Subject: [-mm] CPU controller statistics (v5)
Posted by Balbir Singh on Tue, 03 Jun 2008 20:05:15 GMT
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From: Balaji Rao <balajirrao@gmail.com>

This is a repost of Balaji's patches at
http://kerneltrap.org/mailarchive/linux-kernel/2008/5/11/1791504
I've made changes to the format exported to user space. I've used
clock_t, since /proc/<pid>/stat uses the same format to export data.

I've run some basic tests to verify that the patches work.

Andrew could you please consider them for inclusion if there are no
objections to this patch. This patch helps fill a void in the controllers
we have w.r.t. statistics

The patch is against the latest git.

Signed-off-by: Balaji Rao <balajirrao@gmail.com>
Signed-off-by: Balbir Singh <balbir@linux.vnet.ibm.com>

---
 include/linux/cgroup.h | 1
 kernel/cgroup.c | 6 ++
 kernel/sched.c | 100
 3 files changed, 106 insertions(+), 1 deletion(-)

```
diff --git a/include/linux/cgroup.h b/include/linux/cgroup.h
index e155aa7..60a25cb 100644
--- a/include/linux/cgroup.h
+++ b/include/linux/cgroup.h
@@ -293,6 +293,7 @@ int cgroup_is_descendant(const struct cgroup *cgrp);
 struct cgroup_subsys {
  struct cgroup_subsys_state *(*create)(struct cgroup_subsys *ss,
         struct cgroup *cgrp);
+ void (*initialize)(int early);
  void (*pre_destroy)(struct cgroup_subsys *ss, struct cgroup *cgrp);
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  int (*can_attach)(struct cgroup_subsys *ss,
diff --git a/kernel/cgroup.c b/kernel/cgroup.c
index 15ac0e1..77569d7 100644
--- a/kernel/cgroup.c
+++ b/kernel/cgroup.c
@@ -2553,6 +2553,9 @@ int __init cgroup_init_early(void)

   if (ss->early_init)
    cgroup_init_subsys(ss);
```

```
+
+  if (ss->initialize)
+    ss->initialize(1);
  }
  return 0;
 }
@@ -2577,6 +2580,9 @@ int __init cgroup_init(void)
   struct cgroup_subsys *ss = subsys[i];
   if (!ss->early_init)
    cgroup_init_subsys(ss);
+
+  if (ss->initialize)
+    ss->initialize(0);
  }

  /* Add init_css_set to the hash table */
diff --git a/kernel/sched.c b/kernel/sched.c
index bfb8ad8..d6df3d3 100644
--- a/kernel/sched.c
+++ b/kernel/sched.c
@@ -245,11 +245,32 @@ static DEFINE_MUTEX(sched_domains_mutex);
 struct cfs_rq;

 static LIST_HEAD(task_groups);
+#ifdef CONFIG_CGROUP_SCHED
+#define CPU_CGROUP_STAT_THRESHOLD (1 << 30)
+enum cpu_cgroup_stat_index {
+ CPU_CGROUP_STAT_UTIME, /* Usertime of the task group */
+ CPU_CGROUP_STAT_STIME, /* Kerneltime of the task group */
+
+ CPU_CGROUP_STAT_NSTATS,
+};
+
+struct cpu_cgroup_stat {
+ struct percpu_counter cpustat[CPU_CGROUP_STAT_NSTATS];
+};
+
+static void __cpu_cgroup_stat_add(struct cpu_cgroup_stat *stat,
+  enum cpu_cgroup_stat_index idx, s64 val)
+{
+ if (stat)
+  percpu_counter_add(&stat->cpustat[idx], val);
+}
+#endif

 /* task group related information */
 struct task_group {
 #ifdef CONFIG_CGROUP_SCHED
```

```
  struct cgroup_subsys_state css;
+ struct cpu_cgroup_stat *stat;
 #endif

 #ifdef CONFIG_FAIR_GROUP_SCHED
@@ -3885,6 +3906,16 @@ void account_user_time(struct task_struct *p, cputime_t cputime)
   cpustat->nice = cputime64_add(cpustat->nice, tmp);
  else
   cpustat->user = cputime64_add(cpustat->user, tmp);
+
+       /* Charge the task's group */
+#ifdef CONFIG_CGROUP_SCHED
+ {
+  struct task_group *tg;
+  tg = task_group(p);
+  __cpu_cgroup_stat_add(tg->stat, CPU_CGROUP_STAT_UTIME,
+    cputime_to_msecs(cputime) * NSEC_PER_MSEC);
+ }
+#endif
