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Subject: Roadmap for features planed for containers where and Some future features ideas.

Posted by [Peter Dolding](#) on Mon, 21 Jul 2008 11:03:47 GMT

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<http://opensolaris.org/os/community/brandz/> I would like to see if something equal to this is on the roadmap in particular. Being able to run solaris and aix closed source binaries contained would be useful.

Other useful feature is some way to share a single process between PID containers as like a container bridge. For containers used for desktop applications not having a single X11 server interfacing with video card is a issue.

These container bridges avoid having to go threw network cards and other means to share data between containers. A user space solution.

I know this reduces secuirty but when you need a application form X distrobuton and you have Y distribution and its opengl heavy you are kinda stuffed at moment.

Final one is some form of LSM processing different. Lot of the Linux Secuirty channel talk about containers as light weight virtualisation so will never need to run a OS inside with a different LSM profile to the master OS. If containers plan to go after brandz like containers this needs to be made clear that LSM different processing will be required.

Peter Dolding

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Containers mailing list

[Containers@lists.linux-foundation.org](mailto:Containers@lists.linux-foundation.org)

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

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Subject: Re: Roadmap for features planed for containers where and Some future features ideas.

Posted by [ebiederm](#) on Mon, 21 Jul 2008 12:13:27 GMT

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"Peter Dolding" <[oiiahm@gmail.com](mailto:oiiahm@gmail.com)> writes:

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> something equal to this is on the roadmap in particular. Being able  
> to run solaris and aix closed source binaries contained would be  
> useful.

There have been projects to do this at various times on linux. Having a namespace dedicated to a certain kind of application is no big deal. Someone would need to care enough to test and implement it though.

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- > containers as like a container bridge. For containers used for
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X allows network connections, and I think unix domain sockets will work. The latter I need to check on.

The pid namespace is well defined and no a task will not be able to change it's pid namespace while running. That is nasty.

- > These container bridges avoid having to go threw network cards and
- > other means to share data between containers. A user space solution.

There are lots of opportunities for user space solutions.

- > I know this reduces securirty but when you need a application form X
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- > kinda stuffed at moment.
- >
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- > so will never need to run a OS inside with a different LSM profile to
- > the master OS. If containers plan to go after brandz like containers
- > this needs to be made clear that LSM different processing will be
- > required.

We have had that discussion mostly this appears to be a measure of matureness.

Eric

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

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Subject: Re: Roadmap for features planed for containers where and Some future features ideas.

Posted by [Peter Dolding](#) on Mon, 21 Jul 2008 13:21:35 GMT

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On Mon, Jul 21, 2008 at 10:13 PM, Eric W. Biederman  
<[ebiederm@xmission.com](mailto:ebiederm@xmission.com)> wrote:

> "Peter Dolding" <oiiohm@gmail.com> writes:  
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Does to a point until you see that local X11 is using shared memory  
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Ok if that is imposable to extremely risky.

What about a form of a proxy pid in the pid namespace proxying  
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If I am thinking right that avoids not be able to change it's pid.  
Instead sending and receiving the messages you need in the other name  
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performance.

Basically want to setup a neat universal container way of handling  
stuff like <http://www.cs.toronto.edu/~andreslc/xen-gl/> without having  
to go network and hopefully in a way that limitations don't have to

exist since messages are really only be sent threw 1 X11 server to 1 driver system. Only thing is really sending the correct messages to the correct place. There will most likely be other services were a single entity at times is preferred. Worst out come is if proxying .so is required.

Peter Dolding

---

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Subject: Re: Roadmap for features planed for containers where and Some future features ideas.

Posted by [ebiederm](#) on Tue, 22 Jul 2008 01:28:43 GMT

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"Peter Dolding" <[oiuahm@gmail.com](mailto:oiuahm@gmail.com)> writes:

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> <[ebiederm@xmission.com](mailto:ebiederm@xmission.com)> wrote:

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That is easier in general. Don't unshare the sysvipc namespace.

Or share the mount of /dev/shmem at least for the file X cares about.

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> performance.

Proxy pids don't actually do anything for you, unless you want to send signals. Because all of the namespaces are distinct. So even at the best of it you can see the X server but it still can't use your network sockets or ipc shm.

Better is working out the details on how to manipulate multiple sysvipc and network namespaces from a single application. Mostly that is supported now by the objects there is just no easy way of dealing with it.

> Basically want to setup a neat universal container way of handling

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> single entity at times is preferred. Worst out come is if proxying

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Yes. I agree that is essentially desirable. Given that I think high end video card actually have multiple hardware contexts that can be mapped into different user space processes there may be other ways of handling this.

Ideally we can find a high performance solution to X that also gives us good isolation and migration properties. Certainly something to talk

about tomorrow in the conference.

Eric

---

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

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Subject: Re: Roadmap for features planed for containers where and Some future features ideas.

Posted by [Oren Laadan](#) on Tue, 22 Jul 2008 14:05:27 GMT

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Eric W. Biederman wrote:

> "Peter Dolding" <[oiuahm@gmail.com](mailto:oiuahm@gmail.com)> writes:

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>> <[ebiederm@xmission.com](mailto:ebiederm@xmission.com)> wrote:

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> ways of handling this.

