BladeServer

Base Specification
For
Vital Product Data (VPD)

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Contents

Preface

1.1 Introduction

This document specifies the fields and values to be used in the Vital Product Data (VPD).

1.2 Document Control

All approved levels are 1.x and higher. The document is only available in PDF format.

1.3 Version Levels

Version	Date	Reason
0.9	11/03/2003	Preliminary specification (draft).
0.91	03/11/2004	Comments from IBM and Intel reviewers

1.4 Document Change History

Document change history will be maintained for versions 1.x and greater.

Version	Date	Reason
1.00	04/19/2004	Approved version
1.05	1/5/2005	IBM and Intel updates supporting recent HW and specification reviews
1.06	6/25/2005	Regular six month updates
2.00	6/25/2005	Include BladeServer H information – shown in red
2.21	11/05/2007	Periodic Update
2.30	05/09/2008	Periodic Update
2.40	10/13/2008	Periodic Update
2.41	3/04/2009	Periodic Update
2.42	1/23/2010	Periodic Update
2.43	2/18/2010	Version level raised by one for synchronization with other architecture documents.
2.44	5/18/2010	Version skipped.
2.45	5/18/2010	Updated BOSSC Web site link.

1.5 Change Frequency

This document will be updated to reflect changes and updates that are approved by the joint Intel/IBM Collaboration Architecture Review Board.

2 Overview

BladeServer (BS) configuration, status and control information related to a BS component is maintained in a VPD (Vital Product Data) EEPROM in Big Endian format. Each Field Replaceable Unit (FRU) contains a VPD device organized as defined below. When a single component uses multiple blade or multiple switch slots, then each slot must contain a VPD device. Daughter Cards that plug into a blade or module shall contain a VPD device. Certain non-volatile storage within a component of BladeServer are excluded from this format (namely DIMMs and PCI devices).

All BS components (Blade, Daughter Cards, Switch Modules,) contain VPD accessible by the Management Module (MM).

2.1 Big Endian Format

For reference, the following VPD field represents an example of a 32 bit big endian register with byte and bit ordering information.

MSB	Byte 0	Byte 1	Byte 2	Byte 3	LSB
(hex)	A1h	B2h	C3h	D4h	
Bit Order	0 7	8 15	16 23	24 31	
(bin)	1010_0001b	1011_0010b	1100_0011b	1101_0100h	

Figure 2-1. Example of a 32 bit field containing A1B2C3D4h

2.2 Warning on Maximum Number of Writes to a VPD Device

Many VPD devices can be written a limited number of times. Implementation should refrain from unnecessary writes to one or more fields of the device causing the device to fail (typically in the order of hundreds of thousands or millions of write cycles). Simple mechanisms can be employed to reduce the number of writes to VPD. For example, a read-before-write can be employed to determine if a write to a field is necessary. For example, a read-before-write can be made to fields such as the MAC addresses or IP Address or code level-version information to determine if a write to the device is warranted. A read before write is typically not needed for actions that are the results of human interactions which change the configuration of a component.

2.3 Firmware Updates

The intent of this section of the VPD specification is to clarify the behavior of blade center components when firmware updates occur. Beginning with version/level 0105h all components are required to report VPD values that reflect the current behavior and capability of the component to the MM in VPD at all times.

Upgrading firmware on a component requires that all VPD fields accurately reflect the component's supported functions such as capabilities and version/level information. The components' VPD fields therefore must reflect the behaviors supported for either a firmware upgrade to a higher version or back-leveling firmware to lower version.

Typically, upgrading firmware on a component includes updating fields such as capabilities and code levels (ex. FW and VPD levels). Conversely, back-leveling firmware also requires vendors to update fields such as code levels but in this case remove indications in VPD of behavior and capabilities that no longer exist.

To accommodate implementations that rely on logic in power boundary 2 (PB2) to update VPD the component can postpone updating VPD until just prior to POST complete [SR(6) transitions 0b -->1b]. This will allow the newly loaded firmware (up level or back level) running on the component to modify VPD.

2.4 VPD Data Organization

VPD is broken down into 8 blocks numbered block 0 thru 7.

- Block 0 – **Fixed Block Manufacturing Data**
  Block 0 contains pointers to identify the starting locations for Blocks 1 thru 3
- Block 1 – **Dynamic Block Controller Area**
- Block 2 – **Dynamic Block Systems Management Area 1**
- Block 3 – **Dynamic Block Systems Management Area 2**
- Blocks 4-7 – Reserved

The details of the fields contained in these blocks are documented in the following sections.

3 Block 0 – Fixed Block Manufacturing Data

Table 3-1. VPD - Fixed Block Manufacturing Data

Format	Offset	Byte Length	Value	Written By	Component Usage	Description
Byte	0000h	2	03FEh	Mfg	All	Length of valid Block 0 VPD data -2
Byte	0002h	2	0102h	Mfg & Component		VPD Version/Level - A 2-byte value which identifies the VPD Version used by the component. Byte 0 - changed when back level compatibility is broken. Byte 1 – incremented (+1) when fields are added and zero'ed when MSB is incremented • 0100h -- VPD Version 1.00 (prior version) • 0101h – VPD Version 1.05 (prior version) • 0102h – VPD Version 1.06 (prior version) • 0105h – VPD Version 1.07 (prior version) • 0106h – VPD Version 2.40 (prior version) • 0107h – VPD Version 2.41 (prior version) • 0108h – VPD Version 2.43 (this version) • All other values reserved
Byte	0004h	2	03FCh	Mfg		Block Length - A 2-byte value which contains the byte length of the Fixed Block Manufacturing Data block. • Block Length = Overall Length -4
Byte	0006h	1	00h	Mfg		Block ID - A 1-byte value which specifies the type of information present in the current data block
Byte	0007h	1	00h	Mfg		Reserved, set to 00h
Byte	0008h	2		Mfg		VPD ID value • IBM is the naming authority on this field when POS ID extension is not FFEEh • When POS ID extension = FFEEh then this field shall be set to 8000h or an IBM assigned value. For example, an IBM developed component is required to maintain the VPD ID value even when it is OEM'ed. In addition, OEM vendors with no IBM interaction must set this field to 8000h. VPD ID and POS ID together, uniquely identify a component
Byte	000Ah	2		Mfg		POS ID extension • IBM Components shall set this field to 0000h. • OEM Components shall set this field to FFEEh a. See OEM VPD section in this document

