
Subject: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [akpm](#) on Wed, 09 May 2007 02:45:35 GMT

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The patch titled

Merge sys_clone()/sys_unshare() nsproxy and namespace handling has been removed from the -mm tree. Its filename was
merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch

This patch was dropped because it was merged into mainline or a subsystem tree

Subject: Merge sys_clone()/sys_unshare() nsproxy and namespace handling

From: Badari Pulavarty <pbadari@us.ibm.com>

sys_clone() and sys_unshare() both makes copies of nsproxy and its associated namespaces. But they have different code paths.

This patch merges all the nsproxy and its associated namespace copy/clone handling (as much as possible). Posted on container list earlier for feedback.

- Create a new nsproxy and its associated namespaces and pass it back to caller to attach it to right process.
- Changed all copy_*_ns() routines to return a new copy of namespace instead of attaching it to task->nsproxy.
- Moved the CAP_SYS_ADMIN checks out of copy_*_ns() routines.
- Removed unnecessary !ns checks from copy_*_ns() and added BUG_ON() just incase.
- Get rid of all individual unshare_*_ns() routines and make use of copy_*_ns() instead.

[akpm@osdl.org: cleanups, warning fix]

[clg@fr.ibm.com: remove dup_namespaces() declaration]

[serue@us.ibm.com: fix CONFIG_IPC_NS=n, clone(CLONE_NEWIPC) retval]

[akpm@linux-foundation.org: fix build with CONFIG_SYSVIPC=n]

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```
fs/namespace.c      | 30 +-----
include/linux/ipc.h  | 11 +-
include/linux/mnt_namespace.h | 5 -
include/linux/nsproxy.h | 3
include/linux/pid_namespace.h | 2
include/linux/utsname.h | 19 ----
ipc/util.c          | 53 ++-----
kernel/fork.c        | 85 +-----
kernel/nsproxy.c     | 139 ++++++-----
kernel/pid.c         | 11 --
kernel/utsname.c     | 41 -----
11 files changed, 131 insertions(+), 268 deletions(-)
```

diff -puN fs/namespace.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace
fs/namespace.c

--- a/fs/namespace.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/fs/namespace.c

@@ -1441,10 +1441,9 @@ dput_out:

```
* Allocate a new namespace structure and populate it with contents
* copied from the namespace of the passed in task structure.
*/
```

```
-struct mnt_namespace *dup_mnt_ns(struct task_struct *tsk,
+static struct mnt_namespace *dup_mnt_ns(struct mnt_namespace *mnt_ns,
    struct fs_struct *fs)
```

```
{
- struct mnt_namespace *mnt_ns = tsk->nsproxy->mnt_ns;
  struct mnt_namespace *new_ns;
  struct vfsmount *rootmnt = NULL, *pwdmnt = NULL, *altrootmnt = NULL;
  struct vfsmount *p, *q;
@@ -1509,36 +1508,21 @@ struct mnt_namespace *dup_mnt_ns(struct
    return new_ns;
}
```

```
-int copy_mnt_ns(int flags, struct task_struct *tsk)
+struct mnt_namespace *copy_mnt_ns(int flags, struct mnt_namespace *ns,
+ struct fs_struct *new_fs)
{
- struct mnt_namespace *ns = tsk->nsproxy->mnt_ns;
  struct mnt_namespace *new_ns;
- int err = 0;
-
- if (!ns)
-   return 0;
```

```

+ BUG_ON(!ns);
  get_mnt_ns(ns);

  if (!(flags & CLONE_NEWNS))
-   return 0;
+   return ns;

- if (!capable(CAP_SYS_ADMIN)) {
-   err = -EPERM;
-   goto out;
- }
+ new_ns = dup_mnt_ns(ns, new_fs);

- new_ns = dup_mnt_ns(tsk, tsk->fs);
- if (!new_ns) {
-   err = -ENOMEM;
-   goto out;
- }
-
- tsk->nsproxy->mnt_ns = new_ns;
-
-out:
  put_mnt_ns(ns);
- return err;
+ return new_ns;
}

asmlinkage long sys_mount(char __user * dev_name, char __user * dir_name,
diff -puN include/linux/ipc.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
include/linux/ipc.h
--- a/include/linux/ipc.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/include/linux/ipc.h
@@ -92,16 +92,19 @@ extern struct ipc_namespace init_ipc_ns;

#ifdef CONFIG_SYSVIPC
#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
-extern int copy_ipcs(unsigned long flags, struct task_struct *tsk);
+extern struct ipc_namespace *copy_ipcs(unsigned long flags,
+   struct ipc_namespace *ns);
#else
#define INIT_IPC_NS(ns)
-static inline int copy_ipcs(unsigned long flags, struct task_struct *tsk)
-{ return 0; }
+static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
+   struct ipc_namespace *ns)
+{
+ return ns;
+}

```

```

#endif

#ifdef CONFIG_IPC_NS
extern void free_ipc_ns(struct kref *kref);
-extern int unshare_ipcs(unsigned long flags, struct ipc_namespace **ns);
#endif

static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
diff -puN
include/linux/mnt_namespace.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
include/linux/mnt_namespace.h
--- a/include/linux/mnt_namespace.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/include/linux/mnt_namespace.h
@@ -14,10 +14,9 @@ struct mnt_namespace {
    int event;
};

-extern int copy_mnt_ns(int, struct task_struct *);
-extern void __put_mnt_ns(struct mnt_namespace *ns);
-extern struct mnt_namespace *dup_mnt_ns(struct task_struct *,
+extern struct mnt_namespace *copy_mnt_ns(int, struct mnt_namespace *,
    struct fs_struct *);
+extern void __put_mnt_ns(struct mnt_namespace *ns);

static inline void put_mnt_ns(struct mnt_namespace *ns)
{
diff -puN include/linux/nsproxy.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
include/linux/nsproxy.h
--- a/include/linux/nsproxy.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/include/linux/nsproxy.h
@@ -31,10 +31,11 @@ struct nsproxy {
};
extern struct nsproxy init_nsproxy;

-struct nsproxy *dup_namespaces(struct nsproxy *orig);
int copy_namespaces(int flags, struct task_struct *tsk);
void get_task_namespaces(struct task_struct *tsk);
void free_nsproxy(struct nsproxy *ns);
+int unshare_nsproxy_namespaces(unsigned long, struct nsproxy **,
+ struct fs_struct *);

static inline void put_nsproxy(struct nsproxy *ns)
{
diff -puN include/linux/pid_namespace.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
include/linux/pid_namespace.h
--- a/include/linux/pid_namespace.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/include/linux/pid_namespace.h
@@ -29,7 +29,7 @@ static inline void get_pid_ns(struct pid

```

```

    kref_get(&ns->kref);
}

-extern int copy_pid_ns(int flags, struct task_struct *tsk);
+extern struct pid_namespace *copy_pid_ns(int flags, struct pid_namespace *ns);
extern void free_pid_ns(struct kref *kref);

static inline void put_pid_ns(struct pid_namespace *ns)
diff -puN include/linux/utsname.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
include/linux/utsname.h
--- a/include/linux/utsname.h~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/include/linux/utsname.h
@@ -49,9 +49,7 @@ static inline void get_uts_ns(struct uts
}

#ifdef CONFIG_UTS_NS
-extern int unshare_utsname(unsigned long unshare_flags,
- struct uts_namespace **new_uts);
-extern int copy_utsname(int flags, struct task_struct *tsk);
+extern struct uts_namespace *copy_utsname(int flags, struct uts_namespace *ns);
extern void free_uts_ns(struct kref *kref);

static inline void put_uts_ns(struct uts_namespace *ns)
@@ -59,21 +57,12 @@ static inline void put_uts_ns(struct uts
    kref_put(&ns->kref, free_uts_ns);
}
#else
-static inline int unshare_utsname(unsigned long unshare_flags,
- struct uts_namespace **new_uts)
+static inline struct uts_namespace *copy_utsname(int flags,
+ struct uts_namespace *ns)
{
- if (unshare_flags & CLONE_NEWUTS)
- return -EINVAL;
-
- return 0;
+ return ns;
}

-static inline int copy_utsname(int flags, struct task_struct *tsk)
-{
- if (flags & CLONE_NEWUTS)
- return -EINVAL;
- return 0;
-}
static inline void put_uts_ns(struct uts_namespace *ns)
{
}

```

```

diff -puN ipc/util.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace ipc/util.c
--- a/ipc/util.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/ipc/util.c
@@ -85,53 +85,20 @@ err_mem:
     return ERR_PTR(err);
 }

-int unshare_ipcs(unsigned long unshare_flags, struct ipc_namespace **new_ipc)
+struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
 {
- struct ipc_namespace *new;
-
- if (unshare_flags & CLONE_NEWIPC) {
- if (!capable(CAP_SYS_ADMIN))
- return -EPERM;
-
- new = clone_ipc_ns(current->nsproxy->ipc_ns);
- if (IS_ERR(new))
- return PTR_ERR(new);
-
- *new_ipc = new;
- }
-
- return 0;
-}
-
-int copy_ipcs(unsigned long flags, struct task_struct *tsk)
-{
- struct ipc_namespace *old_ns = tsk->nsproxy->ipc_ns;
- struct ipc_namespace *new_ns;
- int err = 0;

- if (!old_ns)
- return 0;

- get_ipc_ns(old_ns);
+ BUG_ON(!ns);
+ get_ipc_ns(ns);

- if (!(flags & CLONE_NEWIPC))
- return 0;

- if (!capable(CAP_SYS_ADMIN)) {
- err = -EPERM;
- goto out;
- }
+ return ns;

```

```

- new_ns = clone_ipc_ns(old_ns);
- if (!new_ns) {
-   err = -ENOMEM;
-   goto out;
- }
+ new_ns = clone_ipc_ns(ns);

- tsk->nsproxy->ipc_ns = new_ns;
-out:
- put_ipc_ns(old_ns);
- return err;
+ put_ipc_ns(ns);
+ return new_ns;
}

void free_ipc_ns(struct kref *kref)
@@ -145,11 +112,11 @@ void free_ipc_ns(struct kref *kref)
    kfree(ns);
}
#else
-int copy_ipcs(unsigned long flags, struct task_struct *tsk)
+struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
{
    if (flags & CLONE_NEWIPC)
-   return -EINVAL;
-   return 0;
+   return ERR_PTR(-EINVAL);
+   return ns;
}
#endif

diff -puN kernel/fork.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace kernel/fork.c
--- a/kernel/fork.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/kernel/fork.c
@@ -1516,26 +1516,6 @@ static int unshare_fs(unsigned long unsh
}

/*
- * Unshare the mnt_namespace structure if it is being shared
- */
-static int unshare_mnt_namespace(unsigned long unshare_flags,
- struct mnt_namespace **new_nsp, struct fs_struct *new_fs)
-{
- struct mnt_namespace *ns = current->nsproxy->mnt_ns;
-
- if ((unshare_flags & CLONE_NEWNS) && ns) {
-   if (!capable(CAP_SYS_ADMIN))
-     return -EPERM;

```

```

-
- *new_nsp = dup_mnt_ns(current, new_fs ? new_fs : current->fs);
- if (!*new_nsp)
- return -ENOMEM;
- }
-
- return 0;
-}
-
-/*
 * Unsharing of sighand is not supported yet
 */
static int unshare_sighand(unsigned long unshare_flags, struct sighand_struct **new_sighp)
@@ -1593,16 +1573,6 @@ static int unshare_semundo(unsigned long
    return 0;
}

