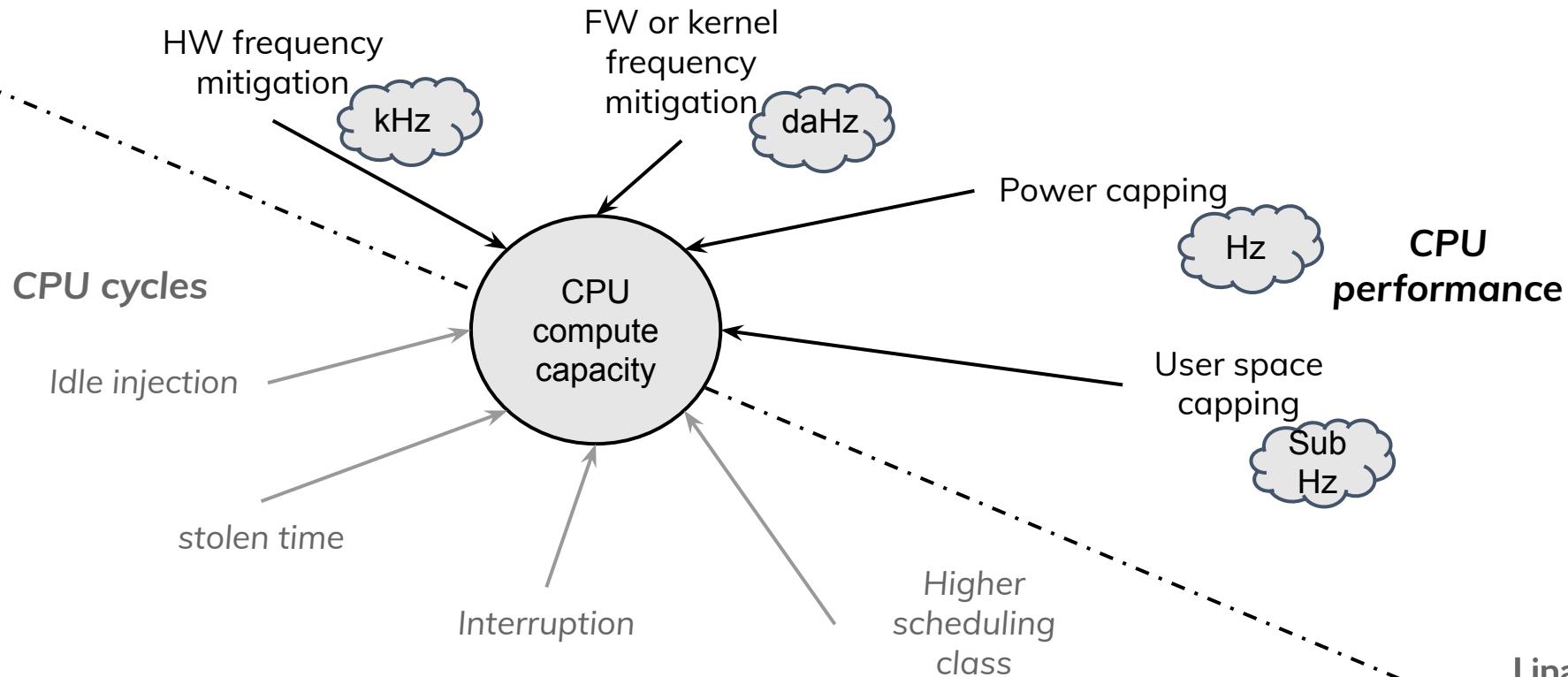


# System pressure and CPU capacity