Format	Offset	Byte Length	Value	Written By	Component Usage	Description
Byte	000Ch	2		Mfg		POS ID value • IBM is the naming authority on this field when POS ID extension is not FFEEh • When POS ID extension = FFEEh then this field shall be set to 8000h or an IBM assigned value. For example, an IBM developed component is required to maintain the VPD ID value even when it is OEM'ed. In addition, OEM vendors with no IBM interaction must set this field to 8000h. VPD ID and POS ID together, uniquely identify a component
Byte	000Eh	7		Mfg	Blades	Machine Type/Model (MTM), ASCII character value, right justified, pad with ASCII "0"s • Lowest numbered blade in multi-slot blade contains this MTM, all others 00h • All other components shall set this field to all zeros • When POS ID extension = FFEEh then this field is unused and set to 00h. • See OEM VPD section in this document
Byte	0015h	7				Machine Serial #, ASCII character value, right justified, pad with ASCII "0"s • Lowest numbered blade in multi-slot blade contains this Serial Number, all others 00h • All other components shall set this field to 00h • When POS ID extension = FFEEh then this field is unused and set to all zeros. • See OEM VPD section in this document
Byte	001Ch	32d		Mfg or Field	All	Asset ID, ASCII character value, left justified, pad with ASCII blanks. • Values in this field are not controlled by this specification. Normally, set to 00h by Mfg. • OEM Components (POS ID extension = FFEEh) shall set this field to all zeros.
Byte	003Ch	12d		Mfg	All	Card Part Number, ASCII character value, left justified, pad with ASCII blanks • For IBM products this value is assigned by IBM • When POS ID extension = FFEEh then this field is unused and set to all zeros • See OEM VPD section in this document • The value in VPD must match the card labeling
Byte	0048h	12d				Card FRU Number, ASCII character value, left justified, pad with ASCII blanks • For IBM products this value is assigned by IBM • When POS ID extension = FFEEh then this field is unused and set to all zeros • See OEM VPD section in this document • The value in VPD must match the card labeling
Byte	0054h	6		Mfg	All	Card Serial #, ASCII character value, right justified, pad with ASCII blanks • For IBM products this value is unique within the P/N • The value in VPD must match the card labeling • When POS ID extension = FFEEh then this field is unused and set to all zeros • See OEM VPD section in this document • The value in VPD must match the card labeling
Byte	005Ah	6				Card Prefix Serial Number, ASCII character value, right justified, pad with ASCII blanks • For IBM products this value is assigned by IBM • When POS ID extension = FFEEh then this field is unused and set to all zeros • See OEM VPD section in this document • The value in VPD must match the card labeling
Byte	0060h	4		Mfg	All	System Manufacturer ID, Defined by Manufacturing, right justified pad with ASCII blanks • Ex: System Manufacturer ID='IBM' • When POS ID extension = FFEEh then this field is unused and set to all zeros. • See OEM VPD section in this document
Byte	0064h	1	00h	Mfg		Reserved, set to 00h
Byte	0065h	1		Mfg		Hardware Revision Level - the Hardware Revision Level must provide a unique identifier for different board revisions, in ascending order. OEM Components (POS ID extension = FFEEh shall set this field to 00h. See OEM VPD section in this document
Byte	0066h	5	Note 1	Mfg	All	Physical Characteristics

Format	Offset	Byte Length	Value	Written By	Component Usage	Description
Byte	006Bh	4		Mfg	All	Manufactured Card Date Code, ASCII character value • Manufacturing date code WW/YY (week =1 - 53, year = 00 - 99 biased by 2000 The week number is as described in the ISO 8601 Standard For example Week 03, Year 08 is represented as 30333038h
Byte	006Fh	48d		Mfg	All	Ethernet MAC Address, up to 8 MAC Addresses, if applicable. Blade Usage: • Offset 00d – MAC Address NIC port connected to Switch Bay 1 • Offset 06d – MAC Address NIC port connected to Switch Bay 2 • Offset 12d - MAC Address NIC port connected to Switch Bay 3 • Offset 18d – MAC Address NIC port connected to Switch Bay 4 • Offset 24d 47d– Reserved Daughter Card Usage: • Offset 00d – MAC Address NIC port connected to Switch Bay 1 • Offset 06d – MAC Address NIC port connected to Switch Bay 2 • Offset 12d - MAC Address NIC port connected to Switch Bay 3 • Offset 18d – MAC Address NIC port connected to Switch Bay 4 • Offset 24d 47d– Reserved Note: Blade wiring determines the relation between the MAC add and the switch bay SM Usage: • Offset 00d – MM Port 0 MAC Address - the MAC address of the Switch Control Point connected to MM installed in MM bay 1 (i.e. MM 1) • Offset 06d – MM Port 1 MAC Address - the MAC address of the Switch Control Point connected to MM installed in MM bay 2 (i.e. MM 2). Both offset 00d and 06d must be set to the same MAC address when the SM implementation includes either an Ethernet switch or a MUX to steer both management Ethernet links into one MAC based on which MM is in control. • Offset 12d -47d– Reserved and set to 00h Notes: • If an Ethernet MAC address does not exist for a port the value in the MAC address field shall be set to 00h • When Daughter Cards are used, the MAC Address will show up in both the Blade and Daughter Card VPD. • When a Blade or Sidecard has Ethernet NICs on the board then only the MAC addresses for those devices should be contained in this VPD. Daughter Card MAC addresses must not be contained in the Blade's or Sidecard's VPD. • In an N-Wide blade, each slot contains a VPD device which must report the MAC address for the 4 ports of this slot which are connected to the mid-plane. o Ex: For a 2-Wide blade plugged into slots 2 and 3. ▪ The VPD device on the planar connected to slot 2 reports the MAC addresses of the NICs that are connected to the mid-plane through the slot 2 mid-plane connector. ▪ The VPD device on the planar connected to slot 3 reports the MAC addresses of the NICs that are connected to the mid-plane through the slot 3 mid-plane connector. • See WWN/GUID for NIC addresses associated with FC and IB ports
Byte	009Fh	16d		Mfg	All	Universal Unique ID (UUID) Refer to RFC 4122 for details regarding generation of UUID UUID is required for all BladeServer components
Byte	00AFh	1	Note 2	Mfg		Type code, Specifies blade, module or option primary function.
Byte	00B0h	16d	Note 3	Mfg		Static Component internal interface characteristics. High order nibble = I/F protocol, low order nibble = I/F speed, (set to 00h if not applicable). This field will be supported for back level compatibility with management software. All management software should deprecate this field in favor of Port I/F Characteristics in Block 1. Not all port characteristics will be found in this field. The information in this field is redundant with Port I/F Characteristics in Block 1.

Format	Offset	Byte Length	Value	Written By	Component Usage	Description
Byte	00C0h	8		Mfg	Switch	Static Component external interface characteristics. High order nibble = I/F protocol, low order nibble = I/F speed, (set to 00h if not applicable) This field will be supported for back level compatibility with management software. The information in this field is redundant with Port I/F Characteristics in Block 1.
Byte	00C8h	2	0400h	Mfg		Block 1 base offset – This field must be set to 0400h.
Byte	00CAh	2	0800h	Mfg		Block 2 base offset – This field must be set to 0800h.
Byte	00CCh	2	0C00h	Mfg		Block 3 base offset – This field must be set to 0C00h. . The block pointed to by this offset is reserved.
Byte	00CEh	2	1000h	Mfg		Block 4 base offset – The block pointed to by this offset is reserved. Blades: • All blades at VPD version 1.05 and above must support a VPD device of 8KB. Non-Blades: If the VPD device size is 4KB (i.e. Capabilities(0) = 0b) then this field must be set to 0000h. If the VPD device size is 8KB (i.e. Capabilities(0) = 1b) then this field must be set to 1000h.
Byte	00D0h	2	1400h	Mfg		Block 5 base offset – The block pointed to by this offset is reserved. Blades: • All blades at VPD version 1.05 and above must support a VPD device of 8KB. Non-Blades: If the VPD device size is 4KB (i.e. Capabilities(0) = 0b) then this field must be set to 0000h. If the VPD device size is 8KB (i.e. Capabilities(0) = 1b) then this field must be set to 1400h.
Byte	00D2h	2	1800h	Mfg		Block 6 base offset – The block pointed to by this offset is reserved. Blades: • All blades at VPD version 1.05 and above must support a VPD device of 8KB. Non-Blades: If the VPD device size is 4KB (i.e. Capabilities(0) = 0b) then this field must be set to 0000h. If the VPD device size is 8KB (i.e. Capabilities(0) = 1b) then this field must be set to 1800h.
Byte	00D4h	2	1C00h	Mfg		Block 7 base offset – The block pointed to by this offset is reserved. Blades: • All blades at VPD version 1.05 and above must support a VPD device of 8KB. Non-Blades: If the VPD device size is 4KB (i.e. Capabilities(0) = 0b) then this field must be set to 0000h. If the VPD device size is 8KB (i.e. Capabilities(0) = 1b) then this field must be set to 1C00h.
Byte	00D6h	1		Mfg		Reserved, set to 00h
Byte	00D7h	1	Note 4	Mfg		Type Sub-Code
Byte	00D8h	4		Mfg		IANA Enterprise Number – used in conjunction with Product ID to identify a particular component type and is intended to provide each component a common namespace from which to identify components independent from IBM and Intel. • This field is independent of POSID Extension
Byte	00DCh	2	Note 4	Mfg		Product ID– used in conjunction with IANA Number to identify a particular component type and is intended to replace VPDID and POSID Ex: 0005h
Byte	00DEh	18d	00h	Mfg		Reserved, set to 00h
Byte	00F0h	2		Mfg	All	Maximum Power (in 1 Watt increments) • Maximum power consumption of the component. This value should not include power consumed from options which contain their own VPD Maximum power field such as daughter cards. This value should include options such as DIMMs, local hard files, standby or aux power, SFP/XFPs etc). In addition, for options that do not contain a VPD device the worst case (maximum) power consumption must be assumed. • For N-wide blades, each slot contains a VPD device. Power drawn from each slot must be reported in this field. In addition, for options which do not contain a VPD device the worst cast must be assumed. Note: This is in addition to the Block 0 @ 0068h which reports this same value in 5w increments