-#ifndef CONFIG_IPC_NS
-static inline int unshare_ipcs(unsigned long flags, struct ipc_namespace **ns)
-{
- if (flags & CLONE_NEWIPC)
- return -EINVAL;
-
- return 0;
-}
-#endif
-
-/*
 * unshare allows a process to 'unshare' part of the process
 * context which was originally shared using clone. copy_*
@@ -1615,14 +1585,11 @@ asmlinkage long sys_unshare(unsigned lon
{
    int err = 0;
    struct fs_struct *fs, *new_fs = NULL;
- struct mnt_namespace *ns, *new_ns = NULL;
    struct sighand_struct *new_sigh = NULL;
    struct mm_struct *mm, *new_mm = NULL, *active_mm = NULL;
    struct files_struct *fd, *new_fd = NULL;
    struct sem_undo_list *new_ulist = NULL;
    struct nsproxy *new_nsproxy = NULL, *old_nsproxy = NULL;
- struct uts_namespace *uts, *new_uts = NULL;
- struct ipc_namespace *ipc, *new_ipc = NULL;

    check_unshare_flags(&unshare_flags);

@@ -1637,36 +1604,24 @@ asmlinkage long sys_unshare(unsigned lon
    goto bad_unshare_out;
    if ((err = unshare_fs(unshare_flags, &new_fs)))

```

```

    goto bad_unshare_cleanup_thread;
- if ((err = unshare_mnt_namespace(unshare_flags, &new_ns, new_fs)))
- goto bad_unshare_cleanup_fs;
  if ((err = unshare_sighand(unshare_flags, &new_sigh)))
- goto bad_unshare_cleanup_ns;
+ goto bad_unshare_cleanup_fs;
  if ((err = unshare_vm(unshare_flags, &new_mm)))
    goto bad_unshare_cleanup_sigh;
  if ((err = unshare_fd(unshare_flags, &new_fd)))
    goto bad_unshare_cleanup_vm;
  if ((err = unshare_semundo(unshare_flags, &new_ulist)))
    goto bad_unshare_cleanup_fd;
- if ((err = unshare_utsname(unshare_flags, &new_uts)))
+ if ((err = unshare_nsproxy_namespaces(unshare_flags, &new_nsproxy,
+ new_fs)))
    goto bad_unshare_cleanup_semundo;
- if ((err = unshare_ipcs(unshare_flags, &new_ipc)))
- goto bad_unshare_cleanup_uts;

- if (new_ns || new_uts || new_ipc) {
- old_nsproxy = current->nsproxy;
- new_nsproxy = dup_namespaces(old_nsproxy);
- if (!new_nsproxy) {
- err = -ENOMEM;
- goto bad_unshare_cleanup_ipc;
- }
- }
-
- if (new_fs || new_ns || new_mm || new_fd || new_ulist ||
- new_uts || new_ipc) {
+ if (new_fs || new_mm || new_fd || new_ulist || new_nsproxy) {

    task_lock(current);

    if (new_nsproxy) {
+ old_nsproxy = current->nsproxy;
    current->nsproxy = new_nsproxy;
    new_nsproxy = old_nsproxy;
    }
@@ -1677,12 +1632,6 @@ asmlinkage long sys_unshare(unsigned lon
    new_fs = fs;
    }

- if (new_ns) {
- ns = current->nsproxy->mnt_ns;
- current->nsproxy->mnt_ns = new_ns;
- new_ns = ns;
- }

```

```

-
    if (new_mm) {
        mm = current->mm;
        active_mm = current->active_mm;
@@ -1698,32 +1647,12 @@ asmlinkage long sys_unshare(unsigned lon
        new_fd = fd;
    }

- if (new_uts) {
-     uts = current->nsproxy->uts_ns;
-     current->nsproxy->uts_ns = new_uts;
-     new_uts = uts;
- }
-
- if (new_ipc) {
-     ipc = current->nsproxy->ipc_ns;
-     current->nsproxy->ipc_ns = new_ipc;
-     new_ipc = ipc;
- }
-
    task_unlock(current);
}

if (new_nsproxy)
    put_nsproxy(new_nsproxy);

-bad_unshare_cleanup_ipc:
- if (new_ipc)
-     put_ipc_ns(new_ipc);
-
-bad_unshare_cleanup_uts:
- if (new_uts)
-     put_uts_ns(new_uts);
-
bad_unshare_cleanup_semundo:
bad_unshare_cleanup_fd:
    if (new_fd)
@@ -1738,10 +1667,6 @@ bad_unshare_cleanup_sigh:
        if (atomic_dec_and_test(&new_sigh->count))
            kmem_cache_free(sighand_cache, new_sigh);

-bad_unshare_cleanup_ns:
- if (new_ns)
-     put_mnt_ns(new_ns);
-
bad_unshare_cleanup_fs:
    if (new_fs)
        put_fs_struct(new_fs);

```

```

diff -puN kernel/nsproxy.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace
kernel/nsproxy.c
--- a/kernel/nsproxy.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/kernel/nsproxy.c
@@ -38,10 +38,8 @@ void get_task_namespaces(struct task_str

/*
 * creates a copy of "orig" with refcount 1.
- * This does not grab references to the contained namespaces,
- * so that needs to be done by dup_namespaces.
 */
-static inline struct nsproxy *clone_namespaces(struct nsproxy *orig)
+static inline struct nsproxy *clone_nsproxy(struct nsproxy *orig)
{
    struct nsproxy *ns;

@@ -52,26 +50,49 @@ static inline struct nsproxy *clone_name
}

/*
- * copies the nsproxy, setting refcount to 1, and grabbing a
- * reference to all contained namespaces. Called from
- * sys_unshare()
+ * Create new nsproxy and all of its the associated namespaces.
+ * Return the newly created nsproxy. Do not attach this to the task,
+ * leave it to the caller to do proper locking and attach it to task.
 */
-struct nsproxy *dup_namespaces(struct nsproxy *orig)
+static struct nsproxy *create_new_namespaces(int flags, struct task_struct *tsk,
+ struct fs_struct *new_fs)
{
- struct nsproxy *ns = clone_namespaces(orig);
+ struct nsproxy *new_nsp;

- if (ns) {
-     if (ns->mnt_ns)
-         get_mnt_ns(ns->mnt_ns);
-     if (ns->uts_ns)
-         get_uts_ns(ns->uts_ns);
-     if (ns->ipc_ns)
-         get_ipc_ns(ns->ipc_ns);
-     if (ns->pid_ns)
-         get_pid_ns(ns->pid_ns);
- }
+ new_nsp = clone_nsproxy(tsk->nsproxy);
+ if (!new_nsp)
+     return ERR_PTR(-ENOMEM);

```

```

- return ns;
+ new_nsp->mnt_ns = copy_mnt_ns(flags, tsk->nsproxy->mnt_ns, new_fs);
+ if (IS_ERR(new_nsp->mnt_ns))
+ goto out_ns;
+
+ new_nsp->uts_ns = copy_utsname(flags, tsk->nsproxy->uts_ns);
+ if (IS_ERR(new_nsp->uts_ns))
+ goto out_uts;
+
+ new_nsp->ipc_ns = copy_ipcs(flags, tsk->nsproxy->ipc_ns);
+ if (IS_ERR(new_nsp->ipc_ns))
+ goto out_ipc;
+
+ new_nsp->pid_ns = copy_pid_ns(flags, tsk->nsproxy->pid_ns);
+ if (IS_ERR(new_nsp->pid_ns))
+ goto out_pid;
+
+ return new_nsp;
+
+out_pid:
+ if (new_nsp->ipc_ns)
+ put_ipc_ns(new_nsp->ipc_ns);
+out_ipc:
+ if (new_nsp->uts_ns)
+ put_uts_ns(new_nsp->uts_ns);
+out_uts:
+ if (new_nsp->mnt_ns)
+ put_mnt_ns(new_nsp->mnt_ns);
+out_ns:
+ kfree(new_nsp);
+ return ERR_PTR(-ENOMEM);
}

/*
@@ -92,47 +113,21 @@ int copy_namespaces(int flags, struct ta
if (!(flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC)))
return 0;

- new_ns = clone_namespaces(old_ns);
- if (!new_ns) {
- err = -ENOMEM;
+ if (!capable(CAP_SYS_ADMIN)) {
+ err = -EPERM;
+ goto out;
+ }

- tsk->nsproxy = new_ns;
-

```

```

- err = copy_mnt_ns(flags, tsk);
- if (err)
- goto out_ns;
-
- err = copy_utsname(flags, tsk);
- if (err)
- goto out_uts;
-
- err = copy_ipcs(flags, tsk);
- if (err)
- goto out_ipc;
-
- err = copy_pid_ns(flags, tsk);
- if (err)
- goto out_pid;
+ new_ns = create_new_namespaces(flags, tsk, tsk->fs);
+ if (IS_ERR(new_ns)) {
+ err = PTR_ERR(new_ns);
+ goto out;
+ }

+ tsk->nsproxy = new_ns;
out:
    put_nsproxy(old_ns);
    return err;
-
-out_pid:
- if (new_ns->ipc_ns)
- put_ipc_ns(new_ns->ipc_ns);
-out_ipc:
- if (new_ns->uts_ns)
- put_uts_ns(new_ns->uts_ns);
-out_uts:
- if (new_ns->mnt_ns)
- put_mnt_ns(new_ns->mnt_ns);
-out_ns:
- tsk->nsproxy = old_ns;
- kfree(new_ns);
- goto out;
}

void free_nsproxy(struct nsproxy *ns)
@@ -147,3 +142,41 @@ void free_nsproxy(struct nsproxy *ns)
    put_pid_ns(ns->pid_ns);
    kfree(ns);
}
+
+/*

```

```

+ * Called from unshare. Unshare all the namespaces part of nsproxy.
+ * On success, returns the new nsproxy and a reference to old nsproxy
+ * to make sure it stays around.
+ */
+int unshare_nsproxy_namespaces(unsigned long unshare_flags,
+ struct nsproxy **new_nsp, struct fs_struct *new_fs)
+{
+ struct nsproxy *old_ns = current->nsproxy;
+ int err = 0;
+
+ if (!(unshare_flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC)))
+ return 0;
+
+ #ifndef CONFIG_IPC_NS
+ if (unshare_flags & CLONE_NEWIPC)
+ return -EINVAL;
+ #endif
+
+ #ifndef CONFIG_UTS_NS
+ if (unshare_flags & CLONE_NEWUTS)
+ return -EINVAL;
+ #endif
+
+ if (!capable(CAP_SYS_ADMIN))
+ return -EPERM;
+
+ get_nsproxy(old_ns);
+
+ *new_nsp = create_new_namespaces(unshare_flags, current,
+ new_fs ? new_fs : current->fs);
+ if (IS_ERR(*new_nsp)) {
+ err = PTR_ERR(*new_nsp);
+ put_nsproxy(old_ns);
+ }
+ return err;
+}
diff -puN kernel/pid.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace kernel/pid.c
--- a/kernel/pid.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/kernel/pid.c
@@ -360,16 +360,11 @@ struct pid *find_get_pid(int nr)
 }
 EXPORT_SYMBOL_GPL(find_get_pid);

