
Subject: Re: [PATCH 10/10] sysfs: user namespaces: add ns to user_struct
Posted by [ebiederm](#) on Wed, 30 Apr 2008 06:47:34 GMT
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"Serge E. Hallyn" <serue@us.ibm.com> writes:

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Ok. The concept present in nfsv4 and 9p is that a user is represented by a username string instead by a numerical id. nfsv4 when it encounters a username it doesn't have a cached mapping to a uid calls out to userspace to get that mapping. 9p does something similar although I believe less general.

The key point here is that we have clear precedent of a mapping from one user namespace to another in real world code. In this case nfsv4 has one user namespace (string based) and the systems that mount it have a separate user namespace (uid based).

Once user namespaces are fleshed out I expect that same potential to exist. That each user namespace can have a different uid mapping for the same username string on nfsv4.

>From uid we current map to a user struct. At which point things get a little odd. I think we could swing either way. Either keeping kernel user namespaces completely disjoint or allowing them to be mapped to each other.

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In general I think managing mapping tables between user namespaces is a pain in the butt and something to be avoided if you have the option. I do see a small place for it though.

Eric

Containers mailing list

Containers@lists.linux-foundation.org

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

Subject: Re: [PATCH 10/10] sysfs: user namespaces: add ns to user_struct
Posted by [serue](#) on Wed, 30 Apr 2008 21:04:15 GMT

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But we also need to decide what we're willing to do for the regular container filesystem. That's where I keep getting stuck.

Do we tag each inode with a user_namespace based on some mount context? Do we tag some files with a persistent 'key' which uniquely identifies a user in all user namespaces (and across reboots)? Do we implement a new, mostly pass-through stackable fs which we mount on top of an existing fs to do uid translation? Do we force the use of nfsv4? Do we

rely on an LSM like SELinux or smack to provide fs isolation between user namespaces? Do we use a new LSM that just adds security.usersns xattrs to all files to tag the usersns?

Heck, maybe nfsv4 is the way to go. Admins can either use nfsv4 for all containers, or implement isolation through SELinux/Smack, or accept that uid 0 in a container has access to uid 0-owned files in all namespaces plus capabilities in all namespaces.

Note that as soon as the fs is tagged with user namespaces, then we can simply have task->cap_effective apply only to tasks and files in its own user_ns, so CAP_DAC_OVERRIDE in a child usersns doesn't grant you privilege to files owned by others in another usersns. But without that, CAP_KILL can be contained to tasks within your own usersns, but CAP_DAC_OVERRIDE in a child usersns can't be contained.

-serge

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Subject: Re: [PATCH 10/10] sysfs: user namespaces: add ns to user_struct
Posted by [ebiederm](#) on Wed, 30 Apr 2008 22:13:53 GMT

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Posted by [serue](#) on Fri, 02 May 2008 22:21:34 GMT
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> Right. We still need to find a way to describe the case of allowing the
> creator of the container to have access to everything the same way root
> does today.

>From a simple ownership point of view that wouldn't be too hard.
To do that we don't need uid-mapping in the kernel, all we need
is a concept of user_structs owning user_namespaces they created.
Then the default `vfs_permission` becomes:

1. if (`user->uid==inode->uid && user->uidns==vfsmount->usersns`)
treat as owner
2. if (`user->uidns==vfsmount->usersns`)
check groups
3. if (`vfsmount->usersns` is in `user->child_namespaces`)
treat as uid 0
4. treat as nobody

But as I was laying that out and trying define sane semantics,
the following obvious shortcoming sprang out. It would have
been obvious if I'd given some fs semantics requirements right
at the top:

Let's use X:Y to describe uid X in usersns Y. Let's assume

the behavior described above, and that we tag vfsmounts with the user_namespace of the user_struct whose task performed the mount.

When user 500:1 creates a container with uidns2, wherein he uses uids 0:2 and 400:2, then:

1. files belonging to 500:1 should be treated no differently than files belonging to any other X:1.
The container init can mount --bind it's / early on using user nobody permissions, so this is sufficient.
2. files created by 0:2 should be owned by 0:2 in the container.

BUT

3. files created by 0:2 should not be owned by uid 0 in the parent container (0:1).
4. when a task executes a file owned by 0:2 or a file owned by X:2 carrying file capabilities, the resulting task should carry privilege over objects in userns 2, not over objects in userns 1.

So simple tagging of vfsmounts can only suffice if we insist on tagging newly created files with a uid in the initial user_namespace. Then to do anything fancier - really, to do anything sufficient for system containers - we'd have to use one of the other things we described above - nfsv4, or a mostly-pass-through stackable fs, or whatever.

-serge

Containers mailing list
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