

USB4 1.0 ENGINEERING CHANGE NOTICE FORM

Title: Port Operation Completion
Applied to: USB4 Specification Version 1.0

Brief description of the functional changes:

Clarifies how Opcode, Metadata, and Data registers are written to on Operation completion

Benefits as a result of the changes:

Catches all operation completion cases
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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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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 Requested

(a). Section 8.3.2, page 346

From Text:



CONNECTION MANAGER NOTE

A Connection Manager shall verify the successful completion of a write to the SB Register Space of the target Port before proceeding with the next write to SB Register Space.

When the Opcode register in SB Register Space is written, a USB4 Port shall execute the Port Operation associated with the Opcode register using the information in the Metadata and Data registers.

When a USB4 Port finishes executing a Port Operation, it shall update the Metadata register with completion metadata (if any), and the Data register with completion data (if any).

- If the Port Operation completes successfully, the USB4 Port shall set the Opcode register to 0.
- If the USB4 Port fails to execute a Port Operation, it shall set the Opcode register to a FourCC value of "ERR" (20525245h).
- If the USB4 Port Operation is not supported by the Port, it shall set the Opcode register to a FourCC value of "!CMD" (444D4321h).

To Text:



CONNECTION MANAGER NOTE

A Connection Manager shall verify the successful completion of a write to the SB Register Space of the target Port before proceeding with the next write to SB Register Space. A Connection Manager verifies the results of a Port Operation by issuing a read to the Opcode register in the SB Register Space of the target Port. The Connection Manager also reads any Completion Metadata and Completion Data. If the Opcode Register = "!CMD" or "ERR" the contents of the Metadata and Data registers are invalid and shall be ignored.

When the Opcode register in SB Register Space is written, a USB4 Port shall execute the Port Operation associated with the Opcode register using the information in the Metadata and Data registers.

~~When a USB4 Port finishes executing a Port Operation, it shall update the Metadata register with completion metadata (if any), and the Data register with completion data (if any).~~

- ~~• If the Port Operation completes successfully, the USB4 Port shall set the Opcode register to 0.~~
- ~~• If the USB4 Port fails to execute a Port Operation, it shall set the Opcode register to a FourCC value of "ERR" (20525245h).~~
- ~~• If the USB4 Port Operation is not supported by the Port, it shall set the Opcode register to a FourCC value of "!CMD" (444D4321h).~~

After executing the Port Operation, the USB4 Port updates the Opcode, Metadata, and Data register as follows:

- If the USB4 Port successfully completed the Port Operation, it shall set the Opcode register to 0. The USB4 Port shall update the Metadata register with completion metadata (if the Port

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Operation is defined to return metadata), and the Data register with completion data (if the Port Operation is defined to return data).

- Else, if the Port Operation is not supported, the USB4 Port shall set the Opcode register to a FourCC value of “!CMD” (444D4321h). The USB4 Port may update the Metadata and Data registers. However, any updates will be ignored by the Connection Manager.
- Else, the USB4 Port shall set the Opcode register to a FourCC value of “ERR ” (20525245h) to indicate that the Port Operation is supported, but could not be completed.-The USB4 Port may update the Metadata and Data registers. However, any updates will be ignored by the Connection Manager.