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Subject: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts

Posted by [Miklos Szeredi](#) on Tue, 08 Jan 2008 11:35:07 GMT

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From: Miklos Szeredi <[mszeredi@suse.cz](mailto:mszeredi@suse.cz)>

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

- mountpoint is not a symlink
- parent mount is owned by the 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.

In particular, if mounting process doesn't have CAP\_SETUID capability, then the "nosuid" flag will be added, and if it doesn't have CAP\_MKNOD capability, then the "nodev" flag will be added.

Signed-off-by: Miklos Szeredi <[mszeredi@suse.cz](mailto:mszeredi@suse.cz)>

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Index: linux/fs/namespace.c

=====

--- linux.orig/fs/namespace.c 2008-01-04 13:47:49.000000000 +0100

+++ linux/fs/namespace.c 2008-01-04 13:48:01.000000000 +0100

@ @ -487,11 +487,34 @ @ 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->fsuid;

```

mnt->mnt_flags |= MNT_USER;
+
+ if (!capable(CAP_SETUID))
+ mnt->mnt_flags |= MNT_NOSUID;
+ if (!capable(CAP_MKNOD))
+ mnt->mnt_flags |= 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);
@@ -510,10 +533,16 @@ 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);
@@ -525,7 +554,7 @@ 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);
@@ -550,6 +579,11 @@ 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)
@@ -986,22 +1020,26 @@ asmlinkage long sys_oldumount(char __use

#endif

-static int mount_is_safe(struct nameidata *nd)
+/*
+ * Conditions for unprivileged mounts are:
+ * - mountpoint is not a symlink
+ * - mountpoint is in a mount owned by the user
+ */
+static bool permit_mount(struct nameidata *nd, int *flags)
{
+ struct inode *inode = nd->path.dentry->d_inode;
+
+ if (capable(CAP_SYS_ADMIN))
- return 0;
- return -EPERM;
-#ifndef notyet
- if (S_ISLNK(nd->path.dentry->d_inode->i_mode))
- return -EPERM;
- if (nd->path.dentry->d_inode->i_mode & S_ISVTX) {
- if (current->uid != nd->path.dentry->d_inode->i_uid)
- return -EPERM;
- }
- if (vfs_permission(nd, MAY_WRITE))
- return -EPERM;
- return 0;
-#endif
+ return true;
+
+ if (S_ISLNK(inode->i_mode))
+ return false;
+
+ if (!is_mount_owner(nd->path.mnt, current->fsuid))
+ return false;
+
+ *flags |= MS_SETUSER;
+ return true;
}

static int lives_below_in_same_fs(struct dentry *d, struct dentry *dentry)
@@ -1245,9 +1283,10 @@ static int do_loopback(struct nameidata

```

```
int clone_fl;
struct nameidata old_nd;
struct vfsmount *mnt = NULL;
- int err = mount_is_safe(nd);
- if (err)
- return err;
+ int err;
+
+ if (!permit_mount(nd, &flags))
+ return -EPERM;
  if (!old_name || !*old_name)
    return -EINVAL;
  err = path_lookup(old_name, LOOKUP_FOLLOW, &old_nd);

--
```

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Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts  
Posted by [Dave Hansen](#) on Tue, 08 Jan 2008 18:12:38 GMT  
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On Tue, 2008-01-08 at 12:35 +0100, Miklos Szeredi wrote:

```
> +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;
> +}
```

Would -ENOSPC or -ENOMEM be a more descriptive error here?

-- Dave

---

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Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts  
Posted by [Dave Hansen](#) on Tue, 08 Jan 2008 18:26:26 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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On Tue, 2008-01-08 at 12:35 +0100, Miklos Szeredi wrote:

```
> @@ -510,10 +533,16 @@ 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);
```

I think there's a little race here. We could have several users racing to get to this point when `nr_user_mounts==max_user_mounts-1`. One user wins the race and gets their mount reserved. The others get the error out of `reserve_user_mount()`, and return.

But, the winner goes on to error out on some condition further down in `clone_mnt()` and never actually instantiates the mount.

Do you think this is a problem?

I think just about the one solution is to block new mounters on a sleepable lock until the race winner actually finishes their mount operation.

