

Real-time Microconference

Since 2004 a project has improved the Real-time and low-latency features for Linux. This project has become known as PREEMPT_RT, formally the real-time patch. Over the past decade, many parts of the PREEMPT_RT became part of the official Linux codebase. Examples of what came from PREEMPT_RT include: Mutexes, high-resolution timers, lockdep, ftrace, RT scheduling, SCHED_DEADLINE, RCU_PREEMPT, generic interrupts, priority inheritance futexes, threaded interrupt handlers, and more. The number of patches that need integration has been reduced in the last years, and the pieces left are now mature enough to make their way into mainline Linux.

As a result of the last year's microconference, the discussions on finding sources of OS Noise resulted in a patch set that is currently under evaluation on LKML [1]. Progress was also made regarding tools to facilitate the maintenance of stable releases [2]. But most importantly, progress was made in the merge effort, but some challenges raised and the merge is still an ongoing effort [3].

In the final lap of this race, the last patches are on the way to be merged, but there are still very few pieces missing. Many of these missing pieces, however, are not at the core of real-time features (like locking, and scheduling), but instead, on other subsystems that compose the kernel, like file systems and memory management.

The main goal of this year conference is:

- New tools for PREEMPT_RT analysis [1].
- How do we teach the rest of the kernel developers how not to break PREEMPT_RT?
- Stable maintainers tools discussion & improvements: [2]
- The usage of PREEMPT_RT on safety-critical systems: what do we need to do?
- Make NAPI and the kernel-rt working better together [4]
- Migrate disable and the problems that they cause on rt tasks [5]
- It is time to discuss the "BKL"-like style of our preempt/bh/irq_disable() synchronization functions.
- How do we close the documentation gap
- The status of the merge, and how can we resolve the last issues that block the merge
- Invite the developers of the areas where patches are still under discussion to help to find an agreement
- How can we improve the testing of the -rt, to follow the problems raised as Linus tree advances?
- What's next?

Attendees list:

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Links:

- 1 <https://lore.kernel.org/lkml/cover.1619210818.git.bristot@redhat.com/>
- 2 <https://github.com/igaw/stable-rt-tools>
- 3 <https://www.linux.com/news/in-the-trenches-with-thomas-gleixner-real-time-linux-kernel-patch-set/>
- 4 Discussions:
 - <https://lore.kernel.org/netdev/20210514222402.295157-1-kuba@kernel.org/>
 - <https://lore.kernel.org/lkml/YJofplWBz8dT7xiw@localhost.localdomain/>
- 5 <https://lore.kernel.org/linux-arm-kernel/20200924082717.GA1362448@hirez.programming.kicks-ass.net/T/>

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I agree

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Session Classification: Real-time MC

Track Classification: Real-time MC