Format	Offset	Byte Length	Value	Written By	Component Usage	Description
Byte	00F2h	2		Mfg	Power Module	Maximum Short Term Output (in 1 Watt increments) This value represents maximum short-term output of the Power Module. All other components (non-power modules) will reserve this field and set it to 00h
Byte	00F4h	12d	00h	Mfg	All	Reserved, set to 00h
Byte	0100h	4		Mfg		SubSystem Manufacturing ID - Defined by Manufacturing, right justified pad with ASCII blanks Ex: Subsystem Manufacturer ID='DELT' This field is by manufacturing and is used to distinguish the manufacturer of the component what multiple suppliers manufacture the same P/N.
Byte	0104h	10d		Mfg		CLEI - COMMON LANGUAGE® Equipment Identification All 20h (ASCII blanks) means CLEI not assigned. Any value other than ASCII blanks indicates that the CLEI code has been assigned
Byte	010Eh	64d		Mfg		IBM Product Name Text) Description Left justified pad with ASCII blanks. This field is initialized at manufacturing and contains an ASCII text string that contains the product name description. This text string may be shown on system management user interfaces. It is desired that this string match the product description strings used in support level documentation. • When POS ID extension = FFEEh then this field is unused and set to all zeros. • See OEM VPD section in this document.
Byte	014Eh	306d	00h	Mfg		Reserved, set to 00h
Byte	0280h	192d		Mfg		OEM BASE VPD, Set to ASCII blank (20h) when not used. See OEM VPD section in this document
Byte	0340h	128d		Mfg		OEM Extended VPD, Set to ASCII blank (20h) when not used. See OEM VPD section in this document
Byte	03C0h	64d	00h	Mfg		Reserved, set to 00h

Additional Notes:

1. Physical Characteristics
   a. Offset 0066h – Width
      Blade Slot Width - Hex value specifying the slot width of a Blade
      - 00h – Unused (value used for Daughter Cards)
      - 01h - Single Wide (value for single wide blades)
      - 02h - Double Wide (value for 2-wide blades)
      - 03h - Triple Wide (value for 3-wide blades)
      - 04h - Quad Wide (value for 4-wide blades)
      - 05h - FFh – Reserved

      i. Daughter Cards
      - 00h – Value for all Daughter Cards
      - 01h - FFh – Reserved

      ii. Switch Modules
      - 01h – Value for Switch Module or High Speed Switch Modules (HSSM)
      - All others Reserved

   b. Offset 0067h – Component Height (normalized to component)
      Hex value specifying height of Blade/Module in 1U (1.75") increments

      i. Blades
      - 06h – Slot Height (value for full height blade)

      All other values reserved

      ii. Daughter Cards
      - 00h – Value for all Daughter Cards
      - 01h – FFh – Reserved

      iii. Switch Modules
      - 03h – Value for Switch Module
      - 07h – Value for High Speed Switch Module (BCH type SM with bay height of 6.6U mm)
      - all other values reserved

   c. Offset 0068h - Component Power in watts (normalized to component and report next highest 5W increments)
      i. Maximum Power Consumption/Capacity. For example, 10W would be 02h
      ii. Hex value specifying maximum power consumption of component in increments of 5 Watts
      iii. Note: Maximum Power in Block 0 @ 00F0h reports this same value in 1 watt increments
      iv. Value of 00h is reserved

   d. Offset 0069h - Component Feature
      i. Feature Support

- 00h – WOL not supported
- 01h - WOL supported
- 02h - FFh Reserved

e. Offset 006Ah
   i. Reserved – set to 00h

2. Type code specifying component function
   N-way represents the number of CPU cores on the blade not the number of sockets on the blade
   - 01h =
     - Prior to Version/Level 0103h: 01h = X86 - 1 Way Processor Blade
     - Beginning with Version/Level 0103h: 01h = X86 - 1 Socket(n-cores) Processor Blade
   - 02h =
     - Prior to Version/Level 0103h: 02h = X86 - 2 Way Processor Blade
     - Beginning with Version/Level 0103h: 02h = X86 - 2 Socket(n-cores) Processor Blade
   - 04h =
     - Prior to Version/Level 0103h: 04h = X86 - 4 Way Processor Blade
     - Beginning with Version/Level 0103h: 04h = X86 - 4 Socket(n-cores) Processor Blade
   - 11h = Ethernet Switch Module
   - 12h = Fibre Channel Switch Module
   - 14h = InfiniBand Switch Module
   - 1Ah = HSSM Module (See Type Sub-Code)
   - 1Bh = Bridge Module (See Type Sub-Code)
   - 1Eh = Optical Pass Thru Module
   - 21h = Ethernet Daughter Card
   - 22h = Fibre Channel Daughter Card
   - 24h = InfiniBand Daughter Card
   - 27h = PCI I/O Expansion Side Card
   - 28h = Copper Pass Thru Module
   - 2Bh = High-Speed Daughter Card (See Type Sub-Code)
   - 61h = Enterprise Chassis Mid-Plane (type 1). This Enterprise chassis contains 14 blades. No other properties should be inferred from this encode.
   - 62h = Telco Chassis Mid-Plane (type 2) . This Telco chassis contains 8 blades. No other properties should be inferred from this encode.

   All other values reserved

3. Static Component Interface Characteristics - Byte field specifying applicable physical port interface characteristics for Switch Modules and Daughter Cards identified sequentially from port 0 to port N. A value of 00h in this field will indicate that the port does not exist or not applicable
   a. Blade
      i. B0h:B3h represent a physical connection from network ports 1 thru 4 to switches 1 thru 4 respectively.
      ii. Locations B4h-B15h are reserved and set to 00h
      iii. Locations C0h-C7h are reserved and set to 00h
   b. Daughter card
      i. B0h:B1h represent two physical connections from network port pairs 1,2 or 3,4 to switches 1,2 or 3,4 respectively.
      ii. Locations B2h-B15h are reserved and set to 00h
      iii. Locations C0h-C7h are reserved and set to 00h
   c. Switch Usage
      i. Locations B0h-BFh defines up to 16 ports internal to this chassis (ex: switch ports to blades). B0h represents the first port (port 1) B1h represents the second port and so on.
      ii. C0h-C7h defines up to 8 ports external to this chassis. C0h represents the first port (port 1) C1h represents the second port and so on.