-- Dave

---

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<https://lists.linux-foundation.org/mailman/listinfo/containers>

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Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts

Posted by [Miklos Szeredi](#) on Tue, 08 Jan 2008 19:08:34 GMT

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```
> On Tue, 2008-01-08 at 12:35 +0100, Miklos Szeredi wrote:
> > +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;
> > +}
>
> Would -ENOSPC or -ENOMEM be a more descriptive error here?
```

The logic behind EPERM, is that this failure is only for unprivileged callers. ENOMEM is too specifically about OOM. It could be changed to ENOSPC, ENFILE, EMFILE, or it could remain EPERM. What do others think?

Miklos

---

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Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts

Posted by [Dave Hansen](#) on Tue, 08 Jan 2008 19:15:10 GMT

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```
On Tue, 2008-01-08 at 20:08 +0100, Miklos Szeredi wrote:
>
> The logic behind EPERM, is that this failure is only for unprivileged
> callers. ENOMEM is too specifically about OOM. It could be changed
> to ENOSPC, ENFILE, EMFILE, or it could remain EPERM. What do others
> think?
```

Since you're patching mount anyway, maybe you could add a little pointer for people to go check the sysctl if they get a certain error code back from here.

-- Dave

---

Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts  
Posted by [Miklos Szeredi](#) on Tue, 08 Jan 2008 19:21:35 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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```
> > @@ -510,10 +533,16 @@ 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);
>
> I think there's a little race here. We could have several users racing
> to get to this point when nr_user_mounts==max_user_mounts-1. One user
> wins the race and gets their mount reserved. The others get the error
> out of reserve_user_mount(), and return.
>
> But, the winner goes on to error out on some condition further down in
> clone_mnt() and never actually instantiates the mount.
>
> Do you think this is a problem?
```

For similar reasons as stated in the previous mail, I don't think this matters. If nr\_user\_mounts is getting remotely close to max\_user\_mounts, then something is wrong (or the max needs to be raised anyway).

Thanks for the review, Dave!

Miklos

---

Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts  
Posted by [Szabolcs Szakacsits](#) on Tue, 08 Jan 2008 20:44:20 GMT  
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On Tue, 8 Jan 2008, Miklos Szeredi wrote:

> > On Tue, 2008-01-08 at 12:35 +0100, Miklos Szeredi wrote:

> > > +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;

> > > +}

> >

> > Would -ENOSPC or -ENOMEM be a more descriptive error here?

>

> The logic behind EPERM, is that this failure is only for unprivileged

> callers. ENOMEM is too specifically about OOM. It could be changed

> to ENOSPC, ENFILE, EMFILE, or it could remain EPERM. What do others

> think?

I think it would be important to log the non-trivial errors. Several  
mount(8) hints to check for the reason by dmesg since it's already too  
challenging to figure out what's exactly the problem by the errno value.  
This could also prevent to mislead troubleshooters with the mount/sysctl  
race.

Szaka

--

NTFS-3G: <http://ntfs-3g.org>



Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts  
Posted by [Jan Engelhardt](#) on Wed, 09 Jan 2008 12:44:31 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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On Jan 8 2008 20:08, Miklos Szeredi wrote:

>> On Tue, 2008-01-08 at 12:35 +0100, Miklos Szeredi wrote:

>> > +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;

>> > +}

>>

>> Would -ENOSPC or -ENOMEM be a more descriptive error here?

>

>The logic behind EPERM, is that this failure is only for unprivileged

>callers. ENOMEM is too specifically about OOM. It could be changed

>to ENOSPC, ENFILE, EMFILE, or it could remain EPERM. What do others

>think?

ENOSPC: No space remaining on device => 'wth'.

ENOMEM: I usually think of a userspace OOM (e.g. malloc'ed out all of your  
32-bit address space on 32-bit processes)

EMFILE: "Too many open files"

ENFILE: "Too many open files in system".

ENFILE seems like a temporary winner among these four.

Back in the old days, when the number of mounts was limited in Linux,  
what error value did it return? That one could be used.

---

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<https://lists.linux-foundation.org/mailman/listinfo/containers>

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Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts  
Posted by [Karel Zak](#) on Wed, 09 Jan 2008 13:25:45 GMT  
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On Wed, Jan 09, 2008 at 01:45:09PM +0100, Jan Engelhardt wrote:

>

```

> On Jan 8 2008 20:08, Miklos Szeredi wrote:
> >> On Tue, 2008-01-08 at 12:35 +0100, Miklos Szeredi wrote:
> >> > +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;
> >> > +}
> >>
> >> Would -ENOSPC or -ENOMEM be a more descriptive error here?
> >
> >> The logic behind EPERM, is that this failure is only for unprivileged
> >> callers. ENOMEM is too specifically about OOM. It could be changed
> >> to ENOSPC, ENFILE, EMFILE, or it could remain EPERM. What do others
> >> think?
>
> ENOSPC: No space remaining on device => 'wth'.
> ENOMEM: I usually think of a userspace OOM (e.g. malloc'ed out all of your
> 32-bit address space on 32-bit processes)
> EMFILE: "Too many open files"
> ENFILE: "Too many open files in system".
>
> ENFILE seems like a temporary winner among these four.

```

I see "EMFILE", it's still supported by the latest mount(8).

