Subject: [PATCH] memory.swappiness
Posted by yamamoto on Mon, 03 Dec 2007 02:54:16 GMT
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here's a trivial patch to implement memory.swappiness,
which controls swappiness for cgroup memory reclamation.

it's against 2.6.24-rc3-mm2.

YAMAMOTO Takashi

Signed-off-by: YAMAMOTO Takashi <yamamoto@valinux.co.jp>

```
--- linux-2.6.24-rc3-mm2-swappiness/include/linux/memcontrol.h.BACKUP 2007-12-03
11:49:27.176669111 +0900
+++ linux-2.6.24-rc3-mm2-swappiness/include/linux/memcontrol.h 2007-12-03
10:00:29.049448425 +0900
@@ -46,6 +46,7 @@ extern void mem_cgroup_out_of_memory(str
 extern int mem_cgroup_cache_charge(struct page *page, struct mm_struct *mm,
      gfp_t gfp_mask);
 int task_in_mem_cgroup(struct task_struct *task, const struct mem_cgroup *mem);
+extern int mem_cgroup_swappiness(struct mem_cgroup *mem);

 static inline struct mem_cgroup *mm_cgroup(const struct mm_struct *mm)
 {
--- linux-2.6.24-rc3-mm2-swappiness/mm/vmscan.c.BACKUP 2007-12-03 07:49:00.000000000
+0900
+++ linux-2.6.24-rc3-mm2-swappiness/mm/vmscan.c 2007-12-03 10:01:57.559803379 +0900
@@ -1030,7 +1030,7 @@ static int calc_reclaim_mapped(struct sc
   *
   * Max temporary value is vm_total_pages*100.
   */
- imbalance *= (vm_swappiness + 1);
+ imbalance *= (sc->swappiness + 1);
  imbalance /= 100;

  /*
@@ -1445,7 +1445,7 @@ unsigned long try_to_free_mem_cgroup_pag
   .may_writepage = !laptop_mode,
   .may_swap = 1,
   .swap_cluster_max = SWAP_CLUSTER_MAX,
-  .swappiness = vm_swappiness,
+  .swappiness = mem_cgroup_swappiness(mem_cont),
   .order = 0,
   .mem_cgroup = mem_cont,
   .isolate_pages = mem_cgroup_isolate_pages,
```

```
--- linux-2.6.24-rc3-mm2-swappiness/mm/memcontrol.c.BACKUP 2007-12-03
07:49:00.000000000 +0900
+++ linux-2.6.24-rc3-mm2-swappiness/mm/memcontrol.c 2007-12-03 11:22:40.157163781 +0900
@@ -133,6 +133,7 @@ struct mem_cgroup {

  unsigned long control_type; /* control RSS or RSS+Pagecache */
  int prev_priority; /* for recording reclaim priority */
+ unsigned int swappiness; /* swappiness */
  /*
   * statistics.
   */
@@ -1077,7 +1078,23 @@ static int mem_control_stat_open(struct
  return single_open(file, mem_control_stat_show, cont);
 }

+static int mem_cgroup_swappiness_write(struct cgroup *cont, struct cftype *cft,
+           u64 val)
+{
+ struct mem_cgroup *mem = mem_cgroup_from_cont(cont);
+
+ if (val > 100)
+  return -EINVAL;
+ mem->swappiness = val;
+ return 0;
+}
+
+static u64 mem_cgroup_swappiness_read(struct cgroup *cont, struct cftype *cft)
+{
+ struct mem_cgroup *mem = mem_cgroup_from_cont(cont);

+ return mem->swappiness;
+}

 static struct cftype mem_cgroup_files[] = {
  {
@@ -1110,8 +1127,21 @@ static struct cftype mem_cgroup_files[]
   .name = "stat",
   .open = mem_control_stat_open,
  },
+ {
+  .name = "swappiness",
+  .write_uint = mem_cgroup_swappiness_write,
+  .read_uint = mem_cgroup_swappiness_read,
+ },
 };

+/* XXX probably it's better to move try_to_free_mem_cgroup_pages to
+  memcontrol.c and kill this */
```

```
+int mem_cgroup_swappiness(struct mem_cgroup *mem)
+{
+
+ return mem->swappiness;
+}
+
 static int alloc_mem_cgroup_per_zone_info(struct mem_cgroup *mem, int node)
 {
  struct mem_cgroup_per_node *pn;
@@ -1155,6 +1185,8 @@ mem_cgroup_create(struct cgroup_subsys *
  res_counter_init(&mem->res);

  mem->control_type = MEM_CGROUP_TYPE_ALL;
+ mem->swappiness = 60; /* XXX probably should inherit a value from
+     either parent cgroup or global vm_swappiness */
  memset(&mem->info, 0, sizeof(mem->info));

  for_each_node_state(node, N_POSSIBLE)
```

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