   The byte field is broken into two nibbles defines as follows:
   Interface protocol (bits 7 - 4 = high order nibble)
   - 0Xh = Reserved
   - 1Xh = Ethernet
   - 2Xh = Fibre Channel
   - 4Xh = InfiniBand
   - 5Xh - DXh = Reserved

   Interface Speed (**approximate speed associated with this protocol**), highest supported (bits 3 - 0 = low order nibble)
   - X0h = Reserved
   - X1h = 1.0 Gbit
   - X2h = 2.0 Gbit
   - X3h = 2.5 Gbit
   - X4h = 4.0 Gbit
   - X5h = 5.0 Gbit
   - X6h = 3.0 Gbit
   - X7h = 6.0 Gbit
   - X8 - X9h = Reserved
   - XAh = 10.0 Gbit
   - XB - XDh = Reserved

- XEh = 100 Mbit

4. Type Sub-Code – Type Sub-Codes are used in conjunction with Type Codes
5. Unused bytes between end of Block ID 0 and beginning of Block ID 1 set to 00h

Table 3-2. Type and SubType Code

Type Code	Type Sub-Code	Comments
xxh	20h	Components that are not assigned a Type Sub-Code must use the default value of 20h.
xxh	00h	Reserved
1Ah (HSSM)	10h	Infiniband
	30h	Ethernet
	40h	Fibre Channel
1Bh (Bridge)	30h	InfiniBand to Ethernet
	40h	InfiniBand to Fibre Channel
	50h	CEE to FC Bridge
27h (PCI Expansion)	20h	PCI Expansion
2Bh HSSM Daughter Card	10h	Infiniband
	30h	Ethernet/Fibre channel daughtercard
	40h	Ethernet
	50h	Fibre Channel
	60h	iSCSI
32h Interposers	10h	MSIM (Multi-Switch Interconnect Module)
38h cKVM	01h	cKVM
51h Management Module	00h, 20h	MM1/CMM1
	01h	AMM - Enterprise
	10h	MM2 - Telco
61h Enterprise Chassis	00h, 20h	Enterprise Chassis (BCE)
	02h	Enterprise Chassis (BCH)
	03h	Enterprise Chassis (BCS)
62h Telco Chassis	00h, 20h	Telco Chassis
	02h	Telco Chassis (BCH-T)
All other code Type Sub-Code and Type Code combinations are reserved • Type Sub-Code copied into History Log, Chassis Type Sub-Code by MM		

4 Block 1 - Dynamic Block Controller Area

Table 4-1. VPD – Dynamic Block Controller Area

Format	Offset	Byte Length	Value	Written by	Component Usage	Description
Byte	0000h	2	0000h	Mfg	All	Reserved, set to 00h
Byte	0002h	2	03Feh			Length of valid Block 1 VPD data -2
Byte	0004h	1	01h			Block ID
Byte	0005h	1	00h			Flag (Reserved set to 00h)
Byte	0006h	36d	Note 1.	Subsystem		Code Level 1 version – Lowest level resident operational software. Examples: POST, Boot code, and BIOS Code Levels are used to inform the Management System of the code levels used in the component. Blades shall report the BIOS version as Code Level 1. Switches shall report Bootrom firmware as Code Level 1. Components other than Blades and Switches must set this field with ASCII blanks (20h) if not applicable.

Byte	002Ah	36d				Code Level 2 version – Next level resident operational software. Examples: RTOS or O/S kernel, Device Drivers, Main Application, Blade Resident diagnostic code. Code Levels are used to inform the Management System of the code levels used in the component. Blades may optionally report the Diagnostic level of Firmware as Code Level 2. Switches shall report Operating Firmware or Application code as Code Level 2. Components other than Blades and Switches must fill this field with ASCII blanks (20h) if not applicable.
Byte	004Eh	36d				Code Level 3 version – Next level resident operational software. Code Levels are used to inform the Management System of the code levels used in the component. Switches may use this field to inform systems management software of additional level of code. All components may fill this field with ASCII blanks (20h) if not applicable.
Byte	0072h	36d				Code Level 4 version – Next level resident operational software. Code Levels are used to inform the Management System of the code levels used in the component. . Switches may use this field to inform systems management software of additional level of code. All components may fill this field with ASCII blanks (20h) if not applicable.
Byte	0096h	36d				Code Level 5 version – Next level resident operational software. Code Levels are used to inform the Management System of the code levels used in the component. . Switches may use this field to inform systems management software of additional level of code. All components may fill this field with ASCII blanks (20h) if not applicable..
Byte	00Bah	36d				Code Level 6 version – Next level resident operational software Code Levels are used to inform the Management System of the code levels used in the component. . Switches may use this field to inform systems management software of additional level of code. All components may fill this field with ASCII blanks (20h) if not applicable
Byte	00DEh	48d		Subsystem	Switches	Manufacturing Default IP Address (DBSDIP), Subnet Mask, Gateway for 4 entries, hex values. • Switches shall provide the 4 byte IP, Subnet Mask, and Gateway address for the Switch Control point in entry 1. In order to ensure a unique address is assigned to each switch module, the switch slot number must be used as the least significant three bits of the default IP address. Entries 2-4 shall be set to 00h • All switches that allow management over Ethernet must implement this field Each entry contains IP Addr + Subnet Mask + GW Addr
Byte	010Eh	1		Subsystem		Current IP v4 acquisition method (DBSCIAQ) in use by Component (ex. SM). Set to 00h if not applicable. • Reflects current management port IP acquisition method and/or configuration. Updated upon reconfiguration. 00h = Not applicable 01h = Static (default) 02h = Reserved for DHCP 03h = Reserved for DHCP then Static, DHCP reverts to static after timeout, (support optional) 04h = Reserved for BOOTP 05h – FFh = Reserved • All switches that allow management over Ethernet must implement this field
Byte	010Fh	48d				Current IP Address (DBSCIP), Subnet Mask, Gateway, up to 4 entries, (set to 00h if not applicable) • All switches that allow external management over Ethernet must implement this field Each entry contains IP Addr + Subnet Mask + GW Addr
Byte	013Fh	115d	00h	Mfg	All	Reserved, set to 0h
Byte	01B2h	2		Mfg and/or Subsystem	Blades, Switches Modules, & Daughter Cards	BaseSpec_Maj_Min_version - A 2-byte value which identifies the appropriate BladeServer Base Specification level that is implemented by this component. Informational field that represents the blade center open specification. This 2 byte field that indicates what Major and Minor Version of SM Base specification is supported. For example if the base specification was at the '2.10' level then the value in this field would be 020Ah

						Note: The value reported in VPD will be specified in the appropriate BladeServer Base Specification and therefore this field is only applicable for components that have a base specification.
Byte	01B8h	8	00h	Mfg and/or Subsystem	Blades, Switche Modules, & Daughter Card	Reserved, set to 00h
Byte	01C0h	128d		Mfg and/or Subsystem	Daughter Cards & Switch Modules	Port Interface Characteristics - 4 Bytes Per Port(16 External, 16 Internal Ports). **Byte 0 (01C0h) – Port Interface Protocol** 00h = Not-implemented (this port is not implemented and does not connect to the chassis mid plane). Bytes 1-3 in this field are invalid. 10h = Ethernet 20h = Fibre Channel 30h = Scalability 40h = InfiniBand 8xh = Reserved for Blade-to-SM, Blade-to-/HSSM and HSSM-to-Bridge Offload Protocols. HSSM-to-Bridge protocol use: • HSSM internal ports 14 & 15 in this VPD field • Bridge internal ports 0 & 1 in this VPD field HSSM's that do not support a Bridge will set ports 14/15 to 00h 90h = CEE (Converged Enhanced Ethernet) All other code points reserved **Byte 1 (01C1h) – Port Interface Speed (Approximate speed associated with this protocol)** 00h = 100 Mbit 01h = 1.0 Gbit 02h = 2.0 Gbit 03h = 2.5 Gbit 04h = 4.0 Gbit 05h = 3.0 Gbit 06h = 5.0 Gbit 07h = 6.0 Gbit 08h = 8.0 Gbit 0Ah = 10.0 Gbit 0Bh = 20.0 Gbit 0Ch = 40.0 Gbit 0Dh = 60.0 Gbit All other code points reserved **Byte 2 (01C2h)– Port Interface Media** 00h – Copper 01h – SERDES 20h – Optical Sx (Short haul) 30h – Optical Lx (Long haul) All other code points reserved **Byte 3 (01C3h) – Port Interface Flags** Bit 0 – Dynamic Interface Characteristics • If Flag(0)=0b then PortInterfaceCharacteristics(0:2), Protocol, Speed and Media must not change after POST completes (i.e. static) • If Flag(0)=1b then PortInterfaceCharacteristics(0:2), Protocol, Speed and Media may change after POST completes at the time when the port characteristics have been altered. Bit 1 – Unlicensed Port • If Flag(1)=0b then the port is fully enabled. The port is restricted in usage and additional function cannot be added to the port by licensing. • If Flag(1)=1b then additional function may be added to the port through licensing. Bit 2 – Dynamic WWN/GUID • If Flag(2)=0b then the port maintains a static WWN/GUID which will not change. • If Flag(2)=1b then the port may alter the WWN/GUID at anytime The MM to I/O Module does not contain a signaling mechanism to

