

USB4 1.0 ENGINEERING CHANGE NOTICE FORM

Title: Lane Adapter in UFP Sends Notification Packet on HEC and Logical Errors After Link transitions to CL0
Applied to: USB4 Specification Version 1.0

Brief description of the functional changes:

UFP sends Notification packets for Errors that causes transition to Training after Link transitions back to CL0.
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Benefits as a result of the changes:

Explains the timing of sending a Notification Packet for an error that causes re-train.

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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None

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 5.1.2.1.1, Header Error Control (HEC), Page 195

From Text:

If the Ingress Adapter that detected the uncorrectable HEC error is a Lane Adapter:

1. The Ingress Adapter shall send a Notification Packet upstream if the HEC Error Enable bit in the Adapter Configuration Space is set to 1b. The Notification Packet shall contain Event Code = ERR_HEC (see Section 6.5).
2. The Lane Adapter(s) in the USB4™ Port with the Ingress Adapter shall enter the Training state.

To Text:

If the Ingress Adapter that detected the uncorrectable HEC error is a Lane Adapter that is a part of a Downstream Facing Port:

1. The Ingress Adapter shall send a Notification Packet upstream if the HEC Error Enable bit in the Adapter Configuration Space is set to 1b. The Notification Packet shall contain Event Code = ERR_HEC (see Section 6.5).
2. The Lane Adapter(s) in the USB4™ Port with the Ingress Adapter shall enter the Training state.

If the Ingress Adapter that detected the uncorrectable HEC error is a Lane Adapter that is a part of a Upstream Facing Port:

1. The Lane Adapter(s) in the USB4™ Port with the Ingress Adapter shall enter the Training state.
2. When the Lane Adapter enter CL0 state, it shall send a Notification Packet upstream if the HEC Error Enable bit in the Adapter Configuration Space is set to 1b. The Notification Packet shall contain Event Code = ERR_HEC (see Section 6.5).

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(b). 4.4.2 Error Cases and Recovery, Page 176

From Text:

An Adapter reports Logical Layer errors in the Logical Layer Errors field in the Lane Adapter Configuration Capability. The Logical Layer Errors Enable field in the Lane Adapter Configuration Capability controls which Logical Layer errors are reported by Notification Packets. A Router may hardwire a Logical Layer Errors Enable bit (other than the OSE bit) to 0b to permanently disable reporting of an error by Notification Packets.

To Text:

An Adapter reports Logical Layer errors in the Logical Layer Errors field in the Lane Adapter Configuration Capability. The Logical Layer Errors Enable field in the Lane Adapter Configuration Capability controls which Logical Layer errors are reported by Notification Packets. A Router may hardwire a Logical Layer Errors Enable bit (other than the OSE bit) to 0b to permanently disable reporting of an error by Notification Packets. If the response to the error case is a transition to Training state and the Logical Errors Enable field for the error case is set to 1b, a Lane Adapter that is part of the Upstream Facing Port sends a Notification Packet after it transitions back to CL0.