
Subject: [PATCH 7/7] uts namespaces: enable UTS namespaces debugging

Posted by [serue](#) on Sat, 08 Apr 2006 04:52:07 GMT

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Adds a /uts directory in debugfs which exposes the current UTS namespace. If a file in this directory is changed, it will unshare and modify the UTS namespace of the current process.

Clearly this is purely for testing purposes. Testing namespaces in this fashion allows us to postpone consensus on a namespace unsharing mechanism.

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```
fs/debugfs/Makefile | 2 -
fs/debugfs/uts.c    | 170 +++++
init/version.c      | 1
lib/Kconfig.debug   | 11 +++
4 files changed, 183 insertions(+), 1 deletions(-)
create mode 100644 fs/debugfs/uts.c
```

```
13a0daa07ae35fa1b00250a2d14a9dfa8e70999b
diff --git a/fs/debugfs/Makefile b/fs/debugfs/Makefile
index 840c456..e5df8b9 100644
--- a/fs/debugfs/Makefile
+++ b/fs/debugfs/Makefile
@@ -1,4 +1,4 @@
debugfs-objs := inode.o file.o
```

```
obj-$(CONFIG_DEBUG_FS) += debugfs.o
-
+obj-$(CONFIG_DEBUG_UTS_NS) += uts.o
diff --git a/fs/debugfs/uts.c b/fs/debugfs/uts.c
new file mode 100644
index 0000000..45b29af
--- /dev/null
+++ b/fs/debugfs/uts.c
@@ -0,0 +1,170 @@
+/*
+ * uts.c - adds a uts/ directory to debug UTS namespaces
+ *
+ * Copyright (C) 2006 IBM
+ *
+ * Author: Cedric Le Goater <clg@fr.ibm.com>
+ */
```

```

+ * This program is free software; you can redistribute it and/or
+ * modify it under the terms of the GNU General Public License as
+ * published by the Free Software Foundation, version 2 of the
+ * License.
+ */
+
+#include <linux/module.h>
+#include <linux/kernel.h>
+#include <linux/pagemap.h>
+#include <linux/debugfs.h>
+#include <linux/utsname.h>
+
+static struct dentry *uts_dentry;
+static struct dentry *uts_dentry_sysname;
+static struct dentry *uts_dentry_nodename;
+static struct dentry *uts_dentry_release;
+static struct dentry *uts_dentry_version;
+static struct dentry *uts_dentry_machine;
+static struct dentry *uts_dentry_domainname;
+
+static inline char* uts_buffer(struct dentry *dentry)
+{
+ if (dentry == uts_dentry_sysname)
+ return utsname()->sysname;
+ else if (dentry == uts_dentry_nodename)
+ return utsname()->nodename;
+ else if (dentry == uts_dentry_release)
+ return utsname()->release;
+ else if (dentry == uts_dentry_version)
+ return utsname()->version;
+ else if (dentry == uts_dentry_machine)
+ return utsname()->machine;
+ else if (dentry == uts_dentry_domainname)
+ return utsname()->domainname;
+ else
+ return NULL;
+}
+
+static ssize_t uts_read_file(struct file *file, char __user *user_buf,
+ size_t count, loff_t *ppos)
+{
+ size_t len;
+ char* buf;
+
+ if (*ppos < 0)
+ return -EINVAL;
+ if (*ppos >= count)
+ return 0;

```

```

+
+ buf = uts_buffer(file->f_dentry);
+ if (!buf)
+ return -ENOENT;
+
+ len = strlen(buf);
+ if (len > count)
+ len = count;
+ if (len)
+ if (copy_to_user(user_buf, buf, len))
+ return -EFAULT;
+ if (len < count) {
+ if (put_user('\n', ((char __user *) user_buf) + len))
+ return -EFAULT;
+ len++;
+ }
+
+ *ppos += count;
+ return count;
+}
+
+
+static ssize_t uts_write_file(struct file * file, const char __user * user_buf,
+    size_t count, loff_t *ppos)
+
+{
+ size_t len;
+ const char __user *p;
+ char c;
+ char* buf;
+
+ if (!unshare_uts_ns())
+ return -ENOMEM;
+
+ buf = uts_buffer(file->f_dentry);
+ if (!buf)
+ return -ENOENT;
+
+ len = 0;
+ p = user_buf;
+ while (len < count) {
+ if (get_user(c, p++))
+ return -EFAULT;
+ if (c == 0 || c == '\n')
+ break;
+ len++;
+ }
+ }
+

```

