
Subject: [PATCH 0/28] Pid namespaces (two models)
Posted by [Pavel Emelianov](#) on Fri, 15 Jun 2007 15:55:43 GMT
[View Forum Message](#) <> [Reply to Message](#)

Long ago Sukadev and I sent two approaches for pid namespaces - the hierarchical model in which namespaces are nested into each other, and the flat model, where pids have only two values and creation of level 3 namespace is prohibited.

After that I showed that multilevel model introduces a noticeable overhead of approximately 1-2% to kernel standard operations like fork() and getpid(). At the same time flat model showed no performance hit on these tests.

Nevertheless multilevel model is worth living.

This set introduces both models each under its config option. The set is logically splitted into the following parts:

- * [PREP] subset - the preparations for the namespaces. These patches by their own do not change the kernel behavior, but prepare the ground for the pid namespaces. This subset weights 14 patches;
- * [FLAT] subset - the flat namespaces model. This is 6 patches;
- * [MULTI] subset - the multilevel models. This is 6 patches also;
- * Patch for cloning the namespace;
- * Patch with Kconfig options.

The following tests were run:

- [1] nptl perf test
- [2] getpid() speed
- [3] ltp (not for speed, but for kernel API checks)

The testing results summary:

- * Flat model provides zero overhead in init namespace for all the tests and less than 7% in the namespace for nptl test only.
- * Multilevel model provides up to 2% overhead in init namespace and more than 10% for nptl test in the level 2 namespace.

Testing details:

```
          | perf, s | getpid |  
-----+-----+-----+
```

```
-----+-----+-----+  
after unshare |      |      |
```

-----+-----+-----+

[1] ./perf -s 1000000 -t 1 -r 0 -T --sync-join
nptl/perf.c from glibc-2.5

error is 3 standard deviations

[2] getpid(2) done 10^9 times real time as reported by time(1)

The patches are for 2.6.22-rc4-mm2 tree.

Thanks,
Pavel

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