Managing the TriMedia cache

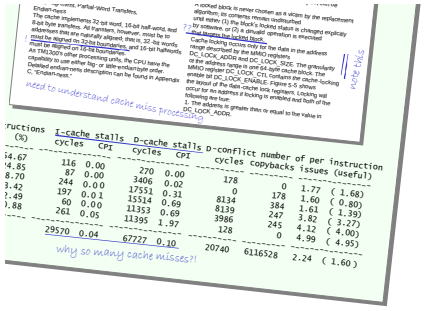
TriMedia foundation series

Benefits

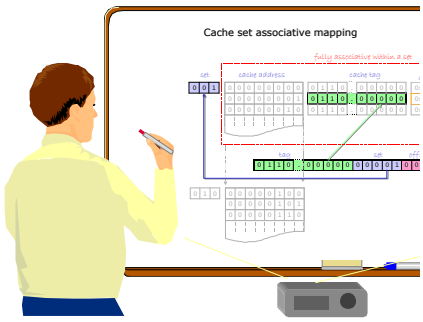
Understanding the TriMedia cache is crucial to getting the best performance from the processor.

Both data and instruction caches impact program speed: but the demands of cache optimization and global scheduling optimization often conflict and interact.

This seminar describes and explains the TriMedia cache architecture including its optimization.



Missing something?



We show you the map

Contents

This seminar describes the TriMedia data and instruction cache architectures and explains their impact on program execution speed: including the often-complex interaction between the demands of cache efficiency and of overall global scheduling optimization. It also explains the important question of 'cache coherency': how the operation of peripherals - which bypass the cache to access memory directly - can be controlled and synchronised.

Cache architecture

Background to cache design including how and why caches can increase program execution speed. Including consideration of how certain types of pattern in data access can be very efficiently handled by caching, and when caching may be inappropriate.

- Cache architectures
- The TriMedia cache architecture

Cache mapping

How data is mapped into a cache: and the compromises that have to be accepted in the interests of economy and their impact on performance. Including the mapping schemes and data bank organization adopted for the TriMedia cache.

- Cache mapping
- Cache set associative mapping
- Data cache mapping
- Data cache banks

Cache management

How the TriMedia data cache can be configured and managed from software for optimum performance appropriate to the application.

- Data cache management
- Data cache programming

Cache simulation

Simulation of the data cache operation, with an example to show the effect of cache configuration on cache mapping.

- Data cache mapping simulation

Cache hits and misses

How the cache handles cache hits and cache misses (ie when data is not found already in the cache). Including explanation of what happens when a cache miss occurs, and an indication of how to calculate and measure the delays involved.

- Data cache hit and miss policy

Cache coherency

Cache coherency is the effect of peripherals accessing memory directly (bypassing the cache) and the consequent need to synchronise data in cache and memory. This section describes cache coherency with the TriMedia cache architecture in relation to memory-mapped peripherals, and explains how to ensure that data is correctly synchronised in both cache and memory when necessary.

- Data cache coherency and MMIO
- Data cache copyback simulation
- Peripherals - cache management

Cache profiling

Measuring how well the caches are used, and the impact of cache misses on overall program performance.

- Data cache profiling

Optimization

The demands of efficient cache usage can often conflict and interact in complex ways with overall goals of parallel scheduling optimization. This section explains the principles of cache optimization including the interaction with overall scheduling.

- Data cache optimization

Instruction cache

Instruction cache architecture, profiling and optimization.

- Instruction cache
- Instruction cache profiling
- Instruction cache optimization

Time and arrangements

This 1-day seminar is presented 'on-site' by arrangement - the material can be adapted if you have specific needs (at extra cost). We recommend that it be presented as part of the 4-day 'TriMedia foundation' seminar series which gives a thorough grounding in TriMedia core, cache, optimization, peripherals and software architecture.

- on-site by arrangement
- contact: Chris Bore
- email: chris@bores.com

TriMedia cache seminar

- 1-day seminar presentation
- £330 (€550, $ 660) per person
- arrangements as above

TriMedia 'foundation' series

- 4-day seminar series
- £1,320 (€2,200 : $ 2,640) per person
- arrangements as above

To book or find out more

Call us by 'phone or send email to book or to ask questions.

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TriMedia foundation seminars

The 'TriMedia foundation' is a 4-day series of seminars designed to give a thorough understanding of all aspects of the TriMedia processor. The series can be followed as a 4-day session or as separate 1-day sessions, by arrangement.

- TriMedia CPU core
- TriMedia cache architecture
- TriMedia optimization
- TriMedia peripheral architecture
- TriMedia Software Architecture

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