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Subject: [PATCH v3 02/13] memcg: Reclaim when more than one page needed.  
Posted by [Glauber Costa](#) on Tue, 18 Sep 2012 14:03:59 GMT  
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From: Suleiman Souhlal <ssouhlal@FreeBSD.org>

mem\_cgroup\_do\_charge() was written before kmem accounting, and expects three cases: being called for 1 page, being called for a stock of 32 pages, or being called for a hugepage. If we call for 2 or 3 pages (and both the stack and several slabs used in process creation are such, at least with the debug options I had), it assumed it's being called for stock and just retried without reclaiming.

Fix that by passing down a minsize argument in addition to the csize.

And what to do about that (csize == PAGE\_SIZE && ret) retry? If it's needed at all (and presumably is since it's there, perhaps to handle races), then it should be extended to more than PAGE\_SIZE, yet how far? And should there be a retry count limit, of what? For now retry up to COSTLY\_ORDER (as page\_alloc.c does) and make sure not to do it if \_\_GFP\_NORETRY.

[v4: fixed nr pages calculation pointed out by Christoph Lameter ]

Signed-off-by: Suleiman Souhlal <suleiman@google.com>

Signed-off-by: Glauber Costa <glommer@parallels.com>

Reviewed-by: Kamezawa Hiroyuki <kamezawa.hiroyu@jp.fujitsu.com>

Acked-by: Michal Hocko <mhocko@suse.cz>

---

mm/memcontrol.c | 16 ++++++-----  
1 file changed, 9 insertions(+), 7 deletions(-)

diff --git a/mm/memcontrol.c b/mm/memcontrol.c

index 9d3bc72..b12121b 100644

--- a/mm/memcontrol.c

+++ b/mm/memcontrol.c

```
@@ -2232,7 +2232,8 @@ enum {  
};
```

```
static int mem_cgroup_do_charge(struct mem_cgroup *memcg, gfp_t gfp_mask,
```

```
- unsigned int nr_pages, bool oom_check)
```

```
+ unsigned int nr_pages, unsigned int min_pages,
```

```
+ bool oom_check)
```

```
{  
    unsigned long csize = nr_pages * PAGE_SIZE;  
    struct mem_cgroup *mem_over_limit;  
@@ -2255,18 +2256,18 @@ static int mem_cgroup_do_charge(struct mem_cgroup *memcg,  
gfp_t gfp_mask,
```

```

} else
    mem_over_limit = mem_cgroup_from_res_counter(fail_res, res);
/*
- * nr_pages can be either a huge page (HPAGE_PMD_NR), a batch
- * of regular pages (CHARGE_BATCH), or a single regular page (1).
- *
  * Never reclaim on behalf of optional batching, retry with a
  * single page instead.
  */
- if (nr_pages == CHARGE_BATCH)
+ if (nr_pages > min_pages)
    return CHARGE_RETRY;

    if (!(gfp_mask & __GFP_WAIT))
        return CHARGE_WOULDBLOCK;

+ if (gfp_mask & __GFP_NORETRY)
+ return CHARGE_NOMEM;
+
    ret = mem_cgroup_reclaim(mem_over_limit, gfp_mask, flags);
    if (mem_cgroup_margin(mem_over_limit) >= nr_pages)
        return CHARGE_RETRY;
@@ -2279,7 +2280,7 @@ static int mem_cgroup_do_charge(struct mem_cgroup *memcg, gfp_t
gfp_mask,
  * unlikely to succeed so close to the limit, and we fall back
  * to regular pages anyway in case of failure.
  */
- if (nr_pages == 1 && ret)
+ if (nr_pages <= (1 << PAGE_ALLOC_COSTLY_ORDER) && ret)
    return CHARGE_RETRY;

/*
@@ -2414,7 +2415,8 @@ again:
    nr_oom_retries = MEM_CGROUP_RECLAIM_RETRIES;
}

- ret = mem_cgroup_do_charge(memcg, gfp_mask, batch, oom_check);
+ ret = mem_cgroup_do_charge(memcg, gfp_mask, batch, nr_pages,
+ oom_check);
    switch (ret) {
    case CHARGE_OK:
        break;
--
1.7.11.4

```

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Subject: Re: [PATCH v3 02/13] memcg: Reclaim when more than one page

needed.

Posted by [Johannes Weiner](#) on Mon, 01 Oct 2012 19:00:48 GMT

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On Tue, Sep 18, 2012 at 06:03:59PM +0400, Glauber Costa wrote:

> From: Suleiman Souhlal <ssouhlal@FreeBSD.org>

>

> mem\_cgroup\_do\_charge() was written before kmem accounting, and expects

> three cases: being called for 1 page, being called for a stock of 32

> pages, or being called for a hugepage. If we call for 2 or 3 pages (and

> both the stack and several slabs used in process creation are such, at

> least with the debug options I had), it assumed it's being called for

> stock and just retried without reclaiming.

>

> Fix that by passing down a minsize argument in addition to the csize.

>

> And what to do about that (csize == PAGE\_SIZE && ret) retry? If it's

Wow, that patch set has been around for a while. It's been nr\_pages == 1 for a while now :-)

> needed at all (and presumably is since it's there, perhaps to handle

> races), then it should be extended to more than PAGE\_SIZE, yet how far?

> And should there be a retry count limit, of what? For now retry up to

> COSTLY\_ORDER (as page\_alloc.c does) and make sure not to do it if

> \_\_GFP\_NORETRY.

>

> [v4: fixed nr pages calculation pointed out by Christoph Lameter ]

>

> Signed-off-by: Suleiman Souhlal <suleiman@google.com>

> Signed-off-by: Glauber Costa <glommer@parallels.com>

> Reviewed-by: Kamezawa Hiroyuki <kamezawa.hiroyu@jp.fujitsu.com>

> Acked-by: Michal Hocko <mhocko@suse.cz>

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> @@ -2232,7 +2232,8 @@ enum {

> };

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> static int mem\_cgroup\_do\_charge(struct mem\_cgroup \*memcg, gfp\_t gfp\_mask,

> - unsigned int nr\_pages, bool oom\_check)

> + unsigned int nr\_pages, unsigned int min\_pages,

> + bool oom\_check)

I'm not a big fan of the parameter names. Can we make this function officially aware of batching and name the parameters like the arguments that are passed in? I.e. @batch and @nr\_pages?

```
> {
> unsigned long csize = nr_pages * PAGE_SIZE;
> struct mem_cgroup *mem_over_limit;
> @@ -2255,18 +2256,18 @@ static int mem_cgroup_do_charge(struct mem_cgroup *memcg,
> gfp_t gfp_mask,
> } else
> mem_over_limit = mem_cgroup_from_res_counter(fail_res, res);
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> - * of regular pages (CHARGE_BATCH), or a single regular page (1).
> - *
> * Never reclaim on behalf of optional batching, retry with a
> * single page instead.
```

"[...] with the amount of actually required pages instead."

```
> */
> - if (nr_pages == CHARGE_BATCH)
> + if (nr_pages > min_pages)
> return CHARGE_RETRY;
```

```
if (batch > nr_pages)
    return CHARGE_RETRY;
```

But that is all just nitpicking. Functionally, it looks sane, so:

Acked-by: Johannes Weiner <hannes@cmpxchg.org>

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