

Indication of support for recovery states

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Comments I-248, I-249

Supporters

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General update

- This presentation is brought to the CRG to support comments I-248 and I-249.
- This content was presented in the June 25th 178B ad-hoc meeting.
- There are no content changes from the June 25th version (Osorio_178b_01a_260625.pdf).
- A straw poll showed strong support of the proposed changes:

Straw poll #1;

I support the proposed changes in osorio_178b_01a_260625.pdf

- Yes
- No
- Abstain

Results:

- Yes: 24
- No: 0
- Abstain: 7

D3.1 Figure 178B-10b

With the updates to add recovery states we currently mandate all implementations must support all recovery methods.

Some implementations may not be capable of doing all these approaches.

The transition to FAIL state must be supported for all implementations. Requiring a restart aligns with the recovery mechanism prior to adding the new states (LOSS_OF_SIGNAL, ADJ_LOS*).

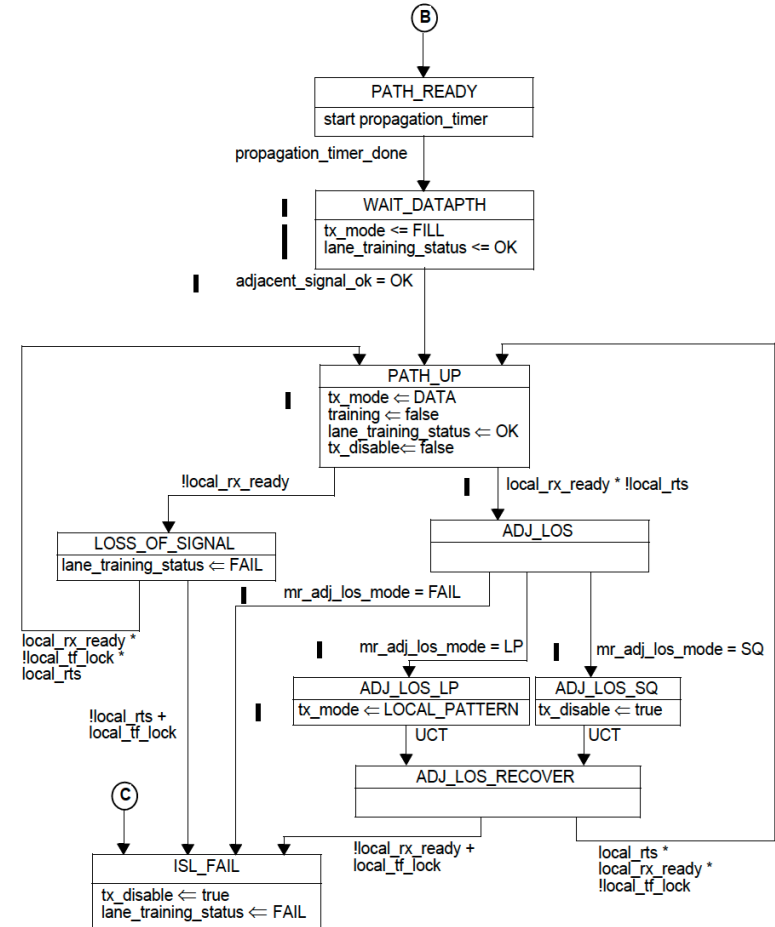


Figure 178B-10b—Training control state diagram, part 2

The concern

The two arcs marked in blue (to ISL_FAIL) need to be supported by all implementations.

The three paths marked in red (1,2,3) may not be supportable by all implementations.

For example, a receiver could be reliant on the training frames to achieve data lock.

