
Subject: [PATCH 20/23] memcg: disable kmem code when not in use.
Posted by [Glauber Costa](#) on Sun, 22 Apr 2012 23:53:37 GMT
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We can use jump labels to patch the code in or out when not used.

Because the assignment: memcg->kmem_accounted = true is done after the jump labels increment, we guarantee that the root memcg will always be selected until all call sites are patched (see mem_cgroup_kmem_enabled). This guarantees that no mischarges are applied.

Jump label decrement happens when the last reference count from the memcg dies. This will only happen when the caches are all dead.

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```
include/linux/memcontrol.h | 4 +++-
mm/memcontrol.c            | 21 ++++++++
2 files changed, 23 insertions(+), 2 deletions(-)
```

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

```
index c1c1302..25c4324 100644
```

```
--- a/include/linux/memcontrol.h
```

```
+++ b/include/linux/memcontrol.h
```

```
@@ -21,6 +21,7 @@
```

```
#define _LINUX_MEMCONTROL_H
```

```
#include <linux/cgroup.h>
```

```
#include <linux/vm_event_item.h>
```

```
+#include <linux/jump_label.h>
```

```
struct mem_cgroup;
```

```
struct page_cgroup;
```

```
@@ -460,7 +461,8 @@ void __mem_cgroup_uncharge_kmem(size_t size);
```

```
struct kmem_cache *
```

```
__mem_cgroup_get_kmem_cache(struct kmem_cache *cachep, gfp_t gfp);
```

```
+#define mem_cgroup_kmem_on 1
```

```
+extern struct static_key mem_cgroup_kmem_enabled_key;
```

```
+#define mem_cgroup_kmem_on static_key_false(&mem_cgroup_kmem_enabled_key)
```

```

void mem_cgroup_destroy_cache(struct kmem_cache *cachep);
#else
diff --git a/mm/memcontrol.c b/mm/memcontrol.c
index ae61e99..547b632 100644
--- a/mm/memcontrol.c
+++ b/mm/memcontrol.c
@@ -422,6 +422,10 @@ static void mem_cgroup_put(struct mem_cgroup *memcg);
#include <net/sock.h>
#include <net/ip.h>

+struct static_key mem_cgroup_kmem_enabled_key;
+/* so modules can inline the checks */
+EXPORT_SYMBOL(mem_cgroup_kmem_enabled_key);
+
static bool mem_cgroup_is_root(struct mem_cgroup *memcg);
static int memcg_charge_kmem(struct mem_cgroup *memcg, gfp_t gfp, s64 delta);
static void memcg_uncharge_kmem(struct mem_cgroup *memcg, s64 delta);
@@ -468,6 +472,12 @@ void sock_release_memcg(struct sock *sk)
}
}

+static void disarm_static_keys(struct mem_cgroup *memcg)
+{
+ if (memcg->kmem_accounted)
+ static_key_slow_dec(&mem_cgroup_kmem_enabled_key);
+}
+
#ifdef CONFIG_INET
struct cg_proto *tcp_proto_cgroup(struct mem_cgroup *memcg)
{
@@ -847,6 +857,10 @@ static void memcg_slab_init(struct mem_cgroup *memcg)
for (i = 0; i < MAX_KMEM_CACHE_TYPES; i++)
rcu_assign_pointer(memcg->slabs[i], NULL);
}
#else
+static inline void disarm_static_keys(struct mem_cgroup *memcg)
+{
+}
#endif /* CONFIG_CGROUP_MEM_RES_CTLR_KMEM */

static void drain_all_stock_async(struct mem_cgroup *memcg);
@@ -4366,8 +4380,12 @@ static int mem_cgroup_write(struct cgroup *cont, struct cftype *cft,
*
* But it is not worth the trouble
*/
- if (!memcg->kmem_accounted && val != RESOURCE_MAX)
+ mutex_lock(&set_limit_mutex);

```

```

+ if (!memcg->kmem_accounted && val != RESOURCE_MAX) {
+   static_key_slow_inc(&mem_cgroup_kmem_enabled_key);
+   memcg->kmem_accounted = true;
+ }
+ mutex_unlock(&set_limit_mutex);
+ }
#endif
else
@@ -5349,6 +5367,7 @@ static void __mem_cgroup_put(struct mem_cgroup *memcg, int count)
{
    if (atomic_sub_and_test(count, &memcg->refcnt)) {
        struct mem_cgroup *parent = parent_mem_cgroup(memcg);
+   disarm_static_keys(memcg);
        __mem_cgroup_free(memcg);
        if (parent)
            mem_cgroup_put(parent);
--
1.7.7.6

```
