CE-Optimized Storage Interface
CE-ATA and Portable Consumer Storage

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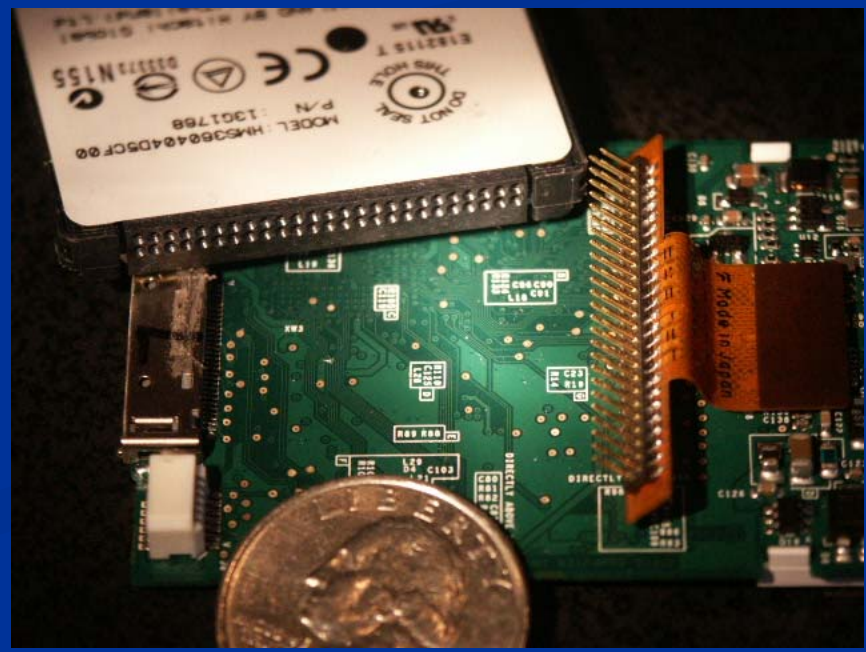
CE Storage Interface Need

- Current small form factor HDD interface primarily CF+
  - 50-pin interface/connector
  - Parallel ATA crammed into a small space
  - High voltage signaling and parallel ATA heritage
- CE segment has even greater need for efficient integration than desktop segment
  - Parallel ATA already being replaced in desktop segment by SATA due to parallel ATA integration shortcomings
  - SATA is not ideal interface for tiny handheld gadgets although SATA is great for computing applications (including some 1.8”)

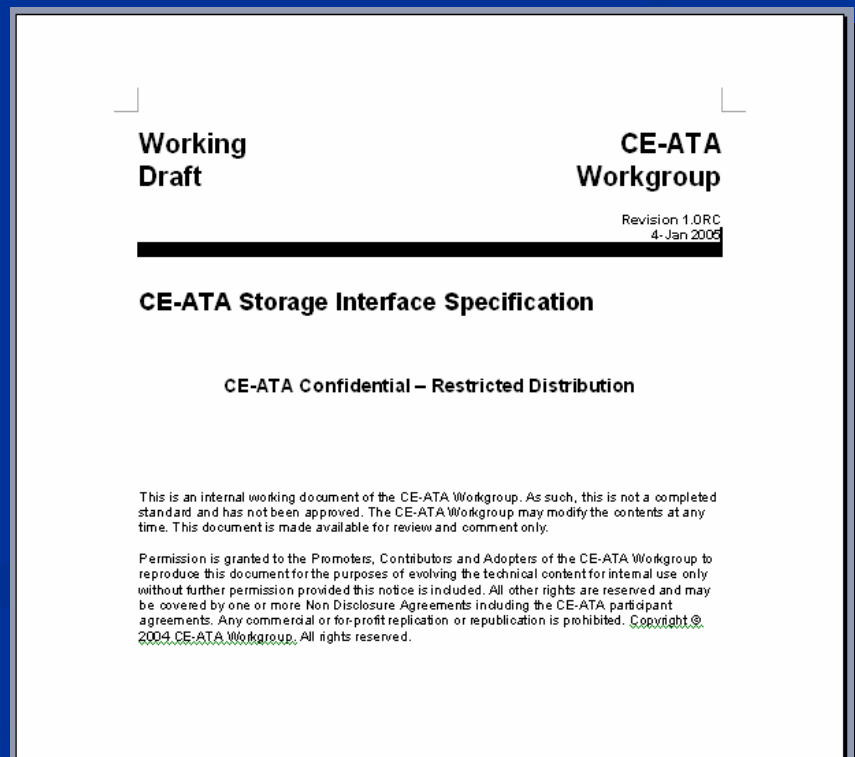


CE-ATA Technical Direction

- Augment MMC interface with enhancements tailored to efficient support of ATA HDDs
  - MMC is a sound and well-suited interface to build on for portable CE applications
- Enhancements approached in a way that does not preclude base MMC compatibility/alignment
  - Goal is if you don't use any CE-ATA tailored enhancements, conceptually revert to MMC behavior/operation
- Initial effort focused on embedded applications with removability as next step
  - Get the fast TTM work done first to enable initial applications and expand with additional capability to support additional usage models