-int copy_pid_ns(int flags, struct task_struct *tsk)
+struct pid_namespace *copy_pid_ns(int flags, struct pid_namespace *old_ns)
 {
- struct pid_namespace *old_ns = tsk->nsproxy->pid_ns;
- int err = 0;

```

```

-
- if (!old_ns)
- return 0;
-
+ BUG_ON(!old_ns);
  get_pid_ns(old_ns);
- return err;
+ return old_ns;
}

void free_pid_ns(struct kref *kref)
diff -puN kernel/utsname.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace
kernel/utsname.c
--- a/kernel/utsname.c~merge-sys_clone-sys_unshare-nsproxy-and-namespace
+++ a/kernel/utsname.c
@@ -32,58 +32,25 @@ static struct uts_namespace *clone_uts_n
}

/*
- * unshare the current process' utsname namespace.
- * called only in sys_unshare()
- */
-int unshare_utsname(unsigned long unshare_flags, struct uts_namespace **new_uts)
-{
- if (unshare_flags & CLONE_NEWUTS) {
- if (!capable(CAP_SYS_ADMIN))
- return -EPERM;
-
- *new_uts = clone_uts_ns(current->nsproxy->uts_ns);
- if (!*new_uts)
- return -ENOMEM;
- }
-
- return 0;
-}

-/*
- * Copy task tsk's utsname namespace, or clone it if flags
- * specifies CLONE_NEWUTS. In latter case, changes to the
- * utsname of this process won't be seen by parent, and vice
- * versa.
- */
-int copy_utsname(int flags, struct task_struct *tsk)
+struct uts_namespace *copy_utsname(int flags, struct uts_namespace *old_ns)
{
- struct uts_namespace *old_ns = tsk->nsproxy->uts_ns;
  struct uts_namespace *new_ns;
- int err = 0;

```

```

-
- if (!old_ns)
- return 0;

+ BUG_ON(!old_ns);
+ get_uts_ns(old_ns);

+ if (!(flags & CLONE_NEWUTS))
- return 0;
-
- if (!capable(CAP_SYS_ADMIN)) {
- err = -EPERM;
- goto out;
- }
+ return old_ns;

+ new_ns = clone_uts_ns(old_ns);
- if (!new_ns) {
- err = -ENOMEM;
- goto out;
- }
- tsk->nsproxy->uts_ns = new_ns;

-out:
+ put_uts_ns(old_ns);
- return err;
+ return new_ns;
}

void free_uts_ns(struct kref *kref)
-

```

Patches currently in -mm which might be from pbadari@us.ibm.com are

origin.patch

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

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
removed from -mm tree

Posted by [Herbert Poetzl](#) on Sat, 16 Jun 2007 19:17:42 GMT

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On Tue, May 08, 2007 at 07:45:35PM -0700, akpm@linux-foundation.org wrote:

```

>
> The patch titled
> Merge sys_clone()/sys_unshare() nsproxy and namespace handling
> has been removed from the -mm tree. Its filename was
> merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
>
> This patch was dropped because it was merged into mainline or a subsystem tree
>
> -----
> Subject: Merge sys_clone()/sys_unshare() nsproxy and namespace handling
> From: Badari Pulavarty <pbadari@us.ibm.com>
>
> sys_clone() and sys_unshare() both makes copies of nsproxy and its associated
> namespaces. But they have different code paths.
>
> This patch merges all the nsproxy and its associated namespace copy/clone
> handling (as much as possible). Posted on container list earlier for
> feedback.
>
>
> - Create a new nsproxy and its associated namespaces and pass it back to
> caller to attach it to right process.
>
> - Changed all copy_*_ns() routines to return a new copy of namespace
> instead of attaching it to task->nsproxy.
>
> - Moved the CAP_SYS_ADMIN checks out of copy_*_ns() routines.
>
> - Removed unnecessary !ns checks from copy_*_ns() and added BUG_ON()
> just incase.
>
> - Get rid of all individual unshare_*_ns() routines and make use of
> copy_*_ns() instead.
>

```

.. [zapped] ...

```

> + * Called from unshare. Unshare all the namespaces part of nsproxy.
> + * On success, returns the new nsproxy and a reference to old nsproxy
> + * to make sure it stays around.
> + */
> +int unshare_nsproxy_namespaces(unsigned long unshare_flags,
> + struct nsproxy **new_nsp, struct fs_struct *new_fs)
> +{

```

this makes sys_unshare leak and nsproxy (reference)

can be tested with the following command sequence:

```
vcmd -nu ^17 -- vcmd -nu ^17 -- sleep 10
```

(and some nsproxy accounting/debugging as used in Linux-VServer)

we probably want to drop the reference to the old nsproxy in sys_unshare() but I do not see a good reason to take the reference in the first place (at least not with the code in mainline 2.6.22-rc4)

HTH,
Herbert

PS: vcmd can be found here:

<http://vserver.13thfloor.at/Experimental/TOOLS/vcmd-0.09.tar.bz2>

... [more zapped] ...

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

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Oleg Nesterov](#) on Sun, 17 Jun 2007 14:38:30 GMT

[View Forum Message](#) <> [Reply to Message](#)

On 06/16, Herbert Poetzl wrote:

```
>
> On Tue, May 08, 2007 at 07:45:35PM -0700, akpm@linux-foundation.org wrote:
> >
> > The patch titled
> >   Merge sys_clone()/sys_unshare() nsproxy and namespace handling
> > has been removed from the -mm tree. Its filename was
> >   merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
> >
> > This patch was dropped because it was merged into mainline or a subsystem tree
> >
>
> .. [zapped] ...
>
> > + * Called from unshare. Unshare all the namespaces part of nsproxy.
> > + * On success, returns the new nsproxy and a reference to old nsproxy
> > + * to make sure it stays around.
> > + */
> > +int unshare_nsproxy_namespaces(unsigned long unshare_flags,
> > + struct nsproxy **new_nsp, struct fs_struct *new_fs)
```

```
> > +{
>
> this makes sys_unshare leak and nsproxy (reference)
>
> can be tested with the following command sequence:
> vcmd -nu ^17 -- vcmd -nu ^17 -- sleep 10
```

I know almost nothing about this stuff, could you please explain in brief what this command does and how do you detect a leak?

```
> (and some nsproxy accounting/debugging as used in
> Linux-VServer)
>
> we probably want to drop the reference to the old
> nsproxy in sys_unshare() but I do not see a good reason
> to take the reference in the first place (at least not
> with the code in mainline 2.6.22-rc4)
```

At first glance, sys_unshare() drops the reference to the old nsproxy,

```
old_nsproxy = current->nsproxy;
current->nsproxy = new_nsproxy;
new_nsproxy = old_nsproxy;
```

...

```
if (new_nsproxy)
    put_nsproxy(new_nsproxy);
```

However, nsproxy's code is full of strange unneeded get/put calls, for example:

```
struct uts_namespace *copy_utsname(int flags, struct uts_namespace *old_ns)
{
    struct uts_namespace *new_ns;

    BUG_ON(!old_ns);
    get_uts_ns(old_ns);

    if (!(flags & CLONE_NEWUTS))
        return old_ns;

    new_ns = clone_uts_ns(old_ns);

    put_uts_ns(old_ns);
    return new_ns;
}
```

I think it would be better to do

```
struct uts_namespace *copy_utsname(int flags, struct uts_namespace *old_ns)
{
    struct uts_namespace *new_ns;

    BUG_ON(!old_ns);

    if (!(flags & CLONE_NEWUTS)) {
        get_uts_ns(old_ns);
        return old_ns;
    }

    new_ns = clone_uts_ns(old_ns);
    return new_ns;
}
```

Not only this looks better (imho), this is more robust.

Let's look at `copy_namespaces()`, it does the same "get_xxx() in advance", but `-EPERM` forgets to do `put_nsproxy()`, so we definitely have a leak in `copy_process()`.

So, if the command above does `clone()` which fails, perhaps this can explain the problem.

Oleg.

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Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Oleg Nesterov](#) on Sun, 17 Jun 2007 14:49:15 GMT

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On 06/17, Oleg Nesterov wrote:

>
> Let's look at `copy_namespaces()`, it does the same "get_xxx() in advance", but
> `-EPERM` forgets to do `put_nsproxy()`, so we definitely have a leak in `copy_process()`.

Ugh, I am sorry, `EPERM` does `put_nsproxy()`. Still I can't understand why `copy_namespaces()` does `get_nsproxy()` unconditionally.

Oleg.

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
removed from -mm tree

Posted by [Oleg Nesterov](#) on Sun, 17 Jun 2007 16:30:04 GMT

[View Forum Message](#) <> [Reply to Message](#)

On 06/17, Oleg Nesterov wrote:

```
>
> However, nsproxy's code is full of strange unneeded get/put calls, for
> example:
>
> struct uts_namespace *copy_utsname(int flags, struct uts_namespace *old_ns)
> {
>     struct uts_namespace *new_ns;
>
>     BUG_ON(!old_ns);
>     get_uts_ns(old_ns);
>
>     if (!(flags & CLONE_NEWUTS))
>         return old_ns;
>
>     new_ns = clone_uts_ns(old_ns);
>
>     put_uts_ns(old_ns);
>     return new_ns;
> }
```

Perhaps I missed something again, but this looks wrong to me.

copy_utsname() assumes that old_ns != NULL. OK, it should not.

However, clone_uts_ns() returns NULL if kmalloc() fails.
create_new_namespaces() checks IS_ERR(new_ns), but IS_ERR(NULL) = false.
So the next copy_namespaces/unshare_nsproxy_namespaces will oops ?

The same for all ->xxx_ns fields.

Oleg.

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Herbert Poetzl](#) on Sun, 17 Jun 2007 17:09:42 GMT

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On Sun, Jun 17, 2007 at 06:38:30PM +0400, Oleg Nesterov wrote:

> On 06/16, Herbert Poetzl wrote:

> >

> > On Tue, May 08, 2007 at 07:45:35PM -0700, akpm@linux-foundation.org wrote:

> > >

> > > The patch titled

> > > Merge sys_clone()/sys_unshare() nsproxy and namespace handling

> > > has been removed from the -mm tree. Its filename was

> > > merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch

> > >

> > > This patch was dropped because it was merged into mainline or a subsystem tree

> > >

> >

> > .. [zapped] ...

> >

> > > + * Called from unshare. Unshare all the namespaces part of nsproxy.

> > > + * On success, returns the new nsproxy and a reference to old nsproxy

> > > + * to make sure it stays around.

> > > + */

> > > +int unshare_nsproxy_namespaces(unsigned long unshare_flags,

> > > + struct nsproxy **new_nsp, struct fs_struct *new_fs)

> > > +{

> >

> > this makes sys_unshare leak and nsproxy (reference)

> >

> > can be tested with the following command sequence:

> > vcmd -nu ^17 -- vcmd -nu ^17 -- sleep 10

>

> I know almost nothing about this stuff, could you please explain in

> brief what this command does ...

yeah, sure, it basically calls sys_unshare() with bit 17 (CLONE_NEWNS) set then invokes the chained command, so we get a sleep which is in a separate namespace, unshared from a namespace != the main one ...

> ... and how do you detect a leak?

> > (and some nsproxy accounting/debugging as used in

> > Linux-VServer)

on Linux-VServer, we have accounting for those proxies (and several other namespace related stuff) because we already suspected leakage and reference bugs in this area some time ago ... btw, I also suggested to put a similar functionality in mainline for the time being, but it was ignored, as usual ...

> > we probably want to drop the reference to the old
> > nsproxy in sys_unshare() but I do not see a good reason
> > to take the reference in the first place (at least not
> > with the code in mainline 2.6.22-rc4)

>
> At first glance, sys_unshare() drops the reference to
> the old nsproxy,

okay, the 'current' task has an nsproxy, and keeps a reference to that (let's assume it is the only task using this nsproxy, then the count will be 1)

unshare_nsproxy_namespaces() now does get_nsproxy() which makes the count=2, then it creates a new nsproxy (which will get count=1), and returns ...

