

TO: T10 Membership
FROM: Paul Suhler, Seagate Technology
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SUBJECT: ADT Frame Format Notes (T10/02-233r0)

Here is the document that I found related to frame design, slightly reorganized. As you see, it describes the design philosophy and lists fields, rather than presenting the actual byte-by-byte format.

General

- No primitives (e.g., 00h) will be defined in ADT. Any transmission outside a frame is outside this standard.
- Flow control is done at the frame level. This suggests setting a maximum frame size so that a node is able to know the minimum number of frames it can accommodate.
- All frames use a common header, including acknowledgements.

Acknowledgement and Timeouts

- Acknowledgement frames are not acknowledged.
- Ack frame will give a failure reason.
- Ack timeout should cause frame retry.
- Frame timeout (maximum time to receive a complete frame). Should this vary with baud rate?
- Must receive Ack, Nak, or Timeout before sending next frame. I.e., the link layer must return to Idle state.

Fields

- SOF, EOF, ESC
 - Byte stuffing is used within frames to make these characters' use unique. A precise definition of byte stuffing is needed.
 - Hamming distance ≥ 2 [Not certain which fields this would apply to.]
- Payload length
 - Default minimum
 - Negotiable maximum payload sizes
 - Two-byte field?
- Frame header includes type field
- Frame number (continuously incrementing or returned with acknowledgement)
- Multiple source & destination physical addresses
- Multiple channels per physical address (LUNs)
- Multiple tasks (I/O processes / commands) per channel
- Table discussion of section numbers
- Error Detection & Correction: 2 byte field on frame. Should we use two's complement addition? Exclusive-or? Need to consider computational load of one- versus two- versus four-byte arithmetic operations.