 }

 /*
@@ -3942,8 +3973,17 @@ void account_system_time(struct task_struct *p, int hardirq_offset,
   cpustat->irq = cputime64_add(cpustat->irq, tmp);
  else if (softirq_count())
   cpustat->softirq = cputime64_add(cpustat->softirq, tmp);
- else if (p != rq->idle)
+ else if (p != rq->idle) {
   cpustat->system = cputime64_add(cpustat->system, tmp);
+#ifdef CONFIG_CGROUP_SCHED
+  {
+   struct task_group *tg;
+   tg = task_group(p);
+   __cpu_cgroup_stat_add(tg->stat, CPU_CGROUP_STAT_STIME,
+    cputime_to_msecs(cputime) * NSEC_PER_MSEC);
+  }
+#endif
+ }
  else if (atomic_read(&rq->nr_iowait) > 0)
   cpustat->iowait = cputime64_add(cpustat->iowait, tmp);
  else
@@ -8325,6 +8365,24 @@ unsigned long sched_group_shares(struct task_group *tg)
 }
 #endif

+static s64 cpu_cgroup_read_stat(struct cpu_cgroup_stat *stat,
+  enum cpu_cgroup_stat_index idx)
+{
```

```
+ if (stat)
+  return nsec_to_clock_t(
+    percpu_counter_read(&stat->cpustat[idx]));
+
+ return 0;
+}
+
+static const struct cpu_cgroup_stat_desc {
+ const char *msg;
+ u64 unit;
+} cpu_cgroup_stat_desc[] = {
+ [CPU_CGROUP_STAT_UTIME] = { "utime", 1, },
+ [CPU_CGROUP_STAT_STIME] = { "stime", 1, },
+};
+
 #ifdef CONFIG_RT_GROUP_SCHED
 /*
  * Ensure that the real time constraints are schedulable.
@@ -8551,10 +8609,41 @@ static inline struct task_group *cgroup_tg(struct cgroup *cgrp)
        struct task_group, css);
 }

+static int cpu_cgroup_stats_show(struct cgroup *cgrp, struct cftype *cft,
+  struct cgroup_map_cb *cb)
+{
+ struct task_group *tg = cgroup_tg(cgrp);
+ struct cpu_cgroup_stat *stat = tg->stat;
+ int i;
+ for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++) {
+  s64 val;
+  val = cpu_cgroup_read_stat(stat, i);
+  val *= cpu_cgroup_stat_desc[i].unit;
+  cb->fill(cb, cpu_cgroup_stat_desc[i].msg, val);
+ }
+ return 0;
+}
+
+static void cpu_cgroup_initialize(int early)
+{
+ int i;
+ struct cpu_cgroup_stat *stat;
+
+ if (!early) {
+  stat = kmalloc(sizeof(struct cpu_cgroup_stat)
+    , GFP_KERNEL);
+  for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++)
+   percpu_counter_init(
+     &stat->cpustat[i], 0);
```

```
+  init_task_group.stat = stat;
+ }
+}
+
 static struct cgroup_subsys_state *
 cpu_cgroup_create(struct cgroup_subsys *ss, struct cgroup *cgrp)
 {
  struct task_group *tg, *parent;
+ int i;

  if (!cgrp->parent) {
   /* This is early initialization for the top cgroup */
@@ -8567,6 +8656,10 @@ cpu_cgroup_create(struct cgroup_subsys *ss, struct cgroup *cgrp)
  if (IS_ERR(tg))
   return ERR_PTR(-ENOMEM);

+ tg->stat = kmalloc(sizeof(struct cpu_cgroup_stat), GFP_KERNEL);
+ for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++)
+  percpu_counter_init(&tg->stat->cpustat[i], 0);
+
  /* Bind the cgroup to task_group object we just created */
  tg->css.cgroup = cgrp;

@@ -8664,6 +8757,10 @@ static struct cftype cpu_files[] = {
   .write_u64 = cpu_rt_period_write_uint,
  },
 #endif
+ {
+  .name = "stat",
+  .read_map = cpu_cgroup_stats_show,
+ },
 };

 static int cpu_cgroup_populate(struct cgroup_subsys *ss, struct cgroup *cont)
@@ -8673,6 +8770,7 @@ static int cpu_cgroup_populate(struct cgroup_subsys *ss, struct
cgroup *cont)

 struct cgroup_subsys cpu_cgroup_subsys = {
  .name  = "cpu",
+ .initialize = cpu_cgroup_initialize,
  .create  = cpu_cgroup_create,
  .destroy = cpu_cgroup_destroy,
  .can_attach = cpu_cgroup_can_attach,

--
 Warm Regards,
 Balbir Singh
 Linux Technology Center
```