```

+ if (len >= __NEW_UTS_LEN)
+ len = __NEW_UTS_LEN - 1;
+
+ if (copy_from_user(buf, user_buf, len))
+ return -EFAULT;
+
+ buf[len] = 0;
+
+ *ppos += count;
+ return count;
+}
+
+static int uts_open(struct inode *inode, struct file *file)
+{
+ return 0;
+}
+
+static struct file_operations uts_file_operations = {
+ .read = uts_read_file,
+ .write = uts_write_file,
+ .open = uts_open,
+};
+
+static int __init uts_init(void)
+{
+ uts_dentry = debugfs_create_dir("uts", NULL);
+
+ uts_dentry_sysname = debugfs_create_file("sysname", 0666,
+     uts_dentry, NULL,
+     &uts_file_operations);
+ uts_dentry_nodename = debugfs_create_file("nodename", 0666,
+     uts_dentry, NULL,
+     &uts_file_operations);
+ uts_dentry_release = debugfs_create_file("release", 0666,
+     uts_dentry, NULL,
+     &uts_file_operations);
+ uts_dentry_version = debugfs_create_file("version", 0666,
+     uts_dentry, NULL,
+     &uts_file_operations);
+ uts_dentry_machine = debugfs_create_file("machine", 0666,
+     uts_dentry, NULL,
+     &uts_file_operations);
+ uts_dentry_domainname = debugfs_create_file("domainname", 0666,
+     uts_dentry, NULL,
+     &uts_file_operations);
+ return 0;
+}
+

```

```

+static void __exit uts_exit(void)
+{
+ debugfs_remove(uts_dentry_sysname);
+ debugfs_remove(uts_dentry_nodename);
+ debugfs_remove(uts_dentry_release);
+ debugfs_remove(uts_dentry_version);
+ debugfs_remove(uts_dentry_machine);
+ debugfs_remove(uts_dentry_domainname);
+ debugfs_remove(uts_dentry);
+}
+
+module_init(uts_init);
+module_exit(uts_exit);
+
+
+MODULE_DESCRIPTION("UTS namespace debugfs");
+MODULE_AUTHOR("Cedric Le Goater <clg@fr.ibm.com>");
+MODULE_LICENSE("GPL");
+
diff --git a/init/version.c b/init/version.c
index c05d8f8..9c83cce 100644
--- a/init/version.c
+++ b/init/version.c
@@ -70,6 +70,7 @@ struct uts_namespace *unshare_uts_ns(voi
 }
 return new_ns;
 }
+EXPORT_SYMBOL_GPL(unshare_uts_ns);

void free_uts_ns(struct kref *kref)
{
diff --git a/lib/Kconfig.debug b/lib/Kconfig.debug
index d57fd91..5ed09b8 100644
--- a/lib/Kconfig.debug
+++ b/lib/Kconfig.debug
@@ -223,3 +223,14 @@ config RCU_TORTURE_TEST
 at boot time (you probably don't).
 Say M if you want the RCU torture tests to build as a module.
 Say N if you are unsure.
+
+config DEBUG_UTS_NS
+ tristate "UTS Namespaces debugging"
+ depends on UTS_NS
+ select DEBUG_FS
+ default n
+ help
+ This option provides a kernel module that adds a uts/ directory
+ in debugfs which can be used to unshare and modify the uts namespace

```

+ of the current process and children. If unsure, say N.

+

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1.2.4
