
Subject: Re: [RFC][only for review] memory controller bacground reclaim [5/5]
Posted by [Pavel Emelianov](#) on Wed, 28 Nov 2007 11:06:22 GMT
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KAMEZAWA Hiroyuki wrote:

```
> Create a daemon which does background page reclaim.
>
> This daemon
> * starts when usage > high_watermark
> * stops when usage < low_watermark.
>
> Because kthread_run() cannot be used when init_mem_cgroup is initialized(Sigh),
> thread for init_mem_cgroup is invoked later by initcall.
>
> Changes from YAMAMOTO-san's version
> * use kthread instead of workqueue.
>
> Signed-off-by: KAMEZAWA Hiroyuki <kamezawa.hiroyu@jp.fujitsu.com>
> From: YAMAMOTO Takashi <yamamoto@valinux.co.jp>
>
>
> mm/memcontrol.c | 79
+++++
> 1 file changed, 79 insertions(+)
>
> Index: linux-2.6.24-rc3-mm1/mm/memcontrol.c
> =====
> --- linux-2.6.24-rc3-mm1.orig/mm/memcontrol.c 2007-11-28 16:44:57.000000000 +0900
> +++ linux-2.6.24-rc3-mm1/mm/memcontrol.c 2007-11-28 17:21:57.000000000 +0900
> @@ -30,6 +30,8 @@
> #include <linux/spinlock.h>
> #include <linux/fs.h>
> #include <linux/seq_file.h>
> +#include <linux/kthread.h>
> +#include <linux/freezer.h>
>
> #include <asm/uaccess.h>
>
> @@ -122,6 +124,13 @@
> */
> struct res_counter res;
> /*
> + * background reclaim
> + */
> + struct {
> + wait_queue_head_t waitq;
> + struct task_struct *thread;
```

```
> + } daemon;
```

Does this HAS to be a struct?

```
> + /*
>  * Per cgroup active and inactive list, similar to the
>  * per zone LRU lists.
>  */
> @@ -401,6 +410,17 @@
> }
> }
>
> +static void
> +mem_cgroup_schedule_reclaim(struct mem_cgroup *mem)
> +{
> + if (!unlikely(mem->daemon.thread))
> + return;
> + if (!waitqueue_active(&mem->daemon.waitq))
> + return;
> + wake_up_interruptible(&mem->daemon.waitq);
> +}
> +
> +
> int task_in_mem_cgroup(struct task_struct *task, const struct mem_cgroup *mem)
> {
> int ret;
> @@ -677,6 +697,8 @@
> mem_cgroup_out_of_memory(mem, GFP_KERNEL);
> goto free_pc;
> }
> + if (res_counter_above_high_watermark(&mem->res))
> + mem_cgroup_schedule_reclaim(mem);
>
> atomic_set(&pc->ref_cnt, 1);
> pc->mem_cgroup = mem;
> @@ -832,6 +854,38 @@
> }
>
> /*
>  * Background page reclaim daeom for memory controller.
>  */
> +
> +static int mem_cgroup_reclaim_daemon(void *data)
> +{
> + DEFINE_WAIT(wait);
> + struct mem_cgroup *mem = data;
> +
> + css_get(&mem->css);
```

Won't this prevent the css from being removed?

```
> + set_freezable();
> +
> + while (!kthread_should_stop()) {
> +   prepare_to_wait(&mem->daemon.waitq, &wait, TASK_INTERRUPTIBLE);
> +
> +   if (res_counter_below_low_watermark(&mem->res)) {
> +     if (!kthread_should_stop()) {
> +       schedule();
> +       try_to_freeze();
> +     }
> +     finish_wait(&mem->daemon.waitq, &wait);
> +     continue;
> +   }
> +   finish_wait(&mem->daemon.waitq, &wait);
> +   try_to_free_mem_cgroup_pages(mem, GFP_HIGHUSER_MOVABLE);
> + }
> +
> + css_put(&mem->css);
> +
> + return 0;
> +}
> +
> +/*
>  * This routine traverse page_cgroup in given list and drop them all.
>  * This routine ignores page_cgroup->ref_cnt.
>  * *And* this routine doesn't reclaim page itself, just removes page_cgroup.
> @@ -1045,6 +1100,7 @@
> {
>   struct mem_cgroup *mem = mem_cgroup_from_cont(cont);
>   int ret;
> +
```

This hunk is not needed :)

```
>   ret = mem_cgroup_force_empty(mem);
>   if (!ret)
>     ret = nbytes;
> @@ -1188,6 +1244,16 @@
>
>   static struct mem_cgroup init_mem_cgroup;
>
> +static int __init mem_cgroup_reclaim_init(void)
> +{
> +   init_mem_cgroup.daemon.thread = kthread_run(mem_cgroup_reclaim_daemon,
> +     &init_mem_cgroup, "memcontd");
```

```

> + if (IS_ERR(init_mem_cgroup.daemon.thread))
> + BUG();
> + return 0;
> +}
> +late_initcall(mem_cgroup_reclaim_init);
> +
> static struct cgroup_subsys_state *
> mem_cgroup_create(struct cgroup_subsys *ss, struct cgroup *cont)
> {
> @@ -1212,6 +1278,17 @@
> if (alloc_mem_cgroup_per_zone_info(mem, node))
> goto free_out;
>
> + /* Memory Reclaim Daemon per cgroup */
> + init_waitqueue_head(&mem->daemon.waitq);
> + if (mem != &init_mem_cgroup) {
> + /* Complicated...but we cannot call kthread create here..*/
> + /* init call will later assign kthread */
> + mem->daemon.thread = kthread_run(mem_cgroup_reclaim_daemon,
> + mem, "memcontd");
> + if (IS_ERR(mem->daemon.thread))
> + goto free_out;

```

goto free_mem_cgroup_per_zone_info()?

```

> +}
> +
> return &mem->css;
> free_out:
> for_each_node_state(node, N_POSSIBLE)
> @@ -1226,6 +1303,7 @@
> {
> struct mem_cgroup *mem = mem_cgroup_from_cont(cont);
> mem_cgroup_force_empty(mem);
> + kthread_stop(mem->daemon.thread);
> }
>
> static void mem_cgroup_destroy(struct cgroup_subsys *ss,
>
>

```

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