
Subject: Re: [RFC][-mm] [1/2] Simple stats for cpu resource controller

Posted by [Dhaval Giani](#) on Sat, 05 Apr 2008 18:56:16 GMT

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On Sat, Apr 05, 2008 at 11:39:46PM +0530, Balaji Rao wrote:

> This patch implements some trivial statistics for the CPU controller.

>

> As per our current requirements, we have decided to keep the stats tick based as opposed to using CFS precise accounting.

>

A quick question? Why? Everywhere in the CFS we use precise accounting, (even within the CPU controller). Doesn't make sense using ticks here then.

Will review and respond soon.

Thanks,

Dhaval

> Signed-off-by: Balaji Rao <balajirao@gmail.com>

> CC: Balbir Singh <balbir@linux.vnet.ibm.com>

> CC: Dhaval Giani <dhaval@linux.vnet.ibm.com>

>

> diff --git a/kernel/sched.c b/kernel/sched.c

> index 8206fda..e2acf06 100644

> --- a/kernel/sched.c

> +++ b/kernel/sched.c

> @@ -164,10 +164,38 @@ struct cfs_rq;

>

> static LIST_HEAD(task_groups);

>

> +#ifdef CONFIG_CGROUP_SCHED

> +enum cpu_cgroup_stat_index {

> + CPU_CGROUP_STAT_UTIME, /* Ustime of the task group */

> + CPU_CGROUP_STAT_STIME, /* Kerntime of the task group */

> +

> + CPU_CGROUP_STAT_NSTATS,

> +};

> +

> +struct cpu_cgroup_stat_cpu {

> + s64 count[CPU_CGROUP_STAT_NSTATS];

> +} ____cacheline_aligned_in_smp;

> +

> +struct cpu_cgroup_stat {

> + struct cpu_cgroup_stat_cpu cpustat[NR_CPUS];

> +};

> +

```

> +/* Called under irq disable. */
> +static void __cpu_cgroup_stat_add(struct cpu_cgroup_stat *stat,
> + enum cpu_cgroup_stat_index idx, int val)
> +{
> + int cpu = smp_processor_id();
> +
> + BUG_ON(!irqs_disabled());
> + stat->cpustat[cpu].count[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
> @@ -3733,6 +3761,16 @@ 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));
> + }
> + #endif
> + }
> +
> + /*
> @@ -3796,6 +3834,15 @@ void account_system_time(struct task_struct *p, int hardirq_offset,
> + cpustat->idle = cputime64_add(cpustat->idle, tmp);
> + /* Account for system time used */
> + acct_update_integrals(p);
> +
> + #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));
> + }

```

```

> +#endif
> }
>
> /*
> @@ -8004,6 +8051,45 @@ static u64 cpu_shares_read_u64(struct cgroup *cgrp, struct cftype
> *cft)
>
> return (u64) tg->shares;
> }
> +
> +static s64 cpu_cgroup_read_stat(struct cpu_cgroup_stat *stat,
> + enum cpu_cgroup_stat_index idx)
> +{
> + int cpu;
> + s64 ret = 0;
> + unsigned long flags;
> +
> + local_irq_save(flags);
> + for_each_possible_cpu(cpu)
> + ret += stat->cpustat[cpu].count[idx];
> + local_irq_restore(flags);
> +
> + return ret;
> +}
> +
> +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, },
> +};
> +
> +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 < ARRAY_SIZE(stat->cpustat[0].count); 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;
> +}

```

```
> #endif
>
> #ifdef CONFIG_RT_GROUP_SCHED
> @@ -8026,6 +8112,11 @@ static struct cftype cpu_files[] = {
>   .read_u64 = cpu_shares_read_u64,
>   .write_u64 = cpu_shares_write_u64,
> },
> +
> + {
> + .name = "stat",
> + .read_map = cpu_cgroup_stats_show,
> + },
> #endif
> #ifdef CONFIG_RT_GROUP_SCHED
> {
>
> --
> regards,
> Balaji Rao
> Dept. of Mechanical Engineering,
> National Institute of Technology Karnataka, India
```

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