IBM, ISTL

_____

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

---

Subject: Re: [-mm] CPU controller statistics (v5)
Posted by akpm on Wed, 04 Jun 2008 21:44:08 GMT
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On Wed, 4 Jun 2008 01:35:15 +0530
Balbir Singh <balbir@linux.vnet.ibm.com> wrote:

> From: Balaji Rao <balajirrao@gmail.com>
>
> This is a repost of Balaji's patches at
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> I've made changes to the format exported to user space. I've used
> clock_t, since /proc/<pid>/stat uses the same format to export data.
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> I've run some basic tests to verify that the patches work.
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> objections to this patch. This patch helps fill a void in the controllers
> we have w.r.t. statistics
>
> The patch is against the latest git.
>

That is not a changelog. Please always include a (good) changelog with
each iteration of a patch.

Were all my previous comments addressed? Most, it seems.

>
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> struct cgroup_subsys {
>   struct cgroup_subsys_state *(*create)(struct cgroup_subsys *ss,
>   struct cgroup *cgrp);
> + void (*initialize)(int early);
>   void (*pre_destroy)(struct cgroup_subsys *ss, struct cgroup *cgrp);
>   void (*destroy)(struct cgroup_subsys *ss, struct cgroup *cgrp);
>   int (*can_attach)(struct cgroup_subsys *ss,

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> index 15ac0e1..77569d7 100644
> --- a/kernel/cgroup.c
> +++ b/kernel/cgroup.c
> @@ -2553,6 +2553,9 @@ int __init cgroup_init_early(void)
>
> if (ss->early_init)
> cgroup_init_subsys(ss);
> +
> + if (ss->initialize)
> + ss->initialize(1);
> }
> return 0;
> }
> @@ -2577,6 +2580,9 @@ int __init cgroup_init(void)
> struct cgroup_subsys *ss = subsys[i];
> if (!ss->early_init)
> cgroup_init_subsys(ss);
> +
> + if (ss->initialize)
> + ss->initialize(0);

Can we avoid these tests? By requiring that cgroup_subsys.initialize()
always be non-zero? It might make sense, and it might not...

> }
>
> /* Add init_css_set to the hash table */
> diff --git a/kernel/sched.c b/kernel/sched.c
> index bfb8ad8..d6df3d3 100644
> --- a/kernel/sched.c
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> @@ -245,11 +245,32 @@ static DEFINE_MUTEX(sched_domains_mutex);
> struct cfs_rq;
>
> static LIST_HEAD(task_groups);
> +#ifdef CONFIG_CGROUP_SCHED
> +#define CPU_CGROUP_STAT_THRESHOLD (1 << 30)
> +enum cpu_cgroup_stat_index {
> + CPU_CGROUP_STAT_UTIME, /* Usertime of the task group */
> + CPU_CGROUP_STAT_STIME, /* Kerneltime of the task group */
> +
> + CPU_CGROUP_STAT_NSTATS,
> +};
> +
> +struct cpu_cgroup_stat {
> + struct percpu_counter cpustat[CPU_CGROUP_STAT_NSTATS];
> +};

```
> +
> +static void __cpu_cgroup_stat_add(struct cpu_cgroup_stat *stat,
> +  enum cpu_cgroup_stat_index idx, s64 val)
> +{
> + if (stat)
> +  percpu_counter_add(&stat->cpustat[idx], val);
> +}
> +#endif
>
>  /* task group related information */
>  struct task_group {
>  #ifdef CONFIG_CGROUP_SCHED
>   struct cgroup_subsys_state css;
> + struct cpu_cgroup_stat *stat;
>  #endif
>
>  #ifdef CONFIG_FAIR_GROUP_SCHED
> @@ -3885,6 +3906,16 @@ void account_user_time(struct task_struct *p, cputime_t cputime)
>    cpustat->nice = cputime64_add(cpustat->nice, tmp);
>   else
>    cpustat->user = cputime64_add(cpustat->user, tmp);
> +
> +       /* Charge the task's group */
> +#ifdef CONFIG_CGROUP_SCHED
> + {
> +  struct task_group *tg;
> +  tg = task_group(p);
> +  __cpu_cgroup_stat_add(tg->stat, CPU_CGROUP_STAT_UTIME,
> +    cputime_to_msecs(cputime) * NSEC_PER_MSEC);
> + }
> +#endif
>  }
>
>  /*
> @@ -3942,8 +3973,17 @@ void account_system_time(struct task_struct *p, int hardirq_offset,
>    cpustat->irq = cputime64_add(cpustat->irq, tmp);
>   else if (softirq_count())
>    cpustat->softirq = cputime64_add(cpustat->softirq, tmp);
> - else if (p != rq->idle)
> + else if (p != rq->idle) {
>    cpustat->system = cputime64_add(cpustat->system, tmp);
> +#ifdef CONFIG_CGROUP_SCHED
> +  {
> +   struct task_group *tg;
> +   tg = task_group(p);
> +   __cpu_cgroup_stat_add(tg->stat, CPU_CGROUP_STAT_STIME,
> +    cputime_to_msecs(cputime) * NSEC_PER_MSEC);
> +  }
```

