Component PAPI:
Measuring Multiple Counter Domains

Presented by

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SC07

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Motivation

- Increasing CPU speeds and densities places greater importance on
  - Thermal health and management and
  - Power consumption.
- Higher processor counts make communications metrics more critical:
  - Bandwidth,
  - Latency,
  - Dropped packets, and
  - Bytes transferred.
- Industry standard interfaces don't exist to measure these metrics.
- Hybrid machines require simultaneous access to multiple processor counter substrates.

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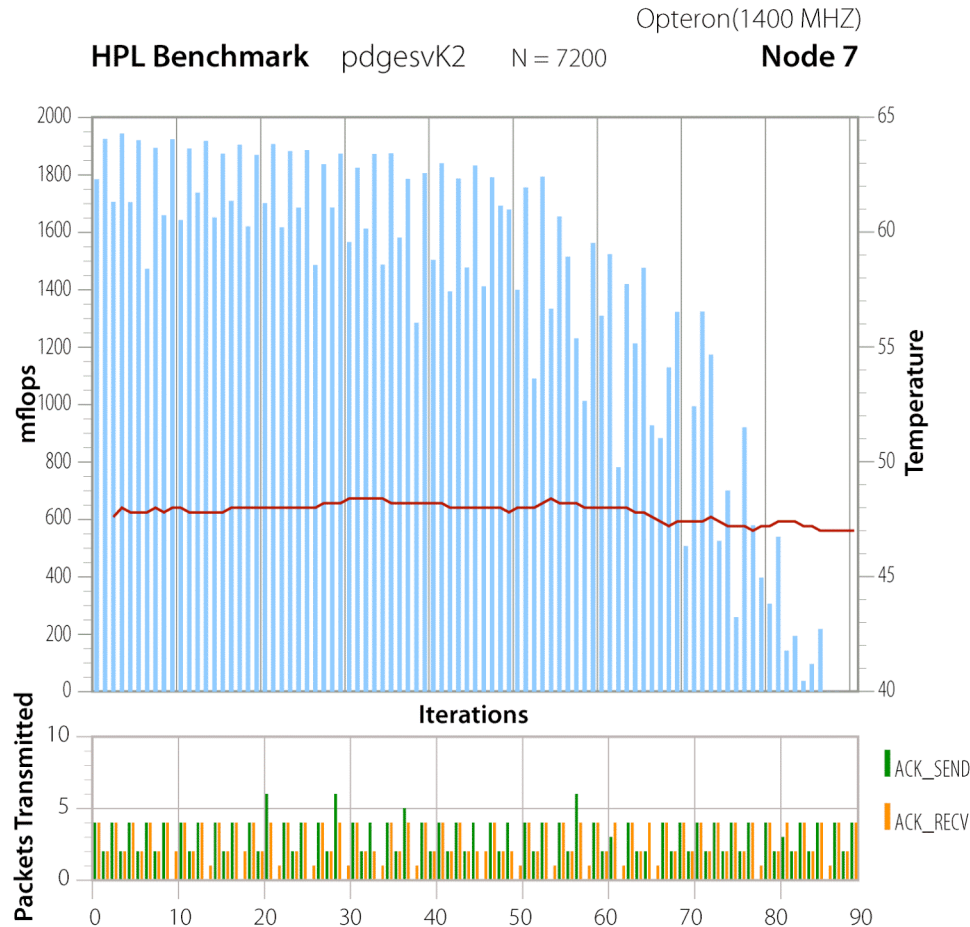Computer Science Department

