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Subject: Playing with namespaces and bloat-o-meeter

Posted by [Pavel Emelianov](#) on Wed, 26 Sep 2007 12:37:32 GMT

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Hi, guys!

I've noticed that compiling out all the core related to cloning and cleaning the new namespace saves us more than a Kbyte (!) from the vmlinux.

add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)

function	old	new	delta
copy_user_ns	-	181	+181
copy_ipcs	-	149	+149
copy_utsname	-	120	+120
shm_exit_ns	-	106	+106
sem_exit_ns	-	106	+106
msg_exit_ns	-	106	+106
freeary	-	100	+100
release_uids	-	95	+95
freeque	-	92	+92
free_nsproxy	48	99	+51
__sem_init_ns	-	45	+45
shm_init_ns	-	42	+42
sem_init_ns	-	42	+42
msg_init_ns	-	42	+42
__shm_init_ns	-	38	+38
create_new_namespaces		300	335 +35
__msg_init_ns	-	31	+31
sysvipc_proc_release		5	35 +30
free_ipc_ns	-	30	+30
do_shm_rmid	-	29	+29
shm_release	18	39	+21
free_user_ns	-	16	+16
sysvipc_proc_open		100	111 +11
do_shmat	778	787	+9
free_uts_ns	-	5	+5
sys_shmctl	1934	1907	-27
msg_init	82	47	-35
shm_init	92	47	-45
sem_init	99	44	-55
sys_msgctl	1394	1311	-83
sys_semctl	2123	2032	-91

Since there already were some questions like "do I need it on my cellphone?" in reply to pid namespaces patches and so on, why don't we make ALL the namespaces cloning code under the config option to make those people happy?

Here's the proposed patch.

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

---

```
diff --git a/include/linux/ipc.h b/include/linux/ipc.h
index 96988d1..b882610 100644
--- a/include/linux/ipc.h
+++ b/include/linux/ipc.h
@@ -100,56 +100,6 @@ struct kern_ipc_perm
    void *security;
};

-struct ipc_ids;
-struct ipc_namespace {
- struct kref kref;
- struct ipc_ids *ids[3];
-
- int sem_ctls[4];
- int used_sems;
-
- int msg_ctlmax;
- int msg_ctlmnb;
- int msg_ctlmni;
-
- size_t shm_ctlmax;
- size_t shm_ctlall;
- int shm_ctlmni;
- int shm_tot;
-};
-
-extern struct ipc_namespace init_ipc_ns;
-
-#ifdef CONFIG_SYSVIPC
-#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
-extern void free_ipc_ns(struct kref *kref);
-extern struct ipc_namespace *copy_ipcs(unsigned long flags,
-    struct ipc_namespace *ns);
-#else
-#define INIT_IPC_NS(ns)
-static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
-    struct ipc_namespace *ns)
-{
- return ns;
-}
-#endif
```

```

-
-static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
-{
-#ifdef CONFIG_SYSVIPC
- if (ns)
-  kref_get(&ns->kref);
-#endif
- return ns;
-}
-
-static inline void put_ipc_ns(struct ipc_namespace *ns)
-{
-#ifdef CONFIG_SYSVIPC
- kref_put(&ns->kref, free_ipc_ns);
-#endif
-}
-
-#endif /* __KERNEL__ */

#endif /* _LINUX_IPC_H */
diff --git a/include/linux/ipc_namespace.h b/include/linux/ipc_namespace.h
new file mode 100644
index 0000000..89f51f8
--- /dev/null
+++ b/include/linux/ipc_namespace.h
@@ -0,0 +1,67 @@
+#ifndef __IPC_NAMESPACE_H__
+#define __IPC_NAMESPACE_H__
+
+#include <linux/err.h>
+
+struct ipc_ids;
+struct ipc_namespace {
+ struct kref kref;
+ struct ipc_ids *ids[3];
+
+ int sem_ctls[4];
+ int used_sems;
+
+ int msg_ctlmax;
+ int msg_ctlmnb;
+ int msg_ctlmni;
+
+ size_t shm_ctlmax;
+ size_t shm_ctlall;
+ int shm_ctlmni;
+ int shm_tot;
+};

```

```

+
+extern struct ipc_namespace init_ipc_ns;
+
+
+#ifdef CONFIG_SYSVIPC
+#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
+#else
+#define INIT_IPC_NS(ns)
+#endif
+
+
+#ifdef CONFIG_NS_IPC
+extern void free_ipc_ns(struct kref *kref);
+extern struct ipc_namespace *copy_ipcs(unsigned long flags,
+    struct ipc_namespace *ns);
+
+
+static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
+{
+    if (ns)
+        kref_get(&ns->kref);
+    return ns;
+}
+
+static inline void put_ipc_ns(struct ipc_namespace *ns)
+{
+    kref_put(&ns->kref, free_ipc_ns);
+}
+#else
+static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
+    struct ipc_namespace *ns)
+{
+    if (flags & CLONE_NEWIPC)
+        return ERR_PTR(-EINVAL);
+
+    return ns;
+}
+
+static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
+{
+    return ns;
+}
+
+static inline void put_ipc_ns(struct ipc_namespace *ns)
+{
+}
+#endif
+#endif
diff --git a/include/linux/nsproxy.h b/include/linux/nsproxy.h
diff --git a/include/linux/pid.h b/include/linux/pid.h
index 4817c66..ac1b47f 100644

```

```

--- a/include/linux/pid.h
+++ b/include/linux/pid.h
@@ -122,7 +122,6 @@ extern struct pid *find_ge_pid(int nr, s

extern struct pid *alloc_pid(struct pid_namespace *ns);
extern void FASTCALL(free_pid(struct pid *pid));
-extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);

/*
 * the helpers to get the pid's id seen from different namespaces
diff --git a/include/linux/pid_namespace.h b/include/linux/pid_namespace.h
index 0135c76..1f5f915 100644
--- a/include/linux/pid_namespace.h
+++ b/include/linux/pid_namespace.h
@@ -6,6 +6,7 @@
#include <linux/threads.h>
#include <linux/nsproxy.h>
#include <linux/kref.h>
+#include <linux/err.h>

struct pidmap {
    atomic_t nr_free;
@@ -29,6 +30,7 @@ struct pid_namespace {

extern struct pid_namespace init_pid_ns;

+#ifdef CONFIG_NS_PID
static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
{
    if (ns != &init_pid_ns)
@@ -38,12 +40,37 @@ static inline struct pid_namespace *get_

extern struct pid_namespace *copy_pid_ns(unsigned long flags, struct pid_namespace *ns);
extern void free_pid_ns(struct kref *kref);
+extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);

static inline void put_pid_ns(struct pid_namespace *ns)
{
    if (ns != &init_pid_ns)
        kref_put(&ns->kref, free_pid_ns);
}
+#else
+static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
+{
+    return ns;
+}
+
+static inline void put_pid_ns(struct pid_namespace *ns)

```

```

+{
+}
+
+static inline struct pid_namespace *copy_pid_ns(unsigned long flags,
+ struct pid_namespace *ns)
+{
+ if (flags & CLONE_NEWPID)
+ return ERR_PTR(-EINVAL);
+
+ return ns;
+}
+
+static inline void zap_pid_ns_processes(struct pid_namespace *ns)
+{
+ BUG();
+}
+
+#endif

static inline struct pid_namespace *task_active_pid_ns(struct task_struct *tsk)
{
diff --git a/include/linux/sched.h b/include/linux/sched.h
diff --git a/include/linux/sem.h b/include/linux/sem.h
diff --git a/include/linux/user_namespace.h b/include/linux/user_namespace.h
index b5f41d4..d73080c 100644
--- a/include/linux/user_namespace.h
+++ b/include/linux/user_namespace.h
@@ -17,7 +17,7 @@ struct user_namespace {

extern struct user_namespace init_user_ns;

-#ifndef CONFIG_USER_NS
+#ifndef CONFIG_NS_UID

static inline struct user_namespace *get_user_ns(struct user_namespace *ns)
{
diff --git a/include/linux/utsname.h b/include/linux/utsname.h
index 923db99..cea08a9 100644
--- a/include/linux/utsname.h
+++ b/include/linux/utsname.h
@@ -35,6 +35,7 @@ struct new_utsname {
#include <linux/sched.h>
#include <linux/kref.h>
#include <linux/nsproxy.h>
+#include <linux/err.h>
#include <asm/atomic.h>

struct uts_namespace {
@@ -43,6 +44,7 @@ struct uts_namespace {

```

```

};
extern struct uts_namespace init_uts_ns;

#ifdef CONFIG_NS_UTS
static inline void get_uts_ns(struct uts_namespace *ns)
{
    kref_get(&ns->kref);
}
@@ -56,6 +58,25 @@ static inline void put_uts_ns(struct uts
{
    kref_put(&ns->kref, free_uts_ns);
}
#else
+static inline void get_uts_ns(struct uts_namespace *ns)
+{
+}
+
+static inline void put_uts_ns(struct uts_namespace *ns)
+{
+}
+
+static inline struct uts_namespace *copy_utsname(unsigned long flags,
+ struct uts_namespace *ns)
+{
+ if (flags & CLONE_NEWUTS)
+ return ERR_PTR(-EINVAL);
+
+ return ns;
+}
#endif
+
static inline struct new_utsname *utsname(void)
{
    return &current->nsproxy->uts_ns->name;
}
diff --git a/init/Kconfig b/init/Kconfig
index 684ccfb..ccb1575 100644
--- a/init/Kconfig
+++ b/init/Kconfig
@@ -206,15 +206,6 @@ config TASK_IO_ACCOUNTING

```

Say N if unsure.

- config USER\_NS
- bool "User Namespaces (EXPERIMENTAL)"
- default n
- depends on EXPERIMENTAL
- help
- Support user namespaces. This allows containers, i.e.
- vservers, to use user namespaces to provide different

- user info for different servers. If unsure, say N.

-

config AUDIT

bool "Auditing support"

depends on NET

@ @ -369,6 +360,39 @ @ config RELAY

If unsure, say N.

+config NAMESPACES

+ bool "The namespaces support"

+ help

+ Provides the way to make tasks work with different objects using

+ the same id

+

+config NS\_UTS

+ bool "Uname namespace"

+ depends on NAMESPACES

+ help

+ The utsname namespace

+

+config NS\_IPC

+ bool "IPC namespace"

+ depends on NAMESPACES && SYSVIPC

+ help

+ The SYSVIPC ids namespaces

+

+config NS\_PIDS

+ bool "PID namespace"

+ depends on NAMESPACES

+ help

+ Tasks see only the pids living in the same namespace and in the

+ child namespaces

+

+config NS\_UID

+ bool "UID namespace"

+ depends on NAMESPACES && EXPERIMENTAL

+ help

+ Support user namespaces. This allows containers, i.e.

+ vservers, to use user namespaces to provide different

+ user info for different servers. If unsure, say N.

+

config BLK\_DEV\_INITRD

bool "Initial RAM filesystem and RAM disk (initramfs/initrd) support"

depends on BROKEN || !FRV

diff --git a/init/main.c b/init/main.c

diff --git a/ipc/Makefile b/ipc/Makefile

index b93bba6..b051636 100644



```

--- a/ipc/Makefile
+++ b/ipc/Makefile
@@ -7,4 +7,5 @@ obj-$(CONFIG_SYSVIPC) += util.o msgutil.
obj-$(CONFIG_SYSVIPC_SYSCTL) += ipc_sysctl.o
obj_mq-$(CONFIG_COMPAT) += compat_mq.o
obj-$(CONFIG_POSIX_QUEUE) += mqueue.o msgutil.o $(obj_mq-y)
+obj-$(CONFIG_NS_IPC) += namespace.o

```

```

diff --git a/ipc/ipc_sysctl.c b/ipc/ipc_sysctl.c
index 79e24e8..7f4235b 100644

```

```

--- a/ipc/ipc_sysctl.c
+++ b/ipc/ipc_sysctl.c
@@ -14,6 +14,7 @@
#include <linux/nsproxy.h>
#include <linux/sysctl.h>
#include <linux/uaccess.h>
+#include <linux/ipc_namespace.h>

```

```

static void *get_ipc(ctl_table *table)
{

```

```

diff --git a/ipc/msg.c b/ipc/msg.c
index b7274db..9406030 100644

```

```

--- a/ipc/msg.c
+++ b/ipc/msg.c
@@ -36,6 +36,7 @@
#include <linux/seq_file.h>
#include <linux/mutex.h>
#include <linux/nsproxy.h>
+#include <linux/ipc_namespace.h>

```

```

#include <asm/current.h>
#include <asm/uaccess.h>
@@ -92,6 +93,7 @@ static void __msg_init_ns(struct ipc_nam
ipc_init_ids(ids);
}

```

```

+#ifdef CONFIG_NS_IPC
int msg_init_ns(struct ipc_namespace *ns)
{
    struct ipc_ids *ids;
@@ -127,6 +129,7 @@ void msg_exit_ns(struct ipc_namespace *n
kfree(ns->ids[IPC_MSG_IDS]);
ns->ids[IPC_MSG_IDS] = NULL;
}
+#endif

```

```

void __init msg_init(void)
{

```

```

diff --git a/ipc/namespace.c b/ipc/namespace.c
new file mode 100644
index 0000000..cef1139
--- /dev/null
+++ b/ipc/namespace.c
@@ -0,0 +1,73 @@
+/*
+ * linux/ipc/namespace.c
+ * Copyright (C) 2006 Pavel Emelyanov <xemul@openvz.org> OpenVZ, SWsoft Inc.
+ */
+
+#include <linux/ipc.h>
+#include <linux/msg.h>
+#include <linux/ipc_namespace.h>
+#include <linux/rcupdate.h>
+#include <linux/nsproxy.h>
+#include <linux/slab.h>
+
+#include "util.h"
+
+static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)
+{
+    int err;
+    struct ipc_namespace *ns;
+
+    err = -ENOMEM;
+    ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
+    if (ns == NULL)
+        goto err_mem;
+
+    err = sem_init_ns(ns);
+    if (err)
+        goto err_sem;
+    err = msg_init_ns(ns);
+    if (err)
+        goto err_msg;
+    err = shm_init_ns(ns);
+    if (err)
+        goto err_shm;
+
+    kref_init(&ns->kref);
+    return ns;
+
+err_shm:
+    msg_exit_ns(ns);
+err_msg:
+    sem_exit_ns(ns);
+err_sem:

```

```

+ kfree(ns);
+err_mem:
+ return ERR_PTR(err);
+}
+
+struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
+{
+ struct ipc_namespace *new_ns;
+
+ BUG_ON(!ns);
+ get_ipc_ns(ns);
+
+ if (!(flags & CLONE_NEWIPC))
+ return ns;
+
+ new_ns = clone_ipc_ns(ns);
+
+ put_ipc_ns(ns);
+ return new_ns;
+}
+
+void free_ipc_ns(struct kref *kref)
+{
+ struct ipc_namespace *ns;
+
+ ns = container_of(kref, struct ipc_namespace, kref);
+ sem_exit_ns(ns);
+ msg_exit_ns(ns);
+ shm_exit_ns(ns);
+ kfree(ns);
+}
diff --git a/ipc/sem.c b/ipc/sem.c
index 45c7e57..a12d52e 100644
--- a/ipc/sem.c
+++ b/ipc/sem.c
@@ -82,6 +82,7 @@
#include <linux/seq_file.h>
#include <linux/mutex.h>
#include <linux/nsproxy.h>
+#include <linux/ipc_namespace.h>

#include <asm/uaccess.h>
#include "util.h"
@@ -130,6 +131,7 @@ static void __sem_init_ns(struct ipc_nam
ipc_init_ids(ids);
}

+#ifdef CONFIG_NS_IPC

```

```

int sem_init_ns(struct ipc_namespace *ns)
{
    struct ipc_ids *ids;
@@ -165,6 +167,7 @@ void sem_exit_ns(struct ipc_namespace *n
    kfree(ns->ids[IPC_SEM_IDS]);
    ns->ids[IPC_SEM_IDS] = NULL;
}
+#endif

void __init sem_init (void)
{
diff --git a/ipc/shm.c b/ipc/shm.c
index f28f2a3..07db882 100644
--- a/ipc/shm.c
+++ b/ipc/shm.c
@@ -38,6 +38,7 @@
#include <linux/mutex.h>
#include <linux/nsproxy.h>
#include <linux/mount.h>
+#include <linux/ipc_namespace.h>

#include <asm/uaccess.h>

@@ -97,6 +98,7 @@ static void do_shm_rmid(struct ipc_names
    shm_destroy(ns, shp);
}

#ifdef CONFIG_NS_IPC
int shm_init_ns(struct ipc_namespace *ns)
{
    struct ipc_ids *ids;
@@ -132,6 +134,7 @@ void shm_exit_ns(struct ipc_namespace *n
    kfree(ns->ids[IPC_SHM_IDS]);
    ns->ids[IPC_SHM_IDS] = NULL;
}
+#endif

void __init shm_init (void)
{
diff --git a/ipc/util.c b/ipc/util.c
index fd29246..44fb843 100644
--- a/ipc/util.c
+++ b/ipc/util.c
@@ -32,6 +32,7 @@
#include <linux/proc_fs.h>
#include <linux/audit.h>
#include <linux/nsproxy.h>
+#include <linux/ipc_namespace.h>

```

```
#include <asm/unistd.h>
```

```
@@ -50,66 +51,6 @@ struct ipc_namespace init_ipc_ns = {
    },
};
```

```

-static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)
-{
- int err;
- struct ipc_namespace *ns;
-
- err = -ENOMEM;
- ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
- if (ns == NULL)
- goto err_mem;
-
- err = sem_init_ns(ns);
- if (err)
- goto err_sem;
- err = msg_init_ns(ns);
- if (err)
- goto err_msg;
- err = shm_init_ns(ns);
- if (err)
- goto err_shm;
-
- kref_init(&ns->kref);
- return ns;
-
-err_shm:
- msg_exit_ns(ns);
-err_msg:
- sem_exit_ns(ns);
-err_sem:
- kfree(ns);
-err_mem:
- return ERR_PTR(err);
-}
-
-struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
-{
- struct ipc_namespace *new_ns;
-
- BUG_ON(!ns);
- get_ipc_ns(ns);
-
- if (!(flags & CLONE_NEWIPC))

```

```

- return ns;
-
- new_ns = clone_ipc_ns(ns);
-
- put_ipc_ns(ns);
- return new_ns;
-}
-
-void free_ipc_ns(struct kref *kref)
-{
- struct ipc_namespace *ns;
-
- ns = container_of(kref, struct ipc_namespace, kref);
- sem_exit_ns(ns);
- msg_exit_ns(ns);
- shm_exit_ns(ns);
- kfree(ns);
-}
-
/**
 * ipc_init - initialise IPC subsystem
 *
diff --git a/ipc/util.h b/ipc/util.h
index 99414a3..8972402 100644
--- a/ipc/util.h
+++ b/ipc/util.h
@@ -20,6 +20,8 @@ void sem_init (void);
void msg_init (void);
void shm_init (void);

+struct ipc_namespace;
+
int sem_init_ns(struct ipc_namespace *ns);
int msg_init_ns(struct ipc_namespace *ns);
int shm_init_ns(struct ipc_namespace *ns);
diff --git a/kernel/Makefile b/kernel/Makefile
index 76f782f..299261c 100644
--- a/kernel/Makefile
+++ b/kernel/Makefile
@@ -4,12 +4,11 @@
obj-y    = sched.o fork.o exec_domain.o panic.o printk.o profile.o \
        exit.o itimer.o time.o softirq.o resource.o \
-   sysctl.o capability.o ptrace.o timer.o user.o user_namespace.o \
+   sysctl.o capability.o ptrace.o timer.o user.o \
        signal.o sys.o kmod.o workqueue.o pid.o \
        rcupdate.o extable.o params.o posix-timers.o \
        kthread.o wait.o kfifo.o sys_ni.o posix-cpu-timers.o mutex.o \