```
> old_nsproxy = current->nsproxy;  
> current->nsproxy = new_nsproxy;  
> new_nsproxy = old_nsproxy;
```

sys_unshare, now replaces the current->nsproxy with the new one, which will have the correct count=1, and puts the old nsproxy (which has count=2), and thus the nsproxy will not get released, although it isn't referenced/used anymore ...

```
> if (new_nsproxy)  
>   put_nsproxy(new_nsproxy);  
>  
>  
> However, nsproxy's code is full of strange unneeded get/put  
> calls, for example:
```

yep, I totally agree, it is quite a mess, and if not handled carefully, you end up leaking proxies :)

best,
Herbert

```

> struct uts_namespace *copy_utsname(int flags, struct uts_namespace *old_ns)
> {
>     struct uts_namespace *new_ns;
>
>     BUG_ON(!old_ns);
>     get_uts_ns(old_ns);
>
>     if (!(flags & CLONE_NEWUTS))
>         return old_ns;
>
>     new_ns = clone_uts_ns(old_ns);
>
>     put_uts_ns(old_ns);
>     return new_ns;
> }
>
> I think it would be better to do
>
> struct uts_namespace *copy_utsname(int flags, struct uts_namespace *old_ns)
> {
>     struct uts_namespace *new_ns;
>
>     BUG_ON(!old_ns);
>
>     if (!(flags & CLONE_NEWUTS)) {
>         get_uts_ns(old_ns);
>         return old_ns;
>     }
>
>     new_ns = clone_uts_ns(old_ns);
>     return new_ns;
> }
>
> Not only this looks better (imho), this is more robust.
>
> Let's look at copy_namespaces(), it does the same
> "get_xxx() in advance", but -EPERM forgets to do
> put_nsproxy(), so we definitely have a leak in copy_process().
>
> So, if the command above does clone() which fails, perhaps
> this can explain the problem.
>
> Oleg.

```

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Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Oleg Nesterov](#) on Sun, 17 Jun 2007 18:28:22 GMT

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On 06/17, Herbert Poetzl wrote:

>

> On Sun, Jun 17, 2007 at 06:38:30PM +0400, Oleg Nesterov wrote:

> >

> > At first glance, sys_unshare() drops the reference to

> > the old nsproxy,

>

> okay, the 'current' task has an nsproxy, and keeps

> a reference to that (let's assume it is the only

> task using this nsproxy, then the count will be 1)

>

> unshare_nsproxy_namespaces() now does get_nsproxy()

> which makes the count=2, then it creates a new

> nsproxy (which will get count=1), and returns ...

Ah yes, stupid me.

Looks like we should just remove get/put old_ns from unshare_nsproxy_namespaces() as you suggested.

Thanks!

Oleg.

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

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Cedric Le Goater](#) on Mon, 18 Jun 2007 11:51:20 GMT

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Oleg Nesterov wrote:

> On 06/17, Oleg Nesterov wrote:

>> Let's look at copy_namespaces(), it does the same "get_xxx() in advance", but

>> -EPERM forgets to do put_nsproxy(), so we definitely have a leak in copy_process().

>

> Ugh, I am sorry, EPERM does put_nsproxy(). Still I can't understand why

> copy_namespaces() does get_nsproxy() unconditionally.

well, if you're cloning a new task and not unsharing some of the namespaces you still want to increase the refcount on the nsproxy bc a new task is now referencing it. nop ?

C.

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Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Cedric Le Goater](#) on Mon, 18 Jun 2007 12:02:19 GMT

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> on Linux-VServer, we have accounting for those
> proxies (and several other namespace related stuff)
> because we already suspected leakage and reference
> bugs in this area some time ago ... btw, I also
> suggested to put a similar functionality in mainline
> for the time being, but it was ignored, as usual ...

something like a kmem_cache ? and we are not ignoring vserver ! :)

Cheers,

C.

Add a kmem_cache to manage nsproxy objects.

Signed-off-by: Cedric Le Goater <clg@fr.ibm.com>

kernel/nsproxy.c | 21 ++++++++-----
1 file changed, 17 insertions(+), 4 deletions(-)

Index: 2.6.22-rc4-mm2/kernel/nsproxy.c

=====

--- 2.6.22-rc4-mm2.orig/kernel/nsproxy.c

+++ 2.6.22-rc4-mm2/kernel/nsproxy.c

@@ -21,6 +21,8 @@

#include <linux/utsname.h>

#include <linux/pid_namespace.h>

+static struct kmem_cache *nsproxy_cachep;

+

struct nsproxy init_nsproxy = INIT_NS_PROXY(init_nsproxy);

```

static inline void get_nsproxy(struct nsproxy *ns)
@@ -43,9 +45,11 @@ static inline struct nsproxy *clone_nspr
{
    struct nsproxy *ns;

- ns = kmemdup(orig, sizeof(struct nsproxy), GFP_KERNEL);
- if (ns)
+ ns = kmem_cache_alloc(nsproxy_cachep, GFP_KERNEL);
+ if (ns) {
+     memcpy(ns, orig, sizeof(struct nsproxy));
+     atomic_set(&ns->count, 1);
+ }
    return ns;
}

@@ -109,7 +113,7 @@ out_uts:
    if (new_nsp->mnt_ns)
        put_mnt_ns(new_nsp->mnt_ns);
    out_ns:
- kfree(new_nsp);
+ kmem_cache_free(nsproxy_cachep, new_nsp);
    return ERR_PTR(err);
}

@@ -160,7 +164,7 @@ void free_nsproxy(struct nsproxy *ns)
    put_pid_ns(ns->pid_ns);
    if (ns->user_ns)
        put_user_ns(ns->user_ns);
- kfree(ns);
+ kmem_cache_free(nsproxy_cachep, ns);
}

/*
@@ -191,3 +195,12 @@ int unshare_nsproxy_namespaces(unsigned
}
    return err;
}
+
+static int __init nsproxy_cache_init(void)
+{
+    nsproxy_cachep = kmem_cache_create("nsproxy", sizeof(struct nsproxy),
+    0, SLAB_PANIC, NULL, NULL);
+    return 0;
+}
+
+module_init(nsproxy_cache_init);

```

Containers mailing list

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Oleg Nesterov](#) on Mon, 18 Jun 2007 12:21:48 GMT

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On 06/18, Cedric Le Goater wrote:

>
> Oleg Nesterov wrote:
> > On 06/17, Oleg Nesterov wrote:
> >> Let's look at copy_namespaces(), it does the same "get_xxx() in advance", but
> >> -EPERM forgets to do put_nsproxy(), so we definitely have a leak in copy_process().
> >
> > Ugh, I am sorry, EPERM does put_nsproxy(). Still I can't understand why
> > copy_namespaces() does get_nsproxy() unconditionally.
>
> well, if you're cloning a new task and not unsharing some of the namespaces
> you still want to increase the refcount on the nsproxy bc a new task is now
> referencing it. nop ?

Yes, but copy_namespaces() does get_nsproxy() unconditionally, and then it does put_nsproxy() if not unsharing, which is not good imho.

IOW, I think the patch below makes the code a bit better. copy_namespaces() doesn't need put_nsproxy() at all.

Oleg.

```
--- t/kernel/nsproxy.c~ 2007-06-18 16:10:53.000000000 +0400
+++ t/kernel/nsproxy.c 2007-06-18 16:13:02.000000000 +0400
@@ -103,31 +103,24 @@ int copy_namespaces(int flags, struct ta
 {
     struct nsproxy *old_ns = tsk->nsproxy;
     struct nsproxy *new_ns;
-    int err = 0;

    if (!old_ns)
        return 0;

-    get_nsproxy(old_ns);
-
-    if (!(flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC)))
+    if (!(flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC))) {
+        get_nsproxy(old_ns);
+        return 0;
```

```

-
- if (!capable(CAP_SYS_ADMIN)) {
-   err = -EPERM;
-   goto out;
- }

+ if (!capable(CAP_SYS_ADMIN))
+   return -EPERM;
+
+   new_ns = create_new_namespaces(flags, tsk, tsk->fs);
- if (IS_ERR(new_ns)) {
-   err = PTR_ERR(new_ns);
-   goto out;
- }
+ if (IS_ERR(new_ns))
+   return PTR_ERR(new_ns);

    tsk->nsproxy = new_ns;
-out:
- put_nsproxy(old_ns);
- return err;
+ return 0;
}

```

```
void free_nsproxy(struct nsproxy *ns)
```

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Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
removed from -mm tree

Posted by [Cedric Le Goater](#) on Mon, 18 Jun 2007 12:25:28 GMT

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Oleg Nesterov wrote:

> On 06/18, Cedric Le Goater wrote:

>> Oleg Nesterov wrote:

>>> On 06/17, Oleg Nesterov wrote:

>>>> Let's look at copy_namespaces(), it does the same "get_xxx() in advance", but

>>>> -EPERM forgets to do put_nsproxy(), so we definitely have a leak in copy_process().

>>> Ugh, I am sorry, EPERM does put_nsproxy(). Still I can't understand why

>>> copy_namespaces() does get_nsproxy() unconditionally.

>> well, if you're cloning a new task and not unsharing some of the namespaces

>> you still want to increase the refcount on the nsproxy bc a new task is now

>> referencing it. nop ?

>
> Yes, but copy_namespaces() does get_nsproxy() unconditionally, and then it does
> put_nsproxy() if not unsharing, which is not good imho.
>
> IOW, I think the patch below makes the code a bit better. copy_namespaces()
> doesn't need put_nsproxy() at all.

Indeed it does and also :

nsproxy.c | 23 ++++++-----
1 file changed, 8 insertions(+), 15 deletions(-)

Thanks,

C.