							inform the MM that a WWN/GUID change has occurred. The MM will sample this information at the end of POST. See WWN/GUID field
							Bits(3:7) reserved and set to zeros
						This byte is only valid if Byte 0 at offset 01C0h is non-zero.	
						Switches and Bridges: Offset Comments / Offset Comments (see notes) 00h - Ext Port 0 / 40h - Int. Port 0 04h - Ext Port 1 / 44h - Int. Port 1 08h - Ext Port 2 / 48h - Int. Port 2 0Ch - Ext Port 3 / 4Ch - Int. Port 3 10h - Ext Port 4 / 50h - Int. Port 4 14h - Ext Port 5 / 54h - Int. Port 5 18h - Ext Port 6 / 58h - Int. Port 6 1Ch - Ext Port 7 / 5Ch - Int. Port 7 20h = Ext Port 8 / 60h - Int. Port 8 24h = Ext Port 9 / 64h - Int. Port 9 28h = Ext Port A / 68h - Int. Port 10 2Ch = Ext Port B / 6Ah - Int. Port 11 30h = Ext Port C / 70h - Int. Port 12 34h = Ext Port D / 74h - Int. Port 13 38h = Ext Port E / 78h - Int. Port 14 3Ch = Ext Port F / 7Ch – Int. Port 15 Blades, Sidecards and Daughter Cards: Offset Comments / Offset Comments (see notes) 00h Internal NIC Port A / 40h External NIC Port A 04h Internal NIC Port B / 44h External NIC Port B 08h Internal NIC Port C / 48h External NIC Port C 0Ch Internal NIC Port D / 4Ch External NIC Port D 10h Internal NIC Port E / 50h External NIC Port E 14h Internal NIC Port F / 54h External NIC Port F 18h Internal NIC Port G / 58h External NIC Port G 1Ch Internal NIC Port H / 5Ch External NIC Port H Note: Unused ports should be set to all zeros Notes: • Unused ports should be set to all zeros • All other elements should be set to 0s • See the Port Data Rate and Lane Count field @ 0280h for additional port characteristics • Internal Ports are subject to Blade wiring. • External Ports • See Port Data Rate and Lane Count at 0280h for additional port characteristics
Byte	0240h	64d		Subsystem	Daughter Cards & Switch Modules	WWN/GUID Address – This field provides the static hardware WWN and GUID information for FC HBA/ IB CA located within the BS chassis. See Capabilities (9:10) to determine the content (WWN/GUID) of each field. Blades: Set to zeros Daughter Card Usage: • Offset 00d – Port A WWN/GUID • Offset 08d – Port B WWN/GUID • Offset 16d - Port C WWN/GUID • Offset 24d – Port D WWN/GUID • Offset 32d 63d– Reserved Switch Module Usage: • Offset 00d – Port A WWN/GUID. Switch Module control point • Represents WWN of an Fibre channel switch module • Or represents GUID of an IB switch module Offset 08d 63d– Reserved and set to 00h	
Byte	0280h	32d		Mfg	All	Port Data Rate and Lane Count Two fields are encoded into each byte representing a port.	

<table>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>(0) - Reserved and set to 0
(1-2) – Port Data Rate
00 – SDR (single data rate)
01 – DDR (double data rate)
10 – QDR (quad data rate)
11 – Reserved
(3-5) – Lane Count
000b – 1
001b – 2
010b – 4
011b – 8
100b - 12

all other encodes and bits reserved

Switches :
Offset Comments / Offset Comments
00h - Ext Port 0 / 10h - Int. Port 0
01h - Ext Port 1 / 11h - Int. Port 1
02h - Ext Port 2 / 12h - Int. Port 2
03h - Ext Port 3 / 13h - Int. Port 3
04h - Ext Port 4 / 14h - Int. Port 4
05h - Ext Port 5 / 15h - Int. Port 5
06h - Ext Port 6 / 16h - Int. Port 6
07h - Ext Port 7 / 17h - Int. Port 7
08h = Ext Port 8 / 18h - Int. Port 8
09h = Ext Port 9 / 19h - Int. Port 9
0Ah = Ext Port A / 1Ah - Int. Port 10
0Bh = Ext Port B / 1Bh - Int. Port 11
0Ch = Ext Port C / 1Ch - Int. Port 12
0Dh = Ext Port D / 1Dh - Int. Port 13
0Eh = Ext Port E / 1Eh – Reserved set to 00h
0Fh = Ext Port F / 1Fh – Reserved set to 00h

Daughter Cards:
Offset Comments / Offset Comments
0 NIC Port A / 4 NIC Port E
1 NIC Port B / 5 NIC Port F
2 NIC Port C / 6 NIC Port G
3 NIC Port D / 7 NIC Port H
Notes:
• Unused ports should be set to all zeros
• All other elements should be set to 0s
• See Port Interface Characteristics at 01C0h for additional port characteristics
• It is assumed that the Transmit and Receive lane counts, speed and data rates are equivalent and when they are not the lower of the two should be reported.</td></tr>
<tr><td>Byte</td><td>02A0h (All)</td><td>32d</td><td></td><td>Subsystem</td><td>All</td><td>Capabilities – Functions or behaviors supported by this component
Each bit or set of bits represents optional functions that are optionally implemented by the SM. A 0 represents the function is not implemented and a non-zero means the function is implemented</td></tr>
<tr><td>Byte</td><td>02A0h (Blade)</td><td>32d</td><td></td><td>Subsystem</td><td>Blades</td><td>Blade Capabilities
Bits | Comments
0 | 8KB VPD present. Blocks 4:7 supported
All other bits reserved, set to 0b
Note: Blades need to report MM to blade Ethernet protocols ad defined in SM capabilities 64:119 via the IPMI/RS485 interface</td></tr>
<tr><td>Byte</td><td>02A0h (SM)</td><td>32d</td><td></td><td>Subsystem</td><td>Switches</td><td>SM Capabilities
Bits Comments
0 8KB VPD present. Blocks 4:7 supported
1 Power Meter Supported (0b=not supported, 1b=supported)
2:3 Reserved and set to 0
4 Daughter Cards Supported (See Base Specification For Switch Module Subsystems)
5 Pluggable SFP/XFPs (See Base Specification For Switch Module Subsystems)
6 PB2Status Supported (See Base Specification For Switch Module</td></tr>
</table>

