T10/05-124r0

To	From	Subject	Date
INCITS T10 Committee	Michael Banther, HP	ADT Remove Restriction When Max ACK Offset Equals Zero	17 March 2005

Revision history

Revision 0 – Initial proposal.

Reference Documents

ADTr13   *Automation/Drive Interface - Transport Layer (ADT).* Rev: 13. 9 September 2004.

ADTr14   *Automation/Drive Interface - Transport Layer (ADT).* Rev: 14. 18 November 2004.

ADT-2r00   *Automation/Drive Interface - Transport Protocol - 2 (ADT-2).* Rev: 00. 14 March 2005.

Background

Between ADTr13 and ADTr14, the text, 'Link service IUs are not counted in the offset' was removed from 6.5.4 *Port Login Information Unit*. ADTr13, 6.5.4 [*emphasis mine*]:

> The MAXIMUM ACK OFFSET field indicates the number of frames that may be sent to the port without receiving an acknowledgement IU in response. The offset count is incremented for each frame sent by a port and decremented for each acknowledgement IU received. *Link service IUs are not counted in the offset (see 4.4).* A value of zero indicates the port is disabled for all but link service traffic. The MAXIMUM ACK OFFSET field shall be set to at least one.

ADTr14 and ADT-2r00, 6.5.4:

> The MAXIMUM ACK OFFSET field indicates the number of frames that may be sent to the port without receiving an acknowledgement IU in response (see 4.4). A value of zero indicates the port is disabled for all but link service traffic.

As a consequence, the standard now requires use of the Unacknowledged Frame Counter for Link Service frames. As a knock-on effect, a port cannot send any Link Service frame other than an acknowledgement IU, a Port Login IU, or an Initiate Recovery IU when the Max. ACK Offset equals zero. ADT-2r00, 4.4 *ACK Offset* [*emphasis mine*]:

> Each port shall keep a counter to track the unacknowledged frames that it has sent, called the Unacknowledged Frame Counter. This counter shall be set to zero at hard reset events. It shall also be set to zero before sending a Port Login IU or upon receiving an ACK IU for an Initiate Recovery IU. The counter shall be incremented by one for each frame that is sent except acknowledgement frames. It shall be decremented by one for each acknowledgement IU that is received. *A port shall not transmit frames when this counter is equal to the maximum ACK offset value except for acknowledgement IUs, Port Login IUs, and Initiate Recovery IUs.* If the port has not successfully completed the Port Login process, it shall not transmit a frame if the unacknowledged frame count is one.

Consequently a port cannot close, pause, or reset a link that was opened with the maximum ACK offset set to zero. HP would like the standard to allow all link service frames when with the maximum ACK offset is set to zero.

Proposed changes

4.4 ACK Offset

Each port shall keep a counter to track the unacknowledged frames that it has sent, called the Unacknowledged Frame Counter. This counter shall be set to zero at hard reset events. It shall also be set to zero before sending a Port Login IU or upon receiving an ACK IU for an Initiate Recovery IU. The counter shall be incremented by one for each frame that is sent except acknowledgement frames. It shall be decremented by one for each acknowledgement IU that is received. Except for Link Service frames, A~~a~~ port shall not transmit frames when this counter is equal to the maximum ACK offset value ~~except for acknowledgement IUs, Port Login IUs, and Initiate Recovery IUs~~. If the port has not successfully completed the Port Login process, it shall not transmit a frame if the unacknowledged frame count is one.