

memorandum



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To
INCITS T10 Committee

From
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Subject
ADT Fast Access Errors

Date
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Introduction

This proposal allows a Data Transfer device (DTD) to report errors detected in an AER Control IU.

ADT requires an Automation device to set multi-bit fields in an AER Control IU to either all ones or all zeros. The text does not provide a mechanism for a DTD to report an error if it receives an illegal value in such a field. The text also does not state whether the DTD should report or not report subsequent events associated with the multi-bit field.

The definition of 'reserved' [ADT, 3.3.8] contains an implicit 'may' clause with regard to targets checking reserved bits. ADT does not provide a NAK frame status code for use by a DTD that checks reserved bits in an AER Control IU and finds one or more equal to one.

Proposed Text

6.5.3.3 NAK information unit

A NAK IU is sent by the transport layer to indicate that the port has detected an error during the reception of a frame. Except for acknowledgement IUs, a port shall send a NAK IU for every frame that it receives in error. The Payload of a NAK IU shall contain 1 byte indicating the status. The FRAME NUMBER field in the ADT Header of the NAK IU shall be set to value in the Expected Frame Number counter (see 4.6.3). Table 15 lists the status values:

Table 15 — NAK frame status code value

Status	Description
00h	Reserved
01h	Bad checksum
02h	Over-length (more bytes received than PAYLOAD SIZE field indicates)
03h	Under-length (fewer bytes received than PAYLOAD SIZE field indicates)
04h	Byte framing error
05h	Hardware over-run
06h	Unexpected Frame Number
07h	Awaiting Initiate Recovery IU
08h	Header reserved bit set (for the version of ADT the receiving device supports)
09h - 6Fh	Reserved
70h - 7Fh	Vendor specific transmission error.
80h	Unsupported protocol
81h	Out of resources, retry later. The receiving port has run out of buffers to store the frame.
82h	Login in progress
83h	Invalid or illegal Pause IU received
84h	Illegal operation for current operating parameters
85h	Rejected, port is logged out
86h	Maximum ACK offset exceeded
87h	Maximum payload size exceeded
88h	Unsupported frame type for selected protocol
89h	Negotiation Error
8Ah	Illegal field in AER Control IU
8Bh – EFh	Reserved
F0h – FFh	Vendor specific protocol error



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7.2.6 AER Control information unit

The AER Control IU may optionally be sent by an Automation device to a Data Transfer device to enable or disable AER reporting. The payload of the AER Control IU shall contain a VHF Data structure, with the bits set to one for each field that the device shall report a change. Multiple-bit fields shall have either all of the bits of the field set to 1 or all of the bits in the field set to 0.

Data Transfer devices that do not support AER shall send a NAK IU in response with the STATUS field set to Unsupported frame type for selected protocol.

Data Transfer devices that support AER shall respond to the receipt of an AER Control IU that contains a multi-bit field equal to an illegal value with a NAK IU. Illegal values include any combination that does not contain either all 1 bits or all 0 bits. The Data Transfer device shall set the status field of the NAK IU to Illegal field in AER Control IU.

Data Transfer devices that support AER may respond to the receipt of an AER Control IU that contains a reserved bit equal to 1 with a NAK IU. The Data Transfer device shall set the status field of the NAK IU to Illegal field in AER Control IU.

Except as noted above, Data Transfer devices that support AER shall respond to the receipt of a AER Control IU by sending an AER Control IU back to the Automation Device with the same x_origin and EXCHANGE ID values. The payload of the IU shall contain a VHF Data IU data structure. Each field that has been enabled for AER notification and is supported by the device shall contain all 1 bits. Each field that has been either disabled for AER notification or is not supported for AER notification by the device shall contain 0. The default setting for all AER events in a Data Transfer device shall be zero.

All AER control fields shall be set to zero by the Data Transfer device at the start of the port login process.