						Subsystems) 7 SM_OT_Supported (See Base Specification For Switch Module Subsystems) 8 SFP/XFP Reporting Requires PD2 Active. This typically occurs when SM designers locate logic required to communicate with the MM on PD2. • 0b – SFP/XFP reporting does not require PD2 active • 1b – SFP/XFP reporting requires PD2 active 9:10 WWN/GUID Address(0:3) Content (see @0240h) 00b – Use expansion field 01b – content is WWN 10b – content is GUID 11b – reserved 11 Thermal Monitoring Capability 0b – This component does not support Thermal Monitoring 1b – This component supports Thermal Monitoring (See Blade Center Component Temperature Reporting for additional information) 15 Dual Fuse Status Detection Supported – This bit indicates that the component has the capability to detect a fuse fault 16:31 SM_PRM_Control Bits 16:31 = 0000b indicates that the SM does not support protect mode. Note: Bit order matches CR/ECR layout • (16) SM supports power-off PRM o 0b indicates that the SM does not support power-off PRM. o 1b indicates that the SM supports power-off PRM. • (19) SM Supports configuration over the SM's external ports and internal blade ports PRM. o 0b indicates that the SM does not support configuration over the SM's external ports and internal blade ports PRM. o 1b indicates that the SM does support configuration over the SM's external ports and internal blade ports PRM. • (20) SM supports external port enablement PRM. o 0b indicates that the SM does not support external port enablement PRM. o 1b indicates that the SM does support external port enablement PRM. • (22) SM supports reset to factory defaults. o 0b indicates that the SM does not support reset to factory defaults PRM. o 1b indicates that the SM does support reset to factory defaults PRM. • (26) SM supports IP Acquisition PRM. o 0b indicates that the SM does not support IP Acquisition PRM. o 1b indicates that the SM does support IP Acquisition PRM. @00A4: 32 Stacked Switch Support • 0b indicates that the SM does not support STM • 1b indicates that the SM supports STM 33 Post Timeout Extension Fields Supported o See POST Timeout Extension in block 1 @ offset 02D8h o 0b=Not supported 1b=Supported 64:95 – Protocols Supported Over Ethernet Interface to MM A bit set to 1b by the Component indicates to the MM that the SM has the capability to support a given function. Conversely, a bit set to 0b indicates that the component does not support the given function defined by that bit position(s). Each bit is defined by industry standards which are outside the scope of this document. 64 HTTP support 65 HTTPs support 66 Telnet CLI support 67 SSH CLI support 68 SNMPv1 support 69 SNMPv3 support 70 Vendor Specific Proprietary External Management Protocol Support 71 NTP Client Support

						72 NTP Server Support 73 FTP Client support 74 FTP server support 75 TFTP client support 76 TFTP server support 77 LDAP support 78 Radius support 79 TACAS support 80 Syslog support 81 Reserved and set to 0b 82 Switch support DHCP using MM Ethernet ports for IP configuration 83 CIM Support: CIM - XML 84 CIM Support: SMI-s 85 CIM Support: rCMPI 86 CIM Support: reserved and set to 0b 120: CR(0:7) supported 127 (see block 2, bits 32:39 at offset 02B0h) 128: ECR(0:7) supported 135 (see block 2, bits 40:47 at offset 02B0h) 136: SR(0-7) supported 143 (see block 2, bits 48:55 at offset 02B0h) 144: ESR bits 0-7 supported 151 (see block 2, bits 56:63 at offset 02B0h) 152: Reserved 159 160: Inter-switch Link (ISL) 161 Encode 00b - Switch Firmware has not been designed to work where internal ISL links are wired. 01b - Switch Firmware works with internal ISL ports wired, but does not support function on these ISL links. 10b - Switch Firmware functionally supports internal ISL ports, and provides for customer configuration where appropriate. 11b - Reserved All other bits reserved, set to 0b Note: Capabilities must be accurate when the SM or DC is plugged into the chassis and prior to PD2 is turned on
Byte	02A0h (Daughter Card)	32d		Subsystem	Daughter Cards	Daughter Card Capabilities Bits: Comments 0: 8KB VPD present. Blocks 4:7 supported 1-8: Reserved and set to 0 9:10: WWN/GUID/SASID Address(0:3) Content (see @0240h) 00b – Use expansion field 01b – content is WWN 10b – content is GUID 11b –content is SASID 11: Thermal Monitoring Capability 0b – This component does not support Thermal Monitoring 1b – This component supports Thermal Monitoring (See Blade Center Component Temperature Reporting for additional information) 12: NCSI (Network Communications Services Interface) is supported. (Note: used to determine if this DC provides a sideband NCSI Ethernet connection to a blades BMC that supports NCSI interface). 13: Reserved and set to 0 14: Component supports 'Expansion Card Control Port Expander B' utilizing an i2c port expander at address 42h (see I/O Expansion Card Base Specification for detail bit definitions). 15: Reserved set to 0 16-22: Bit 16 –PCIe x16 supported Bits 17-22 reserved and set to 0 Note: (1) This field must only used when bit 14 is set equal to 1. (2) A given blades BMC usage of these bits for setting the Expansion Card Control Port Expander will be specified in the Expansion Card PRD.

						23-161 Reserved and set to 0 162 Component supports chassis type and blade slot detection utilizing a i2c port expander at address D0h (see I/O Expansion Card Base Specification). 163-255 Reserved and set to 0 All other bits reserved, set to 0b
Byte	02C0h	2d	00h	Subsystem	SM	SM_PRM_Control (0:15) Bit 0 - informs MM of the current SM protect mode setting which allows the SM to control powering off the SM Bit 3 - informs the MM of the current SM protect mode setting for configuration over the SM's external ports and internal blade ports. Bit 4 - informs the MM of the current SM protect mode setting for SM external port enablement. Bit 6 – informs MM of the current SM protect mode setting for reset to factory default Bit 10 - informs MM of the current SM protect mode setting for IP Acquisition Note: Only valid beginning with V1.07 and beyond of VPD All other bits reserved
Byte	02C2h	1d	00h	Subsystem	SM	SM_STM_Extension (0:7) Bit(0:1) 00b – Not in STM mode 01b – Reserved 10b - indicates this SM is a member in STM mode 11b - indicates this SM is a master in STM mode Note: Only valid beginning with VPD versionV1.07 All other bits reserved
Byte	02C9h	7d	00h	Mfg	All	Reserved. Set to zero (00h)
Byte	02D0h	1d		Mfg	Daughter Card	Capabilities Address Extension (see offset 02A0h bits 9:10) 20h – FibreChannel All others reserved Note: This field is only valid when 02A0h=00b
Byte	02D1h	15d	20h	Mfg	All	Reserved. Set to ASCII blank (20h)
Byte	02D8h	8d	20h	Mfg	Switch Modules	POST Timeout Extension's – Three 8 bit fields which represents the additional time added to the architected POST timeouts as specified in the base switch specification. The SM is required to complete a given POST sequence after the MM signals a power on to the SM. If this time is exceeded the MM will report a POST failure. The resolution is in 1 second.. (See POST timeout extension architecture in the SM stacking specification) Bytes Bits (0:1) (0-7) 00h, (8-15)– Standard Diagnostic Extension Time (2:3) (0-7) 00h, (8-15)– Extended Diagnostic Extension Time (4:5) (0-7) 00h, (8-15)– Full Diagnostic Extension Time (6:7) – Reserved and set to zero Valid values are between 1 and 256 seconds (4.3 minutes). See Capabilities(bit 33) in block 1 @ offset 02A0h
Byte	02D3h	5d	00h	Mfg	All	Reserved. Set to 00h
Byte	02D3h	5d	00h	Mfg	Switch Modules	Cards Supported – This field indicates the number of daughter cards(i.e. the number of connectors) supported by the SM. When Capabilities(4) = 1b then: (4:7) = 0h, the SM contains 1 connector which will accept a daughter card (4:7) = 1h, the SM contains 2 connectors which will accept a daughter card (4:7) = 2h, the SM contains 3 connectors which will accept a daughter card All other code points reserved When Capabilities(4) = 0b this nibble is ignored. All non-Switch Module components set this field to 00h
Byte	02E1h	3	00h	Mfg	All	Reserved. Set to 00h