> +#endif

The above two almost-identical code sequences should, I suggest, be
broken out into a standalone helper function, which has two
implementations, the CONFIG_CGROUP_SCHED=n version of which is a
do-nothing stub, in the usual fashion.

I suggested this last time.

> + }
>   else if (atomic_read(&rq->nr_iowait) > 0)
>   cpustat->iowait = cputime64_add(cpustat->iowait, tmp);
>   else
> @@ -8325,6 +8365,24 @@ unsigned long sched_group_shares(struct task_group *tg)
> }
> #endif
>
> +static s64 cpu_cgroup_read_stat(struct cpu_cgroup_stat *stat,
> + enum cpu_cgroup_stat_index idx)
> +{
> + if (stat)
> + return nsec_to_clock_t(
> +   percpu_counter_read(&stat->cpustat[idx]));
> +
> + return 0;
> +}

ick at the code layout. How about this:

 if (!stat)
  return 0;
 return nsec_to_clock_t(percpu_counter_read(&stat->cpustat[idx]));

?

> +static const struct cpu_cgroup_stat_desc {
> + const char *msg;
> + u64 unit;
> +} cpu_cgroup_stat_desc[] = {
> + [CPU_CGROUP_STAT_UTIME] = { "utime", 1, },
> + [CPU_CGROUP_STAT_STIME] = { "stime", 1, },
> +};
> +
> #ifdef CONFIG_RT_GROUP_SCHED
> /*
>   * Ensure that the real time constraints are schedulable.
> @@ -8551,10 +8609,41 @@ static inline struct task_group *cgroup_tg(struct cgroup *cgrp)
>   struct task_group, css);

> }
>
> +static int cpu_cgroup_stats_show(struct cgroup *cgrp, struct cftype *cft,
> + struct cgroup_map_cb *cb)
> +{
> + struct task_group *tg = cgroup_tg(cgrp);
> + struct cpu_cgroup_stat *stat = tg->stat;
> + int i;
> + for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++) {

Please prefer to put a blank line between end-of-locals and
start-of-code. It does make the code somewhat easier to read.

> + s64 val;
> + val = cpu_cgroup_read_stat(stat, i);
> + val *= cpu_cgroup_stat_desc[i].unit;
> + cb->fill(cb, cpu_cgroup_stat_desc[i].msg, val);
> + }
> + return 0;
> +}
> +
> +static void cpu_cgroup_initialize(int early)
> +{
> + int i;
> + struct cpu_cgroup_stat *stat;
> +
> + if (!early) {

like that.

> + stat = kmalloc(sizeof(struct cpu_cgroup_stat)
> + , GFP_KERNEL);
> + for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++)
> + percpu_counter_init(
> + &stat->cpustat[i], 0);

Suppose the kmalloc failed?

> + init_task_group.stat = stat;
> + }
> +}

more icky layout, and what's that comma doing there?