Some CE-ATA Details

- Tailored MMC command for issuing complete ATA command in a single MMC transaction
  - Individual ATA register accesses can result in high overhead from a large number of register access transactions to set up and issue a command
  - Capability also permits complete status context to be retrieved in a single MMC transaction
- Single uniform data movement protocol extension that aligns with ATA data transfer requirements
  - PIO eliminated
- Command completion signaling to address asynch nature of command completions for disk drives
- Optimized/reduced ATA command set for streamlining implementations
  - Reduces firmware burden as well as development and validation time
- Simplified device environmentals monitoring
  - Replace the full-featured SMART facilities with a streamlined yet flexible facility for obtaining basic device operating conditions
- Sane device block size
  - CE-ATA devices have 4K blocks instead of 512bytes



Working Draft

CE-ATA Workgroup

Revision 1.0RC
4- Jan 2005

CE-ATA Storage Interface Specification

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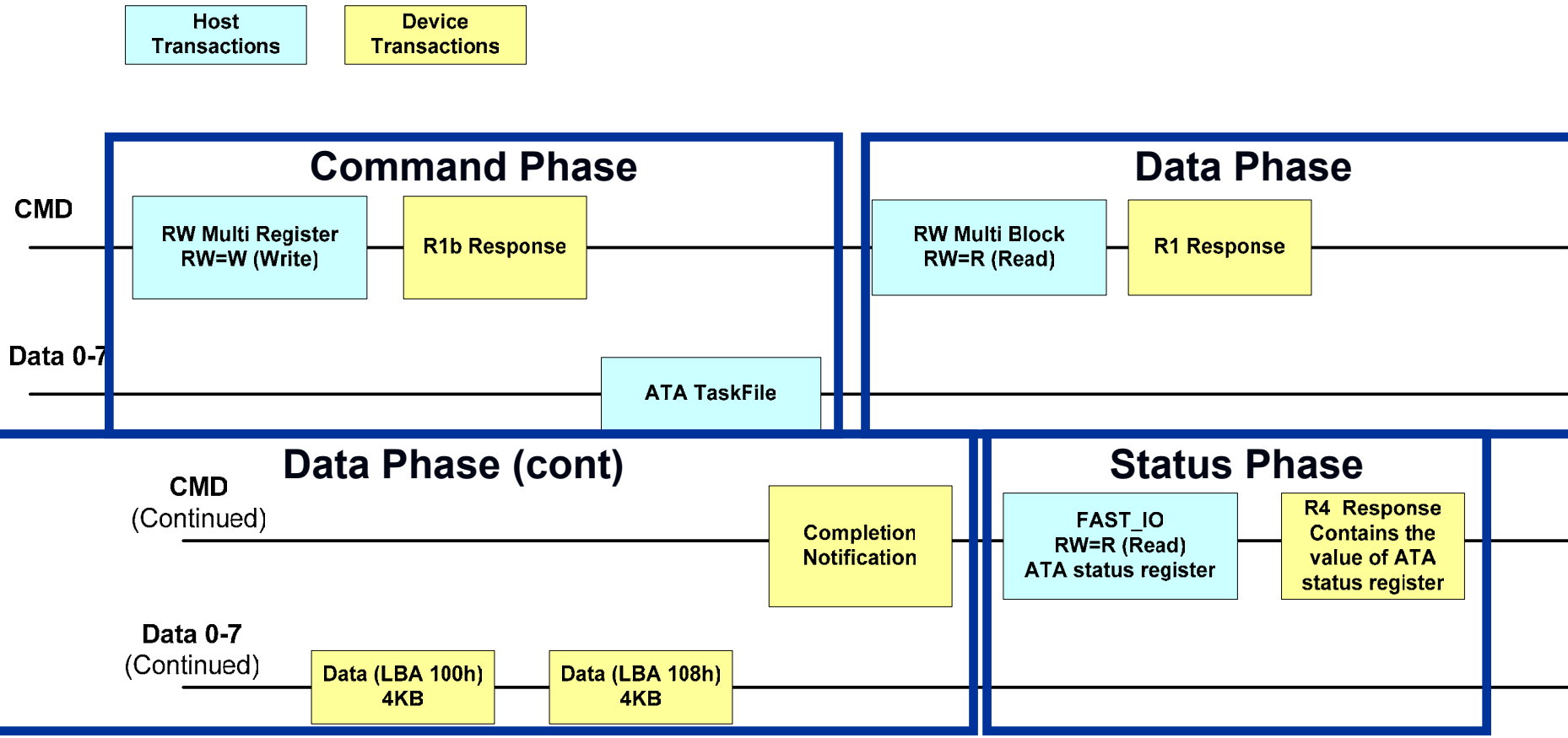
CE-ATA Command Sequence



Reduced Command Set

- CE-ATA command set (complete)
  - IDENTIFY_DEVICE
  - READ_DMA_EXT
  - WRITE_DMA_EXT
  - STANDBY_IMMEDIATE
  - FLUSH_CACHE_EXT
- All the different ATA flavors of reading and writing to the disk reduced to single pair
- Command set stripped down to bare essentials
- Firmware, software, validation, and boundary cases simplified
- Forward-looking from start with 48-bit support

Industry Leaders Spearheading CE-ATA

- Industry leaders are spearheading initiative to define storage interface tailored to needs of handheld and consumer-electronic applications

Promoters

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