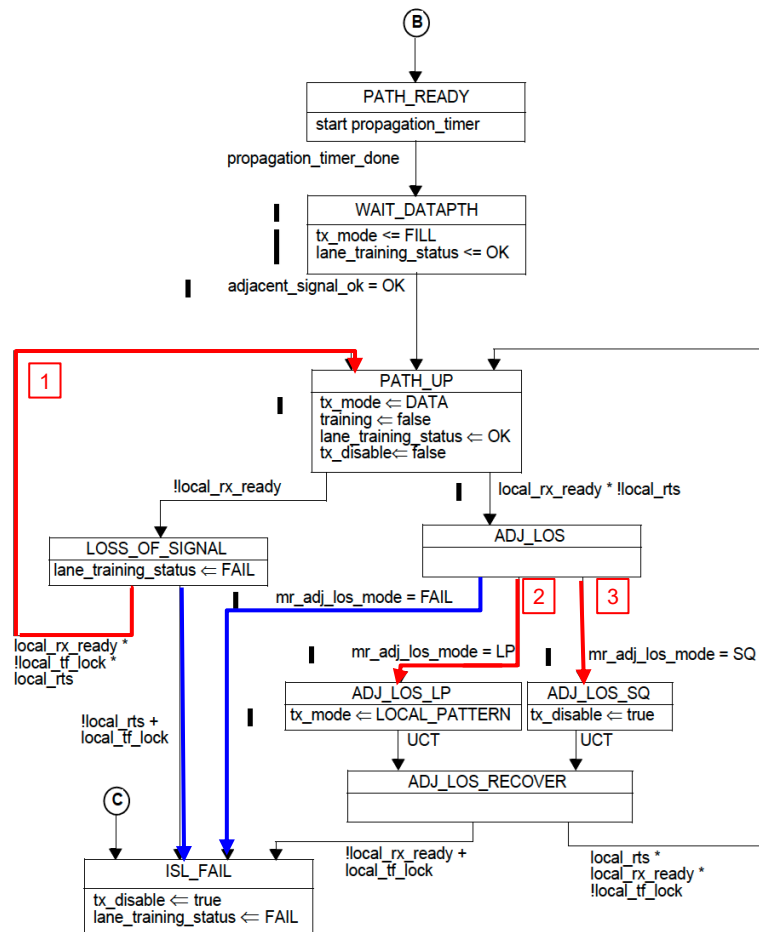


Figure 178B-10b—Training control state diagram, part 2

Proposed solution

For each of the paths 1, 2 and 3, specify an implementation dependent variable that indicates if a path is supported.

- Specify the ability variables in terms of the behavior that occurs when a path is followed. Describing the behavior is more useful to the reader than just listing if transitions between specific states are supported.
- In the transmit direction, management can configure the desired behavior, but based upon the interfaces abilities, it may go to the ISL_FAIL state instead of operating in the mode that management configured.

Note that the ability and configuration variables can be set uniquely per interface. For example, in a module, the PMD may only support going to ISL_FAIL, while upper AUI component could support all modes of operation.

New 178B.8.2.1 implementation dependent variables

tx_lp_on_adj_los_ability

Boolean variable that indicates the interface supports sending LOCAL_PATTERN when the training control state diagram (Figure 178B-10b) is in the PATH_UP state and local_rts becomes false. The value of this variable is implementation dependent.

tx_sq_on_adj_los_ability

Boolean variable that indicates the interface supports stopping the transmission of data when the training control state diagram (Figure 178B-10b) is in the PATH_UP state and local_rts becomes false. The value of this variable is implementation dependent.

rx_fail_on_los

Boolean variable that indicates the receiver requires a restart of the ILT function in order to recover from a loss of signal event (local_rx_ready becomes false) when the training control state diagram (Figure 178B-10b) is in the PATH_UP state. The value of this variable is implementation dependent. Default for this variable is TRUE

New 178B.8.3.1 state diagram variable

adj_los_mode

Enumerated variable that controls the path taken out of the ADJ_LOS state in the training control state diagram (Figure 178B-10b).

It is set as follows:

LP: when adj_los_mode is LP and tx_lp_on_adj_los_ability is true.

SQ: when adj_los_mode is SQ and tx_sq_on_adj_los_ability is true.

FAIL: otherwise.

Figure 178B-10b updates shown in purple

Path 1 is not available when Rx recovery is not supported, as indicated by rx_fail_on_los

Paths 2 & 3 are not available when the mr_los_adj_mode that is set is not supported, as indicated with the ability variables. Logically as follows:

```
if (tx_lp_on_adj_los_ability) && (adj_los_mode == LP)
    adj_los_mode = LP
else if (tx_sq_on_adj_los_ability) && (adj_los_mode == SQ)
    adj_los_mode = SQ
else
    adj_los_mode = FAIL
```

The path from ADJ_LOS_RECOVER to PATH_UP needs to be the same overall set of requirements as WAIT_DATAPATH to PATH_UP. So the requirement of adjacent_signal_ok being OK is added.

