8802-3/802.3 REVISION REQUEST

DATE: 28th June, 2000
NAME: Bob Noseworthy
COMPANY/AFFILIATION: UNH InterOperability Lab
ADDRESS: Univ of New Hampshire
Durham, NH
PHONE: (603) 862-4342
FAX: (603) 862-0898
E-MAIL: ren@iol.unh.edu

REQUESTED REVISION:
STANDARD: IEEE Std 802.3-1998
CLAUSE NUMBER: 28.3.1, 28.3.4 and Figure 28-16
CLAUSE TITLE: State diagram variables and State diagrams

PROPOSED REVISION TEXT:

Use the np_rx variable from clause 37.

In Figure 28-16:

In the COMPLETE ACKNOWLEDGE state, add:
np_rx <= rx_link_code_word[NP].

In the transition from COMPLETE ACKNOWLEDGE
to FLP LINK GOOD CHECK, replace:
rx_link_code_word[NP]=0 with np_rx=0.

In the transition from COMPLETE ACKNOWLEDGE
to NEXT PAGE WAIT, replace:
rx_link_code_word[NP]=1 with np_rx=1.

Add to 28.3.1 the definition of np_rx:

np_rx
Flag to hold the value of rx_link_code_word[NP] upon entry to the COMPLETE ACKNOWLEDGE state. This value is associated with the value of rx_link_code_word[NP] when acknowledge_match was last set.

Values: ZERO; The local device np_rx bit equals logic zero.
ONE; The local device np_rx bit equals logic one.

RATIONALE FOR REVISION:

In figure 28-16, the exit condition from COMPLETE ACKNOWLEDGE to FLP LINK GOOD CHECK contains tx_link_code_word[NP]=0 * rx_link_code_word[NP]=0. This can cause a device involved in a next page exchange to prematurely branch from COMPLETE ACKNOWLEDGE to the FLP LINK GOOD CHECK state, instead of properly proceeding to the NEXT PAGE WAIT state.

Example: Station A is going through a Next Page exchange with station B. Station A and station B are in the COMPLETE ACKNOWLEDGE state.

Station B has more pages to exchange than station A. Station A completed sending its next pages and is now sending NULL pages with NP=0. In the case where station B has more Next Pages to send, tx_link_code_word[NP]=1 * rx_link_code_word[NP]=0. Thus station A has tx_link_code_word[NP]=0 * rx_link_code_word[NP]=1. Both stations have mr_np_able=true * mr_lp_np_able=true.

Station B now transitions to NEXT PAGE WAIT first and starts sending its last next page, setting tx_link_code_word[NP]=0. Because station A is still in COMPLETE ACKNOWLEDGE, it should follow station B through this last Next Page exchange, but it is now receiving FLPs that set rx_link_code_word[NP]=0.

This completes the exit conditions and station A properly transitions to FLP LINK GOOD CHECK. Since station B receives flp_receive_idle=true it transitions to TRANSMIT DISABLE and then to ABILITY DETECT. Station A does not receive a link and sets link_status_[HCD]=FAIL and thus transitions to TRANSMIT DISABLE and back to ABILITY DETECT after link_fail_inhibit_timer and break_link_timer.

Although both stations are compliant, they can not complete the negotiation and end up back in the ABILITY DETECT state.

IMPACT ON EXISTING NETWORKS:

The standard defines incorrect behavior and _every_ existing PHY manufacturer is well aware of the issues and in all(?) cases works the way they "should" and not the way the standard says they "shall".

Please attach supporting material, if any

Submit to:- Geoffrey O. Thompson, Chair IEEE 802.3
Nortel Networks, Inc. M/S SC5-02
4401 Great America Parkway
P. O. Box 58185
Santa Clara, CA 95052-8185 USA
Phone: +1 408 495 1339 FAX: 988 5525
E-Mail: gthompso@nortelnetworks.com

For official 802.3 use

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For information about this Revision Request see -
http://www.ieee802.org/3/maint/requests/revision_history.html#REQ1040