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NVM Express Technical Proposal for New Feature

Technical Proposal ID	TP4167 Command Effects Enhancements
Change Date	2023-09-05
Builds on Specification	NVM Express NVM Base Specification 2.0c
References Specification	

Technical Proposal Author(s)

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This technical proposal allows the set of valid values for the CSE field in the Commands Supported and Effects log page (Log Identifier 05h) to be expanded.

E.g., it defines a value which indicates a separate restriction for Admin commands executing concurrently with a given command versus I/O commands executing concurrently with that same command.

Revision History

Revision Date	Change Description
2023-04-04	Initial version
2023-04-06	Deleted comment, removed reference to TP4167 in “References” section
2023-06-15	Addressed old host/new value backward compatibility concern by only allowing new CSE field value to be reported by the controller if the host has set new field Command Submission and Execution Enhancement (CSEE) field to 1h in the Host Behavior Support feature.
2023-06-16	Minor edits from David Black
2023-06-21	Minor edits from Judy
2023-06-22	Per WG feedback, changed approach to addressing old host/new value backward compatibility concern. Use new field in reserved area to contain relaxed choices.
2023-06-26	Removed CSE Select (CSE SEL) field and renamed CSEPR field per Christoph’s suggestions
2023-06-27	Reworded the meaning of the value of 00b in the CSER field.
2023-06-28	Minor editorial change
2023-07-12	Changed remaining occurrence of “if the host understands” to “if the host supports”
2023-07-13	Incorporated editorial feedback from Tech WG walk-thru
2023-07-17	Incorporated member review feedback from Mike Allison

2023-09-05	Integrated
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Description for Changes Document for

NVM Express Base Specification 1.0c

Feature Enhancement:

- Defined new Command Submission and Execution Relaxation (CSER) field in reserved area in Commands Supported and Effects data structure which relaxes the original CSE behavior choices.

New requirement / incompatible change:

-
- References:
 -

Markup Conventions:

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

Modify portions of NVM Express Base Specification 2.0c as shown below:

Modify figure 211 in section 5.16.1.6 as shown below:

5.16.1.6 Commands Supported and Effects (Log Identifier 05h)

...

Figure 211: Commands Supported and Effects Data Structure

Bits	Description										
...	...										
18:16	Command Submission and Execution (CSE): This field defines the command submission and execution recommendations for the associated command. If the CSER field contains a non-zero value and the host supports the value in that field, then this field should be ignored by the host. If the CSER field is set to 01b, then this field shall be set to 001b.										
	<table><tr><th>Value</th><th>Definition</th></tr><tr><td>000b</td><td>No command submission or execution restriction</td></tr><tr><td>001b</td><td>The command associated with this structure should only be submitted when there is no other outstanding command affecting the same namespace and another command should not be submitted that affects the same namespace until this command is complete.</td></tr><tr><td>010b</td><td>The command associated with this structure should only be submitted when there is no other outstanding command that affects any namespace and another command should not be submitted that affects any namespace until this command is complete.</td></tr><tr><td>011b to 111b</td><td>Reserved</td></tr></table>	Value	Definition	000b	No command submission or execution restriction	001b	The command associated with this structure should only be submitted when there is no other outstanding command affecting the same namespace and another command should not be submitted that affects the same namespace until this command is complete.	010b	The command associated with this structure should only be submitted when there is no other outstanding command that affects any namespace and another command should not be submitted that affects any namespace until this command is complete.	011b to 111b	Reserved
	Value	Definition									
	000b	No command submission or execution restriction									
	001b	The command associated with this structure should only be submitted when there is no other outstanding command affecting the same namespace and another command should not be submitted that affects the same namespace until this command is complete.									
	010b	The command associated with this structure should only be submitted when there is no other outstanding command that affects any namespace and another command should not be submitted that affects any namespace until this command is complete.									
011b to 111b	Reserved										

Figure 211: Commands Supported and Effects Data Structure

Bits	Description								
15:14	<p>Command Submission and Execution Relaxations (CSER): This field defines relaxed command submission and execution recommendations for the associated command.</p> <p>If this field is cleared to 00b, then the CSE field defines the command submission and execution recommendations for the associated command and this field has no effect.</p> <p>If this field is set to a non-zero value, then:</p> <ul style="list-style-type: none"> if the host supports the value in this field, then the host should ignore the CSE field and use the value in this field as the command submission and execution recommendation; and if the host does not support the value in this field, then the host should ignore this field and use the value in the CSE field as the command submission and execution recommendation. <table border="1"> <thead> <tr> <th>Value</th><th>Definition</th></tr> </thead> <tbody> <tr> <td>00b</td><td>No relaxed command submission and execution recommendation is defined. The host should use the value in the CSE field as the command submission and execution recommendation.</td></tr> <tr> <td>01b</td><td>The command associated with this structure should only be submitted when there is no outstanding Admin command that affects any namespace and no Admin command should be submitted that affects any namespace until this command is complete.</td></tr> <tr> <td>10b to 11b</td><td>Reserved</td></tr> </tbody> </table>	Value	Definition	00b	No relaxed command submission and execution recommendation is defined. The host should use the value in the CSE field as the command submission and execution recommendation.	01b	The command associated with this structure should only be submitted when there is no outstanding Admin command that affects any namespace and no Admin command should be submitted that affects any namespace until this command is complete.	10b to 11b	Reserved
Value	Definition								
00b	No relaxed command submission and execution recommendation is defined. The host should use the value in the CSE field as the command submission and execution recommendation.								
01b	The command associated with this structure should only be submitted when there is no outstanding Admin command that affects any namespace and no Admin command should be submitted that affects any namespace until this command is complete.								
10b to 11b	Reserved								
13:05	Reserved								