```
> Oleg.
>
> --- t/kernel/nsproxy.c~ 2007-06-18 16:10:53.000000000 +0400
> +++ t/kernel/nsproxy.c 2007-06-18 16:13:02.000000000 +0400
> @@ -103,31 +103,24 @@ int copy_namespaces(int flags, struct ta
> {
>     struct nsproxy *old_ns = tsk->nsproxy;
>     struct nsproxy *new_ns;
>     - int err = 0;
>
>     if (!old_ns)
>         return 0;
>
>     - get_nsproxy(old_ns);
>     -
>     - if (!(flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC)))
>     + if (!(flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC))) {
>     +     get_nsproxy(old_ns);
>     +     return 0;
>     -
>     - if (!capable(CAP_SYS_ADMIN)) {
>     -     err = -EPERM;
>     -     goto out;
>     }
>
>     + if (!capable(CAP_SYS_ADMIN))
>     +     return -EPERM;
>     +
>     new_ns = create_new_namespaces(flags, tsk, tsk->fs);
>     - if (IS_ERR(new_ns)) {
>     -     err = PTR_ERR(new_ns);
>     -     goto out;
```

```

> - }
> + if (IS_ERR(new_ns))
> + return PTR_ERR(new_ns);
>
> tsk->nsproxy = new_ns;
> -out:
> - put_nsproxy(old_ns);
> - return err;
> + return 0;
> }
>
> void free_nsproxy(struct nsproxy *ns)
>
>

```

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

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Cedric Le Goater](#) on Mon, 18 Jun 2007 12:37:25 GMT

[View Forum Message](#) <> [Reply to Message](#)

Herbert Poetzl wrote:

```

> On Sun, Jun 17, 2007 at 06:38:30PM +0400, Oleg Nesterov wrote:
>> On 06/16, Herbert Poetzl wrote:
>>> On Tue, May 08, 2007 at 07:45:35PM -0700, akpm@linux-foundation.org wrote:
>>>> The patch titled
>>>> Merge sys_clone()/sys_unshare() nsproxy and namespace handling
>>>> has been removed from the -mm tree. Its filename was
>>>> merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
>>>>
>>>> This patch was dropped because it was merged into mainline or a subsystem tree
>>>>
>>> .. [zapped] ...
>>>
>>>> + * Called from unshare. Unshare all the namespaces part of nsproxy.
>>>> + * On success, returns the new nsproxy and a reference to old nsproxy
>>>> + * to make sure it stays around.
>>>> + */
>>>> +int unshare_nsproxy_namespaces(unsigned long unshare_flags,
>>>> + struct nsproxy **new_nsp, struct fs_struct *new_fs)
>>>> +{
>>> this makes sys_unshare leak and nsproxy (reference)
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```

```

>>> can be tested with the following command sequence:
>>>  vcmd -nu ^17 -- vcmd -nu ^17 -- sleep 10
>> I know almost nothing about this stuff, could you please explain in
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> bit 17 (CLONE_NEWNS) set then invokes the chained
> command, so we get a sleep which is in a separate
> namespace, unshared from a namespace != the main
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>> ... and how do you detect a leak?
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>>> (and some nsproxy accounting/debugging as used in
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> proxies (and several other namespace related stuff)
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>>> we probably want to drop the reference to the old
>>> nsproxy in sys_unshare() but I do not see a good reason
>>> to take the reference in the first place (at least not
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>> the old nsproxy,
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> okay, the 'current' task has an nsproxy, and keeps
> a reference to that (let's assume it is the only
> task using this nsproxy, then the count will be 1)
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> unshare_nsproxy_namespaces() now does get_nsproxy()
> which makes the count=2, then it creates a new
> nsproxy (which will get count=1), and returns ...
>
>>  old_nsproxy = current->nsproxy;
>>  current->nsproxy = new_nsproxy;
>>  new_nsproxy = old_nsproxy;
>
> sys_unshare, now replaces the current->nsproxy with
> the new one, which will have the correct count=1,
> and puts the old nsproxy (which has count=2), and
> thus the nsproxy will not get released, although
> it isn't referenced/used anymore ...

```

Herbert,

Could you give a try to the patch i've sent previously and this one which removes an extra `get_nsproxy()` ? It fixes the leak for me. I've run the ltp tests we have on namespace unsharing and i could see the no leaks in `/proc/slabinfo`.

Badari,

That extra `get_nsproxy()` seemed a superfluous remain from the 2.6.20. Do you see any issues with it ?

If we're all happy with these fixes, i'll send them on lkml@ for review. They might deserve to be in 2.6.22.

Thanks,

C.

Signed-off-by: Cedric Le Goater <clg@fr.ibm.com>

kernel/nsproxy.c | 7 +-----
1 file changed, 1 insertion(+), 6 deletions(-)

Index: 2.6.22-rc4-mm2/kernel/nsproxy.c

=====

--- 2.6.22-rc4-mm2.orig/kernel/nsproxy.c

+++ 2.6.22-rc4-mm2/kernel/nsproxy.c

@@ -175,7 +175,6 @@ void free_nsproxy(struct nsproxy *ns)
int unshare_nsproxy_namespaces(unsigned long unshare_flags,
struct nsproxy **new_nsp, struct fs_struct *new_fs)

{
- struct nsproxy *old_ns = current->nsproxy;
int err = 0;

if (!(unshare_flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC |
@@ -185,14 +184,10 @@ int unshare_nsproxy_namespaces(unsigned
if (!capable(CAP_SYS_ADMIN))
return -EPERM;

- get_nsproxy(old_ns);

-

*new_nsp = create_new_namespaces(unshare_flags, current,
new_fs ? new_fs : current->fs);

- if (IS_ERR(*new_nsp)) {

+ if (IS_ERR(*new_nsp))
err = PTR_ERR(*new_nsp);

```
-         put_nsproxy(old_ns);
-     }
    return err;
}
```

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

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Herbert Poetzl](#) on Mon, 18 Jun 2007 15:38:41 GMT

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On Mon, Jun 18, 2007 at 02:37:25PM +0200, Cedric Le Goater wrote:

> Herbert Poetzl wrote:

> > On Sun, Jun 17, 2007 at 06:38:30PM +0400, Oleg Nesterov wrote:

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> >>>> This patch was dropped because it was merged into mainline or a subsystem tree

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> >>> .. [zapped] ...

> >>>

> >>>> + * Called from unshare. Unshare all the namespaces part of nsproxy.

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> >>> this makes sys_unshare leak and nsproxy (reference)

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> >>> can be tested with the following command sequence:

> >>> vcmd -nu ^17 -- vcmd -nu ^17 -- sleep 10

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> >> brief what this command does ...

> >

> > yeah, sure, it basically calls sys_unshare() with

> > bit 17 (CLONE_NEWNS) set then invokes the chained

> > command, so we get a sleep which is in a separate

> > namespace, unshared from a namespace != the main

```

> > one ...
> >
> >> ... and how do you detect a leak?
> >
> >>> (and some nsproxy accounting/debugging as used in
> >>> Linux-VServer)
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> > on Linux-VServer, we have accounting for those
> > proxies (and several other namespace related stuff)
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> > and puts the old nsproxy (which has count=2), and
> > thus the nsproxy will not get released, although
> > it isn't referenced/used anymore ...
>
>
> Herbert,
>
> Could you give a try to the patch i've sent previously
> and this one which removes an extra get_nsproxy() ?

```

will do so shortly ...

> It fixes the leak for me. I've run the ltp tests we

> have on namespace unsharing and i could see the no
> leaks in /proc/slabinfo.

> Badari,
>
> That extra get_nsproxy() seemed a superfluous remain
> from the 2.6.20.
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I'm not terribly happy with the current nsproxy
framework, although it improved somewhat ...

I'm still missing some mechanism to 'mix' two
proxies according to a flagmask (which is required
to enter a guest 'partially') ...

best,
Herbert

> They might deserve to be in 2.6.22.
>
> Thanks,
>
> C.
>
> Signed-off-by: Cedric Le Goater <clg@fr.ibm.com>

> ---

> kernel/nsproxy.c | 7 +-----
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>

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> struct nsproxy **new_nsp, struct fs_struct *new_fs)

> {

> - struct nsproxy *old_ns = current->nsproxy;
> int err = 0;

>
> if (!(unshare_flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC |
> @@ -185,14 +184,10 @@ int unshare_nsproxy_namespaces(unsigned
> if (!capable(CAP_SYS_ADMIN))
> return -EPERM;

```
>
> -   get_nsproxy(old_ns);
> -
>     *new_nsp = create_new_namespaces(unshare_flags, current,
>                                     new_fs ? new_fs : current->fs);
> -   if (IS_ERR(*new_nsp)) {
> +   if (IS_ERR(*new_nsp))
>       err = PTR_ERR(*new_nsp);
> -       put_nsproxy(old_ns);
> -   }
>     return err;
> }
```

Containers mailing list

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Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
removed from -mm tree

Posted by [Herbert Poetzl](#) on Mon, 18 Jun 2007 15:41:08 GMT

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On Mon, Jun 18, 2007 at 02:02:19PM +0200, Cedric Le Goater wrote:

```
>
> > on Linux-VServer, we have accounting for those
> > proxies (and several other namespace related stuff)
> > because we already suspected leakage and reference
> > bugs in this area some time ago ... btw, I also
> > suggested to put a similar functionality in mainline
> > for the time being, but it was ignored, as usual ...
>
> something like a kmem_cache ?
```

maybe, but even simplest accounting of the
different 'objects' would be more than enough
for the test phase (or maybe as statistics :)

> and we are not ignoring vservers ! :)

good for them, our project is called Linux-VServer :)

best,
Herbert

```
> Cheers,
>
> C.
```

```

>
> Add a kmem_cache to manage nsproxy objects.
>
> Signed-off-by: Cedric Le Goater <clg@fr.ibm.com>
> ---
> kernel/nsproxy.c | 21 ++++++++-----
> 1 file changed, 17 insertions(+), 4 deletions(-)
>
> Index: 2.6.22-rc4-mm2/kernel/nsproxy.c
> =====
> --- 2.6.22-rc4-mm2.orig/kernel/nsproxy.c
> +++ 2.6.22-rc4-mm2/kernel/nsproxy.c
> @@ -21,6 +21,8 @@
> #include <linux/utsname.h>
> #include <linux/pid_namespace.h>
>
> +static struct kmem_cache *nsproxy_cachep;
> +
> struct nsproxy init_nsproxy = INIT_NS_PROXY(init_nsproxy);
>
> static inline void get_nsproxy(struct nsproxy *ns)
> @@ -43,9 +45,11 @@ static inline struct nsproxy *clone_nspr
> {
>     struct nsproxy *ns;
>
>     - ns = kmemdup(orig, sizeof(struct nsproxy), GFP_KERNEL);
>     - if (ns)
>     + ns = kmem_cache_alloc(nsproxy_cachep, GFP_KERNEL);
>     + if (ns) {
>     +     memcpy(ns, orig, sizeof(struct nsproxy));
>     +     atomic_set(&ns->count, 1);
>     + }
>     return ns;
> }
>
> @@ -109,7 +113,7 @@ out_uts:
>     if (new_nsp->mnt_ns)
>         put_mnt_ns(new_nsp->mnt_ns);
>     out_ns:
>     - kfree(new_nsp);
>     + kmem_cache_free(nsproxy_cachep, new_nsp);
>     return ERR_PTR(err);
> }
>
> @@ -160,7 +164,7 @@ void free_nsproxy(struct nsproxy *ns)
>     put_pid_ns(ns->pid_ns);
>     if (ns->user_ns)
>         put_user_ns(ns->user_ns);

```

```

> - kfree(ns);
> + kmem_cache_free(nsproxy_cache, ns);
> }
>
> /*
> @@ -191,3 +195,12 @@ int unshare_nsproxy_namespaces(unsigned
> }
> return err;
> }
> +
> +static int __init nsproxy_cache_init(void)
> +{
> + nsproxy_cache = kmem_cache_create("nsproxy", sizeof(struct nsproxy),
> + 0, SLAB_PANIC, NULL, NULL);
> + return 0;
> +}
> +
> +module_init(nsproxy_cache_init);

```

Containers mailing list

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Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
removed from -mm tree

Posted by [Herbert Poetzl](#) on Mon, 18 Jun 2007 15:48:05 GMT

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On Mon, Jun 18, 2007 at 02:37:25PM +0200, Cedric Le Goater wrote:

> Herbert Poetzl wrote:

> > On Sun, Jun 17, 2007 at 06:38:30PM +0400, Oleg Nesterov wrote:

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```

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 > Do you see any issues with it ?
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the patch looks like it should fix the issue
 (will test that soon) but it leaves the comment
 unmodified, which is now wrong ...

