Merging DT & Packetized CRC

- Two CRC algorithms described in SPI-3
- Packetized now restricted to DT systems.
- Both DT and packetized restricted to wide busses.
- Why do we need two?

Similarities

- CRC calculation is identical.
- Both algorithms only support use during synchronous high speed transfers.

Differences

- DT CRC specifies position of CRC bytes using P_CRCA bus signal.
- Packetized specifies position of CRC bytes using length field of a header packet (SPIL_Q packet).
- SPIL_Q packet itself has fixed length so CRC position is known.

Performance

- DT CRC overhead limited to time to transfer the CRC bytes- two REQ/ACK handshakes.
- On long transfers, packetized CRC requires a new SPIL_Q packet for each CRC group.
- During Data-In phases, transmission of the SPIL_Q packet for each group requires a bus turnaround and 2 phase changes - 1200ns of additional overhead + 20 additional bytes transferred.

Implementation

- Can implement both algorithms with one CRC generator.
- Requires two completely different sets of control logic for CRC.

Merging

- Packetized SCSI can adopt DT CRC.
- Has no effect on the “meat” of Packetized SCSI.
- Eliminates overhead on long data transfers.
- Simplifies implementation

Addendum - SPIL_Q Length Field

- With DT CRC, length field no longer specified CRC position.
- Length field still needed to determine end of packet.
- Defines “border” between data packets and subsequent SPIL_Q packets.