
Subject: Re: [RFC][mm] Memory controller hierarchy support (v1)

Posted by [Balbir Singh](#) on Sun, 20 Apr 2008 08:16:37 GMT

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Paul Menage wrote:

> On Fri, Apr 18, 2008 at 10:35 PM, Balbir Singh

> <balbir@linux.vnet.ibm.com> wrote:

>> 1. We need to hold cgroup_mutex while walking through the children

>> in reclaim. We need to figure out the best way to do so. Should

>> cgroups provide a helper function/macro for it?

>

> There's already a function, cgroup_lock(). But it would be nice to

> avoid such a heavy locking here, particularly since memory allocations

> can occur with cgroup_mutex held, which could lead to a nasty deadlock

> if the allocation triggered reclaim.

>

Hmm.. probably..

> One of the things that I've been considering was to put the

> parent/child/sibling hierarchy explicitly in cgroup_subsys_state. This

> would give subsystems their own copy to refer to, and could use their

> own internal locking to synchronize with callbacks from cgroups that

> might change the hierarchy. Cpusets could make use of this too, since

> it has to traverse hierarchies sometimes.

>

Very cool! I look forward to that infrastructure. I'll also look at the cpuset

code and see how to traverse the hierarchy.

>> 2. Do not allow children to have a limit greater than their parents.

>> 3. Allow the user to select if hierarchial support is required

>

> My thoughts on this would be:

>

> 1) Never attach a first-level child's counter to its parent. As

> Yamamoto points out, otherwise we end up with extra global operations

> whenever any cgroup allocates or frees memory. Limiting the total

> system memory used by all user processes doesn't seem to be something

> that people are going to generally want to do, and if they really do

> want to they can just create a non-root child and move the whole

> system into that.

>

> The one big advantage that you currently get from having all

> first-level children be attached to the root is that the reclaim logic

> automatically scans other groups when it reaches the top-level - but I

> think that can be provided as a special-case in the reclaim traversal,

> avoiding the overhead of hitting the root cgroup that we have in this

> patch.

>

I've been doing some thinking along these lines, I'll think more about this.

> 2) Always attach other children's counters to their parents - if the
> user didn't want a hierarchy, they could create a flat grouping rather
> than nested groupings.

>

Yes, that's a TODO

> Paul

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Warm Regards,
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