Byte	02E4h	4		Subsystem	Switch Modules	SFP/XFP PresenceDetect – The SM reports the presence of SFP/XFPs within the SM and if present, reports if the SFP/XFP is permanent or hot-plugable. When Capabilities (5) = 1b then up to sixteen SFP/XFPs can be located in the SM. (0:1) – SFP/XFP 1, (2:3) – SFP/XFP 2 and so on until (30:31) – SFP/XFP 16 Each port contains a 2-bit encode: 00b – This port does not support a pluggable SFP/XFP 01b – Reserved. 10b – Hot-plug SFP/XFP port – SFP/XFP is unplugged 11b – Hot-plug SFP/XFP port – SFP/XFP is plugged When Capabilities(5) = 0b this field is ignored. All non-Switch Module components set this field to 00h
Byte	02E8h	2		Subsystem		Daughter Card Fault – 3 bit field reporting a failing Daughter Card (0:2) – Daughter Card Fault Bit 0 = 1b = Daughter Card 1 fault Bit 1 = 1b = Daughter Card 2 fault Bit 2 = 1b = Daughter Card 3 fault (3:15) – Reserved All non-Switch Module components set this field to 00h
Byte	02EAh	2		Subsystem		SFP/XFP Fault – 16 bit field reporting a failing hot-pluggable SFP/XFP (0:15) – SFP/XFP Fault Bit Comments 0 SFP/XFP 1 =0b no fault detected, =1b fault detected 1 SFP/XFP 2 =0b no fault detected, =1b fault detected …and so on until 15 SFP/XFP 16 =0b no fault detected, =1b fault detected All non-Switch Module components set this field to 00h
Byte	02ECh	1		MFG	SM and PM	TempSensorLoc - Location of 2nd Temperature Sensor • FFh – not implemented • 00h – Component Inlet • 01h – Component Exhaust • 02h – Within the ASIC • 03h – On the Heatsink Note: Only valid if Thermal Monitoring Capability [Capabilities(11) = 1b] See Specification on BladeServer Temperature Reporting
Byte	02EDh	19d	00h	Mfg	All	Reserved. Set to 00h
Byte	0300h	128d	00h	Mfg	All	Reserved
Byte	0380h	128d	00h	Subsystem	All	Reserved. Set to **zeros**

Additional Notes:

1. Written at initial code installation and updated upon completion of any code update process.
   ASCII characters and left justified.
   Field Format: (36 byte field, first address location to last address location)
   Revision Number 4 bytes ASCII
   Build ID 10 bytes ASCII
   Filename 12 bytes ASCII
   Date (mm/dd/yyyy) 10 bytes ASCII
- Unused bytes between end of Block ID 1 and beginning of Block ID 2 set to 00h

5 Block 2 - Dynamic Block System Management Area 1

Table 5-1, VPD – Dynamic Block System Management Area 1

<table>
<tr><th>Format</th><th>Offset</th><th>Byte Length</th><th>Value</th><th>Written by</th><th>Component Usage</th><th>Description</th></tr>
<tr><td>Byte</td><td>0000h</td><td>2</td><td>0000h</td><td rowspan="4">Mfg</td><td rowspan="4">All</td><td>Reserved, set to 00h</td></tr>
<tr><td>Byte</td><td>0002h</td><td>2</td><td>03FEh</td><td>Length of valid Block 2 VPD data -2</td></tr>
<tr><td>Byte</td><td>0004h</td><td>1</td><td>02h</td><td>Block ID</td></tr>
<tr><td>Byte</td><td>0005h</td><td>1</td><td>00h</td><td>Flag (Reserved set to 00h)</td></tr>
<tr><td>Byte</td><td>0006h</td><td>1</td><td></td><td>Mgmt Sys</td><td rowspan="2">Switch</td><td>IPV4 acquisition method (DBSMIAQ) to be used by Component (if applicable).
Written by management system to indicate method to be used by Component to obtain management port IP configuration
• 00h = Not applicable
• 01h = Static
• 02h = DHCP
• 03h = DHCP then Static, DHCP reverts to static after timeout, (support optional)
• 04h = BOOTP
• 05h – FFh = Reserved
All non-switch modules set this field to 00h</td></tr>
<tr><td>Byte</td><td>0007h</td><td>48d</td><td></td><td>Mgmt Sys</td><td>Static Assigned IPV4 Address (DBSMSIP), Subnet Mask, Gateway to be used when IP acquisition method = static (Must be used by Component as current IP configuration)
• Entry 1 contains the 4 byte IP, Subnet Mask, and Gateway addresses.of the Switch Control point
• Entries 2-4 are set to 00h
All non-switch modules set this field to 00h</td></tr>
<tr><td>Byte</td><td>0037h</td><td>16d</td><td></td><td>Mgmt Sys</td><td>Blades</td><td>Boot Path – Boot path for bootable devices
• Offset 0037+0=1st choice,
• Offset 0037+1= second choice
• and so on
Non-Blades set to 00h
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>00h</td><td>USB Floppy</td></tr>
<tr><td>06h</td><td>Network Boot (PXE, BOOTP, etc). The boot order and/or the NIC selected is implementation dependent.
- Broadcast to the PXE/BOOTP server</td></tr>
<tr><td>08h</td><td>HDD 0</td></tr>
<tr><td>09h</td><td>HDD 1</td></tr>
<tr><td>0Ah</td><td>HDD 2</td></tr>
<tr><td>0Bh</td><td>HDD 3</td></tr>
<tr><td>0Ch</td><td>CD-ROM (USB CD-ROM on Media Tray then enumerate CD ROM on external USB port of Media Tray</td></tr>
<tr><td>0Eh</td><td>HDD 4</td></tr>
<tr><td>FFh</td><td>Terminator Byte – terminates this field</td></tr>
<tr><td colspan="2">All other values reserved</td></tr>
</table></td></tr>
<tr><td>Byte</td><td>0047h</td><td>1d</td><td>00h</td><td>Mgmt Sys</td><td>All</td><td>Reserved - set to 00h</td></tr>
<tr><td>Byte</td><td>0048h</td><td>2</td><td></td><td>Mfg & Component</td><td>All</td><td>BaseSpec_Maj_Min_version - A 2-byte value which identifies the Blade Open Specification level for the current version of firmware executing on the MM.

Informational field that represents the blade center open specification.
This 2 byte field that indicates what Major and Minor Version of SM Base specification is supported.

This field is reserved in blades since information exchanges of this nature occur between the MM and the BMC using IPMI commands.

Note: The value reported in VPD will be specified in the Blade Center Open Specification</td></tr>
</table>

