

NVM Express Technical Errata

Errata ID	023
Change Date	2/13/2012
Affected Spec Ver.	NVM Express 1.0b
Corrected Spec Ver.	

Submission info

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Vendor Specific commands do not have a standard location specifying the size of the data transfer. A driver that receives Vendor Specific commands through an OS pass-through mechanism cannot verify that the amount of data being transferred by the PRP List corresponds to the amount of data that should be transferred for the command. This erratum defines a standard location specifying the size of the transfer such that a driver can ensure that memory is not corrupted by an incorrectly constructed PRP List.

Description of the specification technical flaw:

Append the following to section 4.2 following Figure 7 as shown below:

In addition to the fields commonly defined for all Admin and NVM commands, Admin and NVM Vendor Specific commands may support the Number of Dwords in PRP and Number of Dwords in MPTR fields. If supported, the command format for the Admin Vendor Specific Command and NVM Vendor Specific Commands are defined in Figure 8. For more details, refer to section 8.7.

Figure 8: Command Format – Admin and NVM Vendor Specific Commands (Optional)

Bytes	Description
63:60	Command Dword 15 (CDW15): This field is command specific Dword 15.
59:56	Command Dword 14 (CDW14): This field is command specific Dword 14.
55:52	Command Dword 13 (CDW13): This field is command specific Dword 13.
51:48	Command Dword 12 (CDW12): This field is command specific Dword 12.
47:44	Number of Dwords in MPTR (NDM): This field indicates the number of Dwords in the metadata transfer.
43:40	Number of Dwords in PRP (NDP): This field indicates the number of Dwords in the data transfer.
39:32	PRP Entry 2 (PRP2): This field contains the second PRP entry for the command. If the data transfer spans more than two memory pages, then this field is a PRP List pointer.
31:24	PRP Entry 1 (PRP1): This field contains the first PRP entry for the command.
23:16	Metadata Pointer (MPTR): This field contains the address of a contiguous physical buffer of metadata. This field is only used if metadata is not interleaved with the LBA data, as specified in the Format NVM command. This field shall be Dword aligned.
15:08	Reserved
07:04	Namespace Identifier (NSID): This field indicates the namespace that this command applies to. If the namespace is not used for the command, then this field shall be cleared to 0h. If a command shall be applied to all namespaces on the device, then this value shall be set to FFFFFFFFh.
03:00	Command Dword 0 (CDW0): This field is common to all commands and is defined in Figure 6.

Modify section 5.11 as shown below:

Figure 1: Identify – Identify Controller Data Structure

Bytes	O/M	Description
Admin Command Set Attributes		
264	M	Admin Vendor Specific Command Configuration (AVSCC): This field indicates the configuration settings for Admin Vendor Specific command handling. Refer to section 8.7. Bits 7:1 are reserved. Bit 0 if set to '1' indicates that all Admin Vendor Specific Commands use the format defined in Figure 8. If cleared to '0' indicates that the format of all Admin Vendor Specific Commands are vendor specific.
511:265 264		Reserved
NVM Command Set Attributes		
530	M	NVM Vendor Specific Command Configuration (NVSCC): This field indicates the configuration settings for NVM Vendor Specific command handling. Refer to section 8.7. Bits 7:1 are reserved. Bit 0 if set to '1' indicates that all NVM Vendor Specific Commands use the format defined in Figure 8. If cleared to '0' indicates that the format of all NVM Vendor Specific Commands are vendor specific.
703:531 530		Reserved

Add section 8.7 as shown below:

8.7 Standard Vendor Specific Command Format

Controllers may support the standard Vendor Specific command format defined in Figure 8. Host storage drivers may use the Number of Dwords fields to ensure that the application is not corrupting physical memory (e.g. overflowing a data buffer). The controller indicates support of this format in the Identify Controller data structure in Figure 65; refer to Admin Vendor Specific Command Configuration and NVM Vendor Specific Command Configuration.

Disposition log

10/12/2011	Erratum partially captured.
10/26/2011	Erratum captured.
11/03/2011	Refactored IDENTIFY material into Section 4 with reference.
12/15/2011	Added description of erratum.
1/3/2012	Added section 8.7.
2/13/2012	Erratum ratified.

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