- * Called from unshare. Unshare all the namespaces part of nsproxy.
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 > C.
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 > Signed-off-by: Cedric Le Goater <clg@fr.ibm.com>
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> - struct nsproxy *old_ns = current->nsproxy;
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> if (!(unshare_flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC |
> @@ -185,14 +184,10 @@ int unshare_nsproxy_namespaces(unsigned
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>     return -EPERM;
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> *new_nsp = create_new_namespaces(unshare_flags, current,
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> }

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Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
removed from -mm tree

Posted by [Cedric Le Goater](#) on Mon, 18 Jun 2007 16:44:57 GMT

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[...]

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>

> * Called from unshare. Unshare all the namespaces part of nsproxy.

> * On success, returns the new nsproxy and a reference to old nsproxy

> * to make sure it stays around.

right. I will fix that.

Thanks,

C.

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
removed from -mm tree

Posted by [Cedric Le Goater](#) on Mon, 18 Jun 2007 16:54:33 GMT

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[...]

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>> have on namespace unsharing and i could see the no
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> I'm not terribly happy with the current nsproxy
> framework, although it improved somewhat ...
>
> I'm still missing some mechanism to 'mix' two
> proxies according to a flagmask (which is required
> to enter a guest 'partially') ...

We have that bind_ns() syscall that does that. I sent it last year
but it didn't have much success. We still use and there may be room
for improvement to make it altruistically useful.

Here's the patch on a 2.6.21-mm2. It it's of any interest, I can
refresh it on the latest -mm.

Thanks,

C.

The following patch defines the new bind_ns syscall specific to
nsproxy and namespaces, which allows a process to bind :

1 - its nsproxy to some identifier

2 - to another nsproxy using an identifier or -pid

Here's a sample user space program to use it.

```
#include <stdio.h>
#include <stdlib.h>
#include <sched.h>
#include <unistd.h>
#include <string.h>
#include <errno.h>
#include <libgen.h>
#include <sys/syscall.h>

#ifndef HAVE_UNSHARE

#if __i386__
#   define __NR_unshare 310
#elif __x86_64__
#   define __NR_unshare 272
#elif __ia64__
#   define __NR_unshare 1296
#elif __s390x__
#   define __NR_unshare 303
#elif __powerpc__
#   define __NR_unshare 282
#else
#   error "Architecture not supported"
#endif

#endif /* HAVE_UNSHARE */

#if __i386__
#   define __NR_bind_ns 326
#elif __ia64__
#   define __NR_bind_ns 1305
#elif __powerpc__
#   define __NR_bind_ns 304
#elif __s390x__
#   define __NR_bind_ns 314
#elif __x86_64__
#   define __NR_bind_ns 284
#else
#   error "Architecture not supported"
#endif

#ifndef CLONE_NEWUTS
#define CLONE_NEWUTS 0x04000000
#endif
```

```

#ifndef CLONE_NEWIPC
#define CLONE_NEWIPC 0x08000000
#endif

#ifndef CLONE_NEWUSER
#define CLONE_NEWUSER 0x10000000
#endif

#ifndef CLONE_NEWNET2
#define CLONE_NEWNET2 0x20000000
#endif

#ifndef CLONE_NEWNET3
#define CLONE_NEWNET3 0x40000000
#endif

#ifndef CLONE_NEWPID
#define CLONE_NEWPID 0x80000000
#endif

static inline _syscall1(int, unshare, unsigned long, flags)
static inline _syscall2(int, bind_ns, int, id, unsigned long, flags)

static const char* procname;

static void usage(const char *name)
{
    printf("usage: %s [-h] [-l id] [-muiUnNp] [command [arg ...]]\n", name);
    printf("\n");
    printf(" -h this message\n");
    printf("\n");
    printf(" -l <id> bind process to nsproxy <id>\n");
    printf(" -m mount namespace\n");
    printf(" -u utsname namespace\n");
    printf(" -i ipc namespace\n");
    printf(" -U user namespace\n");
    printf(" -n net namespace level 2\n");
    printf(" -N net namespace level 3\n");
    printf(" -p pid namespace\n");
    printf("\n");
    printf("(C) Copyright IBM Corp. 2006\n");
    printf("\n");
    exit(1);
}

int main(int argc, char *argv[])

```

```

{
    int c;
    unsigned long flags = 0;
    int id = -1;

    procname = basename(argv[0]);

    while ((c = getopt(argc, argv, "+muiUnNphl:")) != EOF) {
        switch (c) {
            case 'l': if (optarg)
                id = atoi(optarg); break;

            case 'm': flags |= CLONE_NEWNS; break;
            case 'u': flags |= CLONE_NEWUTS; break;
            case 'i': flags |= CLONE_NEWIPC; break;
            case 'U': flags |= CLONE_NEWUSER; break;
            case 'n': flags |= CLONE_NEWNET2; break;
            case 'N': flags |= CLONE_NEWNET3; break;
            case 'p': flags |= CLONE_NEWPID; break;
            case 'h':
            default:
                usage(procname);
        }
    };

    argv = &argv[optind];
    argc = argc - optind;

    if (!strcmp(procname, "unsharens")) {
        if (unshare(flags) == -1) {
            perror("unshare");
            return 1;
        }
    }

    if (bind_ns(id, flags) == -1) {
        perror("bind_ns");
        return 1;
    }

    if (argc) {
        execve(argv[0], argv, __environ);
        perror("execve");
        return 1;
    }

    return 0;
}

```

Signed-off-by: Cedric Le Goater <clg@fr.ibm.com>

```
arch/i386/kernel/syscall_table.S | 1
arch/ia64/kernel/entry.S         | 1
arch/s390/kernel/compat_wrapper.S | 6
arch/s390/kernel/syscalls.S      | 1
arch/x86_64/ia32/ia32entry.S     | 1
include/asm-i386/unistd.h         | 3
include/asm-ia64/unistd.h         | 3
include/asm-powerpc/systbl.h      | 1
include/asm-powerpc/unistd.h      | 3
include/asm-s390/unistd.h         | 3
include/asm-x86_64/unistd.h       | 2
include/linux/nsproxy.h           | 10 -
include/linux/sched.h             | 2
include/linux/syscalls.h          | 2
kernel/nsproxy.c                  | 264 ++++++-----
kernel/sys_ni.c                   | 2
16 files changed, 290 insertions(+), 15 deletions(-)
```

Index: 2.6.21-mm2/include/linux/syscalls.h

=====

--- 2.6.21-mm2.orig/include/linux/syscalls.h

+++ 2.6.21-mm2/include/linux/syscalls.h

```
@@ -609,6 +609,8 @@ asmlinkage long sys_timerfd(int ufd, int
    const struct itimerspec __user *utmr);
asmlinkage long sys_eventfd(unsigned int count);
```

```
+asmlinkage long sys_bind_ns(int id, unsigned long unshare_flags);
```

```
+
```

```
int kernel_execve(const char *filename, char *const argv[], char *const envp[]);
```

```
asmlinkage long sys_revokeat(int dfd, const char __user *filename);
```

Index: 2.6.21-mm2/kernel/nsproxy.c

=====

--- 2.6.21-mm2.orig/kernel/nsproxy.c

+++ 2.6.21-mm2/kernel/nsproxy.c

```
@@ -22,7 +22,11 @@
```

```
static struct kmem_cache *nsproxy_cachep;
```

```
+#define NS_HASH_BITS 3 /* this might need some configuration */
```

```
+/
```

```
+ * nsproxies are stored in a hash but a rbtree might be more
```

```
+ * appropriate.
```

```
+ */
```

```

#define NS_HASH_BITS 3
#define NS_HASH_SIZE (1 << NS_HASH_BITS)
#define NS_HASH_MASK (NS_HASH_SIZE - 1)
#define ns_hashfn(id) (((id >> NS_HASH_BITS) + id) & NS_HASH_MASK)
@@ -63,6 +67,30 @@ static inline struct nsproxy *clone_nspr
}

/*
+ * copies the nsproxy, setting refcount to 1, and grabbing a
+ * reference to all contained namespaces. Called from
+ * sys_unshare()
+ */
+static struct nsproxy *dup_namespaces(struct nsproxy *orig)
+{
+ struct nsproxy *ns = clone_nsproxy(orig);
+
+ if (ns) {
+ if (ns->mnt_ns)
+ get_mnt_ns(ns->mnt_ns);
+ if (ns->uts_ns)
+ get_uts_ns(ns->uts_ns);
+ if (ns->ipc_ns)
+ get_ipc_ns(ns->ipc_ns);
+ if (ns->pid_ns)
+ get_pid_ns(ns->pid_ns);
+ if (ns->user_ns)
+ get_user_ns(ns->user_ns);
+ }
+
+ return ns;
+}
+/*
+ * Create new nsproxy and all of its the associated namespaces.
+ * Return the newly created nsproxy. Do not attach this to the task,
+ * leave it to the caller to do proper locking and attach it to task.
@@ -123,7 +151,7 @@ int copy_namespaces(int flags, struct ta

get_nsproxy(old_ns);

- if (!(flags & (CLONE_NEWNS | CLONE_NEWUTS | CLONE_NEWIPC | CLONE_NEWUSER)))
+ if (!(flags & NS_ALL))
return 0;

if (!capable(CAP_SYS_ADMIN)) {
@@ -143,7 +171,7 @@ out:
return err;
}

```

```

-void free_nsproxy(struct nsproxy *ns)
+static void free_nsproxy(struct nsproxy *ns)
{
    if (ns->mnt_ns)
        put_mnt_ns(ns->mnt_ns);
@@ -157,6 +185,29 @@ void free_nsproxy(struct nsproxy *ns)
}

/*
+ * put_nsproxy() is similar to free_uid() in kernel/user.c
+ *
+ * the lock can be taken from a tasklet context (task getting freed by
+ * RCU) which requires to be irq safe.
+ */
+void put_nsproxy(struct nsproxy *ns)
+{
+ unsigned long flags;
+
+ local_irq_save(flags);
+ if (atomic_dec_and_lock(&ns->count, &ns_hash_lock)) {
+ BUG_ON(!ns->id);
+ if (ns->id != -1)
+ hlist_del(&ns->ns_hash_node);
+ spin_unlock_irqrestore(&ns_hash_lock, flags);
+ free_nsproxy(ns);
+ } else {
+ local_irq_restore(flags);
+ }
+}
+EXPORT_SYMBOL_GPL(put_nsproxy);
+
+/*
+ * Called from unshare. Unshare all the namespaces part of nsproxy.
+ * On success, returns the new nsproxy and a reference to old nsproxy
+ * to make sure it stays around.
@@ -211,6 +262,212 @@ static inline struct nsproxy *ns_hash_find
    return NULL;
}

+struct nsproxy *find_nsproxy_by_id(int id)
+{
+ struct nsproxy *ns;
+
+ if (id < 0)
+ return NULL;
+
+ spin_lock_irq(&ns_hash_lock);
+ ns = ns_hash_find(id);

