USB Power Delivery ENGINEERING CHANGE NOTICE

Title: tEnterUSB Clarification
Applied to: USB Power Delivery Specification Revision 3.0 Version 2.0

Brief description of the functional changes proposed:

Clarifies the starting point for the time tEnterUSB so that it aligns with the USB Type-C specification for the start of tUSB4Timeout, which states that it starts at 1) "Sink attach" or 2) "data connection is reestablished" during Data Reset process.

1) PD Connection is the point where the source and the sink are attached.
2) The Data_Reset_Complete message signifies that the data connection has been reestablished following a Data Reset.

This ECN clarifies that a DFP is required to send Enter_USB within tEnterUSB following a DR_Swap.

Sinks are recommended not to initiate any Atomic Message Sequence until the DFP has had time to send the EnterUSB message.

Benefits as a result of the proposed changes:

This ECN clarifies the tEnterUSB requirement.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:

No impact.

An analysis of the hardware implications:

None

An analysis of the software implications:

None

An analysis of the compliance testing implications:

Clarifies the starting point of the tEnterUSB timer. Compliance tests need to take this into account.

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Actual Change Requested

(a). Section 6.4.8

From Text:

The ***Enter_USB*** Message ***Shall*** be sent by a ***[USB4]*** PDUSB Hub's DFP(s) or ***[USB4]*** PDUSB Host's DFP(s) within ***tEnterUSB*** following the initial power-on or a Data Reset to enter ***[USB4]*** operation.

The ***Enter_USB*** Message ***May*** be sent by a PDUSB Hub's DFP(s) or PDUSB Host's DFP(s) within ***tEnterUSB*** following the initial power-on or a Data Reset to enter ***[USB 3.2]*** or ***[USB 2.0]*** operation.

To Text:

The ***Enter_USB*** Message ***Shall*** be sent by a ***[USB4]*** PDUSB Hub's DFP(s) or ***[USB4]*** PDUSB Host's DFP(s) within ***tEnterUSB*** following a PD Connection~~the initial power-on~~ or a Data Reset to enter ***[USB4]*** operation is completed or a DR_Swap is completed.

The ***Enter_USB*** Message ***May*** be sent by a PDUSB Hub's DFP(s) or PDUSB Host's DFP(s) within ***tEnterUSB*** following a PD Connection~~the initial power-on~~ or a Data Reset to enter ***[USB 3.2]*** or ***[USB 2.0]*** operation is completed or a DR_Swap is completed.

(b). Section 6.6.20

From Text:

The DFP ***Shall*** send the ***Enter_USB*** Message within ***tEnterUSB*** of either:

- The last bit of the ***GoodCRC*** acknowledging the ***Accept*** Message in response to the ***Data_Reset*** Message or
- Initial power-on.

Failure to meet this timeout parameter may result in the ports not transitioning into ***[USB4]*** operation.

To Text:

The DFP ***Shall*** send the ***Enter_USB*** Message within ***tEnterUSB*** of either:

- The last bit of the ***GoodCRC*** acknowledging the ~~***Accept***~~ ***Data_Reset_Complete*** Message in response to the ***Data_Reset*** Message or
- A PD Connection~~Initial power-on~~, specifically the last bit of the ***GoodCRC*** acknowledging the ***Source_Capabilities*** Message after the initial entry into the PE_SRC_Send_Capabilities state or~~.~~
- The last bit of the ***GoodCRC*** acknowledging the ***Accept*** Message in response to the ***DR_Swap*** Message

Failure by the DFP to meet this timeout parameter may result in the ports not transitioning into ***[USB4]*** operation. Any AMS initiated by the UFP prior to receiving the ***Enter_USB*** Message will delay reception of the ***Enter_USB***

Message and ***[USB4]*** operation, therefore a USB4-capable UFP ***Should Not*** initiate any AMS until the DFP has been given time to send the ***Enter_USB*** Message.