



Arm Solutions at Lightspeed

# The wakeup path is not enough for EAS

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# Current EAS behavior

- At wakeup, select the most efficient CPU for the task
  - According to current state of the system
  - Assuming state will remain stable over the whole runnable phase
- Actively migrate a “stuck” task when it doesn’t fit anymore on the local CPU
  - local CPU and the whole system become overutilized
  - Trigger a load balance to pull misfit task
- But system state is not really stable
  - Other tasks wake up
  - Dynamic frequency capping
  - Energy Model update
  - Uclamp dynamic update
  - Allowed CPUs mask update

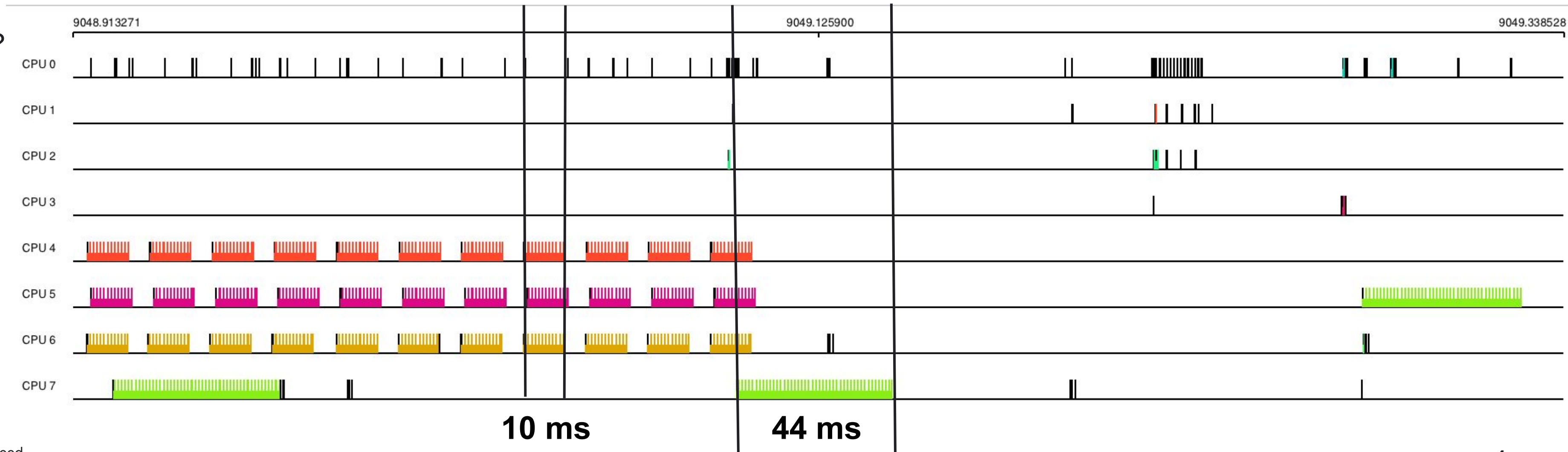
# New push task callback

- Add more opportunities to migrate task
  - According to current state of the system
- Keep tasks efficiently placed
  - Check CPU placement with new system state
  - Even when overutilized
- Remain scalable and efficient
  - Do not parse a list but check one task at a time
  - Select not running but runnable task
- Only when it makes sense
  - Do not bypass default wakeup event behavior
  - For tasks that are stuck on the CPU
- When ?

# When ?

- No wake up anymore
  - Uclamp\_max
  - Misfit task
- Low pace
  - Low frequency
  - Sharing CPU

- Others ?



# Next steps

- Add task misfit case
  - Minimize the trigger of idle load balance
- Add latency hints in CPU selection
  - For same cost level
  - Reduce scheduling latency
  - Need to better define what a latency sensitive task is

# Thank You!

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