```

```

- hrtimer.o rwsem.o latency.o nsproxy.o srcu.o \
- utsname.o notifier.o sysctl.o
+ hrtimer.o rwsem.o latency.o nsproxy.o srcu.o notifier.o sysctl.o

obj-$(CONFIG_SYSCTL) += sysctl_check.o
obj-$(CONFIG_STACKTRACE) += stacktrace.o
@@ -50,6 +49,8 @@ obj-$(CONFIG_AUDITSYSCALL) += auditsc.o
obj-$(CONFIG_AUDIT_TREE) += audit_tree.o
obj-$(CONFIG_KPROBES) += kprobes.o
obj-$(CONFIG_KGDB) += kgdb.o
+obj-$(CONFIG_NS_UTS) += utsname.o
+obj-$(CONFIG_NS_UID) += user_namespace.o
obj-$(CONFIG_SYSFS) += ksysfs.o
obj-$(CONFIG_DETECT_SOFTLOCKUP) += softlockup.o
obj-$(CONFIG_GENERIC_HARDIRQS) += irq/
diff --git a/kernel/nsproxy.c b/kernel/nsproxy.c
index ee68964..5a27426 100644
--- a/kernel/nsproxy.c
+++ b/kernel/nsproxy.c
@@ -20,6 +20,7 @@
#include <linux/mnt_namespace.h>
#include <linux/utsname.h>
#include <linux/pid_namespace.h>
+#include <linux/ipc_namespace.h>

static struct kmem_cache *nsproxy_cachep;

diff --git a/kernel/pid.c b/kernel/pid.c
index e2e060e..a247fea 100644
--- a/kernel/pid.c
+++ b/kernel/pid.c
@@ -432,6 +432,7 @@ struct pid *find_ge_pid(int nr, struct p
}
EXPORT_SYMBOL_GPL(find_get_pid);

+#ifdef CONFIG_NS_PID
struct pid_cache {
    int nr_ids;
    char name[16];
@@ -482,6 +483,11 @@ err_alloc:
    return NULL;
}

+static __init struct kmem_cache *create_init_pid_cachep(void)
+{
+ return create_pid_cachep(1);
+}
+

```





```

}

#ifdef CONFIG_NS_UID
void release_uids(struct user_namespace *ns)
{
    int i;
@@ -223,6 +233,7 @@ void release_uids(struct user_namespace

    free_uid(ns->root_user);
}
#endif

static int __init uid_cache_init(void)
{
diff --git a/kernel/user_namespace.c b/kernel/user_namespace.c
index 7af90fc..4c90062 100644
--- a/kernel/user_namespace.c
+++ b/kernel/user_namespace.c
@@ -10,17 +10,6 @@
#include <linux/nsproxy.h>
#include <linux/user_namespace.h>

-struct user_namespace init_user_ns = {
- .kref = {
- .refcount = ATOMIC_INIT(2),
- },
- .root_user = &root_user,
-};
-
-EXPORT_SYMBOL_GPL(init_user_ns);
-
-#ifdef CONFIG_USER_NS
-
/*
 * Clone a new ns copying an original user ns, setting refcount to 1
 * @old_ns: namespace to clone
@@ -84,5 +73,3 @@ void free_user_ns(struct kref *kref)
    release_uids(ns);
    kfree(ns);
}
-
-#endif /* CONFIG_USER_NS */
diff --git a/kernel/utsname.c b/kernel/utsname.c

```

---

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

---

Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [serue](#) on Wed, 26 Sep 2007 13:13:49 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Quoting Pavel Emelyanov (xemul@openvz.org):

> Hi, guys!

>

> I've noticed that compiling out all the core related to

> cloning and cleaning the new namespace saves us more than

> a Kbyte (!) from the vmlinux.

>

> add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)

> function	old	new	delta
> copy_user_ns	-	181	+181
> copy_ipcs	-	149	+149
> copy_utsname	-	120	+120
> shm_exit_ns	-	106	+106
> sem_exit_ns	-	106	+106
> msg_exit_ns	-	106	+106
> freeary	-	100	+100
> release_uids	-	95	+95
> freeque	-	92	+92
> free_nsproxy	48	99	+51
> __sem_init_ns	-	45	+45
> shm_init_ns	-	42	+42
> sem_init_ns	-	42	+42
> msg_init_ns	-	42	+42
> __shm_init_ns	-	38	+38
> create_new_namespaces		300	335 +35
> __msg_init_ns	-	31	+31
> sysvipc_proc_release		5	35 +30
> free_ipc_ns	-	30	+30
> do_shm_rmid	-	29	+29
> shm_release	18	39	+21
> free_user_ns	-	16	+16
> sysvipc_proc_open		100	111 +11
> do_shmat	778	787	+9
> free_uts_ns	-	5	+5
> sys_shmctl	1934	1907	-27
> msg_init	82	47	-35
> shm_init	92	47	-45
> sem_init	99	44	-55
> sys_msgctl	1394	1311	-83
> sys_semctl	2123	2032	-91

>

> Since there already were some questions like "do I need it

> on my cellphone?" in reply to pid namespaces patches and

> so on, why don't we make ALL the namespaces cloning code

> under the config option to make those people happy?

>  
> Here's the proposed patch.

How about a single config variable for all namespaces?

-serge

```
> Signed-off-by: Pavel Emelyanov <xemul@openvz.org>
>
> ---
>
> diff --git a/include/linux/ipc.h b/include/linux/ipc.h
> index 96988d1..b882610 100644
> --- a/include/linux/ipc.h
> +++ b/include/linux/ipc.h
> @@ -100,56 +100,6 @@ struct kern_ipc_perm
> void *security;
> };
>
> -struct ipc_ids;
> -struct ipc_namespace {
> - struct kref kref;
> - struct ipc_ids *ids[3];
> -
> - int sem_ctls[4];
> - int used_sems;
> -
> - int msg_ctlmax;
> - int msg_ctlmnb;
> - int msg_ctlmni;
> -
> - size_t shm_ctlmax;
> - size_t shm_ctlall;
> - int shm_ctlmni;
> - int shm_tot;
> -};
> -
> -extern struct ipc_namespace init_ipc_ns;
> -
> -#ifdef CONFIG_SYSVIPC
> -#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
> -extern void free_ipc_ns(struct kref *kref);
> -extern struct ipc_namespace *copy_ipcs(unsigned long flags,
> - struct ipc_namespace *ns);
> -#else
> -#define INIT_IPC_NS(ns)
> -static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
> - struct ipc_namespace *ns)
```

```

> -{
> - return ns;
> -}
> -#endif
> -
> -static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
> -{
> -#ifdef CONFIG_SYSVIPC
> - if (ns)
> - kref_get(&ns->kref);
> -#endif
> - return ns;
> -}
> -
> -static inline void put_ipc_ns(struct ipc_namespace *ns)
> -{
> -#ifdef CONFIG_SYSVIPC
> - kref_put(&ns->kref, free_ipc_ns);
> -#endif
> -}
> -
> #endif /* __KERNEL__ */
>
> #endif /* _LINUX_IPC_H */
> diff --git a/include/linux/ipc_namespace.h b/include/linux/ipc_namespace.h
> new file mode 100644
> index 00000000..89f51f8
> --- /dev/null
> +++ b/include/linux/ipc_namespace.h
> @@ -0,0 +1,67 @@
> +#ifndef __IPC_NAMESPACE_H__
> +#define __IPC_NAMESPACE_H__
> +
> +#include <linux/err.h>
> +
> +struct ipc_ids;
> +struct ipc_namespace {
> + struct kref kref;
> + struct ipc_ids *ids[3];
> +
> + int sem_ctls[4];
> + int used_sems;
> +
> + int msg_ctlmax;
> + int msg_ctlmnb;
> + int msg_ctlmni;
> +
> + size_t shm_ctlmax;

```

```

> + size_t shm_ctlall;
> + int shm_ctlmni;
> + int shm_tot;
> +};
> +
> +extern struct ipc_namespace init_ipc_ns;
> +
> +#ifdef CONFIG_SYSVIPC
> +#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
> +#else
> +#define INIT_IPC_NS(ns)
> +#endif
> +
> +#ifdef CONFIG_NS_IPC
> +extern void free_ipc_ns(struct kref *kref);
> +extern struct ipc_namespace *copy_ipcs(unsigned long flags,
> +    struct ipc_namespace *ns);
> +
> +static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
> +{
> + if (ns)
> + kref_get(&ns->kref);
> + return ns;
> +}
> +
> +static inline void put_ipc_ns(struct ipc_namespace *ns)
> +{
> + kref_put(&ns->kref, free_ipc_ns);
> +}
> +#else
> +static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
> +    struct ipc_namespace *ns)
> +{
> + if (flags & CLONE_NEWIPC)
> + return ERR_PTR(-EINVAL);
> +
> + return ns;
> +}
> +
> +static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
> +{
> + return ns;
> +}
> +
> +static inline void put_ipc_ns(struct ipc_namespace *ns)
> +{
> +}
> +#endif

```

```

> +#endif
> diff --git a/include/linux/nsproxy.h b/include/linux/nsproxy.h
> diff --git a/include/linux/pid.h b/include/linux/pid.h
> index 4817c66..ac1b47f 100644
> --- a/include/linux/pid.h
> +++ b/include/linux/pid.h
> @@ -122,7 +122,6 @@ extern struct pid *find_ge_pid(int nr, s
>
> extern struct pid *alloc_pid(struct pid_namespace *ns);
> extern void FASTCALL(free_pid(struct pid *pid));
> -extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);
>
> /*
>  * the helpers to get the pid's id seen from different namespaces
> diff --git a/include/linux/pid_namespace.h b/include/linux/pid_namespace.h
> index 0135c76..1f5f915 100644
> --- a/include/linux/pid_namespace.h
> +++ b/include/linux/pid_namespace.h
> @@ -6,6 +6,7 @@
> #include <linux/threads.h>
> #include <linux/nsproxy.h>
> #include <linux/kref.h>
> +#include <linux/err.h>
>
> struct pidmap {
>     atomic_t nr_free;
> @@ -29,6 +30,7 @@ struct pid_namespace {
>
> extern struct pid_namespace init_pid_ns;
>
> +#ifdef CONFIG_NS_PID
> static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
> {
>     if (ns != &init_pid_ns)
> @@ -38,12 +40,37 @@ static inline struct pid_namespace *get_
>
> extern struct pid_namespace *copy_pid_ns(unsigned long flags, struct pid_namespace *ns);
> extern void free_pid_ns(struct kref *kref);
> +extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);
>
> static inline void put_pid_ns(struct pid_namespace *ns)
> {
>     if (ns != &init_pid_ns)
>         kref_put(&ns->kref, free_pid_ns);
> }
> +#else
> +static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
> +{

```

```

> + return ns;
> +}
> +
> +static inline void put_pid_ns(struct pid_namespace *ns)
> +{
> +}
> +
> +static inline struct pid_namespace *copy_pid_ns(unsigned long flags,
> + struct pid_namespace *ns)
> +{
> + if (flags & CLONE_NEWPID)
> + return ERR_PTR(-EINVAL);
> +
> + return ns;
> +}
> +
> +static inline void zap_pid_ns_processes(struct pid_namespace *ns)
> +{
> + BUG();
> +}
> +#endif
>
> static inline struct pid_namespace *task_active_pid_ns(struct task_struct *tsk)
> {
> diff --git a/include/linux/sched.h b/include/linux/sched.h
> diff --git a/include/linux/sem.h b/include/linux/sem.h
> diff --git a/include/linux/user_namespace.h b/include/linux/user_namespace.h
> index b5f41d4..d73080c 100644
> --- a/include/linux/user_namespace.h
> +++ b/include/linux/user_namespace.h
> @@ -17,7 +17,7 @@ struct user_namespace {
>
> extern struct user_namespace init_user_ns;
>
> -#ifdef CONFIG_USER_NS
> +#ifdef CONFIG_NS_UID
>
> static inline struct user_namespace *get_user_ns(struct user_namespace *ns)
> {
> diff --git a/include/linux/utsname.h b/include/linux/utsname.h
> index 923db99..cea08a9 100644
> --- a/include/linux/utsname.h
> +++ b/include/linux/utsname.h
> @@ -35,6 +35,7 @@ struct new_utsname {
> #include <linux/sched.h>
> #include <linux/kref.h>
> #include <linux/nsproxy.h>
> +#include <linux/err.h>

```

```

> #include <asm/atomic.h>
>
> struct uts_namespace {
> @@ -43,6 +44,7 @@ struct uts_namespace {
> };
> extern struct uts_namespace init_uts_ns;
>
> +#ifdef CONFIG_NS_UTS
> static inline void get_uts_ns(struct uts_namespace *ns)
> {
>   kref_get(&ns->kref);
> @@ -56,6 +58,25 @@ static inline void put_uts_ns(struct uts
> {
>   kref_put(&ns->kref, free_uts_ns);
> }
> +#else
> +static inline void get_uts_ns(struct uts_namespace *ns)
> +{
> +}
> +
> +static inline void put_uts_ns(struct uts_namespace *ns)
> +{
> +}
> +
> +static inline struct uts_namespace *copy_utsname(unsigned long flags,
> + struct uts_namespace *ns)
> +{
> + if (flags & CLONE_NEWUTS)
> + return ERR_PTR(-EINVAL);
> +
> + return ns;
> +}
> +#endif
> +
> static inline struct new_utsname *utsname(void)
> {
>   return &current->nsproxy->uts_ns->name;
> diff --git a/init/Kconfig b/init/Kconfig
> index 684ccfb..ccb1575 100644
> --- a/init/Kconfig
> +++ b/init/Kconfig
> @@ -206,15 +206,6 @@ config TASK_IO_ACCOUNTING
>
>   Say N if unsure.
>
> -config USER_NS
> - bool "User Namespaces (EXPERIMENTAL)"
> - default n

```



```

> - depends on EXPERIMENTAL
> - help
> - Support user namespaces. This allows containers, i.e.
> - vservers, to use user namespaces to provide different
> - user info for different servers. If unsure, say N.
> -
> config AUDIT
> bool "Auditing support"
> depends on NET
> @@ -369,6 +360,39 @@ config RELAY
>
> If unsure, say N.
>
> +config NAMESPACES
> + bool "The namespaces support"
> + help
> + Provides the way to make tasks work with different objects using
> + the same id
> +
> +config NS_UTS
> + bool "Uname namespace"
> + depends on NAMESPACES
> + help
> + The utsname namespace
> +
> +config NS_IPC
> + bool "IPC namespace"
> + depends on NAMESPACES && SYSVIPC
> + help
> + The SYSVIPC ids namespaces
> +
> +config NS_PIDS
> + bool "PID namespace"
> + depends on NAMESPACES
> + help
> + Tasks see only the pids living in the same namespace and in the
> + child namespaces
> +
> +config NS_UID
> + bool "UID namespace"
> + depends on NAMESPACES && EXPERIMENTAL
> + help
> + Support user namespaces. This allows containers, i.e.
> + vservers, to use user namespaces to provide different
> + user info for different servers. If unsure, say N.
> +
> config BLK_DEV_INITRD
> bool "Initial RAM filesystem and RAM disk (initramfs/initrd) support"

```

```

> depends on BROKEN || !FRV
> diff --git a/init/main.c b/init/main.c
> diff --git a/ipc/Makefile b/ipc/Makefile
> index b93bba6..b051636 100644
> --- a/ipc/Makefile
> +++ b/ipc/Makefile
> @@ -7,4 +7,5 @@ obj-$(CONFIG_SYSVIPC) += util.o msgutil.
> obj-$(CONFIG_SYSVIPC_SYSCTL) += ipc_sysctl.o
> obj_mq-$(CONFIG_COMPAT) += compat_mq.o
> obj-$(CONFIG_POSIX_QUEUE) += mqueue.o msgutil.o $(obj_mq-y)
> +obj-$(CONFIG_NS_IPC) += namespace.o
>
> diff --git a/ipc/ipc_sysctl.c b/ipc/ipc_sysctl.c
> index 79e24e8..7f4235b 100644
> --- a/ipc/ipc_sysctl.c
> +++ b/ipc/ipc_sysctl.c
> @@ -14,6 +14,7 @@
> #include <linux/nsproxy.h>
> #include <linux/sysctl.h>
> #include <linux/uaccess.h>
> +#include <linux/ipc_namespace.h>
>
> static void *get_ipc(ctl_table *table)
> {
> diff --git a/ipc/msg.c b/ipc/msg.c
> index b7274db..9406030 100644
> --- a/ipc/msg.c
> +++ b/ipc/msg.c
> @@ -36,6 +36,7 @@
> #include <linux/seq_file.h>
> #include <linux/mutex.h>
> #include <linux/nsproxy.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/current.h>
> #include <asm/uaccess.h>
> @@ -92,6 +93,7 @@ static void __msg_init_ns(struct ipc_nam
> ipc_init_ids(ids);
> }
>
> +#ifdef CONFIG_NS_IPC
> int msg_init_ns(struct ipc_namespace *ns)
> {
> struct ipc_ids *ids;
> @@ -127,6 +129,7 @@ void msg_exit_ns(struct ipc_namespace *n
> kfree(ns->ids[IPC_MSG_IDS]);
> ns->ids[IPC_MSG_IDS] = NULL;
> }

```

```

> +#endif
>
> void __init msg_init(void)
> {
> diff --git a/ipc/namespace.c b/ipc/namespace.c
> new file mode 100644
> index 0000000..cef1139
> --- /dev/null
> +++ b/ipc/namespace.c
> @@ -0,0 +1,73 @@
> +/*
> + * linux/ipc/namespace.c
> + * Copyright (C) 2006 Pavel Emelyanov <xemul@openvz.org> OpenVZ, SWsoft Inc.
> + */
> +
> +#include <linux/ipc.h>
> +#include <linux/msg.h>
> +#include <linux/ipc_namespace.h>
> +#include <linux/rcupdate.h>
> +#include <linux/nsproxy.h>
> +#include <linux/slab.h>
> +
> +#include "util.h"
> +
> +static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)
> +{
> + int err;
> + struct ipc_namespace *ns;
> +
> + err = -ENOMEM;
> + ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
> + if (ns == NULL)
> + goto err_mem;
> +
> + err = sem_init_ns(ns);
> + if (err)
> + goto err_sem;
> + err = msg_init_ns(ns);
> + if (err)
> + goto err_msg;
> + err = shm_init_ns(ns);
> + if (err)
> + goto err_shm;
> +
> + kref_init(&ns->kref);
> + return ns;
> +
> +err_shm:

```

```

> + msg_exit_ns(ns);
> +err_msg:
> + sem_exit_ns(ns);
> +err_sem:
> + kfree(ns);
> +err_mem:
> + return ERR_PTR(err);
> +}
> +
> +struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
> +{
> + struct ipc_namespace *new_ns;
> +
> + BUG_ON(!ns);
> + get_ipc_ns(ns);
> +
> + if (!(flags & CLONE_NEWIPC))
> + return ns;
> +
> + new_ns = clone_ipc_ns(ns);
> +
> + put_ipc_ns(ns);
> + return new_ns;
> +}
> +
> +void free_ipc_ns(struct kref *kref)
> +{
> + struct ipc_namespace *ns;
> +
> + ns = container_of(kref, struct ipc_namespace, kref);
> + sem_exit_ns(ns);
> + msg_exit_ns(ns);
> + shm_exit_ns(ns);
> + kfree(ns);
> +}
> diff --git a/ipc/sem.c b/ipc/sem.c
> index 45c7e57..a12d52e 100644
> --- a/ipc/sem.c
> +++ b/ipc/sem.c
> @@ -82,6 +82,7 @@
> #include <linux/seq_file.h>
> #include <linux/mutex.h>
> #include <linux/nsproxy.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/uaccess.h>
> #include "util.h"
> @@ -130,6 +131,7 @@ static void __sem_init_ns(struct ipc_nam

```

```

> ipc_init_ids(ids);
> }
>
> +#ifdef CONFIG_NS_IPC
> int sem_init_ns(struct ipc_namespace *ns)
> {
>     struct ipc_ids *ids;
> @@ -165,6 +167,7 @@ void sem_exit_ns(struct ipc_namespace *n
>     kfree(ns->ids[IPC_SEM_IDS]);
>     ns->ids[IPC_SEM_IDS] = NULL;
> }
> +#endif
>
> void __init sem_init (void)
> {
> diff --git a/ipc/shm.c b/ipc/shm.c
> index f28f2a3..07db882 100644
> --- a/ipc/shm.c
> +++ b/ipc/shm.c
> @@ -38,6 +38,7 @@
> #include <linux/mutex.h>
> #include <linux/nsproxy.h>
> #include <linux/mount.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/uaccess.h>
>
> @@ -97,6 +98,7 @@ static void do_shm_rmid(struct ipc_names
>     shm_destroy(ns, shp);
> }
>
> +#ifdef CONFIG_NS_IPC
> int shm_init_ns(struct ipc_namespace *ns)
> {
>     struct ipc_ids *ids;
> @@ -132,6 +134,7 @@ void shm_exit_ns(struct ipc_namespace *n
>     kfree(ns->ids[IPC_SHM_IDS]);
>     ns->ids[IPC_SHM_IDS] = NULL;
> }
> +#endif
>
> void __init shm_init (void)
> {
> diff --git a/ipc/util.c b/ipc/util.c
> index fd29246..44fb843 100644
> --- a/ipc/util.c
> +++ b/ipc/util.c
> @@ -32,6 +32,7 @@

```

```

> #include <linux/proc_fs.h>
> #include <linux/audit.h>
> #include <linux/nsproxy.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/unistd.h>
>
> @@ -50,66 +51,6 @@ struct ipc_namespace init_ipc_ns = {
> },
> };
>
> -static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)
> -{
> - int err;
> - struct ipc_namespace *ns;
> -
> - err = -ENOMEM;
> - ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
> - if (ns == NULL)
> - goto err_mem;
> -
> - err = sem_init_ns(ns);
> - if (err)
> - goto err_sem;
> - err = msg_init_ns(ns);
> - if (err)
> - goto err_msg;
> - err = shm_init_ns(ns);
> - if (err)
> - goto err_shm;
> -
> - kref_init(&ns->kref);
> - return ns;
> -
> -err_shm:
> - msg_exit_ns(ns);
> -err_msg:
> - sem_exit_ns(ns);
> -err_sem:
> - kfree(ns);
> -err_mem:
> - return ERR_PTR(err);
> -}
> -
> -struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
> -{
> - struct ipc_namespace *new_ns;
> -

```

```

> - BUG_ON(!ns);
> - get_ipc_ns(ns);
> -
> - if (!(flags & CLONE_NEWIPC))
> - return ns;
> -
> - new_ns = clone_ipc_ns(ns);
> -
> - put_ipc_ns(ns);
> - return new_ns;
> -}
> -
> -void free_ipc_ns(struct kref *kref)
> -{
> - struct ipc_namespace *ns;
> -
> - ns = container_of(kref, struct ipc_namespace, kref);
> - sem_exit_ns(ns);
> - msg_exit_ns(ns);
> - shm_exit_ns(ns);
> - kfree(ns);
> -}
> -
> /**
>  * ipc_init - initialise IPC subsystem
>  *
> diff --git a/ipc/util.h b/ipc/util.h
> index 99414a3..8972402 100644
> --- a/ipc/util.h
> +++ b/ipc/util.h
> @@ -20,6 +20,8 @@ void sem_init (void);
> void msg_init (void);
> void shm_init (void);
>
> +struct ipc_namespace;
> +
> int sem_init_ns(struct ipc_namespace *ns);
> int msg_init_ns(struct ipc_namespace *ns);
> int shm_init_ns(struct ipc_namespace *ns);
> diff --git a/kernel/Makefile b/kernel/Makefile
> index 76f782f..299261c 100644
> --- a/kernel/Makefile
> +++ b/kernel/Makefile
> @@ -4,12 +4,11 @@
>
> obj-y    = sched.o fork.o exec_domain.o panic.o printk.o profile.o \
>          exit.o itimer.o time.o softirq.o resource.o \
> - sysctl.o capability.o ptrace.o timer.o user.o user_namespace.o \

```

```

> + sysctl.o capability.o ptrace.o timer.o user.o \
> signal.o sys.o kmod.o workqueue.o pid.o \
> rcupdate.o extable.o params.o posix-timers.o \
> kthread.o wait.o kfifo.o sys_ni.o posix-cpu-timers.o mutex.o \
> - hrtimer.o rwsem.o latency.o nsproxy.o srcu.o \
> - utsname.o notifier.o sysctl.o
> + hrtimer.o rwsem.o latency.o nsproxy.o srcu.o notifier.o sysctl.o
>
> obj-$(CONFIG_SYSCTL) += sysctl_check.o
> obj-$(CONFIG_STACKTRACE) += stacktrace.o
> @@ -50,6 +49,8 @@ obj-$(CONFIG_AUDITSYSCALL) += auditsc.o
> obj-$(CONFIG_AUDIT_TREE) += audit_tree.o
> obj-$(CONFIG_KPROBES) += kprobes.o
> obj-$(CONFIG_KGDB) += kgdb.o
> +obj-$(CONFIG_NS_UTS) += utsname.o
> +obj-$(CONFIG_NS_UID) += user_namespace.o
> obj-$(CONFIG_SYSFS) += ksysfs.o
> obj-$(CONFIG_DETECT_SOFTLOCKUP) += softlockup.o
> obj-$(CONFIG_GENERIC_HARDIRQS) += irq/
> diff --git a/kernel/nsproxy.c b/kernel/nsproxy.c
> index ee68964..5a27426 100644
> --- a/kernel/nsproxy.c
> +++ b/kernel/nsproxy.c
> @@ -20,6 +20,7 @@
> #include <linux/mnt_namespace.h>
> #include <linux/utsname.h>
> #include <linux/pid_namespace.h>
> +#include <linux/ipc_namespace.h>
>
> static struct kmem_cache *nsproxy_cachep;
>
> diff --git a/kernel/pid.c b/kernel/pid.c
> index e2e060e..a247fea 100644
> --- a/kernel/pid.c
> +++ b/kernel/pid.c
> @@ -432,6 +432,7 @@ struct pid *find_ge_pid(int nr, struct p
> }
> EXPORT_SYMBOL_GPL(find_get_pid);
>
> +#ifdef CONFIG_NS_PID
> struct pid_cache {
> int nr_ids;
> char name[16];
> @@ -482,6 +483,11 @@ err_alloc:
> return NULL;
> }
>
> +static __init struct kmem_cache *create_init_pid_cachep(void)

```



```

> +{
> + return create_pid_cachep(1);
> +}
> +
> static struct pid_namespace *create_pid_namespace(int level)
> {
>     struct pid_namespace *ns;
> @@ -603,6 +609,13 @@ void zap_pid_ns_processes(struct pid_nam
>     pid_ns->child_reaper = NULL;
>     return;
> }
> +#else
> +static __init struct kmem_cache *create_init_pid_cachep(void)
> +{
> + return kmem_cache_create("pid", sizeof(struct pid), 0,
> +     SLAB_HWCACHE_ALIGN, NULL);
> +}
> +#endif
>
> /*
>  * The pid hash table is scaled according to the amount of memory in the
> @@ -636,7 +649,7 @@ void __init pidmap_init(void)
>     set_bit(0, init_pid_ns.pidmap[0].page);
>     atomic_dec(&init_pid_ns.pidmap[0].nr_free);
>
> - init_pid_ns.pid_cachep = create_pid_cachep(1);
> + init_pid_ns.pid_cachep = create_init_pid_cachep();
>     if (init_pid_ns.pid_cachep == NULL)
>         panic("Can't create pid_1 cachep\n");
>
> diff --git a/kernel/user.c b/kernel/user.c
> index b45f55f..d9cac1d 100644
> --- a/kernel/user.c
> +++ b/kernel/user.c
> @@ -17,6 +17,15 @@
> #include <linux/module.h>
> #include <linux/user_namespace.h>
>
> +struct user_namespace init_user_ns = {
> + .kref = {
> +     .refcount = ATOMIC_INIT(2),
> + },
> + .root_user = &root_user,
> +};
> +
> +EXPORT_SYMBOL_GPL(init_user_ns);
> +
> /*

```

```

> * UID task count cache, to get fast user lookup in "alloc_uid"
> * when changing user ID's (ie setuid() and friends).
> @@ -199,6 +208,7 @@ void switch_uid(struct user_struct *new_
>   suid_keys(current);
> }
>
> +#ifdef CONFIG_NS_UID
> void release_uids(struct user_namespace *ns)
> {
>   int i;
> @@ -223,6 +233,7 @@ void release_uids(struct user_namespace
>
>   free_uid(ns->root_user);
> }
> +#endif
>
> static int __init uid_cache_init(void)
> {
> diff --git a/kernel/user_namespace.c b/kernel/user_namespace.c
> index 7af90fc..4c90062 100644
> --- a/kernel/user_namespace.c
> +++ b/kernel/user_namespace.c
> @@ -10,17 +10,6 @@
> #include <linux/nsproxy.h>
> #include <linux/user_namespace.h>
>
> -struct user_namespace init_user_ns = {
> - .kref = {
> - .refcount = ATOMIC_INIT(2),
> - },
> - .root_user = &root_user,
> -};
> -
> -EXPORT_SYMBOL_GPL(init_user_ns);
> -
> -#ifdef CONFIG_USER_NS
> -
> /*
> * Clone a new ns copying an original user ns, setting refcount to 1
> * @old_ns: namespace to clone
> @@ -84,5 +73,3 @@ void free_user_ns(struct kref *kref)
>   release_uids(ns);
>   kfree(ns);
> }
> -
> -#endif /* CONFIG_USER_NS */
> diff --git a/kernel/utsname.c b/kernel/utsname.c

```

---

Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [Cedric Le Goater](#) on Wed, 26 Sep 2007 13:17:39 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Serge E. Hallyn wrote:

> Quoting Pavel Emelyanov (xemul@openvz.org):

>> Hi, guys!

>>

>> I've noticed that compiling out all the core related to  
>> cloning and cleaning the new namespace saves us more than  
>> a Kbyte (!) from the vmlinux.

>>

>> add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)

>> function	old	new	delta
>> copy_user_ns	-	181	+181
>> copy_ipcs	-	149	+149
>> copy_utsname	-	120	+120
>> shm_exit_ns	-	106	+106
>> sem_exit_ns	-	106	+106
>> msg_exit_ns	-	106	+106
>> freeary	-	100	+100
>> release_uids	-	95	+95
>> freeque	-	92	+92
>> free_nsproxy	48	99	+51
>> __sem_init_ns	-	45	+45
>> shm_init_ns	-	42	+42
>> sem_init_ns	-	42	+42
>> msg_init_ns	-	42	+42
>> __shm_init_ns	-	38	+38
>> create_new_namespaces		300	335 +35
>> __msg_init_ns	-	31	+31
>> sysvipc_proc_release		5	35 +30
>> free_ipc_ns	-	30	+30
>> do_shm_rmid	-	29	+29
>> shm_release	18	39	+21
>> free_user_ns	-	16	+16
>> sysvipc_proc_open		100	111 +11
>> do_shmat	778	787	+9
>> free_uts_ns	-	5	+5
>> sys_shmctl	1934	1907	-27
>> msg_init	82	47	-35
>> shm_init	92	47	-45
>> sem_init	99	44	-55

```
>> sys_msgctl          1394  1311  -83
>> sys_semctl          2123  2032  -91
>>
>> Since there already were some questions like "do I need it
>> on my cellphone?" in reply to pid namespaces patches and
>> so on, why don't we make ALL the namespaces cloning code
>> under the config option to make those people happy?
>>
>> Here's the proposed patch.
>
> How about a single config variable for all namespaces?
```

yes good idea.

C.

---

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

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---

Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [Cedric Le Goater](#) on Wed, 26 Sep 2007 13:19:24 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Cedric Le Goater wrote:

```
> Serge E. Hallyn wrote:
>> Quoting Pavel Emelyanov (xemul@openvz.org):
>>> Hi, guys!
>>>
>>> I've noticed that compiling out all the core related to
>>> cloning and cleaning the new namespace saves us more than
>>> a Kbyte (!) from the vmlinux.
>>>
>>> add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)
>>> function          old    new  delta
>>> copy_user_ns       -    181  +181
>>> copy_ipcs          -    149  +149
>>> copy_utsname       -    120  +120
>>> shm_exit_ns        -    106  +106
>>> sem_exit_ns        -    106  +106
>>> msg_exit_ns        -    106  +106
>>> freeary            -    100  +100
>>> release_uids       -     95  +95
>>> freeque            -     92  +92
>>> free_nsproxy       48    99   +51
>>> __sem_init_ns      -     45  +45
>>> shm_init_ns        -     42  +42
```

```

>>> sem_init_ns          -   42   +42
>>> msg_init_ns          -   42   +42
>>> __shm_init_ns        -   38   +38
>>> create_new_namespaces      300  335  +35
>>> __msg_init_ns        -   31   +31
>>> sysvipc_proc_release      5   35  +30
>>> free_ipc_ns          -   30   +30
>>> do_shm_rmid           -   29   +29
>>> shm_release          18   39   +21
>>> free_user_ns         -   16   +16
>>> sysvipc_proc_open      100  111  +11
>>> do_shmat             778  787   +9
>>> free_uts_ns          -    5   +5
>>> sys_shmctl          1934 1907  -27
>>> msg_init             82   47  -35
>>> shm_init             92   47  -45
>>> sem_init             99   44  -55
>>> sys_msgctl          1394 1311  -83
>>> sys_semctl          2123 2032  -91
>>>
>>> Since there already were some questions like "do I need it
>>> on my cellphone?" in reply to pid namespaces patches and
>>> so on, why don't we make ALL the namespaces cloning code
>>> under the config option to make those people happy?
>>>
>>> Here's the proposed patch.
>> How about a single config variable for all namespaces?
>
> yes good idea.

```

oops, that done already in the patch : CONFIG\_NAMESPACES

thanks :)

C.

---

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

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---

Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [Pavel Emelianov](#) on Wed, 26 Sep 2007 13:20:06 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Cedric Le Goater wrote:

```

> Cedric Le Goater wrote:
>> Serge E. Hallyn wrote:
>>> Quoting Pavel Emelyanov (xemul@openvz.org):
>>>> Hi, guys!
>>>>
>>>> I've noticed that compiling out all the core related to
>>>> cloning and cleaning the new namespace saves us more than
>>>> a Kbyte (!) from the vmlinux.
>>>>
>>>> add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)
>>>> function                old    new    delta
>>>> copy_user_ns              -    181   +181
>>>> copy_ipcs                  -    149   +149
>>>> copy_utsname                -    120   +120
>>>> shm_exit_ns                 -    106   +106
>>>> sem_exit_ns                 -    106   +106
>>>> msg_exit_ns                 -    106   +106
>>>> freeary                     -    100   +100
>>>> release_uids                -     95   +95
>>>> freeque                     -     92   +92
>>>> free_nsproxy                48     99   +51
>>>> __sem_init_ns               -     45   +45
>>>> shm_init_ns                 -     42   +42
>>>> sem_init_ns                 -     42   +42
>>>> msg_init_ns                 -     42   +42
>>>> __shm_init_ns               -     38   +38
>>>> create_new_namespaces              300   335   +35
>>>> __msg_init_ns               -     31   +31
>>>> sysvipc_proc_release         5     35   +30
>>>> free_ipc_ns                 -     30   +30
>>>> do_shm_rmid                  -     29   +29
>>>> shm_release                 18     39   +21
>>>> free_user_ns                 -     16   +16
>>>> sysvipc_proc_open              100   111   +11
>>>> do_shmat                    778   787    +9
>>>> free_uts_ns                  -      5    +5
>>>> sys_shmctl                  1934  1907   -27
>>>> msg_init                     82     47   -35
>>>> shm_init                     92     47   -45
>>>> sem_init                     99     44   -55
>>>> sys_msgctl                  1394  1311   -83
>>>> sys_semctl                   2123  2032   -91
>>>>
>>>> Since there already were some questions like "do I need it
>>>> on my cellphone?" in reply to pid namespaces patches and
>>>> so on, why don't we make ALL the namespaces cloning code
>>>> under the config option to make those people happy?
>>>>

```

>>>> Here's the proposed patch.  
>>> How about a single config variable for all namespaces?  
>> yes good idea.  
>  
>  
> oops, that done already in the patch : CONFIG\_NAMESPACES

So... Acked-by: Serge E. Hallyn and Cedric Le Goater ? :)

> thanks :)  
>  
> C.  
>  
>

---

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

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---

Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [Daniel Lezcano](#) on Wed, 26 Sep 2007 13:23:57 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Pavel Emelyanov wrote:

> Cedric Le Goater wrote:  
>> Cedric Le Goater wrote:  
>>> Serge E. Hallyn wrote:  
>>>> Quoting Pavel Emelyanov (xemul@openvz.org):  
>>>>> Hi, guys!  
>>>>>  
>>>>> I've noticed that compiling out all the core related to  
>>>>> cloning and cleaning the new namespace saves us more than  
>>>>> a Kbyte (!) from the vmlinux.  
>>>>>  
>>>>> add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)  
>>>>> function                    old    new   delta  
>>>>> copy\_user\_ns                -   181   +181  
>>>>> copy\_ipcs                    -   149   +149  
>>>>> copy\_utsname                -   120   +120  
>>>>> shm\_exit\_ns                 -   106   +106  
>>>>> sem\_exit\_ns                 -   106   +106  
>>>>> msg\_exit\_ns                 -   106   +106  
>>>>> freeary                      -   100   +100  
>>>>> release\_uids                -   95   +95  
>>>>> freeque                      -   92   +92  
>>>>> free\_nsproxy                48   99   +51

```

>>>>> __sem_init_ns          -   45   +45
>>>>> shm_init_ns            -   42   +42
>>>>> sem_init_ns            -   42   +42
>>>>> msg_init_ns            -   42   +42
>>>>> __shm_init_ns          -   38   +38
>>>>> create_new_namespaces      300   335   +35
>>>>> __msg_init_ns          -   31   +31
>>>>> sysvipc_proc_release      5    35   +30
>>>>> free_ipc_ns            -   30   +30
>>>>> do_shm_rmid             -   29   +29
>>>>> shm_release            18    39   +21
>>>>> free_user_ns           -   16   +16
>>>>> sysvipc_proc_open        100   111   +11
>>>>> do_shmat               778   787   +9
>>>>> free_uts_ns            -    5   +5
>>>>> sys_shmctl             1934  1907  -27
>>>>> msg_init               82    47  -35
>>>>> shm_init               92    47  -45
>>>>> sem_init               99    44  -55
>>>>> sys_msgctl             1394  1311  -83
>>>>> sys_semctl             2123  2032  -91
>>>>>
>>>>> Since there already were some questions like "do I need it
>>>>> on my cellphone?" in reply to pid namespaces patches and
>>>>> so on, why don't we make ALL the namespaces cloning code
>>>>> under the config option to make those people happy?
>>>>>
>>>>> Here's the proposed patch.
>>>> How about a single config variable for all namespaces?
>>> yes good idea.
>>
>> oops, that done already in the patch : CONFIG_NAMESPACES
>
> So... Acked-by: Serge E. Hallyn and Cedric Le Goater ? :)

```

That is a good idea, that will avoid to have the namespaces config all around the menuconfig too.

