SYSTEM C INTEROPERABILITY

Goals

- Lots of simulators and models
  - Use models together in a flexible way
  - Interoperability, SystemC is the de-facto standard (good or not)
- Pressure to successive refinement
  - From high-level to low-level

- Configuration
  - IP-XACT to C++ used today, potential contribution from TI
  - Configuration front-end JSON a possibility, go from Python to JSON and then use that for the C++ instantiation

- Statistics/output
  - Python vs C++/SystemC interoperability. Tighter connection with Python is a complication? [AP: Andreas]

gem5

Solutions

- Running gem5 in SystemC
  - SystemC is the top-level
  - How performant is it? Alexandre, overhead for different options? End of January. [AP: Alexandre]
  - Currently, entire gem5 is running as a single SC_THREAD
  - Multiple instances are already running

- SystemC models in gem5
  - More elaborate SC_THREAD model makes this difficult
  - Not seen as a feasible option

Performance

- Compartments of SC_THREADS per core/large chunk of gem5 and use with TLM2 quantums

- What is already in SystemC and vice versa?
  - Execution model differences
    - gem5 keeping things simple, no delta cycles, update in execute
    - Problems today with input and output happening at the same time
      - Use the event priorities to solve the input and output
    - Notify, execute similar to SystemC beneficial?

Interfaces

- What are the interfaces?
  - TLM2 the best option? Are there others?
    - Not necessary to always use TLM2
  - How is AMBA-PV 2.0 supporting the abstract coherence protocol [AP: Andreas]
    - How and when to arrange the discuss the protocol and adapters?
  - Ruby should be more modular to afford a more flexible configuration to support partial (non-monolithic) modes of operation
  - What are the scenarios and what does it require
    - gem5 only for CPU + L1 (baremetal)
    - gem5 only for CPU + L1 + devices (OS)
    - gem5 for all but memory controller
    - gem5 for all but non-coherent device-component model
    - gem5 for all but coherent device-component model (GPU/ GPGPUsim)
      - Not worth trying to mix coherence models

OTHER TOPICS

Simulation Performance

- Faster Fast-forwarding and Robustness (short-term goal)
  - ARM
  - Extend CPU hammering for Ruby
    - ??

- FPGA
  - Derek -- Source to gates translation?

- Multi-threading
  - Nilay is still working on this?

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Issues for ~~New~~ Users

- git-hub (bit-bucket) like forking/merging
  - Derek

- Directory owners
  - Jason (also to check link to doxygen)

- Mercurial workflows
  - Tony to review download web page and fix
  - Paul to subject his students to it

gem5

Regression Testing

- AMD Research is working on a new system

- Directed binary tests

    - HTTP link to checksumed file? BigFiles/Snap test

- How to create stimulus in the simulator

- Continuous Integration??

- Smaller tests that run more quickly