei->pid = get_pid(find_pid_ns(1, ns));
+   rcu_read_unlock();
+ }
+
+ sb->s_flags |= MS_ACTIVE;
+ ns->proc_mnt = mnt;
+ }
+
+ return simple_set_mnt(mnt, sb);
+}
+
+static void proc_kill_sb(struct super_block *sb)
+{
+ struct pid_namespace *ns;
+
+ ns = (struct pid_namespace *)sb->s_fs_info;
+ kill_anon_super(sb);
+ put_pid_ns(ns);
+ }

static struct file_system_type proc_fs_type = {
    .name = "proc",
    .get_sb = proc_get_sb,
- .kill_sb = kill_anon_super,
+ .kill_sb = proc_kill_sb,
};

void __init proc_root_init(void)
@@ -54,12 +112,13 @@ void __init proc_root_init(void)
    err = register_filesystem(&proc_fs_type);
    if (err)
        return;
- proc_mnt = kern_mount(&proc_fs_type);
+ proc_mnt = kern_mount_data(&proc_fs_type, &init_pid_ns);
    err = PTR_ERR(proc_mnt);
    if (IS_ERR(proc_mnt)) {
        unregister_filesystem(&proc_fs_type);
        return;
    }
+
+ proc_misc_init();
+ proc_net = proc_mkdir("net", NULL);
+ proc_net_stat = proc_mkdir("net/stat", NULL);
--- ./include/linux/pid_namespace.h.ve12 2007-08-06 14:58:51.000000000 +0400
+++ ./include/linux/pid_namespace.h 2007-08-06 14:59:02.000000000 +0400
@@ -23,6 +23,9 @@ struct pid_namespace {

```

```

    struct kmem_cache *pid_cache;
    int level;
    struct pid_namespace *parent;
#ifdef CONFIG_PROC_FS
+ struct vfsmount *proc_mnt;
#endif
};

extern struct pid_namespace init_pid_ns;
--- ./include/linux/proc_fs.h.ve12 2007-08-06 14:58:51.000000000 +0400
+++ ./include/linux/proc_fs.h 2007-08-06 14:58:51.000000000 +0400
@@ -126,7 +126,8 @@ extern struct proc_dir_entry *create_pro
extern void remove_proc_entry(const char *name, struct proc_dir_entry *parent);

extern struct vfsmount *proc_mnt;
-extern int proc_fill_super(struct super_block *, void *, int);
+struct pid_namespace;
+extern int proc_fill_super(struct super_block *);
extern struct inode *proc_get_inode(struct super_block *, unsigned int, struct proc_dir_entry *);

/*

```

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