

USB4 1.0 ENGINEERING CHANGE NOTICE FORM

Title: TBT3 Total Buffers

Applied to: USB4 Specification Version 1.0

Brief description of the functional changes:
A Device Router, working in TBT3 Compatibility mode, and supports DP Tunneling, reports its Total Buffers in ADP_CS_3 as well as ADP_CS_4.

Benefits as a result of the changes:
Updates the Spec to match the ecosystem.

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:
Implement to this ECN.

An analysis of the software implications:
None

An analysis of the compliance testing implications:
None

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Actual Change

(a). 13.6.2.1 Basic Attributes

FROM:

13.6.2.1 Basic Attributes

An Adapter shall support the Adapter Configuration Space Basic Attributes in Table 13-20. A Lane 1 Adapter may optionally implement the HEC Error, Flow Control Error, and/or Shared Buffering Capable bits.

Table 13-20. Adapter Configuration Space Basic Attributes

DW	Register Name	Bit(s)	Field Name and Description	Type	Default Value
4	ADP_CS_4	29:20	Max Credits This field shall be equal to the <i>Total Buffers</i> field.	RO	Vendor Defined
		31	Lock (LCK) This bit controls whether a Connection Manager can access a Router that is downstream of the Adapter. This bit is only used for the Adapters in a Downstream Facing Port. When the bit is 1b, the Adapter is “locked”, which means that Control Packets are not forwarded to the downstream Router. When the bit is 0b, the Adapter is “unlocked”, and Control Packets can be forwarded to the downstream Router. If the value in the <i>Connection Manager USB4 Version</i> field is greater than 0, an Adapter shall set this bit to 1b after the Adapter goes through a disconnect. If the value in the <i>Connection Manager USB4 Version</i> field is 0, an Adapter shall keep this bit set to 0b. An Adapter may ignore a write to this bit if the Adapter does not have a Router connected downstream. <i>Note: A TBT3 Connection Manager does not use this bit and the Adapter remains “unlocked” by default.</i>	R/W	0b

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TO:

13.6.2.1 Basic Attributes

An Adapter shall support the Adapter Configuration Space Basic Attributes in Table 13-20. A Lane 1 Adapter may optionally implement the HEC Error, Flow Control Error, and/or Shared Buffering Capable bits.

Table 13-20 Adapter Configuration Space Basic Attributes (ADP_CS 4)

DW	Register Name	Bit(s)	Field Name and Description	Type	Default Value
4	ADP_CS_4	29:20	Max Credits This field shall be equal to the <i>Total Buffers</i> field.	RO	Vendor Defined
4	ADP_CS_4	31	Lock (LCK) This bit controls whether a Connection Manager can access a Router that is downstream of the Adapter. This bit is only used for the Adapters in a Downstream Facing Port. When the bit is 1b, the Adapter is “locked”, which means that Control Packets are not forwarded to the downstream Router. When the bit is 0b, the Adapter is “unlocked”, and Control Packets can be forwarded to the downstream Router. If the value in the <i>Connection Manager USB4 Version</i> field is greater than 0, an Adapter shall set this bit to 1b after the Adapter goes through a disconnect. If the value in the <i>Connection Manager USB4 Version</i> field is 0, an Adapter shall keep this bit set to 0b. An Adapter may ignore a write to this bit if the Adapter does not have a Router connected downstream. <i>Note: A TBT3 Connection Manager does not use this bit and the Adapter remains “unlocked” by default.</i>	R/W	0b

If a Router is a Device Router that supports DP Tunneling, an Adapter shall also support the Adapter Configuration Space Basic Attributes in Table 13-21.

Table 13-21 Adapter Configuration Space Basic Attributes (ADP_CS 3)

DW	Register Name	Bit(s)	Field Name and Description	Type	Default Value
<u>3</u>	<u>ADP_CS_3</u>	<u>9:0</u>	<u>TBT3 Total Buffers</u> <u>This field shall be equal to the <i>Total Buffers</i> field.</u>	RO	Vendor Defined