# Monolithic PAPI design
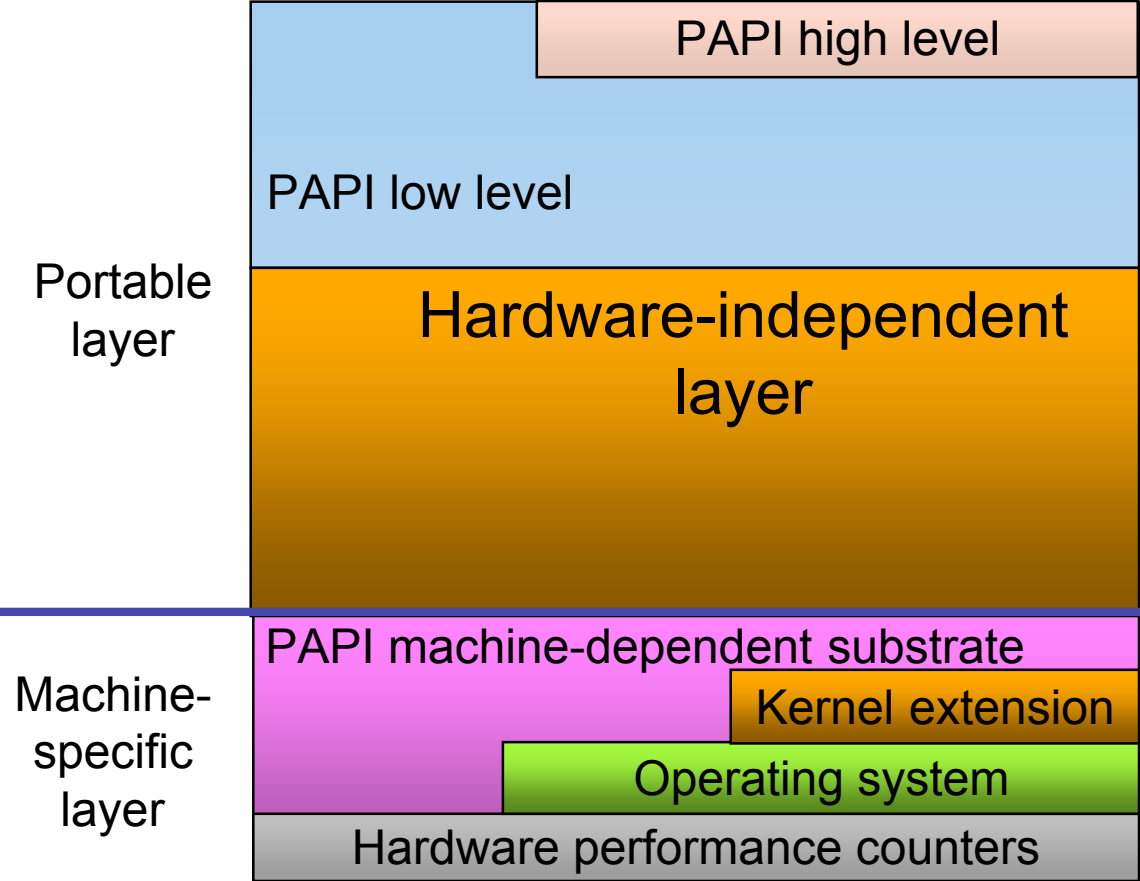
Component PAPI 4.0 design
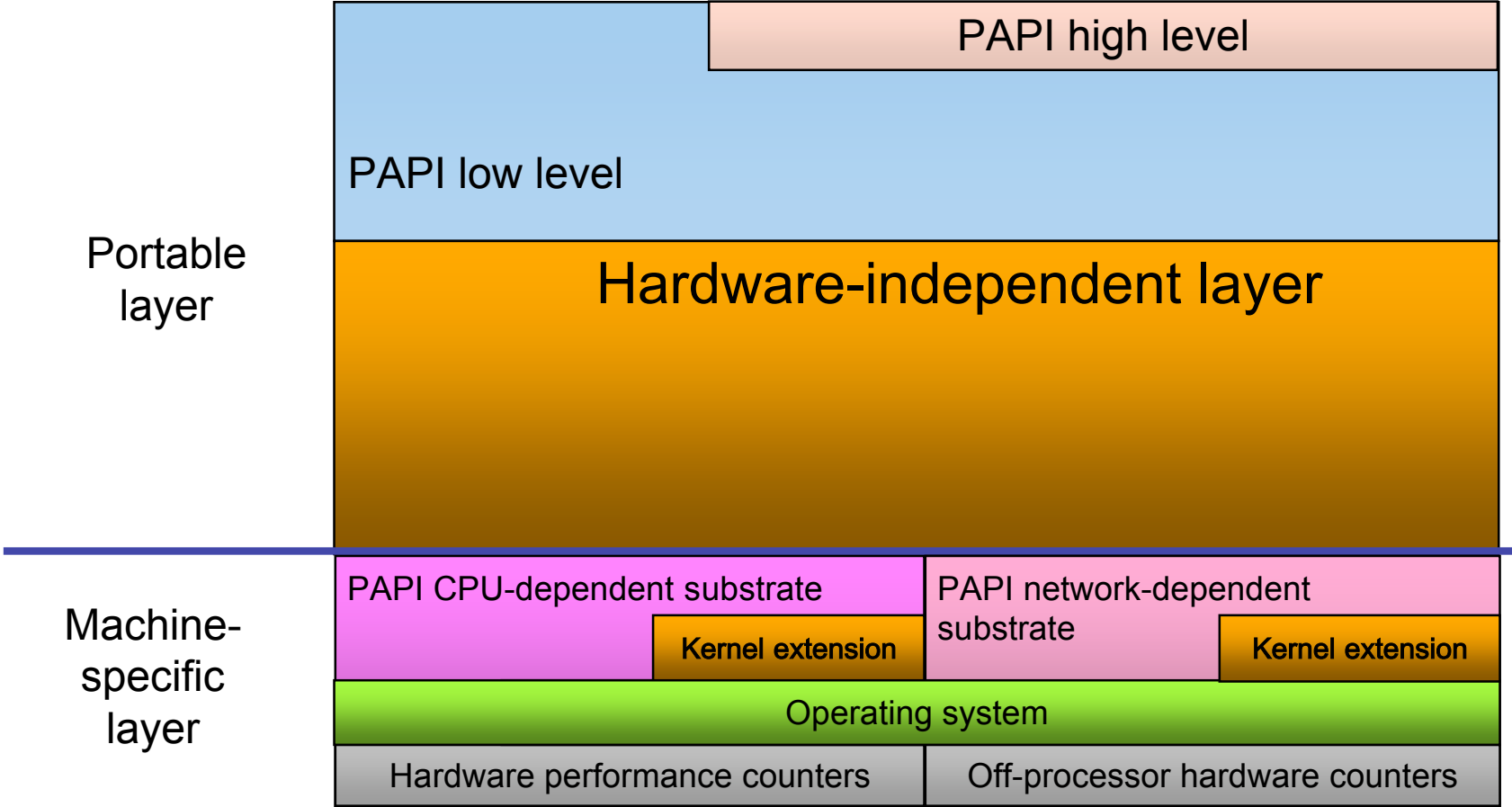
Multiple measurements

