
Subject: [RFC PATCH 4/5] use the memcg VM overcommit prototypes

Posted by [Andrea Righi](#) on Mon, 09 Jun 2008 23:33:02 GMT

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Apply the new memory controller VM prototypes to the opportune kernel routines.

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```
ipc/shm.c | 6 ++++--
kernel/fork.c | 2 +-
mm/mmap.c | 10 ++++++-----
mm/mprotect.c | 2 +-
mm/mremap.c | 4 +++-
mm/shmem.c | 49 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++-----
mm/swapfile.c | 4 +++-
7 files changed, 57 insertions(+), 20 deletions(-)
```

```
diff --git a/ipc/shm.c b/ipc/shm.c
```

```
index 554429a..420bfa9 100644
```

```
--- a/ipc/shm.c
```

```
+++ b/ipc/shm.c
```

```
@@ -384,12 +384,14 @@ static int newseg(struct ipc_namespace *ns, struct ipc_params *params)
```

```
    shp->mlock_user = current->user;
```

```
    } else {
```

```
        int acctflag = VM_ACCOUNT;
```

```
+ struct vm_acct_values v;
```

```
/*
```

```
 * Do not allow no accounting for OVERCOMMIT_NEVER, even
```

```
- * if it's asked for.
```

```
+ * if it's asked for.
```

```
*/
```

```
+ vm_acct_get_config(current->mm, &v);
```

```
if ((shmflg & SHM_NORESERVE) &&
```

```
- sysctl_overcommit_memory != OVERCOMMIT_NEVER)
```

```
+ v.overcommit_memory != OVERCOMMIT_NEVER)
```

```
    acctflag = 0;
```

```
    file = shmem_file_setup(name, size, acctflag);
```

```
    }
```

```
diff --git a/kernel/fork.c b/kernel/fork.c
```

```
index 19908b2..eaffa56 100644
```

```
--- a/kernel/fork.c
```

```
+++ b/kernel/fork.c
```

```
@@ -336,7 +336,7 @@ fail_nomem_policy:
```

```
    kmem_cache_free(vm_area_cachep, tmp);
```

```
fail_nomem:
```

```
    retval = -ENOMEM;
```

```
- vm_unacct_memory(charge);
```

```

+ vm_unacct_memory(mm, charge);
  goto out;
}

diff --git a/mm/mmap.c b/mm/mmap.c
index 256599e..ab40277 100644
--- a/mm/mmap.c
+++ b/mm/mmap.c
@@ -1028,6 +1028,7 @@ unsigned long mmap_region(struct file *file, unsigned long addr,
  int error;
  struct rb_node **rb_link, *rb_parent;
  unsigned long charged = 0;
+ struct vm_acct_values v;
  struct inode *inode = file ? file->f_path.dentry->d_inode : NULL;

  /* Clear old maps */
@@ -1044,6 +1045,7 @@ munmap_back:
  if (!may_expand_vm(mm, len >> PAGE_SHIFT))
    return -ENOMEM;

+ vm_acct_get_config(mm, &v);
  if (accountable && (!(flags & MAP_NORESERVE) ||
    sysctl_overcommit_memory == OVERCOMMIT_NEVER)) {
    if (vm_flags & VM_SHARED) {
@@ -1170,7 +1172,7 @@ free_vma:
  kmem_cache_free(vm_area_cachep, vma);
  unacct_error:
  if (charged)
- vm_unacct_memory(charged);
+ vm_unacct_memory(mm, charged);
  return error;
}

@@ -1698,7 +1700,7 @@ static void unmap_region(struct mm_struct *mm,
  tlb = tlb_gather_mmu(mm, 0);
  update_hiwater_rss(mm);
  unmap_vmas(&tlb, vma, start, end, &nr_accounted, NULL);
- vm_unacct_memory(nr_accounted);
+ vm_unacct_memory(mm, nr_accounted);
  free_pgtables(&tlb, vma, prev? prev->vm_end: FIRST_USER_ADDRESS,
    next? next->vm_start: 0);
  tlb_finish_mmu(tlb, start, end);
@@ -1959,7 +1961,7 @@ unsigned long do_brk(unsigned long addr, unsigned long len)
  */
  vma = kmem_cache_zalloc(vm_area_cachep, GFP_KERNEL);
  if (!vma) {
- vm_unacct_memory(len >> PAGE_SHIFT);
+ vm_unacct_memory(mm, len >> PAGE_SHIFT);

```

```
    return -ENOMEM;
}
```

```
@@ -1998,7 +2000,7 @@ void exit_mmap(struct mm_struct *mm)
/* Don't update_hiwater_rss(mm) here, do_exit already did */
/* Use -1 here to ensure all VMAs in the mm are unmapped */
end = unmap_vmas(&tlb, vma, 0, -1, &nr_accounted, NULL);
- vm_unacct_memory(nr_accounted);
+ vm_unacct_memory(mm, nr_accounted);
  free_pgtables(&tlb, vma, FIRST_USER_ADDRESS, 0);
  tlb_finish_mmu(tlb, 0, end);
```

```
diff --git a/mm/mprotect.c b/mm/mprotect.c
index a5bf31c..2b1ad3b 100644
--- a/mm/mprotect.c
+++ b/mm/mprotect.c
@@ -216,7 +216,7 @@ success:
    return 0;
```

