Subject: [PATCH 6/7]: Check for user-space mount of /dev/pts
Posted by Sukadev Bhattiprolu on Tue, 25 Mar 2008 04:26:14 GMT
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From: Sukadev Bhattiprolu <sukadev@us.ibm.com>
Subject: [PATCH 6/7]: Check for user-space mount of /dev/pts

When the pts namespace is cloned, the /dev/pts is not useful unless it
is remounted from the user space.

If user-space clones pts namespace but does not remount /dev/pts, it
would end up using the /dev/pts mount from parent-pts-ns but allocate
the pts indices from current pts ns.

This patch (hack ?) prevents creation of PTYs in user space unless
user-space mounts /dev/pts.

(While this patch can be folded into others, keeping this separate
for now for easier review (and to highlight the hack :-)

Signed-off-by: Sukadev Bhattiprolu <sukadev@us.ibm.com>
---
 fs/devpts/inode.c | 25 ++++++++++++++++++++++++--
 include/linux/devpts_fs.h | 20 +++++++++++++++++++-
 2 files changed, 42 insertions(+), 3 deletions(-)

Index: 2.6.25-rc5-mm1/include/linux/devpts_fs.h
==========
--- 2.6.25-rc5-mm1.orig/include/linux/devpts_fs.h 2008-03-24 20:08:33.000000000 -0700
+++ 2.6.25-rc5-mm1/include/linux/devpts_fs.h 2008-03-24 20:08:57.000000000 -0700
@@ -23,6 +23,7 @@ struct pts_namespace {
  struct kref kref;
  struct idr allocated_ptys;
  struct vfsmount *mnt;
+ int user_mounted;
 };

 extern struct pts_namespace init_pts_ns;
@@ -30,6 +31,8 @@ extern struct pts_namespace init_pts_ns;
 #define DEVPTS_SUPER_MAGIC 0x1cd1
 static inline struct pts_namespace *pts_ns_from_inode(struct inode *inode)
 {
+ struct pts_namespace *ns;
+
  /*
   * Need this bug-on for now to catch any cases in tty_open()
   * or release_dev() I may have missed.
@@ -43,7 +46,22 @@ static inline struct pts_namespace *pts_

```
   * should not need a lock here.
   */

- return (struct pts_namespace *)inode->i_sb->s_fs_info;
+ ns = (struct pts_namespace *)inode->i_sb->s_fs_info;
+
+ /*
+  * If user-space did not mount pts ns after cloning pts namespace,
+  * the child process would end up accessing devpts mount of the
+  * parent but use allocated_ptys from the cloned pts ns.
+  *
+  * This check prevents creating ptys unless user-space mounts
+  * devpts  in the new pts namespace.
+  *
+  * Is there a cleaner way to prevent this ?
+  */
+ if (!ns->user_mounted)
+  return NULL;
+
+ return ns;
 }

 static inline struct pts_namespace *current_pts_ns(void)
Index: 2.6.25-rc5-mm1/fs/devpts/inode.c
=====================================================================
--- 2.6.25-rc5-mm1.orig/fs/devpts/inode.c 2008-03-24 20:08:33.000000000 -0700
+++ 2.6.25-rc5-mm1/fs/devpts/inode.c 2008-03-24 20:08:57.000000000 -0700
@@ -201,8 +201,11 @@ static int devpts_get_sb(struct file_sys
  if (IS_ERR(sb))
   return PTR_ERR(sb);

- if (sb->s_root)
+ if (sb->s_root) {
+  if (!(flags & MS_KERNMOUNT))
+   ns->user_mounted = 1;
   return simple_set_mnt(mnt, sb);
+ }

  sb->s_flags = flags;
  err = devpts_fill_super(sb, data, flags & MS_SILENT ? 1 : 0);
@@ -248,6 +251,10 @@ int devpts_new_index(struct pts_namespac
  int index;
  int idr_ret;

+ if (!pts_ns || !pts_ns->user_mounted) {
+  printk(KERN_ERR "devpts_new_index() without user_mount\n");
+  return -ENOSYS;
+ }
```

```
 retry:
  if (!idr_pre_get(&pts_ns->allocated_ptys, GFP_KERNEL)) {
   return -ENOMEM;
@@ -273,7 +280,7 @@ retry:

 void devpts_kill_index(struct pts_namespace *pts_ns, int idx)
 {
-
+ BUG_ON(!pts_ns->user_mounted);
  down(&allocated_ptys_lock);
  idr_remove(&pts_ns->allocated_ptys, idx);
  up(&allocated_ptys_lock);
@@ -293,6 +300,11 @@ int devpts_pty_new( struct pts_namespace
  BUG_ON(driver->type != TTY_DRIVER_TYPE_PTY);
  BUG_ON(driver->subtype != PTY_TYPE_SLAVE);

+ if (!pts_ns || !pts_ns->user_mounted) {
+  printk(KERN_ERR "devpts_pty_new() without user_mount\n");
+  return -ENOSYS;
+ }
+
  mnt = pts_ns->mnt;
  root = mnt->mnt_root;

@@ -332,6 +344,11 @@ struct tty_struct *devpts_get_tty(struct
  struct dentry *dentry;
  struct tty_struct *tty;

+ if (!pts_ns || !pts_ns->user_mounted) {
+  printk(KERN_ERR "devpts_get_tty() without user_mount\n");
+  return ERR_PTR(-ENOSYS);
+ }
+
  mnt = pts_ns->mnt;

  dentry = get_node(mnt->mnt_root, number);
@@ -353,6 +370,10 @@ void devpts_pty_kill(struct pts_namespac
  struct dentry *dentry;
  struct dentry *root;

+ if (!pts_ns || !pts_ns->user_mounted) {
+  printk(KERN_ERR "devpts_pty_kill() without user_mount\n");
+  BUG_ON(1);
+ }
  root = pts_ns->mnt->mnt_root;

  dentry = get_node(root, number);
```

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