---

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Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [Cedric Le Goater](#) on Wed, 26 Sep 2007 13:24:19 GMT  
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---



Pavel Emelyanov wrote:

> Hi, guys!

>

> I've noticed that compiling out all the core related to

> cloning and cleaning the new namespace saves us more than

> a Kbyte (!) from the vmlinux.

cool.

but compared to the 5KB pid ns is adding, it's not much. I guess anything that can be saved is good to save when you run on a cell.

> add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)

> function	old	new	delta
> copy_user_ns	-	181	+181
> copy_ipcs	-	149	+149
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> shm_exit_ns	-	106	+106
> sem_exit_ns	-	106	+106
> msg_exit_ns	-	106	+106
> freeary	-	100	+100
> release_uids	-	95	+95
> freeque	-	92	+92
> free_nsproxy	48	99	+51
> __sem_init_ns	-	45	+45
> shm_init_ns	-	42	+42
> sem_init_ns	-	42	+42
> msg_init_ns	-	42	+42
> __shm_init_ns	-	38	+38
> create_new_namespaces		300	335 +35
> __msg_init_ns	-	31	+31
> sysvipc_proc_release		5	35 +30
> free_ipc_ns	-	30	+30
> do_shm_rmid	-	29	+29
> shm_release	18	39	+21
> free_user_ns	-	16	+16
> sysvipc_proc_open		100	111 +11
> do_shmat	778	787	+9
> free_uts_ns	-	5	+5
> sys_shmctl	1934	1907	-27
> msg_init	82	47	-35
> shm_init	92	47	-45
> sem_init	99	44	-55
> sys_msgctl	1394	1311	-83
> sys_semctl	2123	2032	-91

>

> Since there already were some questions like "do I need it

> on my cellphone?" in reply to pid namespaces patches and

> so on, why don't we make ALL the namespaces cloning code  
> under the config option to make those people happy?  
>  
> Here's the proposed patch.

I think I'm ok with it but it would be easier to review if you  
could split it in little patchlets, at least one for each  
namespace. diffstats are welcome also :)

```
> Signed-off-by: Pavel Emelyanov <xemul@openvz.org>
>
> ---
>
> diff --git a/include/linux/ipc.h b/include/linux/ipc.h
> index 96988d1..b882610 100644
> --- a/include/linux/ipc.h
> +++ b/include/linux/ipc.h
> @@ -100,56 +100,6 @@ struct kern_ipc_perm
> void *security;
> };
>
> -struct ipc_ids;
> -struct ipc_namespace {
> - struct kref kref;
> - struct ipc_ids *ids[3];
> -
> - int sem_ctls[4];
> - int used_sems;
> -
> - int msg_ctlmax;
> - int msg_ctlmnb;
> - int msg_ctlmni;
> -
> - size_t shm_ctlmax;
> - size_t shm_ctlall;
> - int shm_ctlmni;
> - int shm_tot;
> -};
> -
> -extern struct ipc_namespace init_ipc_ns;
> -
> -#ifdef CONFIG_SYSVIPC
> -#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
> -extern void free_ipc_ns(struct kref *kref);
> -extern struct ipc_namespace *copy_ipcs(unsigned long flags,
> - struct ipc_namespace *ns);
> -#else
> -#define INIT_IPC_NS(ns)
```

```

> -static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
> - struct ipc_namespace *ns)
> -{
> - return ns;
> -}
> -#endif
> -
> -static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
> -{
> -#ifdef CONFIG_SYSVIPC
> - if (ns)
> - kref_get(&ns->kref);
> -#endif
> - return ns;
> -}
> -
> -static inline void put_ipc_ns(struct ipc_namespace *ns)
> -{
> -#ifdef CONFIG_SYSVIPC
> - kref_put(&ns->kref, free_ipc_ns);
> -#endif
> -}
> -
> #endif /* __KERNEL__ */
>
> #endif /* _LINUX_IPC_H */
> diff --git a/include/linux/ipc_namespace.h b/include/linux/ipc_namespace.h
> new file mode 100644
> index 0000000..89f51f8
> --- /dev/null
> +++ b/include/linux/ipc_namespace.h

```

that's something i wanted to do. thanks.

```

> @@ -0,0 +1,67 @@
> +#ifndef __IPC_NAMESPACE_H__
> +#define __IPC_NAMESPACE_H__
> +
> +#include <linux/err.h>
> +
> +struct ipc_ids;
> +struct ipc_namespace {
> + struct kref kref;
> + struct ipc_ids *ids[3];
> +
> + int sem_ctls[4];
> + int used_sems;
> +

```

```

> + int msg_ctlmax;
> + int msg_ctlmnb;
> + int msg_ctlmni;
> +
> + size_t shm_ctlmax;
> + size_t shm_ctlall;
> + int shm_ctlmni;
> + int shm_tot;
> +};
> +
> +extern struct ipc_namespace init_ipc_ns;
> +
> +#ifdef CONFIG_SYSVIPC
> +#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
> +#else
> +#define INIT_IPC_NS(ns)
> +#endif
> +
> +#ifdef CONFIG_NS_IPC

```

ok so you're readding that flag. please check ipc/ipc\_sysctl.c there might be some surprises.

check the compile with CONFIG\_SYSCTL=n

```

> +extern void free_ipc_ns(struct kref *kref);
> +extern struct ipc_namespace *copy_ipcs(unsigned long flags,
> +    struct ipc_namespace *ns);
> +
> +static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
> +{
> + if (ns)
> + kref_get(&ns->kref);
> + return ns;
> +}
> +
> +static inline void put_ipc_ns(struct ipc_namespace *ns)
> +{
> + kref_put(&ns->kref, free_ipc_ns);
> +}
> +#else
> +static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
> +    struct ipc_namespace *ns)
> +{
> + if (flags & CLONE_NEWIPC)
> + return ERR_PTR(-EINVAL);
> +
> + return ns;

```

```

> +}
> +
> +static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
> +{
> + return ns;
> +}
> +
> +static inline void put_ipc_ns(struct ipc_namespace *ns)
> +{
> +}
> +#endif
> +#endif
> diff --git a/include/linux/nsproxy.h b/include/linux/nsproxy.h
> diff --git a/include/linux/pid.h b/include/linux/pid.h
> index 4817c66..ac1b47f 100644
> --- a/include/linux/pid.h
> +++ b/include/linux/pid.h
> @@ -122,7 +122,6 @@ extern struct pid *find_ge_pid(int nr, s
>
> extern struct pid *alloc_pid(struct pid_namespace *ns);
> extern void FASTCALL(free_pid(struct pid *pid));
> -extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);
>
> /*
>  * the helpers to get the pid's id seen from different namespaces
> diff --git a/include/linux/pid_namespace.h b/include/linux/pid_namespace.h
> index 0135c76..1f5f915 100644
> --- a/include/linux/pid_namespace.h
> +++ b/include/linux/pid_namespace.h
> @@ -6,6 +6,7 @@
> #include <linux/threads.h>
> #include <linux/nsproxy.h>
> #include <linux/kref.h>
> +#include <linux/err.h>
>
> struct pidmap {
>     atomic_t nr_free;
> @@ -29,6 +30,7 @@ struct pid_namespace {
>
> extern struct pid_namespace init_pid_ns;
>
> +#ifdef CONFIG_NS_PID
> static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
> {
>     if (ns != &init_pid_ns)
> @@ -38,12 +40,37 @@ static inline struct pid_namespace *get_
>
> extern struct pid_namespace *copy_pid_ns(unsigned long flags, struct pid_namespace *ns);

```

```

> extern void free_pid_ns(struct kref *kref);
> +extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);
>
> static inline void put_pid_ns(struct pid_namespace *ns)
> {
>   if (ns != &init_pid_ns)
>     kref_put(&ns->kref, free_pid_ns);
> }
> +#else
> +static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
> +{
> + return ns;
> +}
> +
> +static inline void put_pid_ns(struct pid_namespace *ns)
> +{
> +}
> +
> +static inline struct pid_namespace *copy_pid_ns(unsigned long flags,
> + struct pid_namespace *ns)
> +{
> + if (flags & CLONE_NEWPID)
> + return ERR_PTR(-EINVAL);
> +
> + return ns;
> +}
> +
> +static inline void zap_pid_ns_processes(struct pid_namespace *ns)
> +{
> + BUG();
> +}
> +#endif
>
> static inline struct pid_namespace *task_active_pid_ns(struct task_struct *tsk)
> {
> diff --git a/include/linux/sched.h b/include/linux/sched.h
> diff --git a/include/linux/sem.h b/include/linux/sem.h
> diff --git a/include/linux/user_namespace.h b/include/linux/user_namespace.h
> index b5f41d4..d73080c 100644
> --- a/include/linux/user_namespace.h
> +++ b/include/linux/user_namespace.h
> @@ -17,7 +17,7 @@ struct user_namespace {
>
> extern struct user_namespace init_user_ns;
>
> -#ifdef CONFIG_USER_NS
> +#ifdef CONFIG_NS_UID
>

```

```

> static inline struct user_namespace *get_user_ns(struct user_namespace *ns)
> {
> diff --git a/include/linux/utsname.h b/include/linux/utsname.h
> index 923db99..cea08a9 100644
> --- a/include/linux/utsname.h
> +++ b/include/linux/utsname.h
> @@ -35,6 +35,7 @@ struct new_utsname {
> #include <linux/sched.h>
> #include <linux/kref.h>
> #include <linux/nsproxy.h>
> +#include <linux/err.h>
> #include <asm/atomic.h>
>
> struct uts_namespace {
> @@ -43,6 +44,7 @@ struct uts_namespace {
> };
> extern struct uts_namespace init_uts_ns;
>
> +#ifdef CONFIG_NS_UTS
> static inline void get_uts_ns(struct uts_namespace *ns)
> {
> kref_get(&ns->kref);
> @@ -56,6 +58,25 @@ static inline void put_uts_ns(struct uts
> {
> kref_put(&ns->kref, free_uts_ns);
> }
> +#else
> +static inline void get_uts_ns(struct uts_namespace *ns)
> +{
> +}
> +
> +static inline void put_uts_ns(struct uts_namespace *ns)
> +{
> +}
> +
> +static inline struct uts_namespace *copy_utsname(unsigned long flags,
> + struct uts_namespace *ns)
> +{
> + if (flags & CLONE_NEWUTS)
> + return ERR_PTR(-EINVAL);
> +
> + return ns;
> +}
> +#endif
> +
> static inline struct new_utsname *utsname(void)
> {
> return &current->nsproxy->uts_ns->name;

```

```

> diff --git a/init/Kconfig b/init/Kconfig
> index 684ccfb..ccb1575 100644
> --- a/init/Kconfig
> +++ b/init/Kconfig
> @@ -206,15 +206,6 @@ config TASK_IO_ACCOUNTING
>
>     Say N if unsure.
>
> -config USER_NS
> - bool "User Namespaces (EXPERIMENTAL)"
> - default n
> - depends on EXPERIMENTAL
> - help
> -   Support user namespaces. This allows containers, i.e.
> -   vservers, to use user namespaces to provide different
> -   user info for different servers. If unsure, say N.
> -
> config AUDIT
>   bool "Auditing support"
>   depends on NET
> @@ -369,6 +360,39 @@ config RELAY
>
>     If unsure, say N.
>
> +config NAMESPACES
> + bool "The namespaces support"
> + help
> +   Provides the way to make tasks work with different objects using
> +   the same id
> +
> +config NS_UTS
> + bool "Uname namespace"
> + depends on NAMESPACES
> + help
> +   The utsname namespace
> +
> +config NS_IPC
> + bool "IPC namespace"
> + depends on NAMESPACES && SYSVIPC
> + help
> +   The SYSVIPC ids namespaces
> +
> +config NS_PIDS
> + bool "PID namespace"
> + depends on NAMESPACES

```

I'd put experimental on this one also



```

> + help
> + Tasks see only the pids living in the same namespace and in the
> + child namespaces
> +
> +config NS_UID
> + bool "UID namespace"
> + depends on NAMESPACES && EXPERIMENTAL
> + help
> + Support user namespaces. This allows containers, i.e.
> + vservers, to use user namespaces to provide different
> + user info for different servers. If unsure, say N.
> +
> config BLK_DEV_INITRD
> bool "Initial RAM filesystem and RAM disk (initramfs/initrd) support"
> depends on BROKEN || !FRV
> diff --git a/init/main.c b/init/main.c
> diff --git a/ipc/Makefile b/ipc/Makefile
> index b93bba6..b051636 100644
> --- a/ipc/Makefile
> +++ b/ipc/Makefile
> @@ -7,4 +7,5 @@ obj-$(CONFIG_SYSVIPC) += util.o msgutil.
> obj-$(CONFIG_SYSVIPC_SYSCTL) += ipc_sysctl.o
> obj_mq-$(CONFIG_COMPAT) += compat_mq.o
> obj-$(CONFIG_POSIX_MQUEUE) += mqueue.o msgutil.o $(obj_mq-y)
> +obj-$(CONFIG_NS_IPC) += namespace.o

```

ipc\_namespace.c is a better name.

```

>
> diff --git a/ipc/ipc_sysctl.c b/ipc/ipc_sysctl.c
> index 79e24e8..7f4235b 100644
> --- a/ipc/ipc_sysctl.c
> +++ b/ipc/ipc_sysctl.c
> @@ -14,6 +14,7 @@
> #include <linux/nsproxy.h>
> #include <linux/sysctl.h>
> #include <linux/uaccess.h>
> +#include <linux/ipc_namespace.h>
>
> static void *get_ipc(ctl_table *table)
> {
> diff --git a/ipc/msg.c b/ipc/msg.c
> index b7274db..9406030 100644
> --- a/ipc/msg.c
> +++ b/ipc/msg.c
> @@ -36,6 +36,7 @@
> #include <linux/seq_file.h>
> #include <linux/mutex.h>

```

```

> #include <linux/nsproxy.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/current.h>
> #include <asm/uaccess.h>
> @@ -92,6 +93,7 @@ static void __msg_init_ns(struct ipc_nam
> ipc_init_ids(ids);
> }
>
> +#ifdef CONFIG_NS_IPC
> int msg_init_ns(struct ipc_namespace *ns)
> {
> struct ipc_ids *ids;
> @@ -127,6 +129,7 @@ void msg_exit_ns(struct ipc_namespace *n
> kfree(ns->ids[IPC_MSG_IDS]);
> ns->ids[IPC_MSG_IDS] = NULL;
> }
> +#endif

```

can't this routine be in ipc\_namespace.c to remove the #ifdef CONFIG\_NS\_IPC ? the same apply to the other init routine.

```

> void __init msg_init(void)
> {
> diff --git a/ipc/namespace.c b/ipc/namespace.c

```

i'd call it ipc\_namespace.c

```

> new file mode 100644
> index 0000000..cef1139
> --- /dev/null
> +++ b/ipc/namespace.c
> @@ -0,0 +1,73 @@
> +/*
> + * linux/ipc/namespace.c
> + * Copyright (C) 2006 Pavel Emelyanov <xemul@openvz.org> OpenVZ, SWsoft Inc.
> + */
> +
> +#include <linux/ipc.h>
> +#include <linux/msg.h>
> +#include <linux/ipc_namespace.h>
> +#include <linux/rcupdate.h>
> +#include <linux/nsproxy.h>
> +#include <linux/slab.h>
> +
> +#include "util.h"
> +
> +static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)

```

```

> +{
> + int err;
> + struct ipc_namespace *ns;
> +
> + err = -ENOMEM;
> + ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
> + if (ns == NULL)
> + goto err_mem;
> +
> + err = sem_init_ns(ns);
> + if (err)
> + goto err_sem;
> + err = msg_init_ns(ns);
> + if (err)
> + goto err_msg;
> + err = shm_init_ns(ns);
> + if (err)
> + goto err_shm;
> +
> + kref_init(&ns->kref);
> + return ns;
> +
> +err_shm:
> + msg_exit_ns(ns);
> +err_msg:
> + sem_exit_ns(ns);
> +err_sem:
> + kfree(ns);
> +err_mem:
> + return ERR_PTR(err);
> +}
> +
> +struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
> +{
> + struct ipc_namespace *new_ns;
> +
> + BUG_ON(!ns);
> + get_ipc_ns(ns);
> +
> + if (!(flags & CLONE_NEWIPC))
> + return ns;
> +
> + new_ns = clone_ipc_ns(ns);
> +
> + put_ipc_ns(ns);
> + return new_ns;
> +}
> +

```

```

> +void free_ipc_ns(struct kref *kref)
> +{
> + struct ipc_namespace *ns;
> +
> + ns = container_of(kref, struct ipc_namespace, kref);
> + sem_exit_ns(ns);
> + msg_exit_ns(ns);
> + shm_exit_ns(ns);
> + kfree(ns);
> +}
> diff --git a/ipc/sem.c b/ipc/sem.c
> index 45c7e57..a12d52e 100644
> --- a/ipc/sem.c
> +++ b/ipc/sem.c
> @@ -82,6 +82,7 @@
> #include <linux/seq_file.h>
> #include <linux/mutex.h>
> #include <linux/nsproxy.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/uaccess.h>
> #include "util.h"
> @@ -130,6 +131,7 @@ static void __sem_init_ns(struct ipc_nam
> ipc_init_ids(ids);
> }
>
> +#ifdef CONFIG_NS_IPC
> int sem_init_ns(struct ipc_namespace *ns)
> {
> struct ipc_ids *ids;
> @@ -165,6 +167,7 @@ void sem_exit_ns(struct ipc_namespace *n
> kfree(ns->ids[IPC_SEM_IDS]);
> ns->ids[IPC_SEM_IDS] = NULL;
> }
> +#endif
>
> void __init sem_init (void)
> {
> diff --git a/ipc/shm.c b/ipc/shm.c
> index f28f2a3..07db882 100644
> --- a/ipc/shm.c
> +++ b/ipc/shm.c
> @@ -38,6 +38,7 @@
> #include <linux/mutex.h>
> #include <linux/nsproxy.h>
> #include <linux/mount.h>
> +#include <linux/ipc_namespace.h>
>