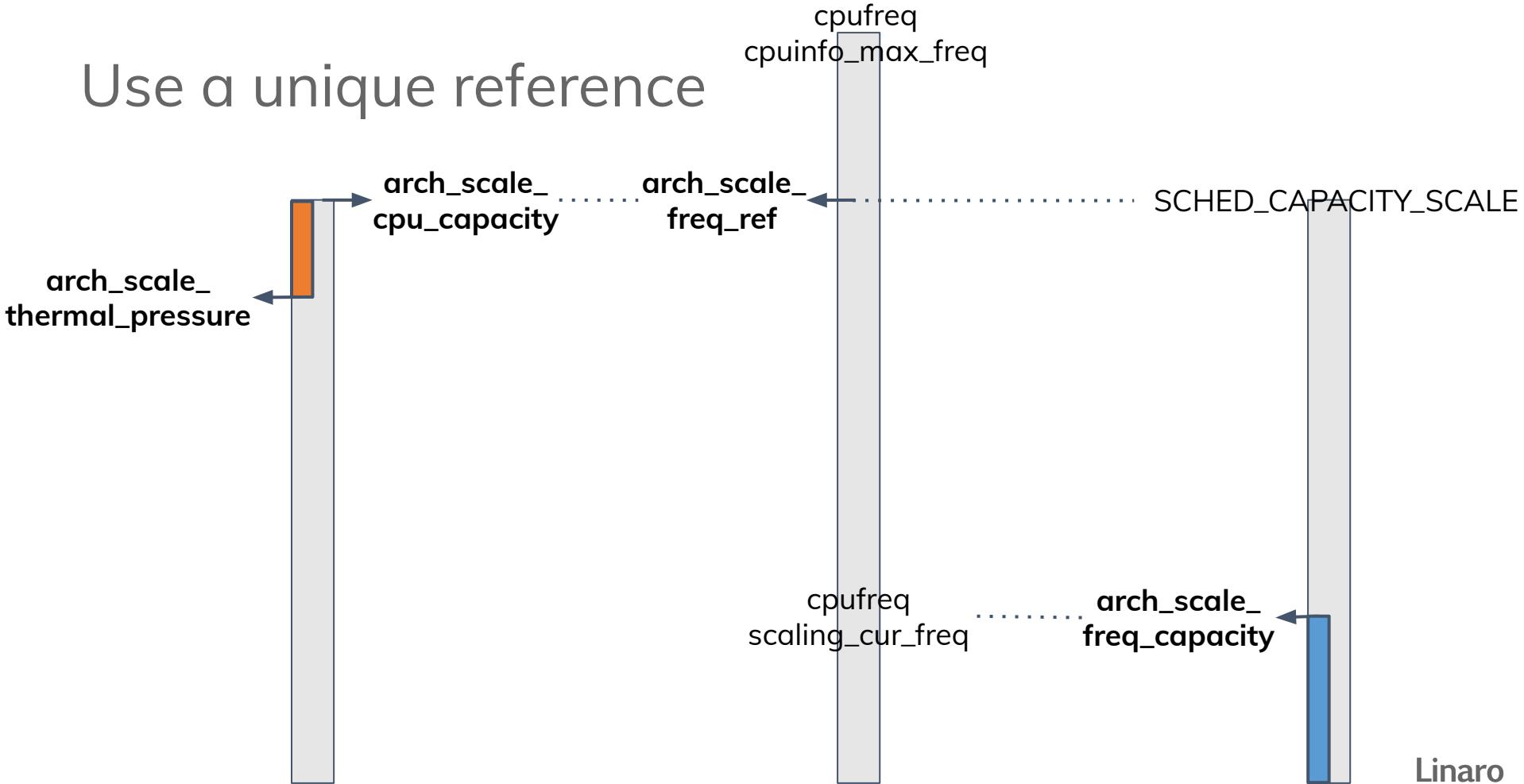
Vincent Guittot  
Linaro Ltd  
Nov 12th 2023



