USB4 2.0 ENGINEERING CHANGE NOTICE FORM

Title: Clear StartAsymmetricFlow on Unplug
Applied to: USB4 Specification Version 2.0

Brief description of the functional changes:
Upon DFP disconnect, a Router will set the *StartAsymmetricFlow* bit to its default value

Benefits as a result of the changes:
This will ensure that when an unplug happens after the CM has initiated the process of transition to/from Asymmetric/Symmetric link and before the Router actually started the transition, the control and status register will return to their default values. Reminder: CM is forbidden to access PORT_CS_19 of the USB4 Port Capability register while the *StartAsymmetricFlow* bit is set to 1b.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
None.

An analysis of the hardware implications:
Router that supports Asymmetric operation needs to implement this change.

An analysis of the software implications:
None.

An analysis of the compliance testing implications:
None.

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Actual Change

CONNECTION MANAGER NOTE

When writing to a USB4 Port Capability, a Connection Manager shall abide by the following rules:

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- *The Connection Manager shall not write USB4 Port Capability Register 19 while StartAsymmetricFlow is 1b.*

(a). Section 4.4.5.2.1 SBRX Goes Low

The Router shall do the following for each enabled Lane Adapter in the disconnected USB4 Port:

- Send the Connection Manager a Hot Plug Event Packet with the *UPG* bit set to 1b.
- Load the following fields in the Adapter Configuration Space with their default values:
    - Basic Configuration Registers:
        - *Link Credits Allocated.*
        - *HEC Errors* (optional, recommended).
        - *Invalid HopID Errors* (optional, recommended).
        - *ECC Errors* (optional, recommended).
    - TMU Adapter Configuration Capability:
        - *Inter-Domain Time Initiator.*
        - *EnableUniDirectionalMode.*
        - *Enable Enhanced Uni-Directional Mode.*
    - Lane Adapter Configuration Capability:
        - *Target Link Width.*
        - *Target Asymmetric Link.*
        - *CL0s Enable.*
        - *CL1 Enable.*
        - *CL2 Enable.*
        - *Lane Bonding.*
        - *PM Secondary* (optional, recommended).
        - *Logical Layer Errors* (optional, recommended).
        - *Logical Layer Errors Enable* (optional, recommended).
    - USB4 Port Capability:
        - *AsymmetricTransitionInProgress*
        - *StartAsymmetricFlow*

(b). Section 4.4.5.2.2 LT_LRoff Transaction is Received

The Router shall do the following for each enabled Lane Adapter in the disconnected USB4 Port:

- Send the Connection Manager a Hot Plug Event Packet with the *UPG* bit set to 1b.
- Load the following fields in Adapter Configuration Space with their default values:
  - Basic Configuration Registers:
    - *Link Credits Allocated.*
    - *HEC Errors* (optional, recommended).
    - *Invalid HopID Errors* (optional, recommended).
    - *ECC Errors* (optional, recommended).
  - TMU Adapter Configuration Capability:
    - *Inter-Domain Time Initiator.*
    - *EnableUniDirectionalMode.*
    - *Enable Enhanced Uni-Directional Mode.*
  - Lane Adapter Configuration Capability:
    - *Target Link Width.*
    - *Target Asymmetric Link.*
    - *CL0s Enable.*
    - *CL1 Enable.*
    - *CL2 Enable.*
    - *Lane Bonding.*
    - *PM Secondary* (optional, recommended).
    - *Logical Layer Errors* (optional, recommended).
    - *Logical Layer Errors Enable* (optional, recommended).
  - USB4 Port Capability:
    - *AsymmetricTransitionInProgress.*
    - *StartAsymmetricFlow*