```

```

> #include <asm/uaccess.h>
>
> @@ -97,6 +98,7 @@ static void do_shm_rmid(struct ipc_names
>   shm_destroy(ns, shp);
> }
>
> +#ifdef CONFIG_NS_IPC
> int shm_init_ns(struct ipc_namespace *ns)
> {
>   struct ipc_ids *ids;
> @@ -132,6 +134,7 @@ void shm_exit_ns(struct ipc_namespace *n
>   kfree(ns->ids[IPC_SHM_IDS]);
>   ns->ids[IPC_SHM_IDS] = NULL;
> }
> +#endif
>
> void __init shm_init (void)
> {
> diff --git a/ipc/util.c b/ipc/util.c
> index fd29246..44fb843 100644
> --- a/ipc/util.c
> +++ b/ipc/util.c
> @@ -32,6 +32,7 @@
> #include <linux/proc_fs.h>
> #include <linux/audit.h>
> #include <linux/nsproxy.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/unistd.h>
>
> @@ -50,66 +51,6 @@ struct ipc_namespace init_ipc_ns = {
> },
> };
>
> -static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)
> -{
> - int err;
> - struct ipc_namespace *ns;
> -
> - err = -ENOMEM;
> - ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
> - if (ns == NULL)
> - goto err_mem;
> -
> - err = sem_init_ns(ns);
> - if (err)
> - goto err_sem;
> - err = msg_init_ns(ns);

```

```

> - if (err)
> - goto err_msg;
> - err = shm_init_ns(ns);
> - if (err)
> - goto err_shm;
> -
> - kref_init(&ns->kref);
> - return ns;
> -
> -err_shm:
> - msg_exit_ns(ns);
> -err_msg:
> - sem_exit_ns(ns);
> -err_sem:
> - kfree(ns);
> -err_mem:
> - return ERR_PTR(err);
> -}
> -
> -struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
> -{
> - struct ipc_namespace *new_ns;
> -
> - BUG_ON(!ns);
> - get_ipc_ns(ns);
> -
> - if (!(flags & CLONE_NEWIPC))
> - return ns;
> -
> - new_ns = clone_ipc_ns(ns);
> -
> - put_ipc_ns(ns);
> - return new_ns;
> -}
> -
> -void free_ipc_ns(struct kref *kref)
> -{
> - struct ipc_namespace *ns;
> -
> - ns = container_of(kref, struct ipc_namespace, kref);
> - sem_exit_ns(ns);
> - msg_exit_ns(ns);
> - shm_exit_ns(ns);
> - kfree(ns);
> -}
> -
> /**
>  * ipc_init - initialise IPC subsystem

```

```

> *
> diff --git a/ipc/util.h b/ipc/util.h
> index 99414a3..8972402 100644
> --- a/ipc/util.h
> +++ b/ipc/util.h
> @@ -20,6 +20,8 @@ void sem_init (void);
> void msg_init (void);
> void shm_init (void);
>
> +struct ipc_namespace;
> +
> int sem_init_ns(struct ipc_namespace *ns);
> int msg_init_ns(struct ipc_namespace *ns);
> int shm_init_ns(struct ipc_namespace *ns);
> diff --git a/kernel/Makefile b/kernel/Makefile
> index 76f782f..299261c 100644
> --- a/kernel/Makefile
> +++ b/kernel/Makefile
> @@ -4,12 +4,11 @@
>
> obj-y    = sched.o fork.o exec_domain.o panic.o printk.o profile.o \
>   exit.o itimer.o time.o softirq.o resource.o \
> -   sysctl.o capability.o ptrace.o timer.o user.o user_namespace.o \
> +   sysctl.o capability.o ptrace.o timer.o user.o \
>   signal.o sys.o kmod.o workqueue.o pid.o \
>   rcupdate.o extable.o params.o posix-timers.o \
>   kthread.o wait.o kfifo.o sys_ni.o posix-cpu-timers.o mutex.o \
> -   hrtimer.o rwsem.o latency.o nsproxy.o srcu.o \
> -   utsname.o notifier.o sysctl.o
> +   hrtimer.o rwsem.o latency.o nsproxy.o srcu.o notifier.o sysctl.o
>
> obj-$(CONFIG_SYSCTL) += sysctl_check.o
> obj-$(CONFIG_STACKTRACE) += stacktrace.o
> @@ -50,6 +49,8 @@ obj-$(CONFIG_AUDITSYSCALL) += auditsc.o
> obj-$(CONFIG_AUDIT_TREE) += audit_tree.o
> obj-$(CONFIG_KPROBES) += kprobes.o
> obj-$(CONFIG_KGDB) += kgdb.o
> +obj-$(CONFIG_NS_UTS) += utsname.o
> +obj-$(CONFIG_NS_UID) += user_namespace.o
> obj-$(CONFIG_SYSFS) += ksysfs.o
> obj-$(CONFIG_DETECT_SOFTLOCKUP) += softlockup.o
> obj-$(CONFIG_GENERIC_HARDIRQS) += irq/
> diff --git a/kernel/nsproxy.c b/kernel/nsproxy.c
> index ee68964..5a27426 100644
> --- a/kernel/nsproxy.c
> +++ b/kernel/nsproxy.c
> @@ -20,6 +20,7 @@
> #include <linux/mnt_namespace.h>

```

```

> #include <linux/utsname.h>
> #include <linux/pid_namespace.h>
> +#include <linux/ipc_namespace.h>
>
> static struct kmem_cache *nsproxy_cachep;
>
> diff --git a/kernel/pid.c b/kernel/pid.c
> index e2e060e..a247fea 100644
> --- a/kernel/pid.c
> +++ b/kernel/pid.c
> @@ -432,6 +432,7 @@ struct pid *find_ge_pid(int nr, struct p
> }
> EXPORT_SYMBOL_GPL(find_get_pid);
>
> +#ifdef CONFIG_NS_PID
> struct pid_cache {
>   int nr_ids;
>   char name[16];
> @@ -482,6 +483,11 @@ err_alloc:
>   return NULL;
> }
>
> +static __init struct kmem_cache *create_init_pid_cachep(void)
> +{
> + return create_pid_cachep(1);
> +}
> +
> static struct pid_namespace *create_pid_namespace(int level)
> {
>   struct pid_namespace *ns;
> @@ -603,6 +609,13 @@ void zap_pid_ns_processes(struct pid_nam
>   pid_ns->child_reaper = NULL;
>   return;
> }
> +#else
> +static __init struct kmem_cache *create_init_pid_cachep(void)
> +{
> + return kmem_cache_create("pid", sizeof(struct pid), 0,
> +   SLAB_HWCACHE_ALIGN, NULL);
> +}
> +#endif
>
> /*
>  * The pid hash table is scaled according to the amount of memory in the
> @@ -636,7 +649,7 @@ void __init pidmap_init(void)
>   set_bit(0, init_pid_ns.pidmap[0].page);
>   atomic_dec(&init_pid_ns.pidmap[0].nr_free);
>

```



```

> - init_pid_ns.pid_cachep = create_pid_cachep(1);
> + init_pid_ns.pid_cachep = create_init_pid_cachep();
>   if (init_pid_ns.pid_cachep == NULL)
>     panic("Can't create pid_1 cachep\n");
>
> diff --git a/kernel/user.c b/kernel/user.c
> index b45f55f..d9cac1d 100644
> --- a/kernel/user.c
> +++ b/kernel/user.c
> @@ -17,6 +17,15 @@
> #include <linux/module.h>
> #include <linux/user_namespace.h>
>
> +struct user_namespace init_user_ns = {
> + .kref = {
> + .refcount = ATOMIC_INIT(2),
> + },
> + .root_user = &root_user,
> +};
> +
> +EXPORT_SYMBOL_GPL(init_user_ns);
> +
> /*
>  * UID task count cache, to get fast user lookup in "alloc_uid"
>  * when changing user ID's (ie setuid() and friends).
> @@ -199,6 +208,7 @@ void switch_uid(struct user_struct *new_
>   suid_keys(current);
> }
>
> +#ifdef CONFIG_NS_UID
> void release_uids(struct user_namespace *ns)
> {
>   int i;
> @@ -223,6 +233,7 @@ void release_uids(struct user_namespace
>
>   free_uid(ns->root_user);
> }
> +#endif
>
> static int __init uid_cache_init(void)
> {
> diff --git a/kernel/user_namespace.c b/kernel/user_namespace.c
> index 7af90fc..4c90062 100644
> --- a/kernel/user_namespace.c
> +++ b/kernel/user_namespace.c
> @@ -10,17 +10,6 @@
> #include <linux/nsproxy.h>
> #include <linux/user_namespace.h>

```

```

>
> -struct user_namespace init_user_ns = {
> - .kref = {
> - .refcount = ATOMIC_INIT(2),
> - },
> - .root_user = &root_user,
> -};
> -
> -EXPORT_SYMBOL_GPL(init_user_ns);
> -
> -#ifdef CONFIG_USER_NS
> -
> /*
>  * Clone a new ns copying an original user ns, setting refcount to 1
>  * @old_ns: namespace to clone
> @@ -84,5 +73,3 @@ void free_user_ns(struct kref *kref)
>   release_uids(ns);
>   kfree(ns);
> }
> -
> -#endif /* CONFIG_USER_NS */
> diff --git a/kernel/utsname.c b/kernel/utsname.c
>

```

---

Containers mailing list

Containers@lists.linux-foundation.org

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

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---

Subject: Re: Playing with namespaces and bloat-o-meeter

Posted by [serue](#) on Wed, 26 Sep 2007 13:30:19 GMT

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---

Quoting Cedric Le Goater (clg@fr.ibm.com):

> Cedric Le Goater wrote:

> > Serge E. Hallyn wrote:

> > > Quoting Pavel Emelyanov (xemul@openvz.org):

> > > > Hi, guys!

> > > >

> > > > I've noticed that compiling out all the core related to

> > > > cloning and cleaning the new namespace saves us more than

> > > > a Kbyte (!) from the vmlinux.

> > > >

> > > > add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)

> > > > function                    old    new   delta

> > > > copy\_user\_ns                -    181   +181

> > > > copy\_ipc                    -    149   +149

```

> >>> copy_utsname          - 120 +120
> >>> shm_exit_ns           - 106 +106
> >>> sem_exit_ns           - 106 +106
> >>> msg_exit_ns           - 106 +106
> >>> freeary               - 100 +100
> >>> release_uids          - 95 +95
> >>> freeque               - 92 +92
> >>> free_nsproxy          48 99 +51
> >>> __sem_init_ns         - 45 +45
> >>> shm_init_ns           - 42 +42
> >>> sem_init_ns           - 42 +42
> >>> msg_init_ns           - 42 +42
> >>> __shm_init_ns         - 38 +38
> >>> create_new_namespaces      300 335 +35
> >>> __msg_init_ns         - 31 +31
> >>> sysvipc_proc_release    5 35 +30
> >>> free_ipc_ns           - 30 +30
> >>> do_shm_rmid           - 29 +29
> >>> shm_release           18 39 +21
> >>> free_user_ns          - 16 +16
> >>> sysvipc_proc_open      100 111 +11
> >>> do_shmat              778 787 +9
> >>> free_uts_ns           - 5 +5
> >>> sys_shmctl            1934 1907 -27
> >>> msg_init              82 47 -35
> >>> shm_init              92 47 -45
> >>> sem_init              99 44 -55
> >>> sys_msgctl            1394 1311 -83
> >>> sys_semctl            2123 2032 -91
> >>>
> >>> Since there already were some questions like "do I need it
> >>> on my cellphone?" in reply to pid namespaces patches and
> >>> so on, why don't we make ALL the namespaces cloning code
> >>> under the config option to make those people happy?
> >>>
> >>> Here's the proposed patch.
> >> How about a single config variable for all namespaces?
> >
> > yes good idea.
>
>
> oops, that done already in the patch : CONFIG_NAMESPACES
>
> thanks :)

```

That at least organizes them all in Kconfig. I meant one config variable, period.

Then instead of adding CONFIG\_USER\_NS and such while they are experimental, put all experimental namespaces (i.e. maybe soon user and network) under CONFIG\_NAMESPACES\_EXPERIMENTAL.

-serge

---

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---

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Subject: Re: Playing with namespaces and bloat-o-meeter

Posted by [Pavel Emelianov](#) on Wed, 26 Sep 2007 14:08:11 GMT

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Cedric Le Goater wrote:

> Pavel Emelyanov wrote:

>> Hi, guys!

>>

>> I've noticed that compiling out all the core related to

>> cloning and cleaning the new namespace saves us more than

>> a Kbyte (!) from the vmlinux.

>

> cool.

>

> but compared to the 5KB pid ns is adding, it's not much. I guess

> anything that can be saved is good to save when you run on a cell.

Yup, but I've already sent 3 patches to Andrew that save 1.5 KB  
so we have already managed to get a half for cell users ;)

>> add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)

>> function	old	new	delta
>> copy_user_ns	-	181	+181
>> copy_ipcns	-	149	+149
>> copy_utsname	-	120	+120
>> shm_exit_ns	-	106	+106
>> sem_exit_ns	-	106	+106
>> msg_exit_ns	-	106	+106
>> freeary	-	100	+100
>> release_uids	-	95	+95
>> freeque	-	92	+92
>> free_nsproxy	48	99	+51
>> __sem_init_ns	-	45	+45
>> shm_init_ns	-	42	+42
>> sem_init_ns	-	42	+42
>> msg_init_ns	-	42	+42
>> __shm_init_ns	-	38	+38

```

>> create_new_namespaces          300  335  +35
>> __msg_init_ns                   -   31  +31
>> sysvipc_proc_release            5   35  +30
>> free_ipc_ns                     -   30  +30
>> do_shm_rmid                     -   29  +29
>> shm_release                     18   39  +21
>> free_user_ns                    -   16  +16
>> sysvipc_proc_open              100  111  +11
>> do_shmat                        778  787  +9
>> free_uts_ns                     -    5  +5
>> sys_shmctl                     1934 1907 -27
>> msg_init                        82   47 -35
>> shm_init                       92   47 -45
>> sem_init                       99   44 -55
>> sys_msgctl                     1394 1311 -83
>> sys_semctl                     2123 2032 -91
>>
>> Since there already were some questions like "do I need it
>> on my cellphone?" in reply to pid namespaces patches and
>> so on, why don't we make ALL the namespaces cloning code
>> under the config option to make those people happy?
>>
>> Here's the proposed patch.
>
> I think I'm ok with it but it would be easier to review if you
> could split it in little patchlets, at least one for each
> namespace. diffstats are welcome also :)
>
>> Signed-off-by: Pavel Emelyanov <xemul@openvz.org>
>>
>> ---
>>
>> diff --git a/include/linux/ipc.h b/include/linux/ipc.h
>> index 96988d1..b882610 100644
>> --- a/include/linux/ipc.h
>> +++ b/include/linux/ipc.h
>> @@ -100,56 +100,6 @@ struct kern_ipc_perm
>> void *security;
>> };
>>
>> -struct ipc_ids;
>> -struct ipc_namespace {
>> - struct kref kref;
>> - struct ipc_ids *ids[3];
>> -
>> - int sem_ctls[4];
>> - int used_sems;
>> -

```

```

>> - int msg_ctlmax;
>> - int msg_ctlmnb;
>> - int msg_ctlmni;
>> -
>> - size_t shm_ctlmax;
>> - size_t shm_ctlall;
>> - int shm_ctlmni;
>> - int shm_tot;
>> -};
>> -
>> -extern struct ipc_namespace init_ipc_ns;
>> -
>> -#ifdef CONFIG_SYSVIPC
>> -#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
>> -extern void free_ipc_ns(struct kref *kref);
>> -extern struct ipc_namespace *copy_ipcs(unsigned long flags,
>> -    struct ipc_namespace *ns);
>> -#else
>> -#define INIT_IPC_NS(ns)
>> -static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
>> -    struct ipc_namespace *ns)
>> -{
>> - return ns;
>> -}
>> -#endif
>> -
>> -static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
>> -{
>> -#ifdef CONFIG_SYSVIPC
>> - if (ns)
>> - kref_get(&ns->kref);
>> -#endif
>> - return ns;
>> -}
>> -
>> -static inline void put_ipc_ns(struct ipc_namespace *ns)
>> -{
>> -#ifdef CONFIG_SYSVIPC
>> - kref_put(&ns->kref, free_ipc_ns);
>> -#endif
>> -}
>> -
>> -#endif /* __KERNEL__ */
>>
>> -#endif /* _LINUX_IPC_H */
>> diff --git a/include/linux/ipc_namespace.h b/include/linux/ipc_namespace.h
>> new file mode 100644
>> index 0000000..89f51f8

```

```

>> --- /dev/null
>> +++ b/include/linux/ipc_namespace.h
>
> that's something i wanted to do. thanks.
>
>> @@ -0,0 +1,67 @@
>> + #ifndef __IPC_NAMESPACE_H__
>> + #define __IPC_NAMESPACE_H__
>> +
>> + #include <linux/err.h>
>> +
>> + struct ipc_ids;
>> + struct ipc_namespace {
>> + struct kref kref;
>> + struct ipc_ids *ids[3];
>> +
>> + int sem_ctls[4];
>> + int used_sems;
>> +
>> + int msg_ctlmax;
>> + int msg_ctlmnb;
>> + int msg_ctlmni;
>> +
>> + size_t shm_ctlmax;
>> + size_t shm_ctlall;
>> + int shm_ctlmni;
>> + int shm_tot;
>> +};
>> +
>> + extern struct ipc_namespace init_ipc_ns;
>> +
>> + #ifdef CONFIG_SYSVIPC
>> + #define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
>> + #else
>> + #define INIT_IPC_NS(ns)
>> + #endif
>> +
>> + #ifdef CONFIG_NS_IPC
>
> ok so you're readding that flag. please check ipc/ipc_sysctl.c there might
> be some surprises.
>
> check the compile with CONFIG_SYSCTL=n
>
>> + extern void free_ipc_ns(struct kref *kref);
>> + extern struct ipc_namespace *copy_ipcs(unsigned long flags,
>> + struct ipc_namespace *ns);
>> +

```

```

>> +static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
>> +{
>> + if (ns)
>> + kref_get(&ns->kref);
>> + return ns;
>> +}
>> +
>> +static inline void put_ipc_ns(struct ipc_namespace *ns)
>> +{
>> + kref_put(&ns->kref, free_ipc_ns);
>> +}
>> +#else
>> +static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
>> + struct ipc_namespace *ns)
>> +{
>> + if (flags & CLONE_NEWIPC)
>> + return ERR_PTR(-EINVAL);
>> +
>> + return ns;
>> +}
>> +
>> +static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
>> +{
>> + return ns;
>> +}
>> +
>> +static inline void put_ipc_ns(struct ipc_namespace *ns)
>> +{
>> +}
>> +#endif
>> +#endif
>> diff --git a/include/linux/nsproxy.h b/include/linux/nsproxy.h
>> diff --git a/include/linux/pid.h b/include/linux/pid.h
>> index 4817c66..ac1b47f 100644
>> --- a/include/linux/pid.h
>> +++ b/include/linux/pid.h
>> @@ -122,7 +122,6 @@ extern struct pid *find_ge_pid(int nr, s
>>
>> extern struct pid *alloc_pid(struct pid_namespace *ns);
>> extern void FASTCALL(free_pid(struct pid *pid));
>> -extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);
>>
>> /*
>>  * the helpers to get the pid's id seen from different namespaces
>> diff --git a/include/linux/pid_namespace.h b/include/linux/pid_namespace.h
>> index 0135c76..1f5f915 100644
>> --- a/include/linux/pid_namespace.h
>> +++ b/include/linux/pid_namespace.h