# What does impact the compute capacity of CPU?



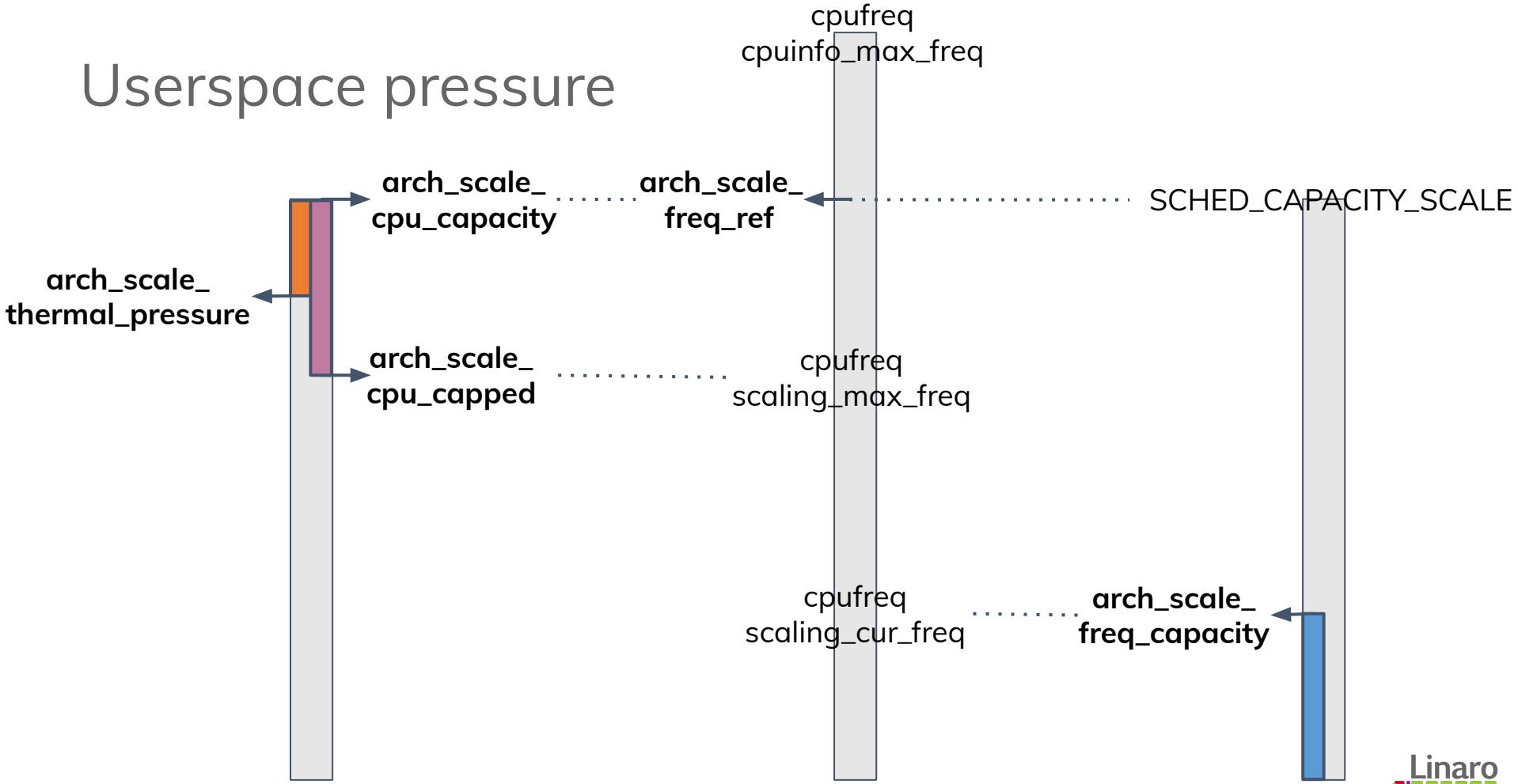
# Use a unique reference



# Userspace pressure on CPU capacity

- `/sys/..../cpufreq/policy*/scaling_max_freq`
  - Store: Set **max\_freq\_request** freq\_qos
  - Show: Return min of all FREQ\_QOS\_MAX requests
- Feedback the userspace max\_freq\_request into the scheduler
  - Can't reuse arch\_scale\_cpu\_capacity
  - Add a new arch\_scale\_cpu\_capped
- One concern could be misfit\_task detection
  - Rebuild sched domain but expensive and not scalable