- HPCC HPL benchmark on Opteron with three performance metrics:
  - FLOPS; temperature; network sends/receives
    - Temperature is from an on-chip thermal diode.

Opteron(1400 MHZ)

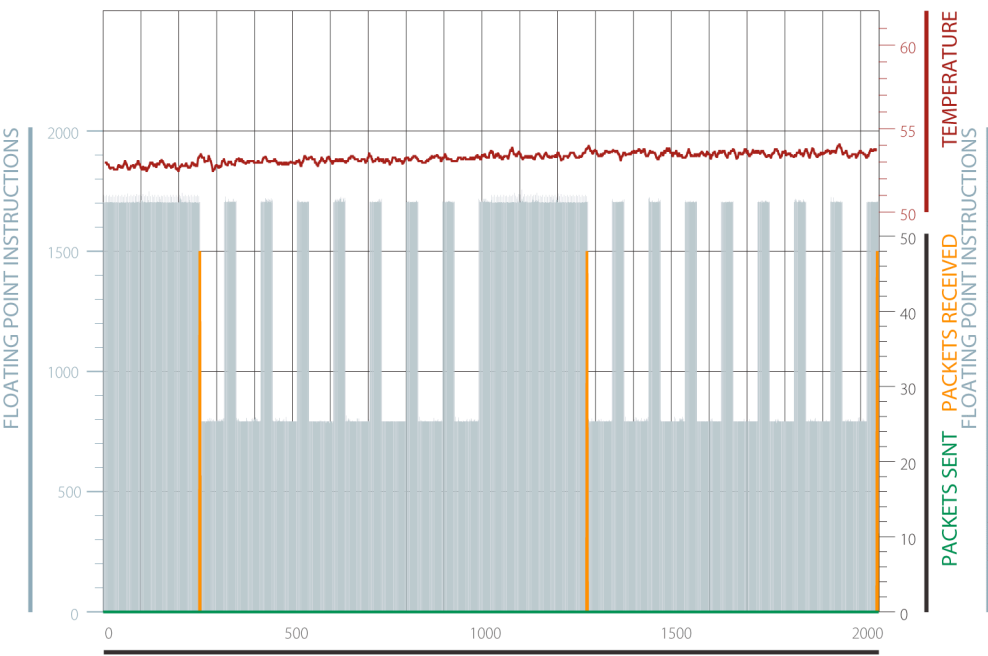HPL Benchmark   pdgesvK2   N = 7200   Node 7

