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## Real-Time Condition Variables: **librtpi**

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POSIX condition variables (condvars) provide a commonly used interprocess communication mechanism. Threads can queue up and wait for an event before continuing. The glibc implementation of condvars in 2009 was not suitable for use in real-time systems due to a potential priority inversion. A fix has been available and used in many real-time systems since that time. A recent change to glibc to address a POSIX compliance issue with condvars broke that fix and modified the implementation in such a way as to prevent real-time usage of glibc condvars by introducing new type of priority inversion.

The real-time use case places constraints on condvar usage patterns, such as requiring a PI mutex to be associated with the condvar prior to a signal or broadcast. Most importantly, the implementation must always wake the waiters in priority FIFO order. To address this usage, the librtpi project provides a narrow real-time specific implementation of the condition variable mechanism in a way which can be readily used in lieu of the glibc implementation.

We will discuss the motivation and the current state of the project, as well as the long term strategy for a stable real-time condvar implementation.

### **I agree to abide by the anti-harassment policy**

Yes

**Primary authors:** HART, Darren; CARTWRIGHT, Julia

**Co-author:** SIEWIOR, Sebastien (Linutronix)

**Presenters:** HART, Darren; CARTWRIGHT, Julia

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