Again, please use a bit of thought rather than blindly whacking in
newlines everywhere.

```
static void cpu_cgroup_initialize(int early)
{
 int i;
 struct cpu_cgroup_stat *stat;

 if (early)
  return;

 stat = kmalloc(sizeof(struct cpu_cgroup_stat), GFP_KERNEL);
 for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++)
  percpu_counter_init(&stat->cpustat[i], 0);
 init_task_group.stat = stat;
}
```

is better, yes?

Also, if this code is likely to be executed with any frequency then the
test of `early' could be inlined:

```
static inline void cpu_cgroup_initialize(int early)
{
 if (unlikely(!early))
  __cpu_cgroup_initialize();
}
```

yes?

```
>  static struct cgroup_subsys_state *
>  cpu_cgroup_create(struct cgroup_subsys *ss, struct cgroup *cgrp)
>  {
>   struct task_group *tg, *parent;
> + int i;
>
>   if (!cgrp->parent) {
>    /* This is early initialization for the top cgroup */
> @@ -8567,6 +8656,10 @@ cpu_cgroup_create(struct cgroup_subsys *ss, struct cgroup *cgrp)
>   if (IS_ERR(tg))
>    return ERR_PTR(-ENOMEM);
>
> + tg->stat = kmalloc(sizeof(struct cpu_cgroup_stat), GFP_KERNEL);
> + for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++)
> +  percpu_counter_init(&tg->stat->cpustat[i], 0);
```

Which will crash the machine if the kmalloc failed.

c'mon guys, that wasn't a great effort.

_____

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

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Subject: Re: [-mm] CPU controller statistics (v5)
Posted by Balbir Singh on Thu, 05 Jun 2008 09:37:15 GMT
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Andrew Morton wrote:
> On Wed, 4 Jun 2008 01:35:15 +0530
> Balbir Singh <balbir@linux.vnet.ibm.com> wrote:
>
>> From: Balaji Rao <balajirrao@gmail.com>
>>
>> This is a repost of Balaji's patches at
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>> I've made changes to the format exported to user space. I've used
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>>
>> The patch is against the latest git.
>>
>
> That is not a changelog. Please always include a (good) changelog with
> each iteration of a patch.
>

Sure, will do

> Were all my previous comments addressed? Most, it seems.
>

Yes, Balaji did work on addressing them

>> diff --git a/include/linux/cgroup.h b/include/linux/cgroup.h
>> index e155aa7..60a25cb 100644
>> --- a/include/linux/cgroup.h
>> +++ b/include/linux/cgroup.h
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>>    if (ss->early_init)
>>     cgroup_init_subsys(ss);
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>> +  if (ss->initialize)
>> +   ss->initialize(1);
>>   }
>>   return 0;
>>  }
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>>    struct cgroup_subsys *ss = subsys[i];
>>    if (!ss->early_init)
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>> +
>> +  if (ss->initialize)
>> +   ss->initialize(0);
>
> Can we avoid these tests?  By requiring that cgroup_subsys.initialize()
> always be non-zero?  It might make sense, and it might not...
>
```

They are really hard to avoid, otherwise we might be taking away the flexibility
we have.

```
>>   }
>>
>>   /* Add init_css_set to the hash table */
>> diff --git a/kernel/sched.c b/kernel/sched.c
>> index bfb8ad8..d6df3d3 100644
>> --- a/kernel/sched.c
>> +++ b/kernel/sched.c
>> @@ -245,11 +245,32 @@ static DEFINE_MUTEX(sched_domains_mutex);
>>  struct cfs_rq;
>>
>>  static LIST_HEAD(task_groups);
>> +#ifdef CONFIG_CGROUP_SCHED
```

