USB4 1.0 ENGINEERING CHANGE NOTICE FORM

Title: PCIe PERST# Behavior Correction
Applied to: USB4 Specification Version 1.0

Brief description of the functional changes:

Removes some inaccuracies in description of PERST# propagation.

Benefits as a result of the changes:

More accurate description of how PERST# is asserted and de-asserted.

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:

None

An analysis of the software implications:

None

An analysis of the compliance testing implications:

None

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Actual Change

(a). Section 11.1.1.4   PERST

Make the following changes:

11.1.1.4   PERST

11.1.1.4.1   PERST Tunneled Packets

PERST Active and PERST Inactive Tunneled Packets are used to propagate PCIe PERST# assertion and de-assertion. A Router shall send PERST Active and PERST Inactive packets only from a Downstream PCIe Adapter. The payload for a PERST Active Tunneled Packet and a PERST Inactive Tunneled Packet shall consist of one DW that contains a value of 0000 0000h.

~~11.1.1.4.2   PERST Propagation~~

~~By default, a Device Router asserts PERST# on all physical PCIe ports and internal PCIe ports.~~

11.1.1.4.3   PERST Activation **in a Host Router**

Upon detecting an assertion of PERST# on a Downstream PCIe Adapter, a Host Router shall:

1. Discard any queued Tunneled Packet in the PCIe Adapter Layer.

2. Send at least three PERST Active Tunneled Packets on ~~all~~ the Downstream PCIe Adapter~~s~~ ~~that have the~~ if its *Path Enable* bit is set to 1b.

11.1.1.4.4   PERST Activation in a Device Router

When a Device Router enters Uninitialized Unplugged state, it shall assert PERST# on its internal PCIe upstream port.

When a Device Router receives a PERST Active Tunneled Packet, or the *Path Enable* bit in the Upstream PCIe Adapter is set to 0b, it shall:

1. Discard any Tunneled Packets that are queued in a PCIe Adapter Layer.

2. Send at least 3 PERST Active Tunneled Packets on all Downstream PCIe Adapters that have the *Path Enable* bit set to 1b.

3. ~~The Router shall also a~~Assert PERST# on its internal PCIe upstream port ~~all physical PCIe ports and to the internal PCIe Port~~.

While PERST# is asserted, a Downstream PCIe Adapter Layer shall discard any received PCIe Tunneled Packets. The Adapter Layer shall not send any PCIe tunneled Packets except for the PERST Active Tunneled Packets.

11.1.1.4.5   PERST Inactivation **in a Host Router**

Upon detecting a de-assertion of PERST# on a Downstream PCIe Adapter, a Host Router shall send at least 3 PERST Inactive Tunneled Packets on ~~all~~ the Downstream PCIe Adapter~~s~~ ~~that have the~~ if its *Path Enable* bit is set to 1b.

11.1.1.4.6   PERST Inactivation in a Device Router

After receiving a PERST Active Tunneled Packet, or after the *Path Enable* bit the Upstream PCIe Adapter is set from 0b to 1b, if a Device Router receives any PCIe Tunneled Packet other than a PERST Active Tunneled Packet on its Upstream PCIe Adapter, it shall:

1. Send at least 3 PERST Inactive Tunneled Packets on all Downstream PCIe Adapters that have the *Path Enable* bit set to 1b.

2. De-assert PERST# on its internal PCIe upstream port ~~all PCIe physical ports and to the internal PCIe Port~~.

After PERST# is de-asserted, a Downstream PCIe Adapter Layer shall not forward to the internal PCIe Port any Ordered Sets, packets, or events that were received before or during PERST# assertion.

(b). Section 11.3.2 Path Tear-Down

Make the following changes:

- If the PCIe Adapter is an Upstream PCIe Adapter, drive PERST# ~~to default~~ as defined in Section 11.1.1.4.3.