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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
```

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1.7.3.5

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

Signed-off-by: Kirill A. Shutemov <[kirill@shutemov.name](mailto:kirill@shutemov.name)>

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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

```

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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>

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```
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

```

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