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Subject: [PATCH O/4] Block I/O tracking

Posted by [Hirokazu Takahashi](#) on Tue, 18 Mar 2008 09:22:51 GMT

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Hi,

When you want to implement some kind of Block I/O controllers, you have to determine who issued each I/O. I just implemented this feature, with which you can track down the I/Os.

When you have to find the owner which issued the I/O, it is the one which owns the page where the IO is going to start. The cgroup memory subsystem already has this feature, so I realized that it would make easy to implemented Block I/O tracking mechanism on the memory subsystem. I named it "bio cgroup."

I made dm-ioband -- I/O bandwidth controller -- work with the bio cgroup, whose implementation is just experimental though.

I have a plan on making the bio cgroup support io\_context. Each bio cgroup will have one or more io\_contexts so the I/O bandwidth controller can use it to control the bandwidths.

I also have another plan on move the implementation of dm-ioband from the device mapper layer to somewhere before the I/O schedulers in the block layer.

The following patches are against linux-2.6.25-rc5-mm1 and you have to apply the patch of dm-ioband v0.0.3, which you can download from <http://people.valinux.co.jp/~ryov/dm-ioband/patches/dm-ioband-0.0.3.patch> before applying the following patches.

Let's say you want make two bio cgroups and assign them to ioband device "ioband1". First, you have to mount the bio cgroup filesystem.

```
# mount -t cgroup -o bio none /cgroup/bio
```

Then, you make new bio cgroups and put some processes in them.

```
# mkdir /cgroup/bio/bgroup1
# mkdir /cgroup/bio/bgroup2
# echo 1234 /cgroup/bio/bgroup1/tasks
# echo 5678 /cgroup/bio/bgroup1/tasks
```

Now you check the ids of the bio cgroups which you just created.

```
# cat /cgroup/bio/bgroup1/bio.id
1
# cat /cgroup/bio/bgroup2/bio.id
```

Finally, you can attach the cgroups to "ioband1" and assign them weights.

```
# dmsetup message ioband1 0 type cgroup
# dmsetup message ioband1 0 attach 1
# dmsetup message ioband1 0 attach 2
# dmsetup message ioband1 0 weight 1:30
# dmsetup message ioband1 0 weight 2:60
```

You can find the manual of dm-ioband at  
<http://people.valinux.co.jp/~ryov/dm-ioband/manual/index.html>.  
But the user interface for the bio cgroup is temporal and it will be  
changed after the io\_context support.

Thank you,  
Hirokazu Takahashi.

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