```

> Back in the old days, when the number of mounts was limited in Linux,
> what error value did it return? That one could be used.

```

Copy & past from mount-0.99.2:

```

/* Mount failed, complain, but don't die. */
switch (mnt_err)
{
    case EPERM:
        if (geteuid() == 0)
            error ("mount: mount point %s is not a directory", node);
        else
            error ("mount: must be superuser to use mount");
        break;
    case EBUSY:
        error ("mount: wrong fs type, %s already mounted, %s busy, "

```

```

"or other error", spec, node);
    break;
case ENOENT:
    error ("mount: mount point %s does not exist", node); break;
case ENOTDIR:
    error ("mount: mount point %s is not a directory", node); break;
case EINVAL:
    error ("mount: %s not a mount point", spec); break;
case EMFILE:
    error ("mount table full"); break;
case EIO:
    error ("mount: %s: can't read superblock", spec); break;
case ENODEV:
    error ("mount: fs type %s not supported by kernel", type); break;
case ENOTBLK:
    error ("mount: %s is not a block device", spec); break;
case ENXIO:
    error ("mount: %s is not a valid block device", spec); break;
case EACCES:
    error ("mount: block device %s is not permitted on its filesystem", spec);
    break;
default:
    error ("mount: %s", strerror (mnt_err)); break;
}

```

Karel

--

Karel Zak <kzak@redhat.com>

---

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Containers@lists.linux-foundation.org  
<https://lists.linux-foundation.org/mailman/listinfo/containers>

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Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts  
Posted by [Miklos Szeredi](#) on Wed, 09 Jan 2008 13:31:59 GMT  
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---

```

> case EMFILE:
>     error ("mount table full"); break;

```

OK, we could go with EMFILE, but the message should be changed to something like "maximum unprivileged mount count exceeded".

Miklos

---

Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts  
Posted by [serue](#) on Thu, 10 Jan 2008 04:47:24 GMT

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---

Quoting Miklos Szeredi ([miklos@szeredi.hu](mailto:miklos@szeredi.hu)):

> From: Miklos Szeredi <[mszeredi@suse.cz](mailto:mszeredi@suse.cz)>

>

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

>

> - mountpoint is not a symlink

> - parent mount is owned by the 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.

>

> In particular, if mounting process doesn't have CAP\_SETUID capability,

> then the "nosuid" flag will be added, and if it doesn't have CAP\_MKNOD

> capability, then the "nodev" flag will be added.

That little part by itself is really needed in order to make the ability to remove CAP\_MKNOD from a process tree's bounding set meaningful. Else instead of creating /dev/hda1, the user can just mount a filesystem with hda1 existing on it. (Which is why I was surprised when one day I found this code missing :)

But of course I'm a fan of the patchset altogether. I plan to review in more detail early next week, but since I liked the previous submission I don't see myself having any complaints, so I'm glad to see the reviews by others.

thanks,  
-serge

> Signed-off-by: Miklos Szeredi <[mszeredi@suse.cz](mailto:mszeredi@suse.cz)>

> ---

>

> Index: linux/fs/namespace.c

> =====

> --- linux.orig/fs/namespace.c 2008-01-04 13:47:49.000000000 +0100

> +++ linux/fs/namespace.c 2008-01-04 13:48:01.000000000 +0100

> @@ -487,11 +487,34 @@ 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->fsuid;
> + mnt->mnt_flags |= MNT_USER;
> +
> + if (!capable(CAP_SETUID))
> + mnt->mnt_flags |= MNT_NOSUID;
> + if (!capable(CAP_MKNOD))
> + mnt->mnt_flags |= 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);
> @@ -510,10 +533,16 @@ 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);
> @@ -525,7 +554,7 @@ 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);
> @@ -550,6 +579,11 @@ 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)
> @@ -986,22 +1020,26 @@ asmlinkage long sys_oldumount(char __use
>
> #endif
>
> -static int mount_is_safe(struct nameidata *nd)
> +/*
> + * Conditions for unprivileged mounts are:
> + * - mountpoint is not a symlink
> + * - mountpoint is in a mount owned by the user
> + */
> +static bool permit_mount(struct nameidata *nd, int *flags)
> {
> + struct inode *inode = nd->path.dentry->d_inode;
> +
> if (capable(CAP_SYS_ADMIN))
> - return 0;
> - return -EPERM;
> #ifdef notyet
> - if (S_ISLNK(nd->path.dentry->d_inode->i_mode))
> - return -EPERM;
> - if (nd->path.dentry->d_inode->i_mode & S_ISVTX) {
> - if (current->uid != nd->path.dentry->d_inode->i_uid)

