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NVM Express Technical Proposal for New Feature

Technical Proposal ID	6030 – More Processing Required Time Reporting
Change Date	2021.03.01
Builds on Specification	NVM Express Management Interface 1.1b

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This proposal adds a mechanism for Management Endpoints to report how much more processing time is required when a More Processing Required response is returned.

Revision History

Revision Date	<ul style="list-style-type: none">• Change Description
10/05/2020	<ul style="list-style-type: none">• Initial Draft
10/26/2020	<ul style="list-style-type: none">• Updated other sections of the specification that reference More Processing Required.
11/30/2020	<ul style="list-style-type: none">• Deleted text sections that didn't need to be updated.• Added that for Replay of a More Processing Required response, the Management Endpoint shall update the More Processing Required Time field in the response.• Added that a value of FFFFh in the More Processing Required field indicates that greater than or equal to 65,535 ms more processing time is required.• Rephrased More Processing Time Required field to use language similar to the existing NVMe CAP.TO field.• Fixed existing typo and clarified existing text in the Command Timeouts section.
12/19/2020	<ul style="list-style-type: none">• Updated text for changes document.• Editorial fixes.
02/12/2021	<ul style="list-style-type: none">• Editorial updates based on member review feedback.
02/24/2021	<ul style="list-style-type: none">• Integrated into the NVMe Management Interface Specification, Revision 1.1.
03/01/2021	<ul style="list-style-type: none">• Accepted all changes, removed all comments, and converted all references/cross-references to text.

Description for NVMe-MI Changes Document

Feature Enhancements:

- More Processing Required Time reporting (mandatory)
 - **New requirement / incompatible change** in section 4.1.2.TBD and 4.2.1.5
 - Added a mechanism for Management Endpoints to report the worst-case processing time required when a More Processing Required Response is returned.
- References:
 - NVMe Management Interface Specification, Revision 1.2 section 4.1.2.TBD and 4.2.1.5.

Description of Specification Changes

Markup Conventions:

Black:	Unchanged (however, hot links are removed)
Red Strikethrough:	Deleted
<u>Blue Underline:</u>	New
<u>Blue Highlighted:</u>	TBD values, anchors, and links to be inserted in new text.
<Green Bracketed>:	Notes to editor

Modify a portion of 4.2.1.5 (Replay) as follows:

Process: The Replay primitive requests retransmission of the last response transmitted for the command in this Command Slot:

- a) If a Response Message has not been transmitted for the Command Message (i.e., the slot never entered the Transmit state for the Command Message), then the Management Endpoint transmits a Response Message with success status and the RR bit cleared to '0'; or
- b) If a Response Message has been transmitted for the Command Message (i.e., a Response Message was transmitted indicating that more processing was required), then the Management Endpoint transmits a Response Message with success status with the RR bit set to '1'. The Management Endpoint shall retransmit ~~s~~ the response indicating that more processing is required. The Management Endpoint shall update the More Processing Required Time field in the response with the current worst-case amount of additional time that the Management Controller should wait for the Management Endpoint to complete processing of the Command Message.

...

It is not an error to issue a Replay primitive to a Command Slot that is paused. ~~The~~ A response is ~~re~~transmitted even if the Command Slot is paused (i.e., there is an implicit Resume primitive affecting both Command Slots when processing the Replay primitive) at any time during the response, including before the first packet was transmitted. After successful completion of the Replay primitive, neither Command Slot is paused.

Add a new section after Section 4.1.2.2 (Invalid Parameter Error Response) as follows:

Section 4.1.2.TBD More Processing Required Response

A More Processing Required Response shall be returned when the Management Endpoint requires more time to complete the processing of the Command Message as described in section 4.2.2.1. The format of a More Processing Required Response is shown in Figure TBD1 and the response specific fields are summarized in Figure TBD2.

Figure TBD1: More Processing Required Response

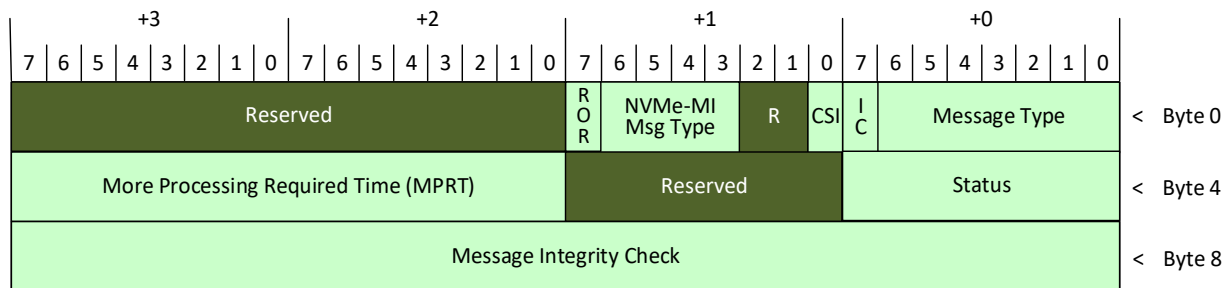


Figure TBD2: More Processing Required Response Fields

Byte	Description
7:6	More Processing Required Time (MPRT): This field indicates the worst-case amount of additional time in 100 ms units that the Management Controller should wait for the Management Endpoint to complete processing of the Command Message. A value of FFFFh in this field indicates that greater than or equal to 6,553.5 s more processing time is required.

Modify Section 4.2.2.1 (Command Timeouts) as follows:

MCTP defines a maximum response time for MCTP control messages (refer to the appropriate MCTP transport binding specification).

If a Management Endpoint determines that command processing may not complete ~~within~~ in less than or equal to the lesser of 100 ms or the request-to-response time specified in the appropriate MCTP transport binding specification, the Management Endpoint shall ~~utilize the~~ return a More Processing Required ~~fResponse mechanism as described in section 4.1.2.TBD.~~ The More Processing Required Response ~~Message~~ from the Management Endpoint is allowed to be delayed beyond this timeout while the transport is busy or unavailable.

A Management Endpoint should only ~~use the return a~~ More Processing Required ~~fResponse~~ for ~~eCommands~~ Messages that are expected to take longer than the required time (e.g., Format NVM). Implementations are strongly discouraged from using this response while processing Commands Messages that take less than or equal to the lesser of 100 ms or the request-to-response time specified in the appropriate MCTP transport binding specification ~~the required time~~.