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> Ideally we can find a high performance solution to X that also gives  
> us good isolation and migration properties. Certainly something to talk  
> about tomorrow in the conference.

In particular, if you wish to share private resources of a container  
between more than a single container, then you won't be able to use  
checkpoint/restart on neither container (unless you make special

provisions in the code).

I agree with Eric that the way to handle this is via virtualization as opposed to direct sharing. The same goes for other hardware, e.g. in the context of a user desktop - /dev/rtc, sound, and so on. My experience is that a proxy/virtualized device is what we probably want.

Oren.

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

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Subject: Re: Roadmap for features planed for containers where and Some future features ideas.

Posted by [Peter Dolding](#) on Wed, 23 Jul 2008 00:56:46 GMT

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From: Kirill A. Shutemov <[kirill@shutemov.name](mailto:kirill@shutemov.name)>

Changelog:

v4:

- hierarchy support
- drop dummy\_timer\_slack\_check()
- workaround lockdep false (?) positive
- allow 0 as timer slack value

v3:

- rework interface
- s/EXPORT\_SYMBOL/EXPORT\_SYMBOL\_GPL/

v2:

- fixed with CONFIG\_CGROUP\_TIMER\_SLACK=y

v1:

- initial revision

Kirill A. Shutemov (2):

cgroups: export cgroup\_iter\_{start,next,end}  
cgroups: introduce timer slack subsystem



```

include/linux/cgroup_subsys.h | 6 +
include/linux/init_task.h | 4 +-
init/Kconfig | 10 ++
kernel/Makefile | 1 +
kernel/cgroup.c | 3 +
kernel/cgroup_timer_slack.c | 262 +++++
kernel/sys.c | 19 +-
7 files changed, 298 insertions(+), 7 deletions(-)
create mode 100644 kernel/cgroup_timer_slack.c

```

--  
1.7.3.5

---

Containers mailing list

Containers@lists.linux-foundation.org

<https://lists.linux-foundation.org/mailman/listinfo/containers> From: Kirill A. Shutemov  
<kirill@shutemov.name>

Signed-off-by: Kirill A. Shutemov <kirill@shutemov.name>

---  
kernel/cgroup.c | 3 +++  
1 files changed, 3 insertions(+), 0 deletions(-)

diff --git a/kernel/cgroup.c b/kernel/cgroup.c  
index b24d702..8234daa 100644

```

--- a/kernel/cgroup.c
+++ b/kernel/cgroup.c
@@ -2443,6 +2443,7 @@ void cgroup_iter_start(struct cgroup *cgrp, struct cgroup_iter *it)
     it->cg_link = &cgrp->css_sets;
     cgroup_advance_iter(cgrp, it);
 }
+EXPORT_SYMBOL_GPL(cgroup_iter_start);

```

```

struct task_struct *cgroup_iter_next(struct cgroup *cgrp,
    struct cgroup_iter *it)
@@ -2467,11 +2468,13 @@ struct task_struct *cgroup_iter_next(struct cgroup *cgrp,
 }
 return res;
 }
+EXPORT_SYMBOL_GPL(cgroup_iter_next);

```

```

void cgroup_iter_end(struct cgroup *cgrp, struct cgroup_iter *it)
{
    read_unlock(&css_set_lock);
}
+EXPORT_SYMBOL_GPL(cgroup_iter_end);

```

```
static inline int started_after_time(struct task_struct *t1,
                                     struct timespec *time,
```

--

### 1.7.3.5

---

Containers mailing list

Containers@lists.linux-foundation.org

<https://lists.linux-foundation.org/mailman/listinfo/containers> From: Kirill A. Shutemov  
<kirill@shutemov.name>

Provides a way of tasks grouping by timer slack value. Introduces per cgroup max and min timer slack value. When a task attaches to a cgroup, its timer slack value adjusts (if needed) to fit min-max range.

It also provides a way to set timer slack value for all tasks in the cgroup at once.

This functionality is useful in mobile devices where certain background apps are attached to a cgroup and minimum wakeups are desired.

