
Subject: [patch 07/10] allow unprivileged bind mounts
Posted by [Miklos Szeredi](#) on Mon, 16 Apr 2007 11:03:15 GMT
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From: Miklos Szeredi <mszeredi@suse.cz>

Allow bind mounts to unprivileged users if the following conditions are met:

- user submounts are permitted on the mountpoint's mount
- mountpoint is not a symlink or special file
- mountpoint is not a sticky directory or is owned by the current user
- mountpoint is writable by user
- the number of user mounts is below the maximum

Unprivileged mounts imply MS_SETUSER, and will also have the "nosuid" and "nodev" mount flags set.

Signed-off-by: Miklos Szeredi <mszeredi@suse.cz>

Index: linux/fs/namespace.c

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--- linux.orig/fs/namespace.c 2007-04-13 13:35:53.000000000 +0200

+++ linux/fs/namespace.c 2007-04-13 14:17:39.000000000 +0200

```
@@ -237,11 +237,30 @@ static void dec_nr_user_mounts(void)
    spin_unlock(&vfsmount_lock);
}
```

```
-static void set_mnt_user(struct vfsmount *mnt)
+static int reserve_user_mount(void)
+{
+ int err = 0;
+ spin_lock(&vfsmount_lock);
+ if (nr_user_mounts >= max_user_mounts && !capable(CAP_SYS_ADMIN))
+ err = -EPERM;
+ else
+ nr_user_mounts++;
+ spin_unlock(&vfsmount_lock);
+ return err;
+}
+
+static void __set_mnt_user(struct vfsmount *mnt)
+{
+ BUG_ON(mnt->mnt_flags & MNT_USER);
+ mnt->mnt_uid = current->uid;
+ mnt->mnt_flags |= MNT_USER;
+ if (!capable(CAP_SYS_ADMIN))
```

```

+ mnt->mnt_flags |= MNT_NOSUID | MNT_NODEV;
+}
+
+static void set_mnt_user(struct vfsmount *mnt)
+{
+ __set_mnt_user(mnt);
+ spin_lock(&vfsmount_lock);
+ nr_user_mounts++;
+ spin_unlock(&vfsmount_lock);
@@ -260,9 +279,16 @@ static struct vfsmount *clone_mnt(struct
+ int flag)
+ {
+ struct super_block *sb = old->mnt_sb;
- struct vfsmount *mnt = alloc_vfsmnt(old->mnt_devname);
+ struct vfsmount *mnt;
+
+ if (flag & CL_SETUSER) {
+ int err = reserve_user_mount();
+ if (err)
+ return ERR_PTR(err);
+ }
+ mnt = alloc_vfsmnt(old->mnt_devname);
+ if (!mnt)
- return ERR_PTR(-ENOMEM);
+ goto alloc_failed;

+ mnt->mnt_flags = old->mnt_flags;
+ atomic_inc(&sb->s_active);
@@ -274,7 +300,7 @@ static struct vfsmount *clone_mnt(struct
+ /* don't copy the MNT_USER flag */
+ mnt->mnt_flags &= ~MNT_USER;
+ if (flag & CL_SETUSER)
- set_mnt_user(mnt);
+ __set_mnt_user(mnt);

+ if (flag & CL_SLAVE) {
+ list_add(&mnt->mnt_slave, &old->mnt_slave_list);
@@ -299,6 +325,11 @@ static struct vfsmount *clone_mnt(struct
+ spin_unlock(&vfsmount_lock);
+ }
+ return mnt;
+
+
+ alloc_failed:
+ if (flag & CL_SETUSER)
+ dec_nr_user_mounts();
+ return ERR_PTR(-ENOMEM);
+ }

```

```

static inline void __mntput(struct vfsmount *mnt)
@@ -746,22 +777,35 @@ asmlinkage long sys_oldumount(char __use

#endif

-static int mount_is_safe(struct nameidata *nd)
+/*
+ * Conditions for unprivileged mounts are:
+ * - user submounts are permitted under this mount
+ * - mountpoint is not a symlink or special file
+ * - mountpoint is "absolutely" writable by user
+ * o if it's a sticky directory, it must be owned by the user
+ * o it must not be an append-only file/directory
+ */
+static int mount_is_safe(struct nameidata *nd, int *flags)
{
+ struct inode *inode = nd->dentry->d_inode;
+
+ if (capable(CAP_SYS_ADMIN))
+     return 0;
- return -EPERM;
-#ifdef notyet
- if (S_ISLNK(nd->dentry->d_inode->i_mode))
+
+ if (!(nd->mnt->mnt_flags & MNT_USERMNT))
+     return -EPERM;
- if (nd->dentry->d_inode->i_mode & S_ISVTX) {
-     if (current->uid != nd->dentry->d_inode->i_uid)
-         return -EPERM;
- }
- if (vfs_permission(nd, MAY_WRITE))
+
+ if (!S_ISDIR(inode->i_mode) && !S_ISREG(inode->i_mode))
+     return -EPERM;
+
+ if ((inode->i_mode & S_ISVTX) && current->fsuid != inode->i_uid)
+     return -EPERM;
+
+ if (vfs_permission(nd, MAY_WRITE) || IS_APPEND(inode))
+     return -EPERM;
+
+ *flags |= MS_SETUSER;
+     return 0;
-#endif
}

static int lives_below_in_same_fs(struct dentry *d, struct dentry *dentry)
@@ -991,7 +1035,7 @@ static int do_loopback(struct nameidata

```

```
int clone_flags;
struct nameidata old_nd;
struct vfsmount *mnt = NULL;
- int err = mount_is_safe(nd);
+ int err = mount_is_safe(nd, &flags);
if (err)
    return err;
if (!old_name || !*old_name)
```

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