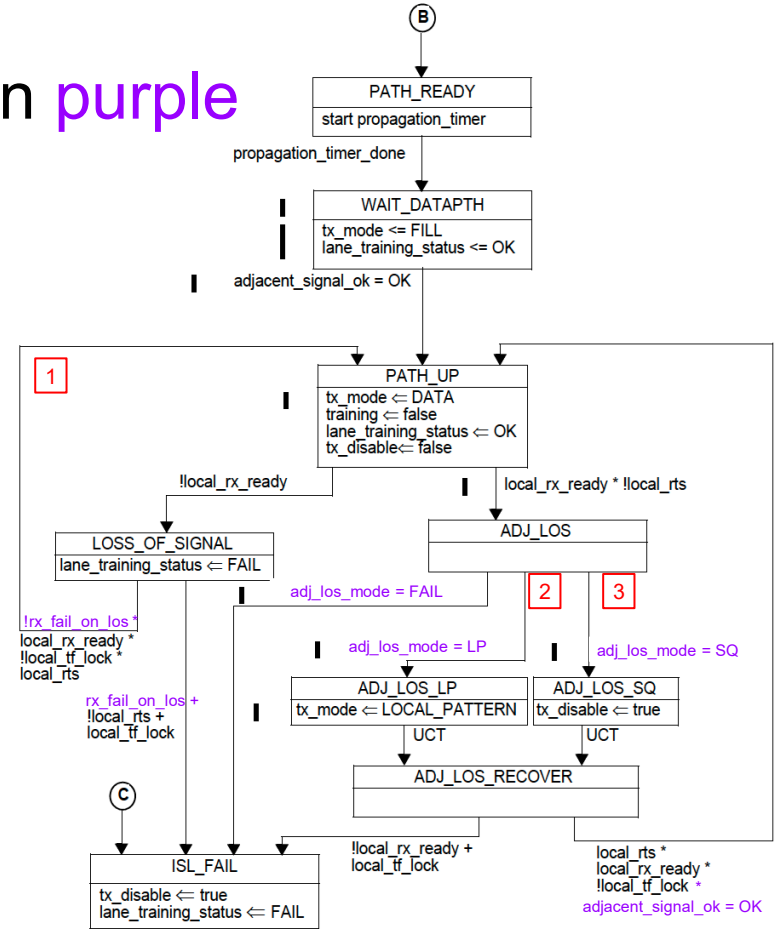


Figure 178B-10b—Training control state diagram, part 2

Table 178B-6 Control variables and MDIO mapping additions

Status Variable	Variable reference	MDIO register/bit number	MDIO register/bit reference
tx_lp_on_adj_los_ability	178B.8.2.1	1.1479.13	45.2.1.168e
tx_sq_on_adj_los_ability	178B.8.2.1	1.1479.14	45.2.1.168e
rx_fail_on_los	178B.8.2.1	1.1479.15	45.2.1.168e

Table 45-133e updates in purple

Bit(s)	Name	Description	R/W ^a
1.1479.15	Receiver recovery ability	0 - supports recovery from loss of signal without training restart 1 - requires restart of training for recovery from loss of signal	RO
1.1479.14	Adjacent loss of signal SQ ability	0 - does not support mr_adj_los_mode = SQ operation 1 - supports mr_adj_los_mode = SQ operation	RO
1.1479.13	Adjacent loss of signal LP ability	0 - does not support mr_adj_los_mode = LP operation 1 - supports mr_adj_los_mode = LP operation	RO
1.1479.12:11	Reserved	Value always 0	RO
1.1479.10:9	Adjacent loss of signal mode	10 9 1 1 = Reserved 1 0 = mr_adj_los_mode is SQ (squelch) 0 1 = mr_adj_los_mode is LP (local pattern) 0 0 = mr_adj_los_mode is FAIL	RW
1.1479.8	Uses recovered clock	1 = Use recovered clock for transmission 0 = Use local clock for transmission	R/W
1.1479.7:0	Maximum recovery events	Maximum allowed number of transitions into the RECOVERY state in the training control state diagram (Figure 178B-10a and Figure 178B-10b)	R/W

Thank You