+--+
| IEEE 802.1 REVISION REQUEST 0135 |
+------------------+==================================+---------------+

DATE: May 7, 2014
NAME: Bob Noseworthy, Jeff Laird
COMPANY/AFFILIATION: University of New Hamsphire's InterOperability Lab
with support from the AVnu Alliance
E-MAIL: ren@iol.unh.edu, laird@iol.unh.edu

REQUESTED REVISION:
STANDARD: 802.1AS-2011
CLAUSE NUMBER: 11.2.15, Figure 11-8
CLAUSE TITLE: MDPdelayReq state machine

RATIONALE FOR REVISION:

The behaviour specified by "Figure 11-8 - MDPdelayReq state machine" requires a Pdelay_Req to be immediately retransmitted after a set of possible error conditions (both entrance arcs into the RESET state).

This results in erroneous or malicious behaviour from a link partner sending malformed Pdelay_Resp frames causing the receiving device to regenerate a Pdelay_Req message 'immediately' and likely then receiving another erroneous response and looping - generating a storm of Pdelay_Req messages and greatly increasing the processing load on the receiving device. This increased load may become significant on a bridge. This behaviour also violates the nominal Pdelay_Req transmission interval.

It is also conceivable that an otherwise well-behaved link partner may momentarily respond incorrectly and fall into a pattern of responding to the second-to-last received Pdelay_Req with a Pdelay_Resp with matching sequenceId, thereby triggering a sequenceId mismatch (as it does not match the most recently received Pdelay_Req sequenceId) thus creating a loop of incorrect sequenceId Pdelay_Resp messages triggering the storm of Pdelay_Req messages from which a device may never recover - triggered by one error.

The proposed reision aborts such a loop by giving the response sender a full request interval to empty its request queue.

Note: 'pdelayIntervalTimer' in the state machine is only set upon entry to these two states:
SEND_PDELAY_REQ, and,
INITIAL_SEND_PDELAY_REQ

Thus the proposed change will merely enforce the expectation that Pdelay_Req messages are sent no more frequently than the pdelayReqInterval.

PROPOSED REVISION TEXT:

Remove the requirement to send a new Pdelay_Req immediately after entry to the RESET state.

One way to accomplish this:

Change the transition from RESET to SEND_PDELAY_REQ:
From:
  “UCT”

To:
  “currentTime – pdelayIntervalTimer >= pdelayReqInterval”

IMPACT ON EXISTING NETWORKS:

No known negative impact.
The proposed maintenance item will reduce the chance of erroneous or malicious device behaviour from impacting an 802.1AS EndStation or Bridge. Existing devices that follow the current standard will interoperate seamlessly with the proposed modification.

Please attach supporting material, if any
Submit to:- Tony Jeffree, Chair IEEE 802.1
and copy:- Glenn Parsons, Vice-Chair IEEE 802.1
E-Mail: stds-802-1-maint-req@ieee.org

For official 802.1 use
REV REQ NUMBER: 0135
DATE RECEIVED: 7 May 2014
EDITORIAL/TECHNICAL
ACCEPTED/DENIED
BALLOT REQ'D YES/NO
Status: R