LEGAL NOTICE:

This Technical Proposal is proprietary to the NVM Express, Inc. (also referred to as "Company") and/or its successors and assigns.

NOTICE TO USERS WHO ARE NVM EXPRESS, INC. MEMBERS: Members of NVM Express, Inc. have the right to use and implement this Technical Proposal subject, however, to the Member's continued compliance with the Company's Intellectual Property Policy and Bylaws and the Member's Participation Agreement.

NOTICE TO NON-MEMBERS OF NVM EXPRESS, INC.: If you are not a Member of NVM Express, Inc. and you have obtained a copy of this document, you only have a right to review this document or make reference to or cite this document. Any such references or citations to this document must acknowledge NVM Express, Inc. copyright ownership of this document. The proper copyright citation or reference is as follows: **"© 2008 to 2024 NVM Express, Inc. ALL RIGHTS RESERVED."** When making any such citations or references to this document you are not permitted to revise, alter, modify, make any derivatives of, or otherwise amend the referenced portion of this document in any way without the prior express written permission of NVM Express, Inc. Nothing contained in this document shall be deemed as granting you any kind of license to implement or use this document or the specification described therein, or any of its contents, either expressly or impliedly, or to any intellectual property owned or controlled by NVM Express, Inc., including, without limitation, any trademarks of NVM Express, Inc.

LEGAL DISCLAIMER:

THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN IS PROVIDED ON AN "**AS IS**" BASIS. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, NVM EXPRESS, INC. (ALONG WITH THE CONTRIBUTORS TO THIS DOCUMENT) HEREBY DISCLAIM ALL REPRESENTATIONS, WARRANTIES AND/OR COVENANTS, EITHER EXPRESS OR IMPLIED, STATUTORY OR AT COMMON LAW, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, VALIDITY, AND/OR NONINFRINGEMENT.

All product names, trademarks, registered trademarks, and/or servicemarks may be claimed as the property of their respective owners.

The NVM Express® design mark is a registered trademark of NVM Express, Inc.

NVM Express Workgroup
c/o VTM, Inc.
3855 SW 153rd Drive
Beaverton, OR 97003
USA
info@nvmexpress.org

NVM Express® Technical Proposal (TP)

Technical Proposal ID	**4181 Discovery Controller Identification**
Revision Date	**2024.05.22**
Builds on Specification(s)	**NVM Express Base Specification 2.0c**
References	

Technical Proposal Author(s)

Name	**Company**
Erik Smith	Dell
Curtis Ballard	HPE
John Meneghini	RedHat

Technical Proposal Overview

This technical proposal addresses a limitation in the NVM Express Base specification that makes it difficult for end-users to identify the system or device (e.g., storage array) a discovery controller is associated with. By adopting this proposal, end-users will be able to identify the system that contains a particular discovery controller and that implements the new capabilities defined in this TP by using additional fields (e.g., the Model Number (MN), Serial Number (SN)) rather than having to rely on the fabric address (e.g., IP Address) alone.

Revision History

Revision Date	Change Description
2023.10.10	Initial draft
2023.10.24	Updates from Curtis added.
2023.10.31	Minor format updates
2023.12.04	Incorporated changes requested during the TWG on 2023.11.09
2023.12.05	Incorporated changes requested during the FMDS meeting on 2023.12.05
2023.12.07	Incorporated changes requested during the TWG meeting on 2023.12.07
2023.12.12	Incorporated changes requested during the FMDS meeting on 2023.12.12
2024.03.07	Incorporated a change to note 3 of Figure 275 that was requested during the TWG meeting on 2024.03.07.
2024.05.22	Integrated

Description for Changes Document for NVM Express Base Specification 2.0c

New Features/Feature Enhancements/Required Changes:

- Updated **Figure 275: Identify – Identify Controller Data Structure, I/O Command Set Independent** to indicate the Serial Number (SN) and Model Number (MN) fields are now Optional for Discovery controllers instead of Reserved.

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.
Purple:	Moved by this TP (destination)
~~Purple Strikethrough~~:	Moved by this TP (source)
<Green Bracketed>:	Notes to editor

Description of Specification Changes for NVM Express Base Specification 2.0c

5 Admin Command Set

…

5.17 Identify command

…

5.17.2 Identify Data Structures

…

5.17.2.1 Identify Controller Data Structure (CNS 01h)

The Identify Controller data structure (refer to Figure 275) is returned to the host for the controller processing the command.

Figure 275: Identify – Identify Controller Data Structure, I/O Command Set Independent

Bytes	I/O[1]	Admin[1]	Disc[1]	Description
Controller Capabilities and Features				
01:00	M	M	R	**PCI Vendor ID (VID):** Contains the company vendor identifier that is assigned by the PCI SIG. This is the same value as reported in the ID register in the PCI Header section of the NVMe over PCIe Transport Specification.
03:02	M	M	R	**PCI Subsystem Vendor ID (SSVID):** Contains the company vendor identifier that is assigned by the PCI SIG for the subsystem. This is the same value as reported in the SS register in the PCI Header section of the NVMe over PCIe Transport Specification.
23:04	M	M	~~R~~O TBD	**Serial Number (SN):** Contains the serial number for the NVM subsystem that is assigned by the vendor as an ASCII string. ~~Refer to section 4.5.1 for unique identifier requirements.~~ Refer to section 1.4.2 for ASCII string requirements. For a Discovery subsystem, this field should not be used to construct a unique identifier. For subsystems that are not Discovery subsystems, ~~R~~refer to section 4.5.1 for unique identifier requirements.
63:24	M	M	~~R~~O TBD	**Model Number (MN):** Contains the model number for the NVM subsystem that is assigned by the vendor as an ASCII string. ~~Refer to section 4.5.1 for unique identifier requirements.~~ Refer to section 1.4.2 for ASCII string requirements. For a Discovery subsystem, this field should not be used to construct a unique identifier. For subsystems that are not Discovery subsystems, ~~R~~refer to section 4.5.1 for unique identifier requirements.

Figure 275: Identify – Identify Controller Data Structure, I/O Command Set Independent

Bytes	I/O[1]	Admin[1]	Disc[1]	Description
71:64	M	M	M	**Firmware Revision (FR):** Contains the currently active firmware revision, as an ASCII string, for the domain of which this controller is a part. This is the same revision information that may be retrieved with the Get Log Page command, refer to section 5.16.1.4.
…				
4095:3072	O	O	O	Vendor Specific

Notes:
1. O/M/R definition: O = Optional, M = Mandatory, R = Reserved.
2. Mandatory for I/O controllers using a message-based transport. Reserved for controllers using a memory-based transport.

TBD. If a Discovery controller returns a non-null value for either the Serial Number (SN) or Model Number (MN) fields, that Discovery controller shall return a non-null value for both of those fields.