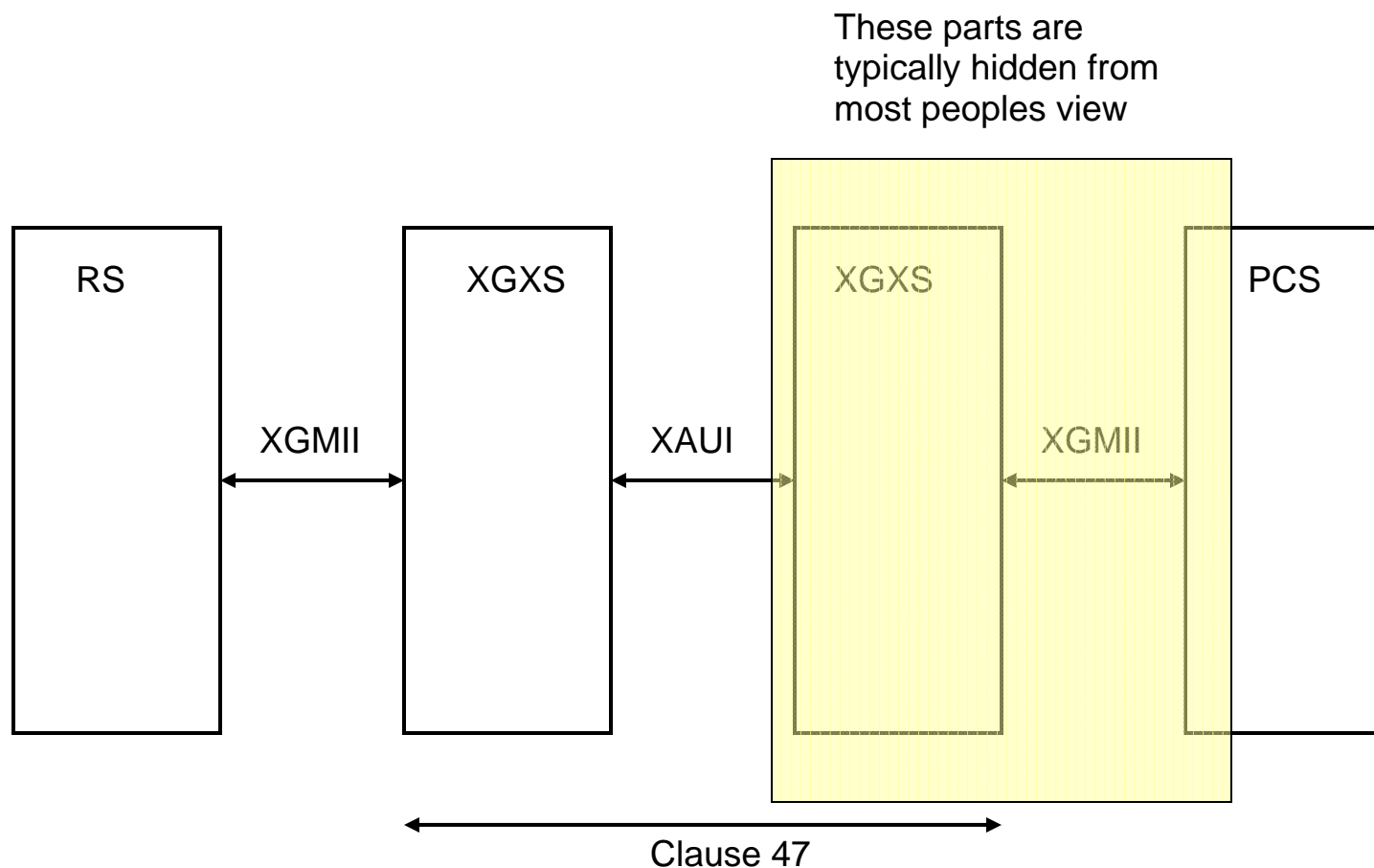# EEE – use of XAUI

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XGXS & XAUI

Clause 47 defines the XGMII Extender Sublayer (XGXS) and the 10 Gigabit Attachment Unit Interface (XAUI)

These parts are typically hidden from most peoples view

| RS | | XGXS | | XGXS | | PCS |

XGMII

XAUI

XGMII

Clause 47

Clause 47 changes?

Clause 47 explicitly leverages Clause 48 for functional specifications

47.2.1

> The XGXS shall meet all mandatory portions of 48.2 and 48.3, and may meet any optional portions of 48.2 and 48.3.

Therefore no change to Clause 47 is required to support LPI signaling

> LPI assertion/deassertion can be passed through transparently

XAUI shutdown would require edits to Clause 47

> No signal detect defined in Clause 47 (so how does Clause 48 work?)

> Needs definition of turn-off, turn-on & off state

> Similar in magnitude (and form) to Clause 71 changes

Proposal – logical signaling

48.2.3 – mention the use of EEE for XGXS/XAUI

48.2.6.2.6

   Add tables for MDI status indications in PHY & DTE XGXS (as suggested by Rita)

45.2.4 / 45.2.5 (management registers for PHY & DTE XGXS)

   PHY/DTE XGXS control & status regs – clock stop enable/stoppable

      (for XGMII clock) beware of direction for each!

   Status register – LPI indication (as in 48.2.6.2.6)

   EEE capability (new register 4.20/5.20?) – single bit

Proposal – XAUI shutdown (i)

Make XAUI shutdown an option for EEE

Changes to Clause 47 – mimic Clause 71

- Copy (with rewording as appropriate) Cl 71 changes

- Off signal level, off/on transition times

- Add optional signal detect(n) & global signal detect – only required if XAUI shutdown supported. Signal detect = OK if not implemented (fixes problem with existing XAUI !)

45.2.4 / 45.2.5 (management registers for PHY & DTE XGXS)

- PHY/DTE XGXS control & status regs:

    - XAUI shutdown enable & capability (similar to clock stoppable)

- 4.22/5.22 Wake error counter

Proposal – XAUI shutdown (ii)

Changes to wake time & wake time shrinkage

Conduct a wake shrinkage review –

  Values for T_s, T_q, T_r / $T_{w\_sys\_tx}$, T_{w_phy}, $T_{phy\_shrink\_tx}$, $T_{phy\_shrink\_rx}$, $T_{w\_sys\_rx}$

  Use values from 10GBASE-KX4 as baseline

  Add rows in tables 78-2, 78-4

Add a section to describe addition of wake times & shrinkage

  Local transmitter must add PHY XGXS wake increment ($T_{w\_sys\_tx}$ - $T_{w\_sys\_rx)}$ to (negotiated) T_{w_sys} - when Tx XAUI shutdown supported/enabled

  Receiver must negotiate additional time added to LP T_{w_sys} for DTE XGXS wake increment ($T_{w\_sys\_tx}$ - $T_{w\_sys\_rx)}$)