```
>> +#define CPU_CGROUP_STAT_THRESHOLD (1 << 30)
>> +enum cpu_cgroup_stat_index {
>> + CPU_CGROUP_STAT_UTIME, /* Usertime of the task group */
>> + CPU_CGROUP_STAT_STIME, /* Kerneltime of the task group */
>> +
>> + CPU_CGROUP_STAT_NSTATS,
>> +};
>> +
>> +struct cpu_cgroup_stat {
>> + struct percpu_counter cpustat[CPU_CGROUP_STAT_NSTATS];
>> +};
>> +
>> +static void __cpu_cgroup_stat_add(struct cpu_cgroup_stat *stat,
>> +  enum cpu_cgroup_stat_index idx, s64 val)
>> +{
>> + if (stat)
>> +  percpu_counter_add(&stat->cpustat[idx], val);
>> +}
>> +#endif
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>>  /* task group related information */
>>  struct task_group {
>>  #ifdef CONFIG_CGROUP_SCHED
>>   struct cgroup_subsys_state css;
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>>
>>  #ifdef CONFIG_FAIR_GROUP_SCHED
>> @@ -3885,6 +3906,16 @@ void account_user_time(struct task_struct *p, cputime_t cputime)
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>>   else
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>> +       /* Charge the task's group */
>> +#ifdef CONFIG_CGROUP_SCHED
>> + {
>> +  struct task_group *tg;
>> +  tg = task_group(p);
>> +  __cpu_cgroup_stat_add(tg->stat, CPU_CGROUP_STAT_UTIME,
>> +    cputime_to_msecs(cputime) * NSEC_PER_MSEC);
>> + }
>> +#endif
>>  }
>>
>>  /*
>> @@ -3942,8 +3973,17 @@ void account_system_time(struct task_struct *p, int hardirq_offset,
>>    cpustat->irq = cputime64_add(cpustat->irq, tmp);
>>   else if (softirq_count())
```

>>   cpustat->softirq = cputime64_add(cpustat->softirq, tmp);
>> - else if (p != rq->idle)
>> + else if (p != rq->idle) {
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>> +   struct task_group *tg;
>> +   tg = task_group(p);
>> +   __cpu_cgroup_stat_add(tg->stat, CPU_CGROUP_STAT_STIME,
>> +   cputime_to_msecs(cputime) * NSEC_PER_MSEC);
>> + }
>> +#endif
>
> The above two almost-identical code sequences should, I suggest, be
> broken out into a standalone helper function, which has two
> implementations, the CONFIG_CGROUP_SCHED=n version of which is a
> do-nothing stub, in the usual fashion.
>
> I suggested this last time.
>

OK, will do. I thought that we had addressed this, but we let this one slip.
Will fix.

>> + }
>>   else if (atomic_read(&rq->nr_iowait) > 0)
>>   cpustat->iowait = cputime64_add(cpustat->iowait, tmp);
>>   else
>> @@ -8325,6 +8365,24 @@ unsigned long sched_group_shares(struct task_group *tg)
>> }
>> #endif
>>
>> +static s64 cpu_cgroup_read_stat(struct cpu_cgroup_stat *stat,
>> + enum cpu_cgroup_stat_index idx)
>> +{
>> + if (stat)
>> + return nsec_to_clock_t(
>> +   percpu_counter_read(&stat->cpustat[idx]));
>> +
>> + return 0;
>> +}
>
> ick at the code layout. How about this:
>
> if (!stat)
>   return 0;
> return nsec_to_clock_t(percpu_counter_read(&stat->cpustat[idx]));
>

> ?

Definitely! My bad again - I should have reviewed the patch more closely.

>
>> +static const struct cpu_cgroup_stat_desc {
>> + const char *msg;
>> + u64 unit;
>> +} cpu_cgroup_stat_desc[] = {
>> + [CPU_CGROUP_STAT_UTIME] = { "utime", 1, },
>> + [CPU_CGROUP_STAT_STIME] = { "stime", 1, },
>> +};
>> +
>> #ifdef CONFIG_RT_GROUP_SCHED
>> /*
>>   * Ensure that the real time constraints are schedulable.
>> @@ -8551,10 +8609,41 @@ static inline struct task_group *cgroup_tg(struct cgroup *cgrp)
>> struct task_group, css);
>> }
>>
>> +static int cpu_cgroup_stats_show(struct cgroup *cgrp, struct cftype *cft,
>> + struct cgroup_map_cb *cb)
>> +{
>> + struct task_group *tg = cgroup_tg(cgrp);
>> + struct cpu_cgroup_stat *stat = tg->stat;
>> + int i;
>> + for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++) {
>
> Please prefer to put a blank line between end-of-locals and
> start-of-code. It does make the code somewhat easier to read.
>

Sure, will fix.

>
>> + s64 val;
>> + val = cpu_cgroup_read_stat(stat, i);
>> + val *= cpu_cgroup_stat_desc[i].unit;
>> + cb->fill(cb, cpu_cgroup_stat_desc[i].msg, val);