Signed-off-by: Kirill A. Shutemov <kirill@shutemov.name>

Idea-by: Jacob Pan <jacob.jun.pan@linux.intel.com>

Signed-off-by: Kirill A. Shutemov <kirill@shutemov.name>

---

```
include/linux/cgroup_subsys.h | 6 +
include/linux/init_task.h    | 4 +-
init/Kconfig                  | 10 ++
kernel/Makefile               | 1 +
kernel/cgroup_timer_slack.c   | 262 +++++
kernel/sys.c                  | 19 +-
6 files changed, 295 insertions(+), 7 deletions(-)
create mode 100644 kernel/cgroup_timer_slack.c
```

```
diff --git a/include/linux/cgroup_subsys.h b/include/linux/cgroup_subsys.h
```

```
index ccefff0..e399228 100644
```

```
--- a/include/linux/cgroup_subsys.h
+++ b/include/linux/cgroup_subsys.h
@@ -66,3 +66,9 @@ SUBSYS(blkio)
#endif
```

```
/* */
```

```
+
```

```
+#ifdef CONFIG_CGROUP_TIMER_SLACK
```

```
+SUBSYS(timer_slack)
```

```
+#endif
```

```
+
```

```
+/* */
```

```

diff --git a/include/linux/init_task.h b/include/linux/init_task.h
index caa151f..48eca8f 100644
--- a/include/linux/init_task.h
+++ b/include/linux/init_task.h
@@ -124,6 +124,8 @@ extern struct cred init_cred;
# define INIT_PERF_EVENTS(tsk)
#endif

+#define TIMER_SLACK_NS_DEFAULT 50000
+
+/*
+ * INIT_TASK is used to set up the first task table, touch at
+ * your own risk!. Base=0, limit=0x1ffff (=2MB)
@@ -177,7 +179,7 @@ extern struct cred init_cred;
.cpu_timers = INIT_CPU_TIMERS(tsk.cpu_timers), \
.fs_excl = ATOMIC_INIT(0), \
.pi_lock = __RAW_SPIN_LOCK_UNLOCKED(tsk.pi_lock), \
- .timer_slack_ns = 50000, /* 50 usec default slack */ \
+ .timer_slack_ns = TIMER_SLACK_NS_DEFAULT, \
.pids = { \
[PIDTYPE_PID] = INIT_PID_LINK(PIDTYPE_PID), \
[PIDTYPE_PGID] = INIT_PID_LINK(PIDTYPE_PGID), \
diff --git a/init/Kconfig b/init/Kconfig
index be788c0..6cf465f 100644
--- a/init/Kconfig
+++ b/init/Kconfig
@@ -596,6 +596,16 @@ @@ config CGROUP_FREEZER
Provides a way to freeze and unfreeze all tasks in a
cgroup.

+config CGROUP_TIMER_SLACK
+ tristate "Timer slack cgroup subsystem"
+ help
+ Provides a way of tasks grouping by timer slack value.
+ Introduces per cgroup timer slack value which will override
+ the default timer slack value once a task is attached to a
+ cgroup.
+ It's useful in mobile devices where certain background apps
+ are attached to a cgroup and combined wakeups are desired.
+
config CGROUP_DEVICE
bool "Device controller for cgroups"
help
diff --git a/kernel/Makefile b/kernel/Makefile
index 353d3fe..0b60239 100644
--- a/kernel/Makefile
+++ b/kernel/Makefile
@@ -61,6 +61,7 @@ @@ obj-$(CONFIG_BACKTRACE_SELF_TEST) += backtracetest.o

```

```

obj-$(CONFIG_COMPAT) += compat.o
obj-$(CONFIG_CGROUPS) += cgroup.o
obj-$(CONFIG_CGROUP_FREEZER) += cgroup_freezer.o
+obj-$(CONFIG_CGROUP_TIMER_SLACK) += cgroup_timer_slack.o
obj-$(CONFIG_CPUSETS) += cpuset.o
obj-$(CONFIG_CGROUP_NS) += ns_cgroup.o
obj-$(CONFIG_UTS_NS) += utsname.o
diff --git a/kernel/cgroup_timer_slack.c b/kernel/cgroup_timer_slack.c
new file mode 100644
index 0000000..affd33a
--- /dev/null
+++ b/kernel/cgroup_timer_slack.c
@@ -0,0 +1,262 @@
+/*
+ * cgroup_timer_slack.c - control group timer slack subsystem
+ *
+ * Copyright Nokia Corporation, 2011
+ * Author: Kirill A. Shutemov
+ *
+ * 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; either version 2 of the License, or
+ * (at your option) any later version.
+ *
+ * This program is distributed in the hope that it will be useful,
+ * but WITHOUT ANY WARRANTY; without even the implied warranty of
+ * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
+ * GNU General Public License for more details.
+ */
+#include <linux/cgroup.h>
+#include <linux/init_task.h>
+#include <linux/module.h>
+#include <linux/slab.h>
+#include <linux/rcupdate.h>
+
+struct cgroup_subsys timer_slack_subsys;
+struct timer_slack_cgroup {
+ struct cgroup_subsys_state css;
+ unsigned long min_slack_ns;
+ unsigned long max_slack_ns;
+};
+
+enum {
+ TIMER_SLACK_MIN,
+ TIMER_SLACK_MAX,
+};
+
+extern int (*timer_slack_check)(struct task_struct *task,

```

```
+ unsigned long slack_ns);
+
+static struct timer_slack_cgroup *cgroup_to_tslack_cgroup(struct cgroup *cgroup)
+{
+ struct cgroup_subsys_state *css;
+
+ css = cgroup_subsys_state(cgroup, timer_slack_subsys.subsys_id);
+ return container_of(css, struct timer_slack_cgroup, css);
+}
+
+static int is_timer_slack_allowed(struct timer_slack_cgroup *t
```

---