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| 8802-3/802.3 REVISION REQUEST 1115 |
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DATE: 2nd October, 2003
NAME: Terry R Cobb
COMPANY/AFFILIATION: Avaya Inc.
E-MAIL: MDI Connectors

REQUESTED REVISION:
STANDARD: IEEE Std. 802.3ae-2002
CLAUSE NUMBER: 23.7.1, 40.8.1
CLAUSE TITLE: MDI Connectors

PROPOSED REVISION TEXT:

See attached draft.

RATIONALE FOR REVISION:

The polarity for contacts 4/5 is inconsistent with the industry standard. Since the inception of RJ connectors the center conductors have always been labeled 'Ring/Tip' or '-/+' in that order, see FCC regulations Part 68, Subpart F, Section 68.502. When the outside split pair was added to the single pair connection it reversed the order so that the connector would alternate in polarity. When the two additional outside pairs were added, for an 8 pin connector, the convention was followed. The original reason for this is that it provides isolation, (+ - + - + - + -); and it also alternates the color code, making it easy to see that the plug is wired correctly. Most of the cabling that is used today follows this convention.

In general, the cabling industry will build a cross over cable according to TIA-568-B.1. We can correct the discrepancy by reversing the polarity or at the least add a note that acknowledges this and will alert the implementer or user to the problem.

IMPACT ON EXISTING NETWORKS:

This will only show up when a cross over cable is used that is wired according to TIA-568. It is possible that this does occur quite often. Clause 23.7.1 is T4. For Clause 40.8.1 I believe all the 1000BASE-T PHY's have the capability of reversing polarity and this should not have an impact.

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| Please attach supporting material, if any |
| Submit to:- Bob Grow, Chair IEEE 802.3 |
| E-Mail: Bob.Grow@intel.com |
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| +----- For official 802.3 use -----+ |
| REV REQ NUMBER: 1115 |
| DATE RECEIVED: 2nd October, 2003 |
| ~~EDITORIAL~~/TECHNICAL |
| ACCEPTED/~~DENIED~~ |
| BALLOT REQ'D YES/~~NO~~ |
| COMMENTS: 08-Mar-06 Ver: D3.0 Status: P |
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| For information about this Revision Request see - |
| http://www.ieee802.org/3/maint/requests/revision_history.html#REQ1115 |
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40.4.4 Automatic MDI/MDI-X Configuration

Automatic MDI/MDI-X Configuration is intended to eliminate the need for crossover cables between similar devices. ~~Implementation of an automatic MDI/MDI-X configuration is optional for 1000BASE-T devices shall implement an automatic MDI/MDI-X configuration and, if an automatic configuration method is used, it shall~~ comply with the following specifications. The assignment of pin-outs for a 1000BASE-T crossover function cable is shown in Table 40-12 in 40.8.

40.8.2 MDI connectors

Add sentence to the end of the paragraph:

The PHY shall be capable of reversing the polarity of the contacts for any PMA signal to correct for a mis-wired channel between any two PHY entities within the link segment.

40.8.2 Crossover function

~~Although the automatic MDI/MDI-X configuration (see 40.4.4) is not required for successful operation of 1000BASE-T, it~~ It is a functional requirement that a crossover function be implemented in every segment to support the operation of Auto-Negotiation. The crossover function connects the transmitters of one PHY to the receivers of the PHY at the other end of the link segment. Crossover functions may be implemented internally to a PHY or else-where in the link segment. ~~For a PHY that does not implement the crossover function, the MDI labels in the middle column of Table 40-12 refer to its own internal circuits. For PHYs that do implement the internal crossover, the MDI labels in the last column of Table 40-12 refer to the internal circuits of the remote PHY of the link segment. Additionally, the~~ The MDI connector for a 1000BASE-T PHY that implements the crossover function shall be marked with the graphical symbol X. The crossover function specified here is not compatible with the crossover function specified in 14.5.2 for pairs TD and RD.

When a link segment connects a single-port device to a multiport device, it is recommended that the cross-over be implemented in the PHY local to the multiport device. ~~It neither or both PHYs of a link segment contain internal corsrossover functions, an additional external crossover is necessary.~~ It is recommended that the crossover be visible to an installer from one of the PHYs. ~~When both PHYs contain internal corssovers,~~ It is further recommended that, in networks in which the topology identifies either a central backbone segment or a central device, the PHY furthest from the central element be assigned the external crossover to maintain consistency.

Implicit implementation of the crossover function within a twisted-pair cable or at a wiring panel, while not expressly forbidden, is beyond the scope of this standard.

40.12.5 Physical Medium Attachment (PMA)

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PMF14	MDI/MDI-X automatic configuration	40.4.4	M	Yes <input type="checkbox"/>	Comply with the specification of 40.4.4
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40.12.9 MDI requirements

Change MDI4 and add MDI5

MDI4	Connector used on PHY	40.8.1	M	Yes <input type="checkbox"/>	The PHY shall be capable capable of reversing the polarity of the contacts.
MDI5	Connector used on PHY	40.8.2	M	Yes <input type="checkbox"/>	The PHY shall be marked with the graphical symbol X.