>> + }
>> + return 0;
>> +}
>> +
>> +static void cpu_cgroup_initialize(int early)
>> +{
>> + int i;
>> + struct cpu_cgroup_stat *stat;
>> +

>> + if (!early) {
>
> like that.
>
>> + stat = kmalloc(sizeof(struct cpu_cgroup_stat)
>> +   , GFP_KERNEL);
>> + for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++)
>> +   percpu_counter_init(
>> +   &stat->cpustat[i], 0);
>
> Suppose the kmalloc failed?
>

Good point. Just goes to show that picking up someone elses code and working off it, requires more effort that I put in.

>> + init_task_group.stat = stat;
>> + }
>> +}
>
> more icky layout, and what's that comma doing there?
>
> Again, please use a bit of thought rather than blindly whacking in
> newlines everywhere.
>

Sure, will do

> static void cpu_cgroup_initialize(int early)
> {
> int i;
> struct cpu_cgroup_stat *stat;
>
> if (early)
>   return;
>
> stat = kmalloc(sizeof(struct cpu_cgroup_stat), GFP_KERNEL);
> for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++)
>   percpu_counter_init(&stat->cpustat[i], 0);
> init_task_group.stat = stat;
> }
>
> is better, yes?
>
>

Yep

> Also, if this code is likely to be executed with any frequency then the
> test of `early' could be inlined:
>
> static inline void cpu_cgroup_initialize(int early)
> {
> if (unlikely(!early))
>   __cpu_cgroup_initialize();
> }
>
> yes?
>

Definitely

>
>> static struct cgroup_subsys_state *
>> cpu_cgroup_create(struct cgroup_subsys *ss, struct cgroup *cgrp)
>> {
>>   struct task_group *tg, *parent;
>> + int i;
>>
>>   if (!cgrp->parent) {
>>   /* This is early initialization for the top cgroup */
>> @@ -8567,6 +8656,10 @@ cpu_cgroup_create(struct cgroup_subsys *ss, struct cgroup
*cgrp)
>>   if (IS_ERR(tg))
>>   return ERR_PTR(-ENOMEM);
>>
>> + tg->stat = kmalloc(sizeof(struct cpu_cgroup_stat), GFP_KERNEL);
>> + for (i = 0; i < CPU_CGROUP_STAT_NSTATS; i++)
>> + percpu_counter_init(&tg->stat->cpustat[i], 0);
>
> Which will crash the machine if the kmalloc failed.
>
>
>
> c'mon guys, that wasn't a great effort.

Yes, true. I might be better off, rewriting it. I'll see.

--
 Warm Regards,
 Balbir Singh
 Linux Technology Center
 IBM, ISTL

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Containers mailing list
Containers@lists.linux-foundation.org

Subject: Re: [-mm] CPU controller statistics (v5)
Posted by Paul Menage on Wed, 11 Jun 2008 08:28:20 GMT
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On Thu, Jun 5, 2008 at 2:37 AM, Balbir Singh <balbir@linux.vnet.ibm.com> wrote:
>>
>> Can we avoid these tests? By requiring that cgroup_subsys.initialize()
>> always be non-zero? It might make sense, and it might not...
>>
>
> They are really hard to avoid, otherwise we might be taking away the flexibility
> we have.

And this is something that only gets called at startup.

>
>> Also, if this code is likely to be executed with any frequency then the
>> test of `early' could be inlined:
>>
>> static inline void cpu_cgroup_initialize(int early)
>> {
>> if (unlikely(!early))
>> __cpu_cgroup_initialize();
>> }
>>
>> yes?
>>
>
> Definitely

Er, no. It gets called twice at system boot (once with early=true and once with early=false) via a vtable. So there's nothing to optimize for, and making the function inline won't help since the compiler needs to take its address.

Paul

Subject: Re: [-mm] CPU controller statistics (v5)
Posted by Paul Menage on Wed, 11 Jun 2008 08:32:30 GMT

On Tue, Jun 3, 2008 at 1:05 PM, Balbir Singh <balbir@linux.vnet.ibm.com> wrote:
> diff --git a/include/linux/cgroup.h b/include/linux/cgroup.h
> index e155aa7..60a25cb 100644
> --- a/include/linux/cgroup.h
> +++ b/include/linux/cgroup.h
> @@ -293,6 +293,7 @@ int cgroup_is_descendant(const struct cgroup *cgrp);
> struct cgroup_subsys {
> struct cgroup_subsys_state *(*create)(struct cgroup_subsys *ss,
> struct cgroup *cgrp);
> + void (*initialize)(int early);
> void (*pre_destroy)(struct cgroup_subsys *ss, struct cgroup *cgrp);
