Accredited Standards Committee*
NCITS, Information Technology

To: Membership of T10

From: Rob Basham
             IBM Tucson

Subject: End to End CRC Proposal
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1. Why End-To-End CRC?

1.1 Data Integrity Issues

- Number of bits detected better than Parity
- Depends, usually > 3 bits
- Intermediate box/adapter
- A customer adds in a box that hasn't been tested.
- Testing criteria for permanent errors vs. data integrity errors is lower, for faster time to market.

1.2 Additional Utility

- External systems with no other protection may use
- Intermediate "checkpoints" possible for further isolation

1.3 Managing Complexity

- Allows data assurance in multi-protocol systems

2. Where Does CRC Belong?

2.1 At the SAM layer

- Given bus bit error rates, data integrity errors are more likely because of microcode, intermediate boxes. A CRC that starts on one end of the bus and ends at the other is less useful.
- It would be nice to allow the CRC to propagate through all the various protocols and still be there at the very ends of the system.
- The option to generate or check is needed at multiple places in the system to account pieces that don't have CRC generation capability.

3. IBM's Experience

3.1 IBM Tucson uses end-to-end CRC

- We've seen a data integrity problem caused by bus bit errors
- Card and microcode designs have yielded data integrity problems.
- Overall, end-to-end CRC is viewed as positive
- Would be more useful if it were standard