Silent Start

For 10/25/50G Bidi PHYs

Silent Start Requirements

- Not required in OLT PHYs
- In ONUs
  - Higher management function
  - No transmission allowed until a good received signal is seen
  - Should not "flicker" (ie., transmission should not go in and out due to a marginal received signal

Potential control keys from PMA/PCS

- BASE-R and MultiGBASE-T receive link status (CI 45.2.3.15.1)

  - Indicates whether the PCS is in a fully operational state. It is only true if block_lock is true and hi_ber is false.

  - Reflected in MDIO register 3.32.12. A latch low view of this status is reflected in MDIO register 3.1.2 and a latch high of the inverse of this status, Receive fault, is reflected in MDIO register 3.8.10.

- BASE-R and MultiGBASE-T PCS high BER (CI 45.2.3.15.4).

  - Indicates the state of the hi_ber variable ($> 10 \times 10^{-4}$)

  - Reflected in MDIO register 3.32.1.

- BASE-R and MultiGBASE-T PCS block lock (CI 45.2.3.15.5)

  - Indicates when receiver acquires block delineation.

  - Reflected in MDIO register 3.32.0.

- PMD_global_transmit_disable (CI 45.2.1.8)

  - Optional in most PMDs

  - Disables transmission.
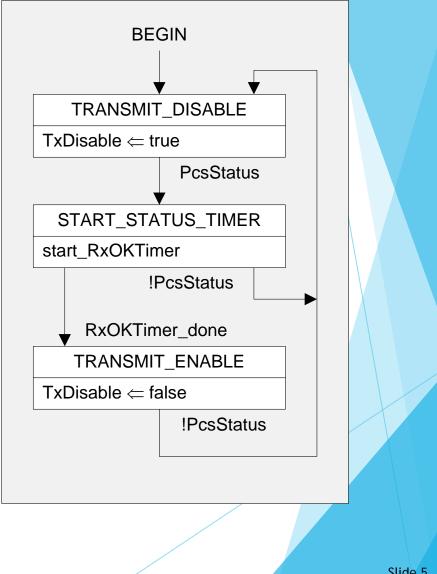
Proposal

- Describe function in Introduction clause (157)

- Use PCS_status as defined in 49.2.14.1 to control Silent Start feature

  - If PCS-status indicates the PCS receive path is up and running normally for some per-determined time period (1 sec ?) the upstream PMD may transmit.

  - If PCS_status indicates there is a PCS receive path fault the PMD transmission shall be disabled.

- PMD_global_transmit_disable as defined in CI 45.2.1.8 (register 1.9.0, optional in 10/25/50GBASE-R PHYs)

  - make mandatory in 10/25/50GBASE-BxR-U PHYs

Variables & State Diagram

▶ TxDisable – Boolean variable when set to true PHY transmission is allowed, when set to false PHY transmission is disallowed. Maps to CI 45.2.1.8 (register 1.9.0) PMD_global_transmit_disable

▶ PcsStatus – Boolean variable when set to true indicates the PCS is in a fully operational state. When set to faulse Indicates the PCS is in a non-operational state. Maps to CI 45.2.3.15.1 (register 3.32.12) BASE-R and MultiGBASE-T receive link status

▶ RxOKTmr – A timer used to ensure the PHY transmission enable includes hysteresis. The RxOKTmr is set to {1 second} on start.

BEGIN

TRANSMIT_DISABLE
TxDisable ⇐ true

PcsStatus

START_STATUS_TIMER
start_RxOKTimer

!PcsStatus

RxOKTimer_done

TRANSMIT_ENABLE
TxDisable ⇐ false

!PcsStatus

How to include Silent Start requirement

- ▶ How would the TF prefer like to include the silent start requirement in the draft?

- ▶ Silent Start as described here is really a Management requirement

  - ▶ Read PHY Rx Status
    - ▶ All PCSs have a requirement to include this

  - ▶ Set PHY Tx Control accordingly
    - ▶ Mandating Tx Control point is easy

  - ▶ How to mandate the overall feature may be delicate

- ▶ Option 1 – Duplicate the feature description (~1.5 pg) in each PMD clause including text, variable definitions & SD

- ▶ Option 2

  - ▶ Describe the feature fully in CI 157 (Intro) including variable definitions and State Diagrams (note typically Intros don't include requirements)

  - ▶ Create a requirement statement ("shall") in the PMD clause (158, 159 & 160) to mandate the Silent Start feature for PHYs including PMDs as described in "this clause"

    - ▶ Ex: "Devices including a 10GBASE-BxR-U PMD shall include the Silent Start feature described in 157.x.y." & "10GBASE-RxR-U PMDs shall include the TxDisable variable described in 157.x.y."

  - ▶ Create PICS in PMD clause

- ▶ Other Options?

Thank You