> void (*destroy)(struct cgroup_subsys *ss, struct cgroup *cgrp);
> int (*can_attach)(struct cgroup_subsys *ss,
> diff --git a/kernel/cgroup.c b/kernel/cgroup.c
> index 15ac0e1..77569d7 100644
> --- a/kernel/cgroup.c
> +++ b/kernel/cgroup.c
> @@ -2553,6 +2553,9 @@ int __init cgroup_init_early(void)
>
> if (ss->early_init)
> cgroup_init_subsys(ss);
> +
> + if (ss->initialize)
> + ss->initialize(1);
> }
> return 0;
> }
> @@ -2577,6 +2580,9 @@ int __init cgroup_init(void)
> struct cgroup_subsys *ss = subsys[i];
> if (!ss->early_init)
> cgroup_init_subsys(ss);
> +
> + if (ss->initialize)
> + ss->initialize(0);
> }

This seems a little weird - even if the subsystem didn't want early
initialization, we call its initialize() during early setup?

I assume the idea is to move away from the current model where the
subsystem is expected to initialize itself during the first call to
its create() method, when it gets passed a cgroup with a NULL parent?
I agree that was a bit icky. How about we call ss->initialize() from
cgroup_init_subsys()? Then we wouldn't need the "early" parameter,
since it would be implicit based on whether the subsystem wanted early
initialization or not.

Also, if you're adding a new subsystem method, you should document it
in Documentation/cgroups.txt

Paul

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

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Subject: Re: [-mm] CPU controller statistics (v5)
Posted by Balbir Singh on Wed, 11 Jun 2008 08:40:28 GMT
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Paul Menage wrote:
> On Tue, Jun 3, 2008 at 1:05 PM, Balbir Singh <balbir@linux.vnet.ibm.com> wrote:
>> diff --git a/include/linux/cgroup.h b/include/linux/cgroup.h
>> index e155aa7..60a25cb 100644
>> --- a/include/linux/cgroup.h
>> +++ b/include/linux/cgroup.h
>> @@ -293,6 +293,7 @@ int cgroup_is_descendant(const struct cgroup *cgrp);
>> struct cgroup_subsys {
>>   struct cgroup_subsys_state *(*create)(struct cgroup_subsys *ss,
>>   struct cgroup *cgrp);
>> +   void (*initialize)(int early);
>>   void (*pre_destroy)(struct cgroup_subsys *ss, struct cgroup *cgrp);
>>   void (*destroy)(struct cgroup_subsys *ss, struct cgroup *cgrp);
>>   int (*can_attach)(struct cgroup_subsys *ss,
>> diff --git a/kernel/cgroup.c b/kernel/cgroup.c
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>> --- a/kernel/cgroup.c
>> +++ b/kernel/cgroup.c
>> @@ -2553,6 +2553,9 @@ int __init cgroup_init_early(void)
>>
>>   if (ss->early_init)
>>   cgroup_init_subsys(ss);
>> +
>> +   if (ss->initialize)
>> +   ss->initialize(1);
>>   }
>>   return 0;
>> }
>> @@ -2577,6 +2580,9 @@ int __init cgroup_init(void)
>>   struct cgroup_subsys *ss = subsys[i];
>>   if (!ss->early_init)
>>   cgroup_init_subsys(ss);
>> +
>> +   if (ss->initialize)

>> +   ss->initialize(0);
>>   }
>
> This seems a little weird - even if the subsystem didn't want early
> initialization, we call its initialize() during early setup?
>
> I assume the idea is to move away from the current model where the
> subsystem is expected to initialize itself during the first call to
> its create() method, when it gets passed a cgroup with a NULL parent?
> I agree that was a bit icky. How about we call ss->initialize() from
> cgroup_init_subsys()? Then we wouldn't need the "early" parameter,
> since it would be implicit based on whether the subsystem wanted early
> initialization or not.
>

The motivation was to ensure that kmalloc* calls are available at the time of
ss_initialize

> Also, if you're adding a new subsystem method, you should document it
> in Documentation/cgroups.txt

Thanks for the comments. There were some more things that are wrong with this
patch and Andrew pointed them out. We'll work on a newer vesion.

--
Warm Regards,
Balbir Singh
Linux Technology Center
IBM, ISTL

_____
Containers mailing list
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https://lists.linux-foundation.org/mailman/listinfo/containers