```



```

>> @@ -6,6 +6,7 @@
>> #include <linux/threads.h>
>> #include <linux/nsproxy.h>
>> #include <linux/kref.h>
>> +#include <linux/err.h>
>>
>> struct pidmap {
>>     atomic_t nr_free;
>> @@ -29,6 +30,7 @@ struct pid_namespace {
>>
>> extern struct pid_namespace init_pid_ns;
>>
>> +ifdef CONFIG_NS_PID
>> static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
>> {
>>     if (ns != &init_pid_ns)
>> @@ -38,12 +40,37 @@ static inline struct pid_namespace *get_
>>
>> extern struct pid_namespace *copy_pid_ns(unsigned long flags, struct pid_namespace *ns);
>> extern void free_pid_ns(struct kref *kref);
>> +extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);
>>
>> static inline void put_pid_ns(struct pid_namespace *ns)
>> {
>>     if (ns != &init_pid_ns)
>>         kref_put(&ns->kref, free_pid_ns);
>> }
>> +else
>> +static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
>> +{
>> + return ns;
>> +}
>> +
>> +static inline void put_pid_ns(struct pid_namespace *ns)
>> +{
>> +}
>> +
>> +static inline struct pid_namespace *copy_pid_ns(unsigned long flags,
>> + struct pid_namespace *ns)
>> +{
>> + if (flags & CLONE_NEWPID)
>> +     return ERR_PTR(-EINVAL);
>> +
>> + return ns;
>> +}
>> +
>> +static inline void zap_pid_ns_processes(struct pid_namespace *ns)
>> +{

```

```

>> + BUG();
>> +}
>> +#endif
>>
>> static inline struct pid_namespace *task_active_pid_ns(struct task_struct *tsk)
>> {
>> diff --git a/include/linux/sched.h b/include/linux/sched.h
>> diff --git a/include/linux/sem.h b/include/linux/sem.h
>> diff --git a/include/linux/user_namespace.h b/include/linux/user_namespace.h
>> index b5f41d4..d73080c 100644
>> --- a/include/linux/user_namespace.h
>> +++ b/include/linux/user_namespace.h
>> @@ -17,7 +17,7 @@ struct user_namespace {
>>
>> extern struct user_namespace init_user_ns;
>>
>> -#ifdef CONFIG_USER_NS
>> +#ifdef CONFIG_NS_UID
>>
>> static inline struct user_namespace *get_user_ns(struct user_namespace *ns)
>> {
>> diff --git a/include/linux/utsname.h b/include/linux/utsname.h
>> index 923db99..cea08a9 100644
>> --- a/include/linux/utsname.h
>> +++ b/include/linux/utsname.h
>> @@ -35,6 +35,7 @@ struct new_utsname {
>> #include <linux/sched.h>
>> #include <linux/kref.h>
>> #include <linux/nsproxy.h>
>> +#include <linux/err.h>
>> #include <asm/atomic.h>
>>
>> struct uts_namespace {
>> @@ -43,6 +44,7 @@ struct uts_namespace {
>> };
>> extern struct uts_namespace init_uts_ns;
>>
>> +#ifdef CONFIG_NS_UTS
>> static inline void get_uts_ns(struct uts_namespace *ns)
>> {
>> kref_get(&ns->kref);
>> @@ -56,6 +58,25 @@ static inline void put_uts_ns(struct uts
>> {
>> kref_put(&ns->kref, free_uts_ns);
>> }
>> +#else
>> +static inline void get_uts_ns(struct uts_namespace *ns)
>> +{

```

```

>> +}
>> +
>> +static inline void put_uts_ns(struct uts_namespace *ns)
>> +{
>> +}
>> +
>> +static inline struct uts_namespace *copy_utsname(unsigned long flags,
>> + struct uts_namespace *ns)
>> +{
>> + if (flags & CLONE_NEWUTS)
>> + return ERR_PTR(-EINVAL);
>> +
>> + return ns;
>> +}
>> +#endif
>> +
>> static inline struct new_utsname *utsname(void)
>> {
>> return &current->nsproxy->uts_ns->name;
>> diff --git a/init/Kconfig b/init/Kconfig
>> index 684ccfb..ccb1575 100644
>> --- a/init/Kconfig
>> +++ b/init/Kconfig
>> @@ -206,15 +206,6 @@ config TASK_IO_ACCOUNTING
>>
>> Say N if unsure.
>>
>> -config USER_NS
>> - bool "User Namespaces (EXPERIMENTAL)"
>> - default n
>> - depends on EXPERIMENTAL
>> - help
>> - Support user namespaces. This allows containers, i.e.
>> - vservers, to use user namespaces to provide different
>> - user info for different servers. If unsure, say N.
>> -
>> config AUDIT
>> bool "Auditing support"
>> depends on NET
>> @@ -369,6 +360,39 @@ config RELAY
>>
>> If unsure, say N.
>>
>> +config NAMESPACES
>> + bool "The namespaces support"
>> + help
>> + Provides the way to make tasks work with different objects using
>> + the same id

```

```

>> +
>> +config NS_UTS
>> + bool "Uname namespace"
>> + depends on NAMESPACES
>> + help
>> +   The utsname namespace
>> +
>> +config NS_IPC
>> + bool "IPC namespace"
>> + depends on NAMESPACES && SYSVIPC
>> + help
>> +   The SYSVIPC ids namespaces
>> +
>> +config NS_PIDS
>> + bool "PID namespace"
>> + depends on NAMESPACES
>
> I'd put experimental on this one also
>
>> + help
>> +   Tasks see only the pids living in the same namespace and in the
>> +   child namespaces
>> +
>> +config NS_UID
>> + bool "UID namespace"
>> + depends on NAMESPACES && EXPERIMENTAL
>> + help
>> +   Support user namespaces. This allows containers, i.e.
>> +   vservers, to use user namespaces to provide different
>> +   user info for different servers. If unsure, say N.
>> +
>> config BLK_DEV_INITRD
>> bool "Initial RAM filesystem and RAM disk (initramfs/initrd) support"
>> depends on BROKEN || !FRV
>> diff --git a/init/main.c b/init/main.c
>> diff --git a/ipc/Makefile b/ipc/Makefile
>> index b93bba6..b051636 100644
>> --- a/ipc/Makefile
>> +++ b/ipc/Makefile
>> @@ -7,4 +7,5 @@ obj-$(CONFIG_SYSVIPC) += util.o msgutil.
>> obj-$(CONFIG_SYSVIPC_SYSCTL) += ipc_sysctl.o
>> obj_mq-$(CONFIG_COMPAT) += compat_mq.o
>> obj-$(CONFIG_POSIX_MQUEUE) += mqueue.o msgutil.o $(obj_mq-y)
>> +obj-$(CONFIG_NS_IPC) += namespace.o
>
> ipc_namespace.c is a better name.
>
>> diff --git a/ipc/ipc_sysctl.c b/ipc/ipc_sysctl.c

```

```

>> index 79e24e8..7f4235b 100644
>> --- a/ipc/ipc_sysctl.c
>> +++ b/ipc/ipc_sysctl.c
>> @@ -14,6 +14,7 @@
>> #include <linux/nsproxy.h>
>> #include <linux/sysctl.h>
>> #include <linux/uaccess.h>
>> +#include <linux/ipc_namespace.h>
>>
>> static void *get_ipc(ctl_table *table)
>> {
>> diff --git a/ipc/msg.c b/ipc/msg.c
>> index b7274db..9406030 100644
>> --- a/ipc/msg.c
>> +++ b/ipc/msg.c
>> @@ -36,6 +36,7 @@
>> #include <linux/seq_file.h>
>> #include <linux/mutex.h>
>> #include <linux/nsproxy.h>
>> +#include <linux/ipc_namespace.h>
>>
>> #include <asm/current.h>
>> #include <asm/uaccess.h>
>> @@ -92,6 +93,7 @@ static void __msg_init_ns(struct ipc_nam
>> ipc_init_ids(ids);
>> }
>>
>> +#ifdef CONFIG_NS_IPC
>> int msg_init_ns(struct ipc_namespace *ns)
>> {
>> struct ipc_ids *ids;
>> @@ -127,6 +129,7 @@ void msg_exit_ns(struct ipc_namespace *n
>> kfree(ns->ids[IPC_MSG_IDS]);
>> ns->ids[IPC_MSG_IDS] = NULL;
>> }
>> +#endif
>
> can't this routine be in ipc_namespace.c to remove the #ifdef
> CONFIG_NS_IPC ? the same apply to the other init routine.
>
>> void __init msg_init(void)
>> {
>> diff --git a/ipc/namespace.c b/ipc/namespace.c
>
> i'd call it ipc_namespace.c
>
>> new file mode 100644
>> index 0000000..cef1139

```

```

>> --- /dev/null
>> +++ b/ipc/namespace.c
>> @@ -0,0 +1,73 @@
>> +/*
>> + * linux/ipc/namespace.c
>> + * Copyright (C) 2006 Pavel Emelyanov <xemul@openvz.org> OpenVZ, SWsoft Inc.
>> + */
>> +
>> + #include <linux/ipc.h>
>> + #include <linux/msg.h>
>> + #include <linux/ipc_namespace.h>
>> + #include <linux/rcupdate.h>
>> + #include <linux/nsproxy.h>
>> + #include <linux/slab.h>
>> +
>> + #include "util.h"
>> +
>> + static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)
>> + {
>> + int err;
>> + struct ipc_namespace *ns;
>> +
>> + err = -ENOMEM;
>> + ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
>> + if (ns == NULL)
>> + goto err_mem;
>> +
>> + err = sem_init_ns(ns);
>> + if (err)
>> + goto err_sem;
>> + err = msg_init_ns(ns);
>> + if (err)
>> + goto err_msg;
>> + err = shm_init_ns(ns);
>> + if (err)
>> + goto err_shm;
>> +
>> + kref_init(&ns->kref);
>> + return ns;
>> +
>> +err_shm:
>> + msg_exit_ns(ns);
>> +err_msg:
>> + sem_exit_ns(ns);
>> +err_sem:
>> + kfree(ns);
>> +err_mem:
>> + return ERR_PTR(err);

```

```

>> +}
>> +
>> +struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
>> +{
>> + struct ipc_namespace *new_ns;
>> +
>> + BUG_ON(!ns);
>> + get_ipc_ns(ns);
>> +
>> + if (!(flags & CLONE_NEWIPC))
>> + return ns;
>> +
>> + new_ns = clone_ipc_ns(ns);
>> +
>> + put_ipc_ns(ns);
>> + return new_ns;
>> +}
>> +
>> +void free_ipc_ns(struct kref *kref)
>> +{
>> + struct ipc_namespace *ns;
>> +
>> + ns = container_of(kref, struct ipc_namespace, kref);
>> + sem_exit_ns(ns);
>> + msg_exit_ns(ns);
>> + shm_exit_ns(ns);
>> + kfree(ns);
>> +}
>> diff --git a/ipc/sem.c b/ipc/sem.c
>> index 45c7e57..a12d52e 100644
>> --- a/ipc/sem.c
>> +++ b/ipc/sem.c
>> @@ -82,6 +82,7 @@
>> #include <linux/seq_file.h>
>> #include <linux/mutex.h>
>> #include <linux/nsproxy.h>
>> +#include <linux/ipc_namespace.h>
>>
>> #include <asm/uaccess.h>
>> #include "util.h"
>> @@ -130,6 +131,7 @@ static void __sem_init_ns(struct ipc_nam
>> ipc_init_ids(ids);
>> }
>>
>> +#ifdef CONFIG_NS_IPC
>> int sem_init_ns(struct ipc_namespace *ns)
>> {
>> struct ipc_ids *ids;

```

```

>> @@ -165,6 +167,7 @@ void sem_exit_ns(struct ipc_namespace *n
>> kfree(ns->ids[IPC_SEM_IDS]);
>> ns->ids[IPC_SEM_IDS] = NULL;
>> }
>> +#endif
>>
>> void __init sem_init (void)
>> {
>> diff --git a/ipc/shm.c b/ipc/shm.c
>> index f28f2a3..07db882 100644
>> --- a/ipc/shm.c
>> +++ b/ipc/shm.c
>> @@ -38,6 +38,7 @@
>> #include <linux/mutex.h>
>> #include <linux/nsproxy.h>
>> #include <linux/mount.h>
>> +#include <linux/ipc_namespace.h>
>>
>> #include <asm/uaccess.h>
>>
>> @@ -97,6 +98,7 @@ static void do_shm_rmid(struct ipc_names
>> shm_destroy(ns, shp);
>> }
>>
>> +#ifdef CONFIG_NS_IPC
>> int shm_init_ns(struct ipc_namespace *ns)
>> {
>> struct ipc_ids *ids;
>> @@ -132,6 +134,7 @@ void shm_exit_ns(struct ipc_namespace *n
>> kfree(ns->ids[IPC_SHM_IDS]);
>> ns->ids[IPC_SHM_IDS] = NULL;
>> }
>> +#endif
>>
>> void __init shm_init (void)
>> {
>> diff --git a/ipc/util.c b/ipc/util.c
>> index fd29246..44fb843 100644
>> --- a/ipc/util.c
>> +++ b/ipc/util.c
>> @@ -32,6 +32,7 @@
>> #include <linux/proc_fs.h>
>> #include <linux/audit.h>
>> #include <linux/nsproxy.h>
>> +#include <linux/ipc_namespace.h>
>>
>> #include <asm/unistd.h>
>>

```



```

>> @@ -50,66 +51,6 @@ struct ipc_namespace init_ipc_ns = {
>> },
>> };
>>
>> -static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)
>> -{
>> - int err;
>> - struct ipc_namespace *ns;
>> -
>> - err = -ENOMEM;
>> - ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
>> - if (ns == NULL)
>> - goto err_mem;
>> -
>> - err = sem_init_ns(ns);
>> - if (err)
>> - goto err_sem;
>> - err = msg_init_ns(ns);
>> - if (err)
>> - goto err_msg;
>> - err = shm_init_ns(ns);
>> - if (err)
>> - goto err_shm;
>> -
>> - kref_init(&ns->kref);
>> - return ns;
>> -
>> -err_shm:
>> - msg_exit_ns(ns);
>> -err_msg:
>> - sem_exit_ns(ns);
>> -err_sem:
>> - kfree(ns);
>> -err_mem:
>> - return ERR_PTR(err);
>> -}
>> -
>> -struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
>> -{
>> - struct ipc_namespace *new_ns;
>> -
>> - BUG_ON(!ns);
>> - get_ipc_ns(ns);
>> -
>> - if (!(flags & CLONE_NEWIPC))
>> - return ns;
>> -
>> - new_ns = clone_ipc_ns(ns);

```

```

>> -
>> - put_ipc_ns(ns);
>> - return new_ns;
>> -}
>> -
>> -void free_ipc_ns(struct kref *kref)
>> -{
>> - struct ipc_namespace *ns;
>> -
>> - ns = container_of(kref, struct ipc_namespace, kref);
>> - sem_exit_ns(ns);
>> - msg_exit_ns(ns);
>> - shm_exit_ns(ns);
>> - kfree(ns);
>> -}
>> -
>> /**
>>  * ipc_init - initialise IPC subsystem
>>  *
>> diff --git a/ipc/util.h b/ipc/util.h
>> index 99414a3..8972402 100644
>> --- a/ipc/util.h
>> +++ b/ipc/util.h
>> @@ -20,6 +20,8 @@ void sem_init (void);
>> void msg_init (void);
>> void shm_init (void);
>>
>> +struct ipc_namespace;
>> +
>> int sem_init_ns(struct ipc_namespace *ns);
>> int msg_init_ns(struct ipc_namespace *ns);
>> int shm_init_ns(struct ipc_namespace *ns);
>> diff --git a/kernel/Makefile b/kernel/Makefile
>> index 76f782f..299261c 100644
>> --- a/kernel/Makefile
>> +++ b/kernel/Makefile
>> @@ -4,12 +4,11 @@
>>
>> obj-y    = sched.o fork.o exec_domain.o panic.o printk.o profile.o \
>>          exit.o itimer.o time.o softirq.o resource.o \
>> - sysctl.o capability.o ptrace.o timer.o user.o user_namespace.o \
>> + sysctl.o capability.o ptrace.o timer.o user.o \
>>          signal.o sys.o kmod.o workqueue.o pid.o \
>>          rcupdate.o extable.o params.o posix-timers.o \
>>          kthread.o wait.o kfifo.o sys_ni.o posix-cpu-timers.o mutex.o \
>> - hrtimer.o rwsem.o latency.o nsproxy.o srcu.o \
>> - utsname.o notifier.o sysctl.o
>> + hrtimer.o rwsem.o latency.o nsproxy.o srcu.o notifier.o sysctl.o

```

```

>>
>> obj-$(CONFIG_SYSCTL) += sysctl_check.o
>> obj-$(CONFIG_STACKTRACE) += stacktrace.o
>> @@ -50,6 +49,8 @@ obj-$(CONFIG_AUDITSYSCALL) += auditsc.o
>> obj-$(CONFIG_AUDIT_TREE) += audit_tree.o
>> obj-$(CONFIG_KPROBES) += kprobes.o
>> obj-$(CONFIG_KGDB) += kgdb.o
>> +obj-$(CONFIG_NS_UTS) += utsname.o
>> +obj-$(CONFIG_NS_UID) += user_namespace.o
>> obj-$(CONFIG_SYSFS) += ksysfs.o
>> obj-$(CONFIG_DETECT_SOFTLOCKUP) += softlockup.o
>> obj-$(CONFIG_GENERIC_HARDIRQS) += irq/
>> diff --git a/kernel/nsproxy.c b/kernel/nsproxy.c
>> index ee68964..5a27426 100644
>> --- a/kernel/nsproxy.c
>> +++ b/kernel/nsproxy.c
>> @@ -20,6 +20,7 @@
>> #include <linux/mnt_namespace.h>
>> #include <linux/utsname.h>
>> #include <linux/pid_namespace.h>
>> +#include <linux/ipc_namespace.h>
>>
>> static struct kmem_cache *nsproxy_cachep;
>>
>> diff --git a/kernel/pid.c b/kernel/pid.c
>> index e2e060e..a247fea 100644
>> --- a/kernel/pid.c
>> +++ b/kernel/pid.c
>> @@ -432,6 +432,7 @@ struct pid *find_ge_pid(int nr, struct p
>> }
>> EXPORT_SYMBOL_GPL(find_get_pid);
>>
>> +ifdef CONFIG_NS_PID
>> struct pid_cache {
>> int nr_ids;
>> char name[16];
>> @@ -482,6 +483,11 @@ err_alloc:
>> return NULL;
>> }
>>
>> +static __init struct kmem_cache *create_init_pid_cachep(void)
>> +{
>> + return create_pid_cachep(1);
>> +}
>> +
>> static struct pid_namespace *create_pid_namespace(int level)
>> {
>> struct pid_namespace *ns;

```

```

>> @@ -603,6 +609,13 @@ void zap_pid_ns_processes(struct pid_nam
>> pid_ns->child_reaper = NULL;
>> return;
>> }
>> +#else
>> +static __init struct kmem_cache *create_init_pid_cachep(void)
>> +{
>> + return kmem_cache_create("pid", sizeof(struct pid), 0,
>> + SLAB_HWCACHE_ALIGN, NULL);
>> +}
>> +#endif
>>
>> /*
>> * The pid hash table is scaled according to the amount of memory in the
>> @@ -636,7 +649,7 @@ void __init pidmap_init(void)
>> set_bit(0, init_pid_ns.pidmap[0].page);
>> atomic_dec(&init_pid_ns.pidmap[0].nr_free);
>>
>> - init_pid_ns.pid_cachep = create_pid_cachep(1);
>> + init_pid_ns.pid_cachep = create_init_pid_cachep();
>> if (init_pid_ns.pid_cachep == NULL)
>> panic("Can't create pid_1 cachep\n");
>>
>> diff --git a/kernel/user.c b/kernel/user.c
>> index b45f55f..d9cac1d 100644
>> --- a/kernel/user.c
>> +++ b/kernel/user.c
>> @@ -17,6 +17,15 @@
>> #include <linux/module.h>
>> #include <linux/user_namespace.h>
>>
>> +struct user_namespace init_user_ns = {
>> + .kref = {
>> + .refcount = ATOMIC_INIT(2),
>> + },
>> + .root_user = &root_user,
>> +};
>> +
>> +EXPORT_SYMBOL_GPL(init_user_ns);
>> +
>> /*
>> * UID task count cache, to get fast user lookup in "alloc_uid"
>> * when changing user ID's (ie setuid() and friends).
>> @@ -199,6 +208,7 @@ void switch_uid(struct user_struct *new_
>> suid_keys(current);
>> }
>>
>>
>> +#ifdef CONFIG_NS_UID

```

```

>> void release_uids(struct user_namespace *ns)
>> {
>>     int i;
>> @@ -223,6 +233,7 @@ void release_uids(struct user_namespace
>>
>>     free_uid(ns->root_user);
>> }
>> +#endif
>>
>> static int __init uid_cache_init(void)
>> {
>> diff --git a/kernel/user_namespace.c b/kernel/user_namespace.c
>> index 7af90fc..4c90062 100644
>> --- a/kernel/user_namespace.c
>> +++ b/kernel/user_namespace.c
>> @@ -10,17 +10,6 @@
>> #include <linux/nsproxy.h>
>> #include <linux/user_namespace.h>
>>
>> -struct user_namespace init_user_ns = {
>> - .kref = {
>> - .refcount = ATOMIC_INIT(2),
>> - },
>> - .root_user = &root_user,
>> -};
>> -
>> -EXPORT_SYMBOL_GPL(init_user_ns);
>> -
>> -#ifdef CONFIG_USER_NS
>> -
>> /*
>>  * Clone a new ns copying an original user ns, setting refcount to 1
>>  * @old_ns: namespace to clone
>> @@ -84,5 +73,3 @@ void free_user_ns(struct kref *kref)
>>     release_uids(ns);
>>     kfree(ns);
>> }
>> -
>> -#endif /* CONFIG_USER_NS */
>> diff --git a/kernel/utsname.c b/kernel/utsname.c
>>
>
>

```

Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [Pavel Emelianov](#) on Wed, 26 Sep 2007 14:20:51 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Pavel Emelianov wrote:

> Hi, guys!

