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.