
Subject: [PATCH 27/29] memory controller oom handling v7
Posted by [Paul Menage](#) on Tue, 11 Sep 2007 19:53:06 GMT
[View Forum Message](#) <> [Reply to Message](#)

From: Pavel Emelianov <xemul@openvz.org>

Out of memory handling for cgroups over their limit. A task from the cgroup over limit is chosen using the existing OOM logic and killed.

TODO:

1. As discussed in the OLS BOF session, consider implementing a user space policy for OOM handling.

Signed-off-by: Pavel Emelianov <xemul@openvz.org>

Signed-off-by: Balbir Singh <balbir@linux.vnet.ibm.com>

Cc: Paul Menage <menage@google.com>

Cc: Peter Zijlstra <a.p.zijlstra@chello.nl>

Cc: "Eric W. Biederman" <ebiederm@xmission.com>

Cc: Nick Piggin <nickpiggin@yahoo.com.au>

Cc: Kirill Korotaev <dev@sw.ru>

Cc: Herbert Poetzl <herbert@13thfloor.at>

Cc: David Rientjes <rientjes@google.com>

Cc: Vaidyanathan Srinivasan <svaidy@linux.vnet.ibm.com>

Signed-off-by: Andrew Morton <akpm@linux-foundation.org>

```
include/linux/memcontrol.h | 1
mm/memcontrol.c            | 1
mm/oom_kill.c              | 42 ++++++-----
3 files changed, 40 insertions(+), 4 deletions(-)
```

diff -puN include/linux/memcontrol.h~memory-controller-oom-handling-v7

include/linux/memcontrol.h

--- a/include/linux/memcontrol.h~memory-controller-oom-handling-v7

+++ a/include/linux/memcontrol.h

@@ -39,6 +39,7 @@ extern unsigned long mem_cgroup_isola

int mode, struct zone *z,

struct mem_cgroup *mem_cont,

int active);

+extern void mem_cgroup_out_of_memory(struct mem_cgroup *mem);

static inline void mem_cgroup_uncharge_page(struct page *page)

{

diff -puN mm/memcontrol.c~memory-controller-oom-handling-v7 mm/memcontrol.c

--- a/mm/memcontrol.c~memory-controller-oom-handling-v7

+++ a/mm/memcontrol.c

@@ -322,6 +322,7 @@ int mem_cgroup_charge(struct page *pa

}

```

    css_put(&mem->css);
+ mem_cgroup_out_of_memory(mem);
    goto free_pc;
}

diff -puN mm/oom_kill.c~memory-controller-oom-handling-v7 mm/oom_kill.c
--- a/mm/oom_kill.c~memory-controller-oom-handling-v7
+++ a/mm/oom_kill.c
@@ -25,6 +25,7 @@
#include <linux/cpuset.h>
#include <linux/module.h>
#include <linux/notifier.h>
+#include <linux/memcontrol.h>

int sysctl_panic_on_oom;
/* #define DEBUG */
@@ -48,7 +49,8 @@ int sysctl_panic_on_oom;
 *   of least surprise ... (be careful when you change it)
 */

-unsigned long badness(struct task_struct *p, unsigned long uptime)
+unsigned long badness(struct task_struct *p, unsigned long uptime,
+ struct mem_cgroup *mem)
{
    unsigned long points, cpu_time, run_time, s;
    struct mm_struct *mm;
@@ -61,6 +63,13 @@ unsigned long badness(struct task_struct
    return 0;
}

+#ifdef CONFIG_CGROUP_MEM_CONT
+ if (mem != NULL && mm->mem_cgroup != mem) {
+   task_unlock(p);
+   return 0;
+ }
+#endif
+
/*
 * The memory size of the process is the basis for the badness.
 */
@@ -198,7 +207,8 @@ static inline int constrained_alloc(stru
 *
 * (not docbooked, we don't want this one cluttering up the manual)
 */
-static struct task_struct *select_bad_process(unsigned long *ppoints)
+static struct task_struct *select_bad_process(unsigned long *ppoints,
+ struct mem_cgroup *mem)

```

```

{
    struct task_struct *g, *p;
    struct task_struct *chosen = NULL;
@@ -252,7 +262,7 @@ static struct task_struct *select_bad_pr
    if (p->oomkilladj == OOM_DISABLE)
        continue;

- points = badness(p, uptime.tv_sec);
+ points = badness(p, uptime.tv_sec, mem);
    if (points > *ppoints || !chosen) {
        chosen = p;
        *ppoints = points;
@@ -364,6 +374,30 @@ static int oom_kill_process(struct task_
    return oom_kill_task(p);
}

#ifdef CONFIG_CGROUP_MEM_CONT
+void mem_cgroup_out_of_memory(struct mem_cgroup *mem)
+{
+ unsigned long points = 0;
+ struct task_struct *p;
+
+ cgroup_lock();
+ rcu_read_lock();
+retry:
+ p = select_bad_process(&points, mem);
+ if (PTR_ERR(p) == -1UL)
+ goto out;
+
+ if (!p)
+ p = current;
+
+ if (oom_kill_process(p, points, "Memory cgroup out of memory"))
+ goto retry;
+out:
+ rcu_read_unlock();
+ cgroup_unlock();
+}
+endif
+
static BLOCKING_NOTIFIER_HEAD(oom_notify_list);

int register_oom_notifier(struct notifier_block *nb)
@@ -436,7 +470,7 @@ retry:
    * Rambo mode: Shoot down a process and hope it solves whatever
    * issues we may have.
    */
- p = select_bad_process(&points);

```

```
+ p = select_bad_process(&points, NULL);
```

```
    if (PTR_ERR(p) == -1UL)
        goto out;
```

```
—
```

```
--
```

Containers mailing list

Containers@lists.linux-foundation.org

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