```

```

> - return -EPERM;
> - }
> - if (vfs_permission(nd, MAY_WRITE))
> - return -EPERM;
> - return 0;
> -#endif
> + return true;
> +
> + if (S_ISLNK(inode->i_mode))
> + return false;
> +
> + if (!is_mount_owner(nd->path.mnt, current->fsuid))
> + return false;
> +
> + *flags |= MS_SETUSER;
> + return true;
> }
>
> static int lives_below_in_same_fs(struct dentry *d, struct dentry *dentry)
> @@ -1245,9 +1283,10 @@ static int do_loopback(struct nameidata
> int clone_fl;
> struct nameidata old_nd;
> struct vfsmount *mnt = NULL;
> - int err = mount_is_safe(nd);
> - if (err)
> - return err;
> + int err;
> +
> + if (!permit_mount(nd, &flags))
> + return -EPERM;
> if (!old_name || !*old_name)
> return -EINVAL;
> err = path_lookup(old_name, LOOKUP_FOLLOW, &old_nd);
>
> --

```

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Containers mailing list  
Containers@lists.linux-foundation.org  
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Subject: Re: [patch 5/9] unprivileged mounts: allow unprivileged bind mounts  
Posted by [serue](#) on Mon, 14 Jan 2008 22:42:40 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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Quoting Miklos Szeredi ([miklos@szeredi.hu](mailto:miklos@szeredi.hu)):  
> From: Miklos Szeredi <[mszeredi@suse.cz](mailto:mszeredi@suse.cz)>  
>

```

> Allow bind mounts to unprivileged users if the following conditions are met:
>
> - mountpoint is not a symlink
> - parent mount is owned by the 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.
>
> In particular, if mounting process doesn't have CAP_SETUID capability,
> then the "nosuid" flag will be added, and if it doesn't have CAP_MKNOD
> capability, then the "nodev" flag will be added.
>
> Signed-off-by: Miklos Szeredi <mszeredi@suse.cz>

```

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

```

> ---
>
> Index: linux/fs/namespace.c
> =====
> --- linux.orig/fs/namespace.c 2008-01-04 13:47:49.000000000 +0100
> +++ linux/fs/namespace.c 2008-01-04 13:48:01.000000000 +0100
> @@ -487,11 +487,34 @@ 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->fsuid;
>   mnt->mnt_flags |= MNT_USER;
> +
> + if (!capable(CAP_SETUID))

```



```

> + mnt->mnt_flags |= MNT_NOSUID;
> + if (!capable(CAP_MKNOD))
> + mnt->mnt_flags |= 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);
> @@ -510,10 +533,16 @@ 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);
> @@ -525,7 +554,7 @@ 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);
> @@ -550,6 +579,11 @@ 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)
> @@ -986,22 +1020,26 @@ asmlinkage long sys_oldumount(char __use
>
> #endif
>
> -static int mount_is_safe(struct nameidata *nd)
> +/*
> + * Conditions for unprivileged mounts are:
> + * - mountpoint is not a symlink
> + * - mountpoint is in a mount owned by the user
> + */
> +static bool permit_mount(struct nameidata *nd, int *flags)
> {
> + struct inode *inode = nd->path.dentry->d_inode;
> +
> + if (capable(CAP_SYS_ADMIN))
> - return 0;
> - return -EPERM;
> -#ifdef notyet
> - if (S_ISLNK(nd->path.dentry->d_inode->i_mode))
> - return -EPERM;
> - if (nd->path.dentry->d_inode->i_mode & S_ISVTX) {
> - if (current->uid != nd->path.dentry->d_inode->i_uid)
> - return -EPERM;
> - }
> - if (vfs_permission(nd, MAY_WRITE))
> - return -EPERM;
> - return 0;
> -#endif
> + return true;
> +
> + if (S_ISLNK(inode->i_mode))
> + return false;
> +
> + if (!is_mount_owner(nd->path.mnt, current->fsuid))
> + return false;
> +
> + *flags |= MS_SETUSER;
> + return true;
> }
>
> static int lives_below_in_same_fs(struct dentry *d, struct dentry *dentry)
> @@ -1245,9 +1283,10 @@ static int do_loopback(struct nameidata
> int clone_fl;
> struct nameidata old_nd;
> struct vfsmount *mnt = NULL;

```

```
> - int err = mount_is_safe(nd);
> - if (err)
> - return err;
> + int err;
> +
> + if (!permit_mount(nd, &flags))
> + return -EPERM;
> if (!old_name || !*old_name)
> return -EINVAL;
> err = path_lookup(old_name, LOOKUP_FOLLOW, &old_nd);
>
> --
```

---

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