```
fail:
- vm_unacct_memory(charged);
+ vm_unacct_memory(mm, charged);
  return error;
}
```

```
diff --git a/mm/mremap.c b/mm/mremap.c
index 08e3c7f..9dc5921 100644
--- a/mm/mremap.c
+++ b/mm/mremap.c
@@ -217,7 +217,7 @@ static unsigned long move_vma(struct vm_area_struct *vma,
```

```
    if (do_munmap(mm, old_addr, old_len) < 0) {
        /* OOM: unable to split vma, just get accounts right */
- vm_unacct_memory(excess >> PAGE_SHIFT);
+ vm_unacct_memory(mm, excess >> PAGE_SHIFT);
        excess = 0;
    }
```

```
    mm->hiwater_vm = hiwater_vm;
@@ -407,7 +407,7 @@ unsigned long do_mremap(unsigned long addr,
```

```
    out:
    if (ret & ~PAGE_MASK)
- vm_unacct_memory(charged);
+ vm_unacct_memory(mm, charged);
    out_nc:
    return ret;
}
```

```
diff --git a/mm/shmem.c b/mm/shmem.c
```

index e2a6ae1..2cd56be 100644

--- a/mm/shmem.c

+++ b/mm/shmem.c

```
@@ -163,14 +163,30 @@ static inline struct shmem_sb_info *SHMEM_SB(struct super_block
*sb)
*/
```

```
static inline int shmem_acct_size(unsigned long flags, loff_t size)
```

```
{
- return (flags & VM_ACCOUNT)?
- security_vm_enough_memory(VM_ACCT(size)): 0;
+ if (!(flags & VM_ACCOUNT))
+ return 0;
+ /*
+ * TODO: find a way to correctly account shared memory also for the
+ * cgroup memory controller, as well as non-shared memory. For now
+ * simply undo the accounting in the cgroup's committed space and
+ * report the size only in the global committed memory.
+ */
+ mem_cgroup_vm_acct_memory(current->mm, -VM_ACCT(size));
+ return security_vm_enough_memory(VM_ACCT(size));
}
```

```
static inline void shmem_unacct_size(unsigned long flags, loff_t size)
```

```
{
- if (flags & VM_ACCOUNT)
- vm_unacct_memory(VM_ACCT(size));
+ /*
+ * TODO: find a way to correctly account shared memory also for the
+ * cgroup memory controller, as well as non-shared memory. For now
+ * simply undo the accounting in the cgroup's committed space and
+ * report the size only in the global committed memory.
+ */
+ if (!(flags & VM_ACCOUNT))
+ return;
+ mem_cgroup_vm_acct_memory(current->mm, VM_ACCT(size));
+ vm_unacct_memory(current->mm, VM_ACCT(size));
}
```

```
/*
@@ -181,14 +197,31 @@ static inline void shmem_unacct_size(unsigned long flags, loff_t size)
*/
```

```
static inline int shmem_acct_block(unsigned long flags)
```

```
{
- return (flags & VM_ACCOUNT)?
- 0: security_vm_enough_memory(VM_ACCT(PAGE_CACHE_SIZE));
+ /*
+ * TODO: find a way to correctly account shared memory also for the
+ * cgroup memory controller, as well as non-shared memory. For now
```

```

+ * simply undo the accounting in the cgroup's committed space and
+ * report the size only in the global committed memory.
+ */
+ if (flags & VM_ACCOUNT)
+ return 0;
+ mem_cgroup_vm_acct_memory(current->mm, -VM_ACCT(PAGE_CACHE_SIZE));
+ return security_vm_enough_memory(VM_ACCT(PAGE_CACHE_SIZE));
}

static inline void shmem_unacct_blocks(unsigned long flags, long pages)
{
- if (!(flags & VM_ACCOUNT))
- vm_unacct_memory(pages * VM_ACCT(PAGE_CACHE_SIZE));
+ /*
+ * TODO: find a way to correctly account shared memory also for the
+ * cgroup memory controller, as well as non-shared memory. For now
+ * simply undo the accounting in the cgroup's committed space and
+ * report the size only in the global committed memory.
+ */
+ if (flags & VM_ACCOUNT)
+ return;
+ mem_cgroup_vm_acct_memory(current->mm,
+ pages * VM_ACCT(PAGE_CACHE_SIZE));
+ vm_unacct_memory(current->mm, pages * VM_ACCT(PAGE_CACHE_SIZE));
}

static const struct super_operations shmem_ops;
diff --git a/mm/swapfile.c b/mm/swapfile.c
index bd1bb59..87b7d1a 100644
--- a/mm/swapfile.c
+++ b/mm/swapfile.c
@@ -1213,7 +1213,7 @@ asmlinkage long sys_swapoff(const char __user * specialfile)
char * pathname;
int i, type, prev;
int err;
-
+
if (!capable(CAP_SYS_ADMIN))
return -EPERM;

@@ -1245,7 +1245,7 @@ asmlinkage long sys_swapoff(const char __user * specialfile)
goto out_dput;
}
if (!security_vm_enough_memory(p->pages))
- vm_unacct_memory(p->pages);
+ vm_unacct_memory(current->mm, p->pages);
else {
err = -ENOMEM;

```

```
spin_unlock(&swap_lock);
```

```
--
```

```
1.5.4.3
```

Containers mailing list

Containers@lists.linux-foundation.org

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