### 97.8 (97.7a) Management Interfaces

1000BASE-T1 makes extensive use of the management functions that may be provided by the MDIO (Clause 45), and the communication and self-configuration functions provided by the optional Auto-Negotiation (Clause 98).

#### 97.8.1 Optional Support for Auto-Negotiation

All 1000BASE-T1 PHYs shall be capable of operating as MASTER or SLAVE. Support for Auto-Negotiation (Clause 98) shall be optional.

If Auto-Negotiation is supported and enabled the mechanism described in Clause 98 shall be used.

Auto-Negotiation is performed as part of the initial set-up of the link, and allows the PHYs at each end to advertise their capabilities and to automatically select the operating mode for communication on the link. Auto-Negotiation signaling is used for the following primary purposes for 1000BASE-T1:

a) To negotiate that the PHY is capable of supporting 1000BASE-T1 transmission.
b) To determine the MASTER-SLAVE relationship between the PHYs at each end of the link.

Editor's note: Register descriptions to be added once we decide how to tackle autoneg registers in Clause 45.

### 97.10 (97.7c) Delay Constraints

In full duplex mode, predictable operation of the MAC Control PAUSE operation (Clause 31, Annex 31B) also demands that there be an upper bound on the propagation delays through the network. This implies that MAC, MAC Control sublayer, and PHY implementors conform to certain delay maxima, and that network planners and administrators conform to constraints regarding the cable topology and concatenation of devices.

The sum of the transmit and receive data delays for an implementation of a 1000BASE-T1 PHY shall not exceed TBD BT. Transmit data delay is measured from the input of a given unit of data at the GMII to the presentation of the same unit of data by the PHY to the MDI. Receive data delay is measured from the input of a given unit of data at the MDI to the presentation of the same unit of data by the PHY to the GMII.

NOTE—The physical medium interconnecting two PHYs introduces additional delay in a link.