



# Instrumenting HPX

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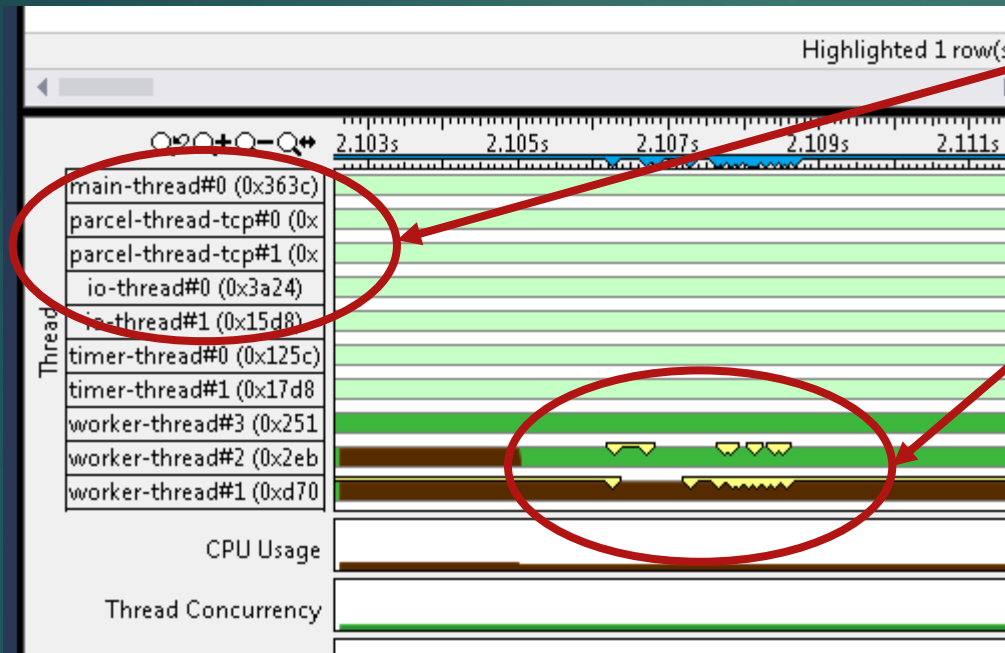
# Intel Parallel Studio

- ▶ Several tools use same interface to hook into the application
  - ▶ Intel Amplifier: Performance analysis
    - ▶ Sampling
    - ▶ Instrumentation
  - ▶ Intel Inspector: find memory and threading errors
    - ▶ Instrumentation
- ▶ ITT\_NOTIFY
  - ▶ Mostly undocumented, but used for TBB – will not go away

# Intel Amplifier

- ▶ Naming threads
  - ▶ worker-thread#0, io-thread#1
- ▶ Expose tasks
  - ▶ Naming HPX threads (tasks)
  - ▶ Task dependencies (not used yet)
  - ▶ Creation, deletion, start/stop executing

# Naming OS Threads



Names as specified by HPX

HPX threads marked on top of OS threads

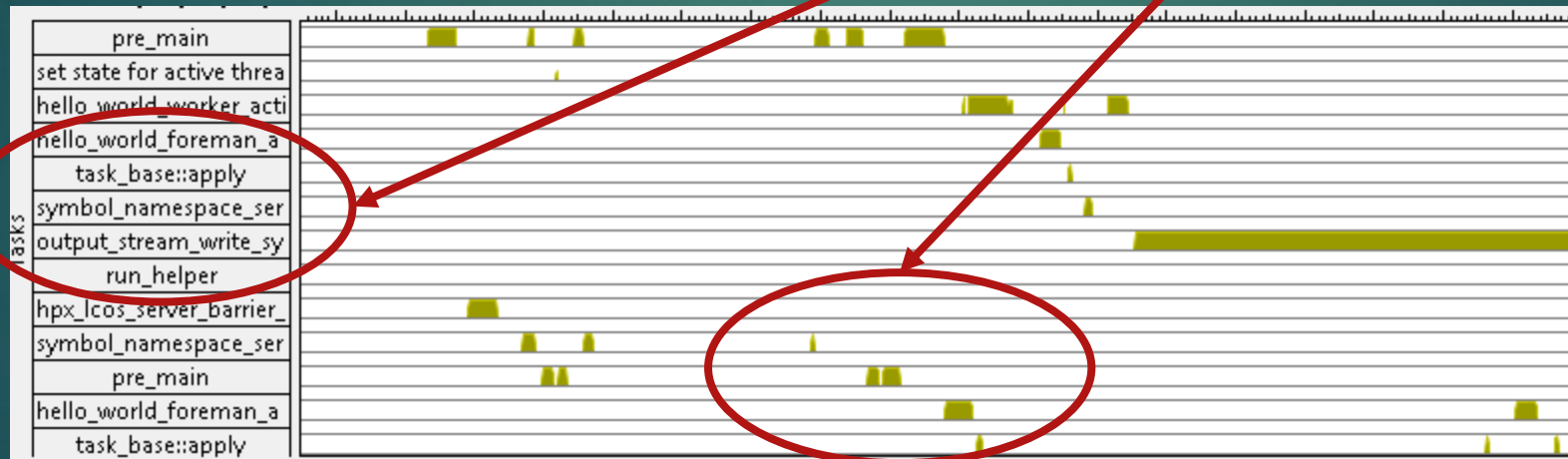
# Naming HPX Threads (Tasks)

- Start/stop of task execution
- Task names as specified by HPX
- Synchronizing tasks



# HPX Threads (Tasks) over Time

Task names as specified by HPX



# Intel Inspector

- ▶ Naming threads
  - ▶ worker-thread#0, io-thread#1
- ▶ Memory tracking
  - ▶ Internal heaps
- ▶ Lock tracking
  - ▶ Creation, deletion, lock/unlock

# Instrument HPX

- ▶ Currently ITT, very rudimentary VS
- ▶ Started with APEX
- ▶ Many commonalities
  - ▶ Create abstraction layer to enable plugging different frameworks
  - ▶ Allows independent development, no duplication of work