Subject: [PATCH 1/2] Container-init must be immune to unwanted signals
Posted by Sukadev Bhattiprolu on Sat, 27 Oct 2007 19:07:29 GMT
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Note: this patch applies on top of Eric's patch:

http://lkml.org/lkml/2007/10/26/440

From: Sukadev Bhattiprolu <sukadev@us.ibm.com>
Subject: [PATCH 1/2] Container-init must be immune to unwanted signals

Container-init process must appear like a normal process to its sibling
in the parent namespace and should be killable (or not) in the usual way.

But it must be immune to any unwanted signals from within its own namespace.

At the time of sending the signal, check if receiver is container-init
and if signal is an unwanted one. If its unwanted signal, ignore the
signal right away.

Note:
A limitation with this patch is that if the signal is blocked by the
container-init at the time of the check, we cannot ignore the signal
because the container-init may install a handler for the signal before
unblocking it.

But if the container-init unblocks the signal without installing the
handler, the unwanted signal will still be delivered to the container-
init. If the unwanted signal is fatal (i.e default action is to
terminate), we end up terminating the container-init and hence the
container.

We have not been able to find a clean-way to address this blocked
signal issue in the kernel. It appears easier to let the container-
init decide what it wants to do with signals i.e have it _explicitly_
ignore or handle all fatal signals.

The next patch in this set prints a warning the first time a
container-init process fork()s without ignoring or handling a fatal
signal.

Signed-off-by: Sukadev Bhattiprolu <sukadev@us.ibm.com>
---
include/linux/pid_namespace.h | 6 +++++-
kernel/pid.c | 9 ++++++++-
kernel/signal.c | 5 ++++-

```
 3 files changed, 17 insertions(+), 3 deletions(-)

Index: 2.6.23-mm1/kernel/signal.c
===================================================================
--- 2.6.23-mm1.orig/kernel/signal.c 2007-10-27 10:08:36.000000000 -0700
+++ 2.6.23-mm1/kernel/signal.c 2007-10-27 10:08:36.000000000 -0700
@@ -45,7 +45,10 @@ static int sig_init_ignore(struct task_s

  // Currently this check is a bit racy with exec(),
  // we can _simplify_ de_thread and close the race.
- if (likely(!is_global_init(tsk->group_leader)))
+ if (likely(!is_container_init(tsk->group_leader)))
+  return 0;
+
+ if (task_in_descendant_pid_ns(tsk) && !in_interrupt())
    return 0;

  return 1;
Index: 2.6.23-mm1/kernel/pid.c
===================================================================
--- 2.6.23-mm1.orig/kernel/pid.c 2007-10-27 10:08:36.000000000 -0700
+++ 2.6.23-mm1/kernel/pid.c 2007-10-27 10:34:59.000000000 -0700
@@ -445,7 +445,7 @@ int pid_ns_equal(struct task_struct *tsk

 static int pid_in_pid_ns(struct pid *pid, struct pid_namespace *ns)
 {
- return pid && (ns->level <= pid->level) &&
+ return pid && ns && (ns->level <= pid->level) &&
    pid->numbers[ns->level].ns == ns;
 }

@@ -454,6 +454,13 @@ int task_in_pid_ns(struct task_struct *t
  return pid_in_pid_ns(task_pid(task), ns);
 }

+int task_in_descendant_pid_ns(struct task_struct *tsk)
+{
+ struct pid_namespace *ns = task_active_pid_ns(current);
+
+ return task_in_pid_ns(tsk, ns) && !pid_ns_equal(tsk);
+}
+
 pid_t pid_nr_ns(struct pid *pid, struct pid_namespace *ns)
 {
  struct upid *upid;
Index: 2.6.23-mm1/include/linux/pid_namespace.h
===================================================================
--- 2.6.23-mm1.orig/include/linux/pid_namespace.h 2007-10-27 10:08:36.000000000 -0700
```

```
+++ 2.6.23-mm1/include/linux/pid_namespace.h 2007-10-27 10:32:27.000000000 -0700
@@ -47,7 +47,10 @@ static inline void put_pid_ns(struct pid

 static inline struct pid_namespace *task_active_pid_ns(struct task_struct *tsk)
 {
- return tsk->nsproxy->pid_ns;
+ if (tsk->nsproxy)
+  return tsk->nsproxy->pid_ns;
+
+ return NULL;
 }

 static inline struct task_struct *task_child_reaper(struct task_struct *tsk)
@@ -58,5 +61,6 @@ static inline struct task_struct *task_c

 extern int pid_ns_equal(struct task_struct *tsk);
 extern int task_in_pid_ns(struct task_struct *tsk, struct pid_namespace *ns);
+extern int task_in_descendant_pid_ns(struct task_struct *tsk);

 #endif /* _LINUX_PID_NS_H */
```

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