



AN Service Interface

Proposed response to comment #80

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Problem Statement

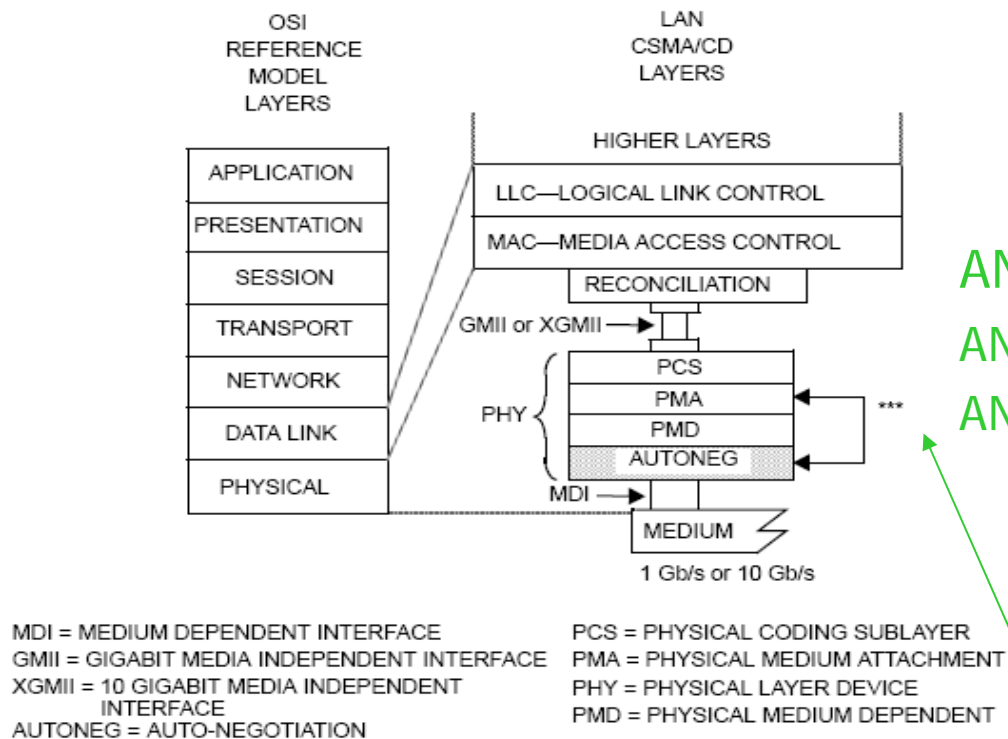
- Comments have raised issues regarding how AN interacts with the PHYs.
- PCS/PMA side of AN_LINK primitives is not defined correctly.
- Comment #80 by David Law
 - Other related comments:
 - #14 by Charles Moore and #84 by David Law



Proposed solution

- Proposed solution would open up Clauses 36, 48 and 49 to insert the necessary hooks for AN_LINK.request primitive.

Location of AN function



AN Service Interface
 AN_LINK.request
 AN_LINK.indication

*** AUTONEG communicates with the PMA sublayer through the AN service interface messages AN_LINK.request and AN_LINK.indication.

Figure 73-1—Location of Auto-Negotiation function within the ISO/IEC OSI reference model



How it is done currently in D3.0

- Clause 70, 71 & 72 define PMDs, whereas the signal link_status needed is from PCS
 - This means adding this primitive to Clauses 36, 48 & 49
- We decided not to open PCS clauses and instead added this information to PMD
 - Describing that, the associated PMA (PCS) should generate the primitive when used with backplane PMDs
 - The issues is, what condition in PCS drives the value of link_status is not clearly defined



Proposed Changes - summary

- Add the primitive to appropriate PCS/PMA clauses where it is generated
 - The PCS shall generate AN_LINK.Indication (link_status)
- Open clauses 36, 48 and 49 to add this information
- Remove AN_LINK.Request primitive (Clause 73)
 - Make link_control variable internal to AN, which determines connection of PMD to Link, describe the behavior more clearly in Clause 73



Proposed changes to Clause 36

- *In subclause 36.2.5.2.7 Add "When the PCS is used with a PMD other than 1000BASE-KX," to the sentence "See Clause 37 for a description of the Auto-Negotiation process and Config_Reg contents."*
- *Add, "When the PCS is used with a 1000BASE-KX PMD, see Clause 73 for a description of the Auto-Negotiation process. The following requirements apply to a PCS used with a 1000BASE-KX PMD. The PCS shall support the primitives AN_LINK.indication(link_status) (see 73.9).*
- The variable `mr_an_enable` should be false to disable Clause 37 Auto-Negotiation. The parameter `link_status` shall take the value FAIL when `sync_status=FAIL` and the value OK when `sync_status=OK`. The primitive shall be generated when the value of `link_status` changes. The value of `xmit` shall be DATA.
 - Setting `mr_an_enable` to false to disable Clause 37 AN also addresses the issue raised by comment #84. (Add this information to Clause 73)



Proposed changes to Clause 48

- *Add the following subclause 48.2.7*

48.2.7 Auto-Negotiation for Backplane Ethernet

- When the PCS is used with a 10GBASE-KX4 PMD, see Clause 73 for a description of the Auto-Negotiation process. The following requirements apply to a PCS used with a 10GBASE-KX4 PMD. The PCS shall support the primitives AN_LINK.indication(link_status) (see 73.9).
- The parameter link_status shall take the value FAIL when align_status=FAIL and the value OK when align_status=OK. The primitive shall be generated when the value of link_status changes.



Proposed changes to Clause 49

- *Insert this subclause and renumber the current 49.2.15*

49.2.15 Auto-Negotiation for Backplane Ethernet

- When the PCS is used with a 10GBASE-KR PMD, see Clause 73 for a description of the Auto-Negotiation process. The following requirements apply to a PCS used with a 10GBASE-KR PMD. The PCS shall support the primitives AN_LINK.indication(link_status) (see 73.9).
- The parameter link_status shall take the value FAIL when PCS_status=false and the value OK when PCS_status=true. The primitive shall be generated when the value of link_status changes.



Proposed changes to Clause 73

- Change all instances of `sync_status` in Clause 73 to `link_status`. Change the value that indicates the link is operational to `link_status=OK`. Delete `READY` as a value for `link_status` and change any occurrences of `READY` to `OK`. (modify response to comment #14 accordingly)
- Remove the primitive `AN_LINK.request` (it is a hold over from Clause 28 and it is not required, with the AN sublayer sitting below the PMDs).
- The description of the variable `link_control` to be redefined as an AN internal variable that determines connection of PMDs to the link.
- `SCAN_FOR_CARRIER` state connects the receiver of each PMD and AN receiver to the link (may be done in serial) and the AN transmitter is connected to the link. `ENABLED` connects the PMD (both transmit and receive) to the link. `DISABLE` isolates the PMD from the link.