>

> I've noticed that compiling out all the core related to

> cloning and cleaning the new namespace saves us more than

> a Kbyte (!) from the vmlinux.

Sorry guys, this patch is a bit broken :P

CONFIG\_NS\_PID is used in kernel/pid.c while the real  
option is CONFIG\_NS\_PIDS :(

I've remade the patch and it actually saves 2KB :) I  
will send it to Andrew soon.

add/remove: 27/0 grow/shrink: 11/7 up/down: 2477/-340 (2137)

function	old	new	delta
copy_pid_ns	-	537	+537
copy_user_ns	-	181	+181
copy_ipcs	-	149	+149
zap_pid_ns_processes		- 130	+130
copy_utsname	-	120	+120
shm_exit_ns	-	106	+106
sem_exit_ns	-	106	+106
msg_exit_ns	-	106	+106
freeary	-	100	+100
release_uids	-	95	+95
freeque	-	92	+92
free_nsproxy	48	123	+75
create_new_namespaces		300 358	+58
free_pid_ns	-	56	+56
pid_namespaces_init	-	48	+48
__sem_init_ns	-	45	+45
shm_init_ns	-	42	+42
sem_init_ns	-	42	+42
msg_init_ns	-	42	+42
__shm_init_ns	-	38	+38
__msg_init_ns	-	31	+31
sysvipc_proc_release		5 35	+30
proc_kill_sb	5	35	+30
free_ipc_ns	-	30	+30
do_shm_rmid	-	29	+29
proc_set_super	13	38	+25
shm_release	18	39	+21
put_pid	75	95	+20

alloc_pid	687	706	+19
pid_caches_mutex	-	16	+16
free_user_ns	-	16	+16
sysvipc_proc_open	100	111	+11
do_shmat	778	787	+9
pid_caches_lh	-	8	+8
free_uts_ns	-	5	+5
pid_ns_cachep	-	4	+4
__initcall_pid_namespaces_init6	-	4	+4
do_exit	1855	1856	+1
show_stat	1665	1661	-4
sys_shmctl	1934	1907	-27
msg_init	82	47	-35
shm_init	92	47	-45
sem_init	99	44	-55
sys_msgctl	1394	1311	-83
sys_semctl	2123	2032	-91

> add/remove: 19/0 grow/shrink: 6/6 up/down: 1532/-336 (1196)

> function	old	new	delta
> copy_user_ns	-	181	+181
> copy_ipcs	-	149	+149
> copy_utsname	-	120	+120
> shm_exit_ns	-	106	+106
> sem_exit_ns	-	106	+106
> msg_exit_ns	-	106	+106
> freeary	-	100	+100
> release_uids	-	95	+95
> freeque	-	92	+92
> free_nsproxy	48	99	+51
> __sem_init_ns	-	45	+45
> shm_init_ns	-	42	+42
> sem_init_ns	-	42	+42
> msg_init_ns	-	42	+42
> __shm_init_ns	-	38	+38
> create_new_namespaces		300	335 +35
> __msg_init_ns	-	31	+31
> sysvipc_proc_release		5	35 +30
> free_ipc_ns	-	30	+30
> do_shm_rmid	-	29	+29
> shm_release	18	39	+21
> free_user_ns	-	16	+16
> sysvipc_proc_open		100	111 +11
> do_shmat	778	787	+9
> free_uts_ns	-	5	+5
> sys_shmctl	1934	1907	-27
> msg_init	82	47	-35

```

> shm_init          92   47  -45
> sem_init          99   44  -55
> sys_msgctl       1394 1311  -83
> sys_semctl       2123 2032  -91
>
> Since there already were some questions like "do I need it
> on my cellphone?" in reply to pid namespaces patches and
> so on, why don't we make ALL the namespaces cloning code
> under the config option to make those people happy?
>
> Here's the proposed patch.
>
> Signed-off-by: Pavel Emelyanov <xemul@openvz.org>
>
> ---
>
> diff --git a/include/linux/ipc.h b/include/linux/ipc.h
> index 96988d1..b882610 100644
> --- a/include/linux/ipc.h
> +++ b/include/linux/ipc.h
> @@ -100,56 +100,6 @@ struct kern_ipc_perm
>  void *security;
> };
>
> -struct ipc_ids;
> -struct ipc_namespace {
> - struct kref kref;
> - struct ipc_ids *ids[3];
> -
> - int sem_ctls[4];
> - int used_sems;
> -
> - int msg_ctlmax;
> - int msg_ctlmnb;
> - int msg_ctlmni;
> -
> - size_t shm_ctlmax;
> - size_t shm_ctlall;
> - int shm_ctlmni;
> - int shm_tot;
> -};
> -
> -extern struct ipc_namespace init_ipc_ns;
> -
> -#ifdef CONFIG_SYSVIPC
> -#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
> -extern void free_ipc_ns(struct kref *kref);
> -extern struct ipc_namespace *copy_ipcs(unsigned long flags,

```



```

> - struct ipc_namespace *ns);
> -#else
> -#define INIT_IPC_NS(ns)
> -static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
> - struct ipc_namespace *ns)
> -{
> - return ns;
> -}
> -#endif
> -
> -static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
> -{
> -#ifdef CONFIG_SYSVIPC
> - if (ns)
> - kref_get(&ns->kref);
> -#endif
> - return ns;
> -}
> -
> -static inline void put_ipc_ns(struct ipc_namespace *ns)
> -{
> -#ifdef CONFIG_SYSVIPC
> - kref_put(&ns->kref, free_ipc_ns);
> -#endif
> -}
> -
> #endif /* __KERNEL__ */
>
> #endif /* _LINUX_IPC_H */
> diff --git a/include/linux/ipc_namespace.h b/include/linux/ipc_namespace.h
> new file mode 100644
> index 0000000..89f51f8
> --- /dev/null
> +++ b/include/linux/ipc_namespace.h
> @@ -0,0 +1,67 @@
> +#ifndef __IPC_NAMESPACE_H__
> +#define __IPC_NAMESPACE_H__
> +
> +#include <linux/err.h>
> +
> +struct ipc_ids;
> +struct ipc_namespace {
> + struct kref kref;
> + struct ipc_ids *ids[3];
> +
> + int sem_ctls[4];
> + int used_sems;
> +

```

```

> + int msg_ctlmax;
> + int msg_ctlmnb;
> + int msg_ctlmni;
> +
> + size_t shm_ctlmax;
> + size_t shm_ctlall;
> + int shm_ctlmni;
> + int shm_tot;
> +};
> +
> +extern struct ipc_namespace init_ipc_ns;
> +
> +#ifdef CONFIG_SYSVIPC
> +#define INIT_IPC_NS(ns) .ns = &init_ipc_ns,
> +#else
> +#define INIT_IPC_NS(ns)
> +#endif
> +
> +#ifdef CONFIG_NS_IPC
> +extern void free_ipc_ns(struct kref *kref);
> +extern struct ipc_namespace *copy_ipcs(unsigned long flags,
> +    struct ipc_namespace *ns);
> +
> +static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
> +{
> + if (ns)
> + kref_get(&ns->kref);
> + return ns;
> +}
> +
> +static inline void put_ipc_ns(struct ipc_namespace *ns)
> +{
> + kref_put(&ns->kref, free_ipc_ns);
> +}
> +#else
> +static inline struct ipc_namespace *copy_ipcs(unsigned long flags,
> +    struct ipc_namespace *ns)
> +{
> + if (flags & CLONE_NEWIPC)
> + return ERR_PTR(-EINVAL);
> +
> + return ns;
> +}
> +
> +static inline struct ipc_namespace *get_ipc_ns(struct ipc_namespace *ns)
> +{
> + return ns;
> +}

```

```

> +
> +static inline void put_ipc_ns(struct ipc_namespace *ns)
> +{
> +}
> +#endif
> +#endif
> diff --git a/include/linux/nsproxy.h b/include/linux/nsproxy.h
> diff --git a/include/linux/pid.h b/include/linux/pid.h
> index 4817c66..ac1b47f 100644
> --- a/include/linux/pid.h
> +++ b/include/linux/pid.h
> @@ -122,7 +122,6 @@ extern struct pid *find_ge_pid(int nr, s
>
> extern struct pid *alloc_pid(struct pid_namespace *ns);
> extern void FASTCALL(free_pid(struct pid *pid));
> -extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);
>
> /*
>  * the helpers to get the pid's id seen from different namespaces
> diff --git a/include/linux/pid_namespace.h b/include/linux/pid_namespace.h
> index 0135c76..1f5f915 100644
> --- a/include/linux/pid_namespace.h
> +++ b/include/linux/pid_namespace.h
> @@ -6,6 +6,7 @@
> #include <linux/threads.h>
> #include <linux/nsproxy.h>
> #include <linux/kref.h>
> +#include <linux/err.h>
>
> struct pidmap {
>     atomic_t nr_free;
> @@ -29,6 +30,7 @@ struct pid_namespace {
>
> extern struct pid_namespace init_pid_ns;
>
> +#ifdef CONFIG_NS_PID
> static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
> {
>     if (ns != &init_pid_ns)
> @@ -38,12 +40,37 @@ static inline struct pid_namespace *get_
>
> extern struct pid_namespace *copy_pid_ns(unsigned long flags, struct pid_namespace *ns);
> extern void free_pid_ns(struct kref *kref);
> +extern void zap_pid_ns_processes(struct pid_namespace *pid_ns);
>
> static inline void put_pid_ns(struct pid_namespace *ns)
> {
>     if (ns != &init_pid_ns)

```

```

> kref_put(&ns->kref, free_pid_ns);
> }
> +#else
> +static inline struct pid_namespace *get_pid_ns(struct pid_namespace *ns)
> +{
> + return ns;
> +}
> +
> +static inline void put_pid_ns(struct pid_namespace *ns)
> +{
> +}
> +
> +static inline struct pid_namespace *copy_pid_ns(unsigned long flags,
> + struct pid_namespace *ns)
> +{
> + if (flags & CLONE_NEWPID)
> + return ERR_PTR(-EINVAL);
> +
> + return ns;
> +}
> +
> +static inline void zap_pid_ns_processes(struct pid_namespace *ns)
> +{
> + BUG();
> +}
> +#endif
>
> static inline struct pid_namespace *task_active_pid_ns(struct task_struct *tsk)
> {
> diff --git a/include/linux/sched.h b/include/linux/sched.h
> diff --git a/include/linux/sem.h b/include/linux/sem.h
> diff --git a/include/linux/user_namespace.h b/include/linux/user_namespace.h
> index b5f41d4..d73080c 100644
> --- a/include/linux/user_namespace.h
> +++ b/include/linux/user_namespace.h
> @@ -17,7 +17,7 @@ struct user_namespace {
>
> extern struct user_namespace init_user_ns;
>
> -#ifdef CONFIG_USER_NS
> +#ifdef CONFIG_NS_UID
>
> static inline struct user_namespace *get_user_ns(struct user_namespace *ns)
> {
> diff --git a/include/linux/utsname.h b/include/linux/utsname.h
> index 923db99..cea08a9 100644
> --- a/include/linux/utsname.h
> +++ b/include/linux/utsname.h

```

```

> @@ -35,6 +35,7 @@ struct new_utsname {
> #include <linux/sched.h>
> #include <linux/kref.h>
> #include <linux/nsproxy.h>
> +#include <linux/err.h>
> #include <asm/atomic.h>
>
> struct uts_namespace {
> @@ -43,6 +44,7 @@ struct uts_namespace {
> };
> extern struct uts_namespace init_uts_ns;
>
> +#ifdef CONFIG_NS_UTS
> static inline void get_uts_ns(struct uts_namespace *ns)
> {
>     kref_get(&ns->kref);
> @@ -56,6 +58,25 @@ static inline void put_uts_ns(struct uts
> {
>     kref_put(&ns->kref, free_uts_ns);
> }
> +#else
> +static inline void get_uts_ns(struct uts_namespace *ns)
> +{
> +}
> +
> +static inline void put_uts_ns(struct uts_namespace *ns)
> +{
> +}
> +
> +static inline struct uts_namespace *copy_utsname(unsigned long flags,
> + struct uts_namespace *ns)
> +{
> + if (flags & CLONE_NEWUTS)
> + return ERR_PTR(-EINVAL);
> +
> + return ns;
> +}
> +#endif
> +
> static inline struct new_utsname *utsname(void)
> {
>     return &current->nsproxy->uts_ns->name;
> diff --git a/init/Kconfig b/init/Kconfig
> index 684ccfb..ccb1575 100644
> --- a/init/Kconfig
> +++ b/init/Kconfig
> @@ -206,15 +206,6 @@ config TASK_IO_ACCOUNTING
>

```

```

> Say N if unsure.
>
> -config USER_NS
> - bool "User Namespaces (EXPERIMENTAL)"
> - default n
> - depends on EXPERIMENTAL
> - help
> - Support user namespaces. This allows containers, i.e.
> - vservers, to use user namespaces to provide different
> - user info for different servers. If unsure, say N.
> -
> config AUDIT
> bool "Auditing support"
> depends on NET
> @@ -369,6 +360,39 @@ config RELAY
>
> If unsure, say N.
>
> +config NAMESPACES
> + bool "The namespaces support"
> + help
> + Provides the way to make tasks work with different objects using
> + the same id
> +
> +config NS_UTS
> + bool "Uname namespace"
> + depends on NAMESPACES
> + help
> + The utsname namespace
> +
> +config NS_IPC
> + bool "IPC namespace"
> + depends on NAMESPACES && SYSVIP
> + help
> + The SYSVIP ids namespaces
> +
> +config NS_PIDS
> + bool "PID namespace"
> + depends on NAMESPACES
> + help
> + Tasks see only the pids living in the same namespace and in the
> + child namespaces
> +
> +config NS_UID
> + bool "UID namespace"
> + depends on NAMESPACES && EXPERIMENTAL
> + help
> + Support user namespaces. This allows containers, i.e.

