OS/2 ATAPI Experiences

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OS/2 ATAPI Test Program

- Started Late November 1994

- Proliferation of Deviations of ATAPI Spec
  - Warp implemented Standard ATAPI Driver
  - 40% initial CDROM's were operable
  - "Worked in DOS" not good enough

- Program Highlights
  - Verification Test
  - Feedback to Manufacturers
  - Recommend Changes (OS/2 Driver or Firmware)
  - Licensing of OS/2 Driver to Manufacturers
  - NOT a verification of full ATAPI compliance
ATAPI Common Problems

In order of frequency:

▶ ReadTOC Command
  - Inherently Complex
  - Leads to inconsistency of implementations
  - Recommend using OS/2 Warp as standard test tool
▶ ReadSubchannel Command
▶ Mode Select Command
▶ ReadCD Command
▶ Read Command
▶ Disk Capacity Sensing
▶ Audio Playback
▶ Inquiry Command
▶ Task File Implementation

ATAPI Command Implementation Problems

▶ ReadTOC Command
  - Starting Track flexible
  - Caching of TOC, correct errors
  - all modes supported

▶ ReadSubchannel
  - Audio Status managed correctly
  - Mode Select should not affect

▶ Mode Select
  - allow during playback
  - assure capabilities page are aligned
  - with H/W
  - Individual channel muting
  - page code bye of CDB
  - Not Ready errors
ATAPI Command Implementation
Problems II

- ReadCD Command
  - complete implementation
  - all flag mandatory flag bits

- Read Error handling
  - Correct Errors for Inappropriate reads
  - mode 2, F2, CD-DA at 2048 byte should generate
  - 05/54/00 not 03/02/00, or 02/30/02

- Capacity
  - proper detection
  - boundary checking

ATAPI Command Implementation
Problems III

- Audio plays
  - error on data
  - seeking accuracy

- Inquiry
  - ANSI version code
  - data length
ATAPI H/W Problems

- Task file
  - timely, correct response to reset, soft reset, POR
  - consistent register shadowing (Spec. issue)

- Protocol
  - generate interrupts in a timely manner according to ATAPI protocol
  - poll mode for dev drv init + machine config code

- Jumpers, Connectors
  - Shrouds to prevent misplugging
  - master/slave/Coel present and marked