OSCI TLM Working Group Status

by
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Presentation Overview

- Progression of OSCI TLM standards
- Current OSCI TLM WG roster
- TLM 2.0 work-in-progress
- TLM 2.0 draft 2 public review
- TLM 2.0 draft 2 feedback
- TLM 2.0 schedule
- TLM standards roadmap
- Summary
Progression of OSCI TLM Standards

TLM-2005-04-08
TLM 1.0
- bidirectional I/F
  - “transport”
  - blocking
- uni-directional I/F
  - “FIFO-like”
  - blocking
  - non-blocking
  (effective pass-by-value; split request/response)

TLM-2006-11-29
TLM 2.0
draft 1
- TLM 1.0
  - timing annotation of TLM 1.0 I/Fs
  - standard payload
    - extension
  - analysis port
  (effective pass-by-value; split request/response)

2007-06-27
TLM 2 requirements,
glossary, whitepaper
- TLM 1.0 (legacy)
  - coding styles
    - untimed
    - loosely-timed
    - approx-timed**
  - layered solution
    - generic technology
    - MMB-specifics
  - temporal decoupling
  - debug transactions*
  - direct memory**
  - model sync**
  - endianness
  - standard payload*
    - extension*
  - analysis port

TLM-2007-11-29
TLM 2.0
draft 2
- satisfies all requirements
- payload event queue
- quantum keeper
- users manual
- training presentation
  (pass-by-reference; whole transaction)

* improved, ** stretch
Current OSCI TLM WG Roster

- 106 individuals from 25 organizations
- ~19 individuals from ~15 organizations participate regularly in weekly 2-hour teleconference
TLM 2.0 Work-In-Progress

- Refinements and improvements being investigated since the release of draft 2
  - Simplifying endianness
  - DMI extensions
  - PEQ consistency
  - Locking & atomic transactions
  - Analysis ports – assess overall value
  - Generic payload mutability enforcement
- It is unlikely that all of these will be resolved for TLM 2.0
TLM 2.0 draft 2 Public Review

- 905 downloads of the draft 2 kit (as of 1/10/08)
- Feedback received from ARM, Cadence, CoWare, Doulos, ECSI (1/29 TLM-2 Workshop), Emulex, ESLX, Freescale, Fujitsu, GreenSocs, Infineon, JEITA, NXP, ST, STARC, SPRINT, Thomson, Virtutech
- Overall, feedback is supportive and encouraging
- Significant requests and suggestions for improvement
  - The TLM WG will be diligent in thoroughly reviewing and addressing all of these requests
  - Some are contradictory (e.g. “add locking support” and “do not add locking support”); can’t please everyone
TLM 2.0 draft 2 Feedback

- Summary of specific feedback is appended; categories are:
  - General
  - tlm_generic_payload
  - b_transport
  - nb_transport
  - Sockets
  - Direct Memory Interface
  - Temporal Decoupling
  - Tlm_quantumkeeper
  - Debug Transaction I/F
  - Users Manual
  - Payload Event Queue
  - Examples
  - Code
  - Build Environment
  - Outside OSCI scope
  - TLM roadmap items
  - Issues already resolved

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TLM 2.0 schedule

Deploy for production use (TLM 2.0 OSCI LRM)

Adapt methods, tools & flows (final TLM 2.0 kit)

Start training and consulting now (draft 2)

08Q2 08Q3 08Q4 2009

Final kit (DAC) OSCI LRM IEEE Standard

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TLM Standards Roadmap

• Areas to standardize after TLM 2.0 (order not yet determined)
  – Analysis (beyond analysis port) & visibility
  – Configuration
  – Control
  – Cycle-accurate modeling
  – Debug (beyond debug transaction)
    • Hardware watchpoints
  – Registers
  – TLM 2.0 WIP items not completed
Summary

- TLM interoperability standards are a reality in 2008!
- Draft 2 is closing in on the target; focus is now on addressing feedback
  - Thanks to those who provided feedback!
- There’s (always) more to do
  - OSCI LRM
  - IEEE Standard
  - Expanding the TLM standard (e.g. TLM 2.1 & beyond)
- Get involved by joining OSCI
  - More influence
  - Accelerate standards