T10/04-369r0

To	From	Subject	Date
INCITS T10 Committee	Michael Banther, HP	ADT Port State Machine, IU Statements in State Sub-clause	4 November 2004

Revision history

Revision 0 – Initial proposal.

Background

During resolution of ADT letter ballot comments at the 3 May 2004 ADI meeting, the working group noticed inconsistencies in the state machine descriptions (see ADTr13, 4.3). Specifically statements that describe how transition from one state to another causes the port to send an information unit appear in different places depending on the transition. Sometimes a statement appears in the description of the state entered into, sometimes a statement appears in the description of the transition, and sometimes no statement appears at all.

After some discussion, the working group concluded that the standard should use a consistent approach regarding the placement of these statements. The group decided to place statements that specify the sending of an IU in the state description.

During the 1 November 2004 ADI teleconference, the working group discussed the approach to use for conditional statements about sending information units that appear in the state machine text. The working group also discussed some other problems that HP's investigation into the state machine text had uncovered (see 04-350r0 Guidance on state machines).

Insofar as possible[1], this proposal changes the Port state machine text to:

a. Place the unconditional portion of each non-acknowledgement information unit statement associated with entry into a next state in the next state description clause;

b. Place the conditional portion of each non-acknowledgement information unit statement associated with entry into a next state in the current state description clause;

c. Retain every acknowledgement information unit statement associated with entry into a next state in the transition description clause;

d. Add explicit transition text for currently implicit transitions in the Port state machine; and

e. Re-distribute the text in 4.3.2.3.1 *State description* (for the P1 Login state) that describes the setting of operating parameters.

Proposed changes

4.3.2.1 Port state machine overview

In figure 4 add a transition arrow from the P3: Logged-Out state to the P1: Login state.

4.3.2.2 P0: Initial state

4.3.2.2.1 State description

This is the initial state of the port state machine.

A port entering this state shall set its operating parameters to default values (see 4.2).

A port in P0: Initial state shall send a NAK IU with status code of REJECTED, PORT IS LOGGED OUT (see table 14) in response to any frame other than Port Login IU, Port Logout IU, NOP IU or acknowledgement IU. Upon entering this state, all other state machines shall be set to their initial states.

4.3.2.3 P1: Login state

4.3.2.3.1 State description

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[1] Typically, the conditional portion of the existing text describes how to set the parameters for the information unit and the act of sending it is unconditional. The lettered list accurately describes how this proposal handles these situations. In cases where the decision to send the information unit depends on a condition, the new text in the next state description includes a statement of the condition, i.e., it's a conditional statement.

While in the P1: Login state, Port Login IUs are used to establish or change link parameters used by both ports on the link. The login process is a negotiation between the ports that shall result in the determination of a set of operating parameters that are acceptable to both ports. ~~Following a hard reset or a transition to P3: Logged Out state, the port shall set its operating parameters to default values before sending the Port Login IU (see 4.2). If the port is already logged in, the operating parameters shall not be changed before sending the Port Login IU, unless otherwise specified.~~ The login process consists of a series of Port Login IUs all within a single exchange (i.e. the same X-Origin and Exchange ID values are used in all information units throughout the process (see 6.3)). …

If the port enters this state as a result of an Initiate Login request, it shall send an Initiate Login message to the link negotiation state machine. If a port enters this state as a result of a Recovery Failed message (see 4.3.2.4.1), the port shall send an Initiate Login message to the link negotiation state machine.

After acknowledging a Port Login IU, transmission of frames for other exchanges shall either be suspended or aborted based on the setting of the AOE bit in the Port Login IU (see 6.5.4).

4.3.2.3.3 Transition P1: Login to P2: Logged-In

A port shall ~~set its operating parameters to the negotiated values and~~ transition to P2: Logged-In state after receiving a Login Process Complete message.

4.3.2.4 P2: Logged-In state

4.3.2.4.1 State description

Upon entry to this state, a port shall set its operating parameters to the negotiated values (see 4.3.2.3.1).

While in this state, the port's permission to transmit is managed through the use of the transmitter state machine. …

If a port receives a Recovery Failed message, the port shall abort all open exchanges, set its operating parameters to default values (see 4.2), and set the AOE bit to one for the next Port Login IU it sends. If the port receives a Recovery Succeeded message, the port shall resume the transmission of frames.

4.3.2.4.3 Transition P2: Logged-In to P1: Login

A port shall transition to P1: Login state ~~and initiate a port login exchange~~ after receiving a Recovery Failed message (see 4.3.5.4.2) or upon receiving a Port Login IU. ~~If the transition is due to a Recovery Failed message, the port shall abort all exchanges, set its operating parameters to default, and initiate a Port Login exchange with the AOE bit set to one.~~

4.3.2.5 P3: Logged-Out state

4.3.2.5.1 State description

A port entering this state shall set its operating parameters to default values (see 4.2).

A port in P3: Logged-Out state shall not initiate an exchange. While in this state, upon receiving any frame other than a Port Login IU, the port shall send a NAK IU with a status code of REJECTED, PORT IS LOGGED OUT (see table 14).

4.3.2.5.3 Transition P3: Logged-Out to P1: Login

A port shall transition to P1: Login state upon receiving a Port Login IU.