Multiple measurements

- HPCC HPL benchmark on Opteron with three performance metrics:
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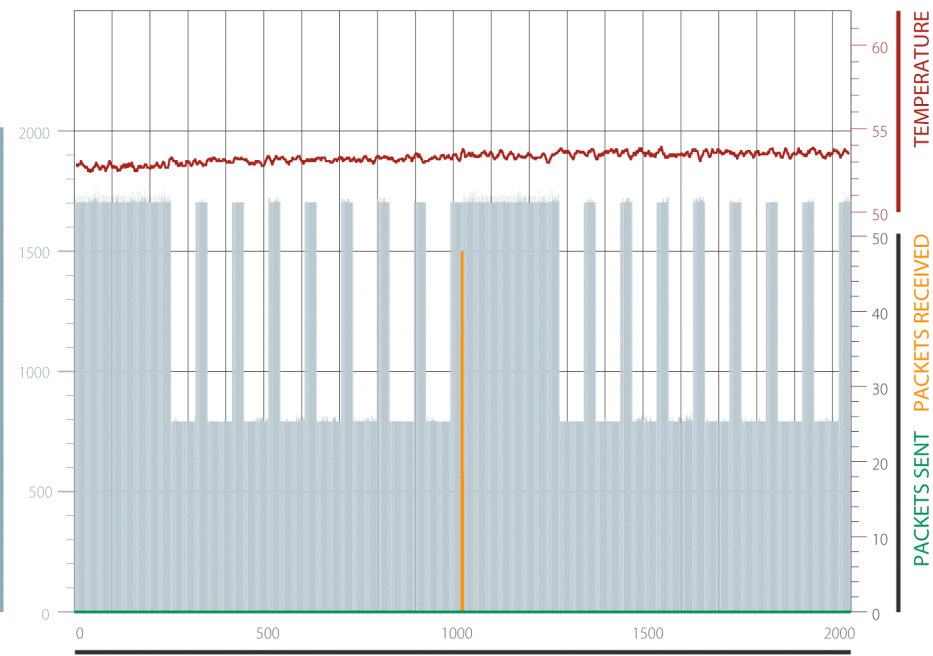   - Temperature is from an on-chip thermal diode.
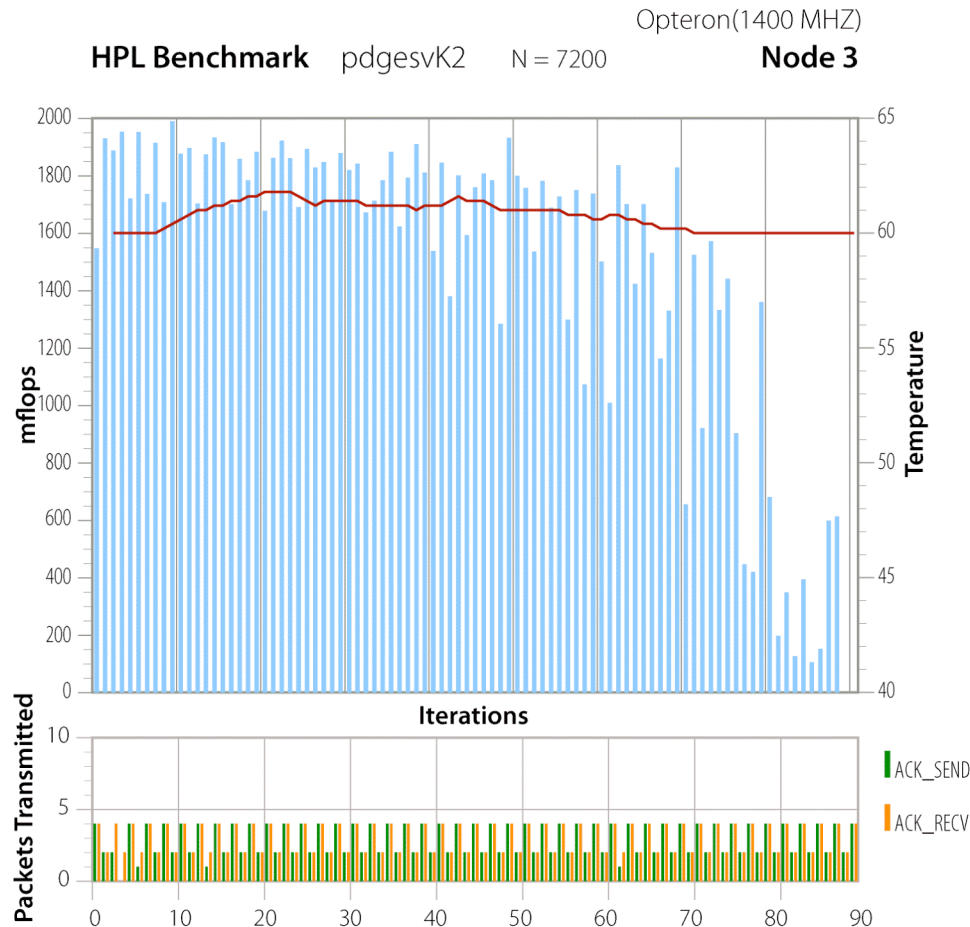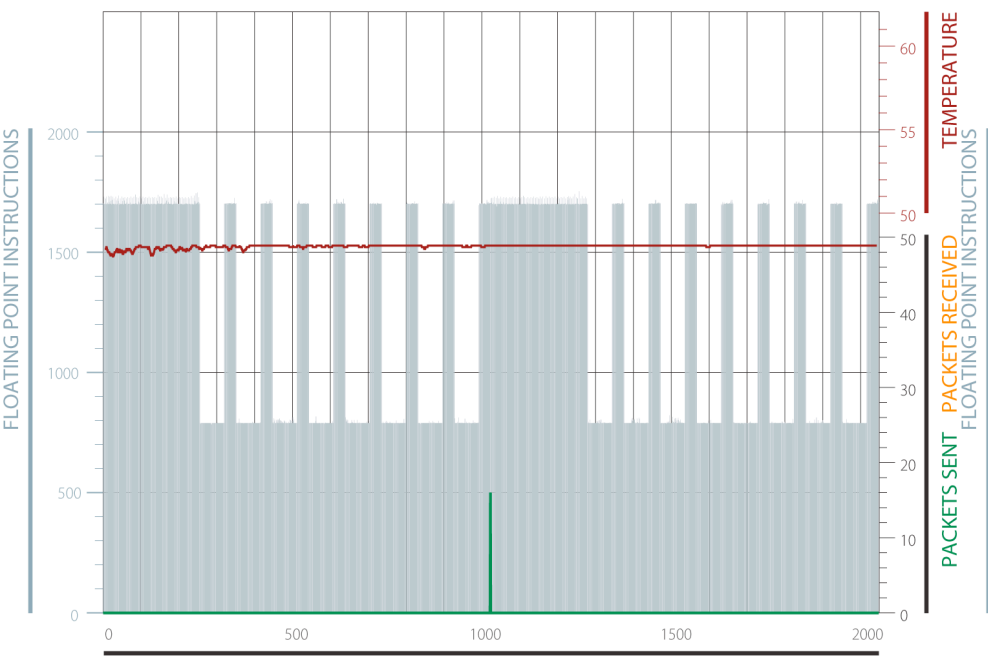
HPC Challenge FFTE: fft235 — Node 4
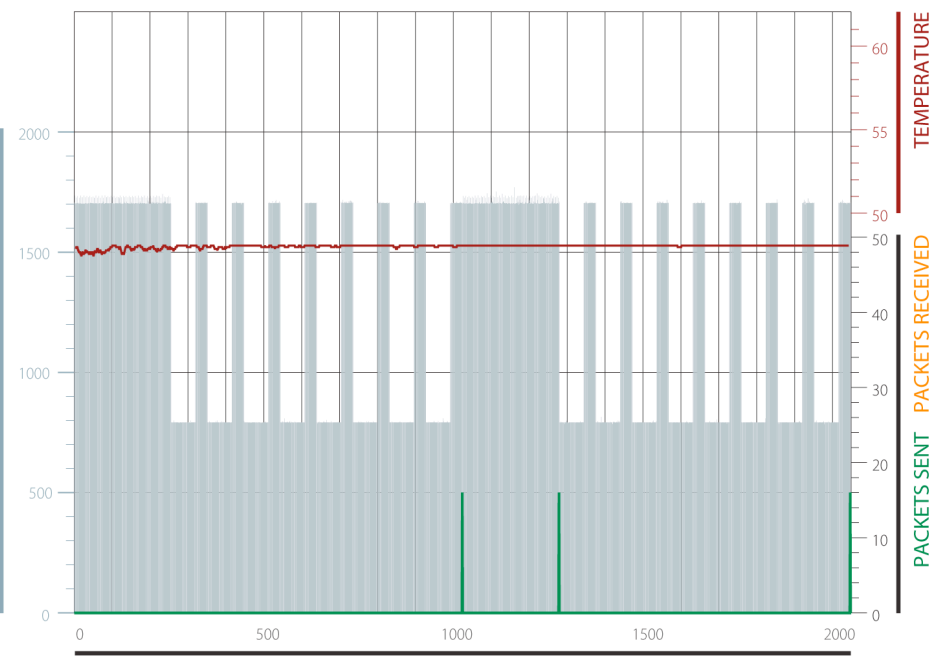
HPC Challenge FFTE: fft235 — Node 5

HPC Challenge FFTE: fft235 — Node 6

HPC Challenge FFTE: fft235 — Node 7

Contacts

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For more information

- http://icl.cs.utk.edu/papi/
  - Software and documentation
  - Reference materials
  - Papers and presentations
  - Third-party tools
  - Mailing lists

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