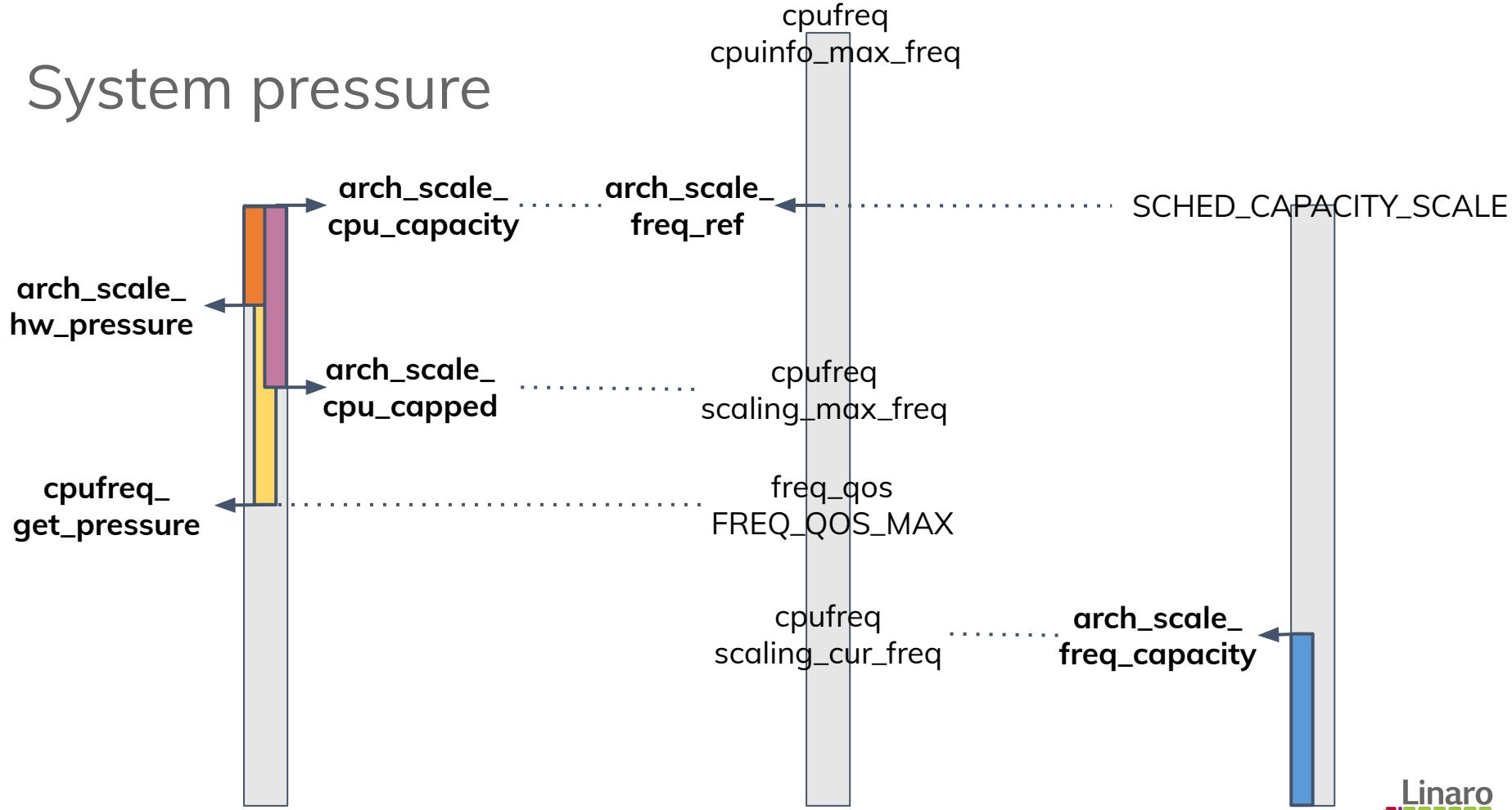
# Userspace pressure



# Firmware/kernel pressure on CPU capacity

- Need to handle several requests
  - And get the maximum pressure applied on the CPU
- Use FREQ\_QOS\_MAX requests ?
  - Blocking notifiers can be a problem
  - Schedule a work to handle the update by cpufreq policy
- Keep arch\_scale\_thermal\_pressure for HW only
  - Rename it arch\_scale\_hw\_pressure

# System pressure



# Get global system pressure on CPU capacity

- Get the lowest capacity among
  - arch\_scale\_cpu\_capped
  - FREQ\_QOS\_MAX requests feedback
  - thermal\_load\_avg (to be renamed)

The background of the slide features a dark, abstract design. It consists of several wavy, translucent bands in shades of red, purple, blue, and teal. These bands are composed of numerous small, glowing dots that create a sense of depth and motion. In the lower half of the slide, there is a large, semi-transparent dark grey arrow pointing from left to right.

Thank you