```

```

+ spin_unlock_irq(&ns_hash_lock);
+
+ return ns;
+}
+
+EXPORT_SYMBOL_GPL(find_nsproxy_by_id);
+
+static int bind_ns(int id, struct nsproxy *ns)
+{
+ struct nsproxy *prev;
+ int ret = 0;
+
+ if (id < 0)
+ return -EINVAL;
+
+ spin_lock_irq(&ns_hash_lock);
+ prev = ns_hash_find(id);
+ if (!prev) {
+ ns->id = id;
+ hlist_add_head(&ns->ns_hash_node, ns_hash_head(ns->id));
+ }
+ spin_unlock_irq(&ns_hash_lock);
+
+ if (prev) {
+ ret = -EBUSY;
+ put_nsproxy(prev);
+ }
+ return ret;
+}
+
+static int switch_ns(int id, unsigned long flags)
+{
+ int err = 0;
+ struct nsproxy *ns = NULL, *old_ns = NULL, *new_ns = NULL;
+
+ if (flags & ~NS_ALL)
+ return -EINVAL;
+
+ /* Let 0 be a default value ? */
+ if (!flags)
+ flags = NS_ALL;
+
+ if (id < 0) {
+ struct task_struct *p;
+
+ err = -ESRCH;
+ read_lock(&tasklist_lock);
+ p = find_task_by_pid(-id);

```

```

+ if (p) {
+   task_lock(p);
+   get_nsproxy(p->nsproxy);
+   ns = p->nsproxy;
+   task_unlock(p);
+ }
+ read_unlock(&tasklist_lock);
+ } else {
+   err = -ENOENT;
+   spin_lock_irq(&ns_hash_lock);
+   ns = ns_hash_find(id);
+   spin_unlock_irq(&ns_hash_lock);
+ }
+
+ if (!ns)
+   goto out;
+
+ new_ns = ns;
+
+ /*
+  * clone current nsproxy and populate it with the namespaces
+  * chosen by flags.
+  */
+ if (flags != NS_ALL) {
+   new_ns = dup_namespaces(current->nsproxy);
+   if (!new_ns) {
+     err = -ENOMEM;
+     goto out_ns;
+   }
+
+   if (flags & CLONE_NEWNS) {
+     put_mnt_ns(new_ns->mnt_ns);
+     get_mnt_ns(ns->mnt_ns);
+     new_ns->mnt_ns = ns->mnt_ns;
+   }
+
+   if (flags & CLONE_NEWUTS) {
+     put_uts_ns(new_ns->uts_ns);
+     get_uts_ns(ns->uts_ns);
+     new_ns->uts_ns = ns->uts_ns;
+   }
+
+   if (flags & CLONE_NEWIPC) {
+     put_ipc_ns(new_ns->ipc_ns);
+     new_ns->ipc_ns = get_ipc_ns(ns->ipc_ns);
+   }
+
+   if (flags & CLONE_NEWUSER) {

```

```

+ put_user_ns(new_ns->user_ns);
+ get_user_ns(ns->user_ns);
+ new_ns->user_ns = ns->user_ns;
+ }
+
+ out_ns:
+ put_nsproxy(ns);
+ }
+
+ task_lock(current);
+ if (new_ns) {
+ old_ns = current->nsproxy;
+ current->nsproxy = new_ns;
+ }
+ task_unlock(current);
+
+ if (old_ns)
+ put_nsproxy(old_ns);
+
+ err = 0;
+out:
+ return err;
+}
+
+
+/*
+ * bind_ns - bind the nsproxy of a task to an id or bind a task to a
+ *           identified nsproxy
+ *
+ * @id: nsproxy identifier if positive or pid if negative
+ * @flags: identifies the namespaces to bind to
+ *
+ * bind_ns serves 2 purposes.
+ *
+ * The first is to bind the nsproxy of the current task to the
+ * identifier @id. If the identifier is already used, -EBUSY is
+ * returned. If the nsproxy is already bound, -EACCES is returned.
+ * flags is not used in that case.
+ *
+ * The second use is to bind the current task to a subset of
+ * namespaces of an identified nsproxy. If positive, @id is considered
+ * being an nsproxy identifier previously used to bind the nsproxy to
+ * @id. If negative, @id is the pid of a task which is another way to
+ * identify a nsproxy. Switching nsproxy is restricted to tasks within
+ * nsproxy 0, the default nsproxy. If unknown, -ENOENT is returned.
+ * @flags is used to bind the task to the selected namespaces.
+ *
+ * Both uses may return -EINVAL for invalid arguments and -EPERM for

```

```

+ * insufficient privileges.
+ *
+ * Returns 0 on success.
+ */
+asmlinkage long sys_bind_ns(int id, unsigned long flags)
+{
+ struct nsproxy *ns = current->nsproxy;
+ int ret = 0;
+
+ /*
+ * ns is being changed by switch_ns(), protect it
+ */
+ get_nsproxy(ns);
+
+ /*
+ * protect ns->id
+ */
+ spin_lock(&ns->nslock);
+ switch (ns->id) {
+ case -1:
+ /*
+ * only an unbound nsproxy can be bound to an id.
+ */
+ ret = bind_ns(id, ns);
+ break;
+
+ case 0:
+ if (!capable(CAP_SYS_ADMIN)) {
+ ret = -EPERM;
+ goto unlock;
+ }
+
+ /*
+ * only nsproxy 0 can switch nsproxy. if target id is
+ * 0, this is a nop.
+ */
+ if (id)
+ ret = switch_ns(id, flags);
+ break;
+
+ default:
+ /*
+ * current nsproxy is already bound. forbid any
+ * switch.
+ */
+ ret = -EACCES;
+ }
+unlock:

```

```

+ spin_unlock(&ns->nslock);
+ put_nsproxy(ns);
+ return ret;
+}
+
static int __init nshash_init(void)
{
    int i;
@@ -235,3 +492,4 @@ static int __init nsproxy_cache_init(voi
}

```

```

module_init(nsproxy_cache_init);
+

```

Index: 2.6.21-mm2/kernel/sys_ni.c

```

=====
--- 2.6.21-mm2.orig/kernel/sys_ni.c
+++ 2.6.21-mm2/kernel/sys_ni.c
@@ -146,3 +146,5 @@ cond_syscall(sys_ioprio_get);
cond_syscall(sys_signalfd);
cond_syscall(sys_timerfd);
cond_syscall(sys_eventfd);
+

```

```

+cond_syscall(sys_bind_ns);
Index: 2.6.21-mm2/arch/ia64/kernel/entry.S

```

```

=====
--- 2.6.21-mm2.orig/arch/ia64/kernel/entry.S
+++ 2.6.21-mm2/arch/ia64/kernel/entry.S
@@ -1583,5 +1583,6 @@ sys_call_table:
    data8 sys_vmsplice
    data8 sys_ni_syscall // reserved for move_pages
    data8 sys_getcpu
+ data8 sys_bind_ns

```

```

.org sys_call_table + 8*NR_syscalls // guard against failures to increase NR_syscalls
Index: 2.6.21-mm2/arch/s390/kernel/compat_wrapper.S

```

```

=====
--- 2.6.21-mm2.orig/arch/s390/kernel/compat_wrapper.S
+++ 2.6.21-mm2/arch/s390/kernel/compat_wrapper.S
@@ -1682,3 +1682,9 @@ compat_sys_utimes_wrapper:
    lgtr %r2,%r2 # char *
    lgtr %r3,%r3 # struct compat_timeval *
    jg compat_sys_utimes
+
+ .globl sys_bind_ns_wrapper
+sys_bind_ns_wrapper:
+ lgfr %r2,%r2 # int
+ llgfr %r3,%r3 # unsigned long
+ jg sys_bind_ns

```

Index: 2.6.21-mm2/arch/s390/kernel/syscalls.S

--- 2.6.21-mm2.orig/arch/s390/kernel/syscalls.S

+++ 2.6.21-mm2/arch/s390/kernel/syscalls.S

@@ -322,3 +322,4 @@ NI_SYSCALL /* 310 sys_move_pages *

SYSCALL(sys_getcpu,sys_getcpu,sys_getcpu_wrapper)

SYSCALL(sys_epoll_pwait,sys_epoll_pwait,compat_sys_epoll_pwait_wrapper)

SYSCALL(sys_utimes,sys_utimes,compat_sys_utimes_wrapper)

+SYSCALL(sys_bind_ns,sys_bind_ns,sys_bind_ns_wrapper)

Index: 2.6.21-mm2/arch/x86_64/ia32/ia32entry.S

--- 2.6.21-mm2.orig/arch/x86_64/ia32/ia32entry.S

+++ 2.6.21-mm2/arch/x86_64/ia32/ia32entry.S

@@ -721,4 +721,5 @@ ia32_sys_call_table:

.quad sys_eventfd

.quad sys_revokeat

.quad sys_frevoke /* 325 */

+ .quad sys_bind_ns

ia32_syscall_end:

Index: 2.6.21-mm2/include/asm-ia64/unistd.h

--- 2.6.21-mm2.orig/include/asm-ia64/unistd.h

+++ 2.6.21-mm2/include/asm-ia64/unistd.h

@@ -294,11 +294,12 @@

#define __NR_vmsplice 1302

/* 1303 reserved for move_pages */

#define __NR_getcpu 1304

+#define __NR_bind_ns 1305

#ifdef __KERNEL__

-#define NR_syscalls 281 /* length of syscall table */

+#define NR_syscalls 282 /* length of syscall table */

#define __ARCH_WANT_SYS_RT_SIGACTION

#define __ARCH_WANT_SYS_RT_SIGSUSPEND

Index: 2.6.21-mm2/include/asm-powerpc/systbl.h

--- 2.6.21-mm2.orig/include/asm-powerpc/systbl.h

+++ 2.6.21-mm2/include/asm-powerpc/systbl.h

@@ -307,3 +307,4 @@ COMPAT_SYS_SPU(set_robust_list)

COMPAT_SYS_SPU(move_pages)

SYSCALL_SPU(getcpu)

COMPAT_SYS(epoll_pwait)

+SYSCALL_SPU(bind_ns)

Index: 2.6.21-mm2/include/asm-powerpc/unistd.h

```

--- 2.6.21-mm2.orig/include/asm-powerpc/unistd.h
+++ 2.6.21-mm2/include/asm-powerpc/unistd.h
@@ -326,10 +326,11 @@
#define __NR_move_pages 301
#define __NR_getcpu 302
#define __NR_epoll_pwait 303
+#define __NR_bind_ns 304

```

```

#ifdef __KERNEL__

```

```

-#define __NR_syscalls 304
+#define __NR_syscalls 305

```

```

#define __NR__exit __NR_exit
#define NR_syscalls __NR_syscalls

```

```

Index: 2.6.21-mm2/include/asm-s390/unistd.h

```

```

=====
--- 2.6.21-mm2.orig/include/asm-s390/unistd.h
+++ 2.6.21-mm2/include/asm-s390/unistd.h
@@ -251,8 +251,9 @@
#define __NR_getcpu 311
#define __NR_epoll_pwait 312
#define __NR_utimes 313
+#define __NR_bind_ns 314