```

```

> + vservers, to use user namespaces to provide different
> + user info for different servers. If unsure, say N.
> +
> config BLK_DEV_INITRD
> bool "Initial RAM filesystem and RAM disk (initramfs/initrd) support"
> depends on BROKEN || !FRV
> diff --git a/init/main.c b/init/main.c
> diff --git a/ipc/Makefile b/ipc/Makefile
> index b93bba6..b051636 100644
> --- a/ipc/Makefile
> +++ b/ipc/Makefile
> @@ -7,4 +7,5 @@ obj-$(CONFIG_SYSVIPC) += util.o msgutil.
> obj-$(CONFIG_SYSVIPC_SYSCTL) += ipc_sysctl.o
> obj_mq-$(CONFIG_COMPAT) += compat_mq.o
> obj-$(CONFIG_POSIX_QUEUE) += mqueue.o msgutil.o $(obj_mq-y)
> +obj-$(CONFIG_NS_IPC) += namespace.o
>
> diff --git a/ipc/ipc_sysctl.c b/ipc/ipc_sysctl.c
> index 79e24e8..7f4235b 100644
> --- a/ipc/ipc_sysctl.c
> +++ b/ipc/ipc_sysctl.c
> @@ -14,6 +14,7 @@
> #include <linux/nsproxy.h>
> #include <linux/sysctl.h>
> #include <linux/uaccess.h>
> +#include <linux/ipc_namespace.h>
>
> static void *get_ipc(ctl_table *table)
> {
> diff --git a/ipc/msg.c b/ipc/msg.c
> index b7274db..9406030 100644
> --- a/ipc/msg.c
> +++ b/ipc/msg.c
> @@ -36,6 +36,7 @@
> #include <linux/seq_file.h>
> #include <linux/mutex.h>
> #include <linux/nsproxy.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/current.h>
> #include <asm/uaccess.h>
> @@ -92,6 +93,7 @@ static void __msg_init_ns(struct ipc_nam
> ipc_init_ids(ids);
> }
>
>
> +#ifdef CONFIG_NS_IPC
> int msg_init_ns(struct ipc_namespace *ns)
> {

```

```

> struct ipc_ids *ids;
> @@ -127,6 +129,7 @@ void msg_exit_ns(struct ipc_namespace *n
> kfree(ns->ids[IPC_MSG_IDS]);
> ns->ids[IPC_MSG_IDS] = NULL;
> }
> +#endif
>
> void __init msg_init(void)
> {
> diff --git a/ipc/namespace.c b/ipc/namespace.c
> new file mode 100644
> index 0000000..cef1139
> --- /dev/null
> +++ b/ipc/namespace.c
> @@ -0,0 +1,73 @@
> +/*
> + * linux/ipc/namespace.c
> + * Copyright (C) 2006 Pavel Emelyanov <xemul@openvz.org> OpenVZ, SWsoft Inc.
> + */
> +
> +#include <linux/ipc.h>
> +#include <linux/msg.h>
> +#include <linux/ipc_namespace.h>
> +#include <linux/rcupdate.h>
> +#include <linux/nsproxy.h>
> +#include <linux/slab.h>
> +
> +#include "util.h"
> +
> +static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)
> +{
> + int err;
> + struct ipc_namespace *ns;
> +
> + err = -ENOMEM;
> + ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
> + if (ns == NULL)
> + goto err_mem;
> +
> + err = sem_init_ns(ns);
> + if (err)
> + goto err_sem;
> + err = msg_init_ns(ns);
> + if (err)
> + goto err_msg;
> + err = shm_init_ns(ns);
> + if (err)
> + goto err_shm;

```



```

> +
> + kref_init(&ns->kref);
> + return ns;
> +
> +err_shm:
> + msg_exit_ns(ns);
> +err_msg:
> + sem_exit_ns(ns);
> +err_sem:
> + kfree(ns);
> +err_mem:
> + return ERR_PTR(err);
> +}
> +
> +struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
> +{
> + struct ipc_namespace *new_ns;
> +
> + BUG_ON(!ns);
> + get_ipc_ns(ns);
> +
> + if (!(flags & CLONE_NEWIPC))
> + return ns;
> +
> + new_ns = clone_ipc_ns(ns);
> +
> + put_ipc_ns(ns);
> + return new_ns;
> +}
> +
> +void free_ipc_ns(struct kref *kref)
> +{
> + struct ipc_namespace *ns;
> +
> + ns = container_of(kref, struct ipc_namespace, kref);
> + sem_exit_ns(ns);
> + msg_exit_ns(ns);
> + shm_exit_ns(ns);
> + kfree(ns);
> +}
> diff --git a/ipc/sem.c b/ipc/sem.c
> index 45c7e57..a12d52e 100644
> --- a/ipc/sem.c
> +++ b/ipc/sem.c
> @@ -82,6 +82,7 @@
> #include <linux/seq_file.h>
> #include <linux/mutex.h>
> #include <linux/nsproxy.h>

```

```

> +#include <linux/ipc_namespace.h>
>
> #include <asm/uaccess.h>
> #include "util.h"
> @@ -130,6 +131,7 @@ static void __sem_init_ns(struct ipc_nam
> ipc_init_ids(ids);
> }
>
> +#ifdef CONFIG_NS_IPC
> int sem_init_ns(struct ipc_namespace *ns)
> {
> struct ipc_ids *ids;
> @@ -165,6 +167,7 @@ void sem_exit_ns(struct ipc_namespace *n
> kfree(ns->ids[IPC_SEM_IDS]);
> ns->ids[IPC_SEM_IDS] = NULL;
> }
> +#endif
>
> void __init sem_init (void)
> {
> diff --git a/ipc/shm.c b/ipc/shm.c
> index f28f2a3..07db882 100644
> --- a/ipc/shm.c
> +++ b/ipc/shm.c
> @@ -38,6 +38,7 @@
> #include <linux/mutex.h>
> #include <linux/nsproxy.h>
> #include <linux/mount.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/uaccess.h>
>
> @@ -97,6 +98,7 @@ static void do_shm_rmid(struct ipc_names
> shm_destroy(ns, shp);
> }
>
> +#ifdef CONFIG_NS_IPC
> int shm_init_ns(struct ipc_namespace *ns)
> {
> struct ipc_ids *ids;
> @@ -132,6 +134,7 @@ void shm_exit_ns(struct ipc_namespace *n
> kfree(ns->ids[IPC_SHM_IDS]);
> ns->ids[IPC_SHM_IDS] = NULL;
> }
> +#endif
>
> void __init shm_init (void)
> {

```

```

> diff --git a/ipc/util.c b/ipc/util.c
> index fd29246..44fb843 100644
> --- a/ipc/util.c
> +++ b/ipc/util.c
> @@ -32,6 +32,7 @@
> #include <linux/proc_fs.h>
> #include <linux/audit.h>
> #include <linux/nsproxy.h>
> +#include <linux/ipc_namespace.h>
>
> #include <asm/unistd.h>
>
> @@ -50,66 +51,6 @@ struct ipc_namespace init_ipc_ns = {
> },
> };
>
> -static struct ipc_namespace *clone_ipc_ns(struct ipc_namespace *old_ns)
> -{
> - int err;
> - struct ipc_namespace *ns;
> -
> - err = -ENOMEM;
> - ns = kmalloc(sizeof(struct ipc_namespace), GFP_KERNEL);
> - if (ns == NULL)
> - goto err_mem;
> -
> - err = sem_init_ns(ns);
> - if (err)
> - goto err_sem;
> - err = msg_init_ns(ns);
> - if (err)
> - goto err_msg;
> - err = shm_init_ns(ns);
> - if (err)
> - goto err_shm;
> -
> - kref_init(&ns->kref);
> - return ns;
> -
> -err_shm:
> - msg_exit_ns(ns);
> -err_msg:
> - sem_exit_ns(ns);
> -err_sem:
> - kfree(ns);
> -err_mem:
> - return ERR_PTR(err);
> -}

```

```

> -
> -struct ipc_namespace *copy_ipcs(unsigned long flags, struct ipc_namespace *ns)
> -{
> - struct ipc_namespace *new_ns;
> -
> - BUG_ON(!ns);
> - get_ipc_ns(ns);
> -
> - if (!(flags & CLONE_NEWIPC))
> - return ns;
> -
> - new_ns = clone_ipc_ns(ns);
> -
> - put_ipc_ns(ns);
> - return new_ns;
> -}
> -
> -void free_ipc_ns(struct kref *kref)
> -{
> - struct ipc_namespace *ns;
> -
> - ns = container_of(kref, struct ipc_namespace, kref);
> - sem_exit_ns(ns);
> - msg_exit_ns(ns);
> - shm_exit_ns(ns);
> - kfree(ns);
> -}
> -
> /**
>  * ipc_init - initialise IPC subsystem
>  *
> diff --git a/ipc/util.h b/ipc/util.h
> index 99414a3..8972402 100644
> --- a/ipc/util.h
> +++ b/ipc/util.h
> @@ -20,6 +20,8 @@ void sem_init (void);
> void msg_init (void);
> void shm_init (void);
>
> +struct ipc_namespace;
> +
> int sem_init_ns(struct ipc_namespace *ns);
> int msg_init_ns(struct ipc_namespace *ns);
> int shm_init_ns(struct ipc_namespace *ns);
> diff --git a/kernel/Makefile b/kernel/Makefile
> index 76f782f..299261c 100644
> --- a/kernel/Makefile
> +++ b/kernel/Makefile

```

```

> @@ -4,12 +4,11 @@
>
> obj-y    = sched.o fork.o exec_domain.o panic.o printk.o profile.o \
>   exit.o itimer.o time.o softirq.o resource.o \
> -   sysctl.o capability.o ptrace.o timer.o user.o user_namespace.o \
> +   sysctl.o capability.o ptrace.o timer.o user.o \
>   signal.o sys.o kmod.o workqueue.o pid.o \
>   rcupdate.o extable.o params.o posix-timers.o \
>   kthread.o wait.o kfifo.o sys_ni.o posix-cpu-timers.o mutex.o \
> -   hrtimer.o rwsem.o latency.o nsproxy.o srcu.o \
> -   utsname.o notifier.o sysctl.o
> +   hrtimer.o rwsem.o latency.o nsproxy.o srcu.o notifier.o sysctl.o
>
> obj-$(CONFIG_SYSCTL) += sysctl_check.o
> obj-$(CONFIG_STACKTRACE) += stacktrace.o
> @@ -50,6 +49,8 @@ obj-$(CONFIG_AUDITSYSCALL) += auditsc.o
> obj-$(CONFIG_AUDIT_TREE) += audit_tree.o
> obj-$(CONFIG_KPROBES) += kprobes.o
> obj-$(CONFIG_KGDB) += kgdb.o
> +obj-$(CONFIG_NS_UTS) += utsname.o
> +obj-$(CONFIG_NS_UID) += user_namespace.o
> obj-$(CONFIG_SYSFS) += ksysfs.o
> obj-$(CONFIG_DETECT_SOFTLOCKUP) += softlockup.o
> obj-$(CONFIG_GENERIC_HARDIRQS) += irq/
> diff --git a/kernel/nsproxy.c b/kernel/nsproxy.c
> index ee68964..5a27426 100644
> --- a/kernel/nsproxy.c
> +++ b/kernel/nsproxy.c
> @@ -20,6 +20,7 @@
> #include <linux/mnt_namespace.h>
> #include <linux/utsname.h>
> #include <linux/pid_namespace.h>
> +#include <linux/ipc_namespace.h>
>
> static struct kmem_cache *nsproxy_cachep;
>
> diff --git a/kernel/pid.c b/kernel/pid.c
> index e2e060e..a247fea 100644
> --- a/kernel/pid.c
> +++ b/kernel/pid.c
> @@ -432,6 +432,7 @@ struct pid *find_ge_pid(int nr, struct p
> }
> EXPORT_SYMBOL_GPL(find_get_pid);
>
> +#ifdef CONFIG_NS_PID
> struct pid_cache {
>   int nr_ids;
>   char name[16];

```

```

> @@ -482,6 +483,11 @@ err_alloc:
> return NULL;
> }
>
> +static __init struct kmem_cache *create_init_pid_cachep(void)
> +{
> + return create_pid_cachep(1);
> +}
> +
> static struct pid_namespace *create_pid_namespace(int level)
> {
> struct pid_namespace *ns;
> @@ -603,6 +609,13 @@ void zap_pid_ns_processes(struct pid_nam
> pid_ns->child_reaper = NULL;
> return;
> }
> +#else
> +static __init struct kmem_cache *create_init_pid_cachep(void)
> +{
> + return kmem_cache_create("pid", sizeof(struct pid), 0,
> + SLAB_HWCACHE_ALIGN, NULL);
> +}
> +#endif
>
> /*
> * The pid hash table is scaled according to the amount of memory in the
> @@ -636,7 +649,7 @@ void __init pidmap_init(void)
> set_bit(0, init_pid_ns.pidmap[0].page);
> atomic_dec(&init_pid_ns.pidmap[0].nr_free);
>
> - init_pid_ns.pid_cachep = create_pid_cachep(1);
> + init_pid_ns.pid_cachep = create_init_pid_cachep();
> if (init_pid_ns.pid_cachep == NULL)
> panic("Can't create pid_1 cachep\n");
>
> diff --git a/kernel/user.c b/kernel/user.c
> index b45f55f..d9cac1d 100644
> --- a/kernel/user.c
> +++ b/kernel/user.c
> @@ -17,6 +17,15 @@
> #include <linux/module.h>
> #include <linux/user_namespace.h>
>
> +struct user_namespace init_user_ns = {
> + .kref = {
> + .refcount = ATOMIC_INIT(2),
> + },
> + .root_user = &root_user,

```

```

> +};
> +
> +EXPORT_SYMBOL_GPL(init_user_ns);
> +
> /*
>  * UID task count cache, to get fast user lookup in "alloc_uid"
>  * when changing user ID's (ie setuid() and friends).
>  @@ -199,6 +208,7 @@ void switch_uid(struct user_struct *new_
>  suid_keys(current);
>  }
>
> +#ifdef CONFIG_NS_UID
> void release_uids(struct user_namespace *ns)
> {
> int i;
> @@ -223,6 +233,7 @@ void release_uids(struct user_namespace
>
> free_uid(ns->root_user);
> }
> +#endif
>
> static int __init uid_cache_init(void)
> {
> diff --git a/kernel/user_namespace.c b/kernel/user_namespace.c
> index 7af90fc..4c90062 100644
> --- a/kernel/user_namespace.c
> +++ b/kernel/user_namespace.c
> @@ -10,17 +10,6 @@
> #include <linux/nsproxy.h>
> #include <linux/user_namespace.h>
>
> -struct user_namespace init_user_ns = {
> - .kref = {
> - .refcount = ATOMIC_INIT(2),
> - },
> - .root_user = &root_user,
> -};
> -
> -EXPORT_SYMBOL_GPL(init_user_ns);
> -
> -#ifdef CONFIG_USER_NS
> -
> /*
>  * Clone a new ns copying an original user ns, setting refcount to 1
>  * @old_ns: namespace to clone
>  @@ -84,5 +73,3 @@ void free_user_ns(struct kref *kref)
>  release_uids(ns);
>  kfree(ns);

```

```
> }  
> -  
> -#endif /* CONFIG_USER_NS */  
> diff --git a/kernel/utsname.c b/kernel/utsname.c  
>
```

---

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

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---

Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [ebiederm](#) on Wed, 26 Sep 2007 14:45:03 GMT  
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---

Pavel Emelyanov <xemul@openvz.org> writes:

```
>>  
>> +config NAMESPACES  
>> + bool "The namespaces support"  
>> + help  
>> + Provides the way to make tasks work with different objects using  
>> + the same id  
>> +  
>> +config NS_UTS  
>> + bool "Uname namespace"  
>> + depends on NAMESPACES  
>> + help  
>> + The utsname namespace  
>> +  
>> +config NS_IPC  
>> + bool "IPC namespace"  
>> + depends on NAMESPACES && SYSVIPC  
>> + help  
>> + The SYSVIPC ids namespaces  
>> +  
>> +config NS_PIDS  
>> + bool "PID namespace"  
>> + depends on NAMESPACES  
>> + help  
>> + Tasks see only the pids living in the same namespace and in the  
>> + child namespaces  
>> +  
>> +config NS_UID  
>> + bool "UID namespace"  
>> + depends on NAMESPACES && EXPERIMENTAL  
>> + help
```



```
>> + Support user namespaces. This allows containers, i.e.  
>> + vservers, to use user namespaces to provide different  
>> + user info for different servers. If unsure, say N.  
>> +  
>> config BLK_DEV_INITRD  
>> bool "Initial RAM filesystem and RAM disk (initramfs/initrd) support"  
>> depends on BROKEN || !FRV
```

The reason we removed these options earlier was a maintenance issue and the fact we could not actually compile out the namespaces.

If we don't cause maintenance complications I think the general idea is fine. But please. This all should show up under CONFIG\_EMBEDDED since the only purpose is to save space.

While things are experimental there is an additional purpose of not exposing people to broken or partially working code, so it does make sense to have an option there.

Eric

---

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---

---

Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [Pavel Emelianov](#) on Wed, 26 Sep 2007 14:49:42 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Eric W. Biederman wrote:

> Pavel Emelyanov <xemul@openvz.org> writes:

>

>>>

>>> +config NAMESPACES

>>> + bool "The namespaces support"

>>> + help

>>> + Provides the way to make tasks work with different objects using

>>> + the same id

>>> +

>>> +config NS\_UTS

>>> + bool "Uname namespace"

>>> + depends on NAMESPACES

>>> + help

>>> + The utsname namespace

>>> +

>>> +config NS\_IPC

```

>>> + bool "IPC namespace"
>>> + depends on NAMESPACES && SYSVIPC
>>> + help
>>> +   The SYSVIPC ids namespaces
>>> +
>>> +config NS_PIDS
>>> + bool "PID namespace"
>>> + depends on NAMESPACES
>>> + help
>>> +   Tasks see only the pids living in the same namespace and in the
>>> +   child namespaces
>>> +
>>> +config NS_UID
>>> + bool "UID namespace"
>>> + depends on NAMESPACES && EXPERIMENTAL
>>> + help
>>> +   Support user namespaces. This allows containers, i.e.
>>> +   vservers, to use user namespaces to provide different
>>> +   user info for different servers. If unsure, say N.
>>> +
>>> config BLK_DEV_INITRD
>>> bool "Initial RAM filesystem and RAM disk (initramfs/initrd) support"
>>> depends on BROKEN || !FRV
>
> The reason we removed these options earlier was a maintenance issue
> and the fact we could not actually compile out the namespaces.

```

I do not propose to compile out the namespaces, I just propose to compile out the code that does the clone and release of new namespaces. This is absolutely painless.

> If we don't cause maintenance complications I think the general  
> idea is fine. But please. This all should show up under  
> CONFIG\_EMBEDDED since the only purpose is to save space.

Hm... Ok, but I also try to save the vmlinux size on my home PC, so I'd be happy if I could just throw these things out.

Anyway - I will move the CONFIG\_NAMESPACES to be selectable with the EMBEDDED only.

> While things are experimental there is an additional purpose of  
> not exposing people to broken or partially working code, so it  
> does make sense to have an option there.

Ok, thanks.

So your accolades, can they be transformed into Acked-by-s or

just mentioned in the patch like "reviewed and approved by ..."?

> Eric  
>

---

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---

Subject: Re: Playing with namespaces and bloat-o-meeter  
Posted by [serue](#) on Wed, 26 Sep 2007 15:42:36 GMT  
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---

Quoting Pavel Emelyanov (xemul@openvz.org):

> Eric W. Biederman wrote:  
> > Pavel Emelyanov <xemul@openvz.org> writes:  
> >  
> >>>  
> >>> +config NAMESPACES  
> >>> + bool "The namespaces support"  
> >>> + help  
> >>> + Provides the way to make tasks work with different objects using  
> >>> + the same id  
> >>> +  
> >>> +config NS\_UTS  
> >>> + bool "Uname namespace"  
> >>> + depends on NAMESPACES  
> >>> + help  
> >>> + The utsname namespace  
> >>> +  
> >>> +config NS\_IPC  
> >>> + bool "IPC namespace"  
> >>> + depends on NAMESPACES && SYSVIPC  
> >>> + help  
> >>> + The SYSVIPC ids namespaces  
> >>> +  
> >>> +config NS\_PIDS  
> >>> + bool "PID namespace"  
> >>> + depends on NAMESPACES  
> >>> + help  
> >>> + Tasks see only the pids living in the same namespace and in the  
> >>> + child namespaces  
> >>> +  
> >>> +config NS\_UID  
> >>> + bool "UID namespace"  
> >>> + depends on NAMESPACES && EXPERIMENTAL

> >>> + help  
> >>> + Support user namespaces. This allows containers, i.e.  
> >>> + vservers, to use user namespaces to provide different  
> >>> + user info for different servers. If unsure, say N.  
> >>> +  
> >>> config BLK\_DEV\_INITRD  
> >>> bool "Initial RAM filesystem and RAM disk (initramfs/initrd) support"  
> >>> depends on BROKEN || !FRV  
> >  
> > The reason we removed these options earlier was a maintenance issue  
> > and the fact we could not actually compile out the namespaces.  
>  
> > I do not propose to compile out the namespaces, I just propose  
> > to compile out the code that does the clone and release of new  
> > namespaces. This is absolutely painless.  
>  
> > If we don't cause maintenance complications I think the general  
> > idea is fine. But please. This all should show up under  
> > CONFIG\_EMBEDDED since the only purpose is to save space.  
>  
> > Hm... Ok, but I also try to save the vmlinux size on my home  
> > PC, so I'd be happy if I could just throw these things out.  
>  
> > Anyway - I will move the CONFIG\_NAMESPACES to be selectable  
> > with the EMBEDDED only.  
>  
> > While things are experimental there is an additional purpose of  
> > not exposing people to broken or partially working code, so it  
> > does make sense to have an option there.  
>  
> > Ok, thanks.  
>  
> > So your accolades, can they be transformed into Acked-by-s or  
> > just mentioned in the patch like "reviewed and approved by ..."?

I for one have no objection to the idea itself. There have been several good suggestions though so I would like to see one more round here to which I can add an Acked-by.

thanks,  
-serge

---

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---