

# Sysfs tagging

(Taken almost verbatim from Eric Biederman's netns tagging patch commit msg)

The problem. Network devices show up in sysfs and with the network namespace active multiple devices with the same name can show up in the same directory, ouch!

To avoid that problem and allow existing applications in network namespaces to see the same interface that is currently presented in sysfs, sysfs now has tagging directory support.

By using the network namespace pointers as tags to separate out the sysfs directory entries we ensure that we don't have conflicts in the directories and applications only see a limited set of the network devices.

Each sysfs directory entry may be tagged with a namespace via the `void *ns` member of its `kernfs_node`. If a directory entry is tagged, then `kernfs_node->flags` will have a flag between `KOBJ_NS_TYPE_NONE` and `KOBJ_NS_TYPES`, and `ns` will point to the namespace to which it belongs.

Each sysfs superblock's `kernfs_super_info` contains an array `void *ns[KOBJ_NS_TYPES]`. When a task in a tagging namespace `kobj_nstype` first mounts sysfs, a new superblock is created. It will be differentiated from other sysfs mounts by having its `s_fs_info->ns[kobj_nstype]` set to the new namespace. Note that through bind mounting and mounts propagation, a task can easily view the contents of other namespaces' sysfs mounts. Therefore, when a namespace exits, it will call `kobj_ns_exit()` to invalidate any `kernfs_node->ns` pointers pointing to it.

Users of this interface:

- define a type in the `kobj_ns_type` enumeration.
- call `kobj_ns_type_register()` with its `kobj_ns_type_operations` which has
  - `current_ns()` which returns current's namespace
  - `netlink_ns()` which returns a socket's namespace
  - `initial_ns()` which returns the initial namespace
- call `kobj_ns_exit()` when an individual tag is no longer valid