```

```

-#define NR_syscalls 314
+#define NR_syscalls 315

```

```

/*

```

```

 * There are some system calls that are not present on 64 bit, some

```

```

Index: 2.6.21-mm2/include/asm-x86_64/unistd.h

```

```

=====
--- 2.6.21-mm2.orig/include/asm-x86_64/unistd.h
+++ 2.6.21-mm2/include/asm-x86_64/unistd.h
@@ -627,6 +627,8 @@ __SYSCALL(__NR_signalfd, sys_signalfd)
__SYSCALL(__NR_timerfd, sys_timerfd)
#define __NR_eventfd 283
__SYSCALL(__NR_eventfd, sys_eventfd)
+#define __NR_bind_ns 284
+__SYSCALL(__NR_bind_ns, sys_bind_ns)

```

```

#ifndef __NO_STUBS
#define __ARCH_WANT_OLD_READDIR

```

```

Index: 2.6.21-mm2/include/linux/sched.h

```

```

=====
--- 2.6.21-mm2.orig/include/linux/sched.h
+++ 2.6.21-mm2/include/linux/sched.h
@@ -29,6 +29,8 @@

```

```

#define CLONE_NEWPID 0x10000000 /* New pid namespace */
#define CLONE_NEWUSER 0x20000000 /* New user namespace */

+#define NS_ALL (CLONE_NEWNS|CLONE_NEWUTS|CLONE_NEWIPC|CLONE_NEWUSER)
+
/*
 * Scheduling policies
 */
Index: 2.6.21-mm2/arch/i386/kernel/syscall_table.S
=====
--- 2.6.21-mm2.orig/arch/i386/kernel/syscall_table.S
+++ 2.6.21-mm2/arch/i386/kernel/syscall_table.S
@@ -325,3 +325,4 @@ ENTRY(sys_call_table)
 .long sys_eventfd
 .long sys_revokeat
 .long sys_frevoke /* 325 */
+ .long sys_bind_ns
Index: 2.6.21-mm2/include/asm-i386/unistd.h
=====
--- 2.6.21-mm2.orig/include/asm-i386/unistd.h
+++ 2.6.21-mm2/include/asm-i386/unistd.h
@@ -331,10 +331,11 @@
#define __NR_eventfd 323
#define __NR_revokeat 324
#define __NR_frevoke 325
+#define __NR_bind_ns 326

#ifdef __KERNEL__

-#define NR_syscalls 326
+#define NR_syscalls 327

#define __ARCH_WANT_IPC_PARSE_VERSION
#define __ARCH_WANT_OLD_READDIR
Index: 2.6.21-mm2/include/linux/nsproxy.h
=====
--- 2.6.21-mm2.orig/include/linux/nsproxy.h
+++ 2.6.21-mm2/include/linux/nsproxy.h
@@ -36,16 +36,10 @@ extern struct nsproxy init_nsproxy;

int copy_namespaces(int flags, struct task_struct *tsk);
void get_task_nsproxy(struct task_struct *tsk);
-void free_nsproxy(struct nsproxy *ns);
int unshare_nsproxy_namespaces(unsigned long, struct nsproxy **,
    struct fs_struct *);
-
-static inline void put_nsproxy(struct nsproxy *ns)
-{

```

```
- if (atomic_dec_and_test(&ns->count)) {  
- free_nsproxy(ns);  
- }  
-}  
+void put_nsproxy(struct nsproxy *ns);  
+struct nsproxy *find_nsproxy_by_id(int id);  
  
static inline void put_task_nsproxy(struct task_struct *p)  
{
```

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

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch
removed from -mm tree

Posted by [Cedric Le Goater](#) on Mon, 18 Jun 2007 17:00:04 GMT

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Herbert Poetzl wrote:

> On Mon, Jun 18, 2007 at 02:02:19PM +0200, Cedric Le Goater wrote:

>>> on Linux-VServer, we have accounting for those
>>> proxies (and several other namespace related stuff)
>>> because we already suspected leakage and reference
>>> bugs in this area some time ago ... btw, I also
>>> suggested to put a similar functionality in mainline
>>> for the time being, but it was ignored, as usual ...
>> something like a kmem_cache ?

>

> maybe, but even simplest accounting of the
> different 'objects' would be more than enough
> for the test phase (or maybe as statistics :)

Sure but Linux-VServer would certainly benefit from a nsproxy
cache. Some scenarios do a lot of unshare(), nop ?

Anyway, I wouldn't know how to measure the difference :) but
it certainly helped me to identify the leak real fast !

>> and we are not ignoring vserver ! :)

>

> good for them, our project is called Linux-VServer :)

arg :)

Cheers,

C.

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

Subject: Re: - merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch removed from -mm tree

Posted by [Badari Pulavarty](#) on Mon, 18 Jun 2007 17:35:14 GMT

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On Mon, 2007-06-18 at 14:37 +0200, Cedric Le Goater wrote:

> Herbert Poetzl wrote:

> > On Sun, Jun 17, 2007 at 06:38:30PM +0400, Oleg Nesterov wrote:

> >> On 06/16, Herbert Poetzl wrote:

> >>> On Tue, May 08, 2007 at 07:45:35PM -0700, akpm@linux-foundation.org wrote:

> >>>> The patch titled

> >>>> Merge sys_clone()/sys_unshare() nsproxy and namespace handling

> >>>> has been removed from the -mm tree. Its filename was

> >>>> merge-sys_clone-sys_unshare-nsproxy-and-namespace.patch

> >>>>

> >>>> This patch was dropped because it was merged into mainline or a subsystem tree

> >>>>

> >>> .. [zapped] ...

> >>>

> >>>> + * Called from unshare. Unshare all the namespaces part of nsproxy.

> >>>> + * On success, returns the new nsproxy and a reference to old nsproxy

> >>>> + * to make sure it stays around.

> >>>> + */

> >>>> +int unshare_nsproxy_namespaces(unsigned long unshare_flags,

> >>>> + struct nsproxy **new_nsp, struct fs_struct *new_fs)

> >>>> +{

> >>> this makes sys_unshare leak and nsproxy (reference)

> >>>

> >>> can be tested with the following command sequence:

> >>> vcmd -nu ^17 -- vcmd -nu ^17 -- sleep 10

> >> I know almost nothing about this stuff, could you please explain in

> >> brief what this command does ...

> >

> > yeah, sure, it basically calls sys_unshare() with

> > bit 17 (CLONE_NEWNS) set then invokes the chained

> > command, so we get a sleep which is in a separate

> > namespace, unshared from a namespace != the main

> > one ...

> >

> >> ... and how do you detect a leak?

> >

```

> >>> (and some nsproxy accounting/debugging as used in
> >>> Linux-VServer)
> >
> > on Linux-VServer, we have accounting for those
> > proxies (and several other namespace related stuff)
> > because we already suspected leakage and reference
> > bugs in this area some time ago ... btw, I also
> > suggested to put a similar functionality in mainline
> > for the time being, but it was ignored, as usual ...
> >
> >>> we probably want to drop the reference to the old
> >>> nsproxy in sys_unshare() but I do not see a good reason
> >>> to take the reference in the first place (at least not
> >>> with the code in mainline 2.6.22-rc4)
> >> At first glance, sys_unshare() drops the reference to
> >> the old nsproxy,
> >
> > okay, the 'current' task has an nsproxy, and keeps
> > a reference to that (let's assume it is the only
> > task using this nsproxy, then the count will be 1)
> >
> > unshare_nsproxy_namespaces() now does get_nsproxy()
> > which makes the count=2, then it creates a new
> > nsproxy (which will get count=1), and returns ...
> >
> >> old_nsproxy = current->nsproxy;
> >> current->nsproxy = new_nsproxy;
> >> new_nsproxy = old_nsproxy;
> >
> > sys_unshare, now replaces the current->nsproxy with
> > the new one, which will have the correct count=1,
> > and puts the old nsproxy (which has count=2), and
> > thus the nsproxy will not get released, although
> > it isn't referenced/used anymore ...
>
>
> Herbert,
>
> Could you give a try to the patch i've sent previously and this one
> which removes an extra get_nsproxy() ? It fixes the leak for me. I've
> run the ltp tests we have on namespace unsharing and i could see the
> no leaks in /proc/slabinfo.
>
> Badari,
>
> That extra get_nsproxy() seemed a superfluous remain from the 2.6.20.
> Do you see any issues with it ?
>

```

> If we're all happy with these fixes, i'll send them on lkml@ for review.
> They might deserve to be in 2.6.22.
>
> Thanks,
>
> C.

Cedric, Oleg and Herbert,

Thanks for working this out. Looks good.

Thanks,
Badari

>
> Signed-off-by: Cedric Le Goater <clg@fr.ibm.com>

Acked.

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

Subject: [PATCH] create_new_namespaces: fix improper return of NULL
Posted by [Oleg Nesterov](#) on Tue, 19 Jun 2007 13:51:29 GMT
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Untested.

dup_mnt_ns() and clone_uts_ns() return NULL on failure. This is wrong,
create_new_namespaces() uses ERR_PTR() to catch an error. This means
that the subsequent create_new_namespaces() will hit BUG_ON() in
copy_mnt_ns() or copy_utsname().

Signed-off-by: Oleg Nesterov <oleg@tv-sign.ru>

```
--- ns/fs/namespace.c~1_NS_NULL 2007-05-21 13:57:56.000000000 +0400
+++ ns/fs/namespace.c 2007-06-19 17:26:35.000000000 +0400
@@ -1457,7 +1457,7 @@ static struct mnt_namespace *dup_mnt_ns(

    new_ns = kmalloc(sizeof(struct mnt_namespace), GFP_KERNEL);
    if (!new_ns)
-   return NULL;
+   return ERR_PTR(-ENOMEM);
```

```

    atomic_set(&new_ns->count, 1);
    INIT_LIST_HEAD(&new_ns->list);
@@ -1471,7 +1471,7 @@ static struct mnt_namespace *dup_mnt_ns(
    if (!new_ns->root) {
        up_write(&namespace_sem);
        kfree(new_ns);
- return NULL;
+ return ERR_PTR(-ENOMEM);
    }
    spin_lock(&vfsmount_lock);
    list_add_tail(&new_ns->list, &new_ns->root->mnt_list);
--- ns/kernel/utsname.c~1_NS_NULL 2007-05-21 13:57:59.000000000 +0400
+++ ns/kernel/utsname.c 2007-06-19 17:35:22.000000000 +0400
@@ -13,6 +13,7 @@
#include <linux/uts.h>
#include <linux/utsname.h>
#include <linux/version.h>
+#include <linux/err.h>

/*
 * Clone a new ns copying an original utsname, setting refcount to 1
@@ -24,10 +25,11 @@ static struct uts_namespace *clone_uts_n
    struct uts_namespace *ns;

    ns = kmalloc(sizeof(struct uts_namespace), GFP_KERNEL);
- if (ns) {
-     memcpy(&ns->name, &old_ns->name, sizeof(ns->name));
-     kref_init(&ns->kref);
- }
+ if (!ns)
+     return ERR_PTR(-ENOMEM);
+
+     memcpy(&ns->name, &old_ns->name, sizeof(ns->name));
+     kref_init(&ns->kref);
    return ns;
}

```

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