

USB4 1.0 ENGINEERING CHANGE NOTICE FORM

Title: tTrainingAbort Action Change
Applied to: USB4 Specification Version 1.0

Brief description of the functional changes:

Increase the minimum value of tTrainingAbort1 for TBT3 Link and require a Sideband disconnect when retrain
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Benefits as a result of the changes:

Compatibility with TBT3 devices that might have longer Link training
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An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
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None

An analysis of the hardware implications:
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Need to increase training abort timer and make sure disconnect happen after retrain

An analysis of the software implications:
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None

An analysis of the compliance testing implications:
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None

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Actual Change

(a). Section 4.2.1.3.3, Page 137

From Text:

If the Adapter does not transition to CL0 state within $t_{\text{TrainingAbort1}}$, the Router shall restart Lane Initialization from phase 1.

If the Adapter does not transition to CL0 state within $t_{\text{TrainingAbort2}}$, the Router shall restart Lane Initialization from phase 1.

To Text:

If the Adapter does not transition to CL0 state within $t_{\text{TrainingAbort1}}$, the Router shall ~~restart Lane Initialization from phase 1~~ initiate a Disconnect by driving SBTX to a logical low state for a minimum of $t_{\text{DisconnectTx}}$.

If the Adapter does not transition to CL0 state within $t_{\text{TrainingAbort2}}$, the Router shall ~~restart Lane Initialization from phase 1~~ initiate a Disconnect by driving SBTX to a logical low state for a minimum of $t_{\text{DisconnectTx}}$.

(b). Section 4.4.5.1.1, Page 177

From Text:

The following events initiate a disconnect on the Upstream Facing Port of a Router as defined in this section:

- The Upstream Facing Port is Hot Unplugged (see Section 6.8.2.1).
- A Downstream Facing Port Reset on the upstream Link Partner (see Section 6.9).
- The Domain enters Sleep state, the *USB4 Port is Configured* bit in the upstream Link Partner is set to 0b, and the *Enable Wake on Connect* bit of the USB4 Port is 0b (see Section 4.5.1).

To Text:

The following events initiate a disconnect on the Upstream Facing Port of a Router as defined in this section:

- The Upstream Facing Port is Hot Unplugged (see Section 6.8.2.1).
- A Downstream Facing Port Reset on the upstream Link Partner (see Section 6.9).
- The Domain enters Sleep state, the *USB4 Port is Configured* bit in the upstream Link Partner is set to 0b, and the *Enable Wake on Connect* bit of the USB4 Port is 0b (see Section 4.5.1).
- ~~The Link Partner failed to train the Link before the defined timeout (see Section 4.2.1.3.3)~~
- ~~The Lane bonding did not complete before the defined timeout (See Section 4.2.2.2)~~

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(c). Section 4.4.5.2.1, Page 179

From Text:

The following events initiate a disconnect on a Downstream Facing Port of a Router as defined in this section:

- The Downstream Facing Port detects a Hot Unplug (see Section 6.8.2.2).
- The Downstream Facing Port is reset (see Section 6.9).
- The Domain enters Sleep state and the *USB4 Port is Configured* bit in the Downstream Facing Port is set to 0b, and the *Enable Wake on inter-Domain* bit is set to 0b (see Section 4.5.1).
- The Domain enters Sleep state and, in the Downstream Facing Port, the *USB4 Port is inter-Domain* bit is 1b, and the *Enable Wake on inter-Domain* bit is set to 0b (see Section 4.5.1).

To Text:

The following events initiate a disconnect on a Downstream Facing Port of a Router as defined in this section:

- The Downstream Facing Port detects a Hot Unplug (see Section 6.8.2.2).
- The Downstream Facing Port is reset (see Section 6.9).
- The Domain enters Sleep state and the *USB4 Port is Configured* bit in the Downstream Facing Port is set to 0b, and the *Enable Wake on inter-Domain* bit is set to 0b (see Section 4.5.1).
- The Domain enters Sleep state and, in the Downstream Facing Port, the *USB4 Port is inter-Domain* bit is 1b, and the *Enable Wake on inter-Domain* bit is set to 0b (see Section 4.5.1).
- **The Link Partner failed to train the Link before the defined timeout (see Section 4.2.1.3.3)**
- **The Lane bonding did not complete before the defined timeout (See Section 4.2.2.2)**

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(d). Section 13.2.5, Table 13-10, Page 514

From Text:

Parameter	Description	Min	Max	Units
tLTPhase4	The amount of time that Broadcast RT Transactions, LT_Gen_2 Transactions, or LT_Gen_3 Transactions are sent after completion of Lane Initialization phase 2.	25	ms	
tLaneParams	The time interval between transmissions of LT_Gen_2 Transactions, between the transmissions of LT_Gen_3 Transactions, or between the transmissions of Broadcast RT Transactions.	1	5	ms

To Text:

Parameter	Description	Min	Max	Units
tLTPhase4	The amount of time that Broadcast RT Transactions, LT_Gen_2 Transactions, or LT_Gen_3 Transactions are sent after completion of Lane Initialization phase 2.	25	ms	
tLaneParams	The time interval between transmissions of LT_Gen_2 Transactions, between the transmissions of LT_Gen_3 Transactions, or between the transmissions of Broadcast RT Transactions.	1	5	ms
tTrainingAbort1	The amount of time in Training state following Lane Initialization.	2	--	sec