Format	Offset	Byte Length	Value	Written by	Component Usage	Description
Byte	004Ah	16d			Switch	IP Communication Configuration by MM - These fields are only valid when the component indicates XML protocol support (see MM to Component Protocol Supported @ offset 02A0h in block 1). The SM must use these values. Bytes (0:1) AssignedCmd_TCP_XML portnum Written by the MM as part of the IP configuration to define the TCP port number which is to be used for the SM's server for XML commands sent to the SM by the MM for the XML protocol. This portnum supersedes the Default_Cmd_TCP_ portnum. Bytes (2:3) Assigned_Event_TCP_XML portnum Written by the MM as part of the IP configuration protocol to define the TCP port number to be used for the SM's server that sends events to the MM for the XML protocol. This portnum supersedes the Default_Event_TCP_ portnum All other bits reserved and set to zero
Byte	005Ah	150d	20h	Mgmt Sys	All	Reserved - set to ASCII blank (20h)
Byte	00F0h	16d		Mgmt Sys	All	Service Processor Name within Component • Administrator determined value written by management system upon first occurrence of initialization. ASCII left justified, pad with ASCII blanks Default to ASCII(20h)
Byte	0100h	7		Mgmt Sys	All	• Reserved set to 00h
Byte	0107h	1		Mgmt Sys		History log entry pointer - Points to most recent entry in history log • Written by MM upon completion of log entry (Pointer + 1 = next entry)
Byte	0108h	416d		Mgmt Sys		History log - Circular buffer containing most recent 16 entries. Ch_UUIDSlot, Date, Time, Inform and Config Code. • History log written by the MM on insertion event (16 entry circular log) • Entry format (26d bytes per entry) • Ch_UUID - 16 bytes, hex - Refer to WfM 2.0 Specification, Attachment A for details regarding generation of Chassis UUID • Slot ID - 1 byte, hex • Date/Time - 7 bytes, hex (Year/Month/Day of Month/Day of Week, Hour, Minute, Sec • Inform - 1 byte o Inform(7:4) = 0000b o Inform(3:0) – Set to 0000b for Enterprise Chassis(Type 1) and 0001b for Telco Chassis(Type 2) Chassis Type-Sub Code - 1 byte • 01h = no error. This field represents an indication of errors detected as the MM configured the component – Legacy value deprecated in V1.06 of VPD • Beginning with V1.06, this field will contain the Type Sub-Code associated with chassis types. • A value of 00h, 01h or 20h may be set into this field for BS1 Enterprise and Telco chassis. • If the Chassis Type Sub-Code is not recognized then the default must be BCE chassis for both Enterprise and Telco chassis.
Byte	02A8h	8d	00h	Mfg	All	Reserved. Set to zeros
Byte	02B0h	8d		Mgmt Sys	Switch Modules	MM Capabilities() -– Functions or behaviors supported by the MM. Bit 0 – reserved set to 0 Bit 1 - MM Stacking Support (See PRM and STM architecture document o 0b indicates that the MM does not support STM o 1b indicates that the MM supports STM Bits 2:15 reserved set to 0 MM Capabilities for SM Protect mode (See Base Spec for Switch Modules - PRM and STM architecture): Bit 16 – informs SM if MM is capable of supporting MM_PM_Permission (0). Bit 19 – informs SM if MM is capable of supporting MM_PM_Permission (3). Bit 20 – informs SM if MM is capable of supporting MM_PM_Permission (4). Bit 22 – informs SM if MM is capable of supporting MM_PM_Permission (6). Bit 26 – informs SM if MM is capable of supporting MM_PM_Permission (10). Bits (32:64) - A bit set to 1b by the MM indicates to the Component that the MM has the capability to support a given function. Conversely, a bit set to 0b indicates that the MM does not support the given function defined by that bit position(s). (32-39) = CR(0:7) supported (see block 1, bits 120:127 at offset 02A0h) (40-47) = ECR(0:7) supported (see block 1, bits 128:135 at offset 02A0h) (48-55) = SR(0-7) supported (see block 1, bits 136:143 at offset 02A0h)

Format	Offset	Byte Length	Value	Written by	Component Usage	Description
						(56-63) = ESR bits 0-7 supported (see block 1, bits 144:151 at offset 02A0h) All other bits reserved and set to 0b
Byte	02B8h	4d	00h	Mfg		Reserved, initialized to 00h
Byte	02BCh	2d	00h	Mfg	SM	MM_PRM_Permission() Bit 0 - informs SM of the current chassis policy which allows the MM to control powering off the SM. Bit 3 - informs the SM of the current chassis policy which allows the MM to control configuration over the SM's external ports and internal blade ports. Bit 4 - informs the SM of the current chassis policy which allows the MM to control SM external port enablement. Bit 6 - informs the SM of the current chassis policy which allows the MM to control reset to factory default. Bit 10 - informs the SM of the current chassis policy which allows the MM to control IP Acquisition. Note: Only valid beginning with V1.07 and beyond of VPD All other bits reserved
Byte	02CEh	306d	00h	MFG		Reserved, initialized to 00h

- Unused bytes between end of Block ID 1 and beginning of Block ID 2 set to 00h
- This Block is set by the MM and read by the Component
- Written By

a. Mfg – Values specified prior to MM access of VPD
Subsystem – The component is responsible for setting this field with the correct value. This value is set before MM access of VPD.s
Mgmt System – Entity external to the component that accesses VPD. Typically, this is the MM.

6 Blocks 3 - 7

6.1 Block 3 - Dynamic Block System Management Area 2

Table 6-1 Dynamic Block System Management Area 2

Format	Offset	Byte Length	Fixed Value	Written By	Component Usage	Description
Word	0000h	2	0000h	Mfg	All	Reserved, set to 00h
Word	0002h	2	03FEh	Mfg		Length of valid Block 3 VPD data -2
Byte	0004h	1	03h	Mfg		Block ID = 3
Byte	0005h	1	00h	Mfg		Flag (Reserved set to 00h)
Byte	0006h	250d	00h	Mfg		Reserved and set to 00h
Byte	0100h	160d		Mgmt Sys	Switch Module	Chassis Information TLV Block – Contains specific chassis information written by the MM when the SM is inserted into a chassis. (See Chassis Information TLV Block).
Byte	01A0h	608d	00	Mfg	All	Reserved and set to 00h

6.2 Chassis Information TLV Block

This section provides the VPD EEPROM structure and field format definitions for the "Chassis Information" and is targeted for switch modules. The intent of this section is to add more detail for the SM to determine the attributes of the chassis and to replace the 'history log'. This block shall be supported at VPD version/level greater than or equal to 1.09 (0106h) and the history log will be deprecated. Beginning with At VPD version/levels greater than or equal to 1.09 the SM must not require the chassis information in the history log

Note: As with most TLV implementations the SM shall not assume a fixed offset for a given TLV entry.

There are cases that the firmware and associated capabilities on the MM and the SM will not be at the same level of support. Additionally situations can occur when the firmware is updated after a feature has been enabled and can have residual affects due to the update to some other versions of the firmware. The updated version of the firmware may not include mechanisms to clean-up fields that by definition cannot be managed when firmware is updated. Below is the condition(s) that may occur when both the MM and SM are not at a firmware level that supports of TLV support.

Table 6-2 Firmware Level Incompatibilities

MM Firmware	SM Firmware	SM Behavior
No TLV Support	No TLV Support	TLV is not supported and must use the history log
No TLV Support	TLV Supported and TLV block has not been written (contains either 00h or 20h)	SM supports TLV but must use the history log.[2]
No TLV support	TLV supported and TLV block has previously been written	Two cases: (1) If TLV of chassis type/subtype , UUID, slot number does not match the chassis information in the history log then SM should ignore the data in the TLV block and only use the history log information.[2] (2) If the TLV of chassis type/subtype , UUID, slot number matches the chassis information in the history log then in this case the SM may not assume all the TLV data represents valid information.[1] This situation could happen for:

		• MM firmware in this chassis has been updated from a version that supported TLV to a version that did not support TLV. Then chassis type/subtype ,UUID, slot number would match the chassis information in the history log. • MM firmware supports TLV in chassis A, The SM is then moved from chassis A to chassis B in which the AMM does not support TLV. The MM firmware in chassis A has been updated to not support TLV and the SM is moved back to chassis A in the same slot. It is possible that certain fields of the TLV are not correct anymore.
TLV supported	TLV not supported	SM uses the history log.
TLV supported	TLV supported	TLV is valid based on current chassis configuration and SM may use the TLV information.
Notes: (1): For complete coverage of blade and SM interoperability the interop guides and SM's user guides should state the minimum level of MM firmware supported in order for the SM to make use of the TLV information for correct behavior. (2)SM's that use this information for link speed determination will be responsible to inform users of available speeds. The SM must signal via alerts/logs so the network administrator is aware of this condition.		

Table 6-3 Chassis Information TLV Assignments and Structure

Type[A] (1 byte)	**Len (1 byte)**	**Value (variable)**
Midplane Bay Number (01h)	01h	Component's Chassis Bay Number. Notes: • If an IOM inserted into a Multi-Switch Interface Module (MSIM) this is the chassis midplane slot number of the MSIM interposer that connects to the chassis midplane. • For example this value in a BCH chassis would range from 01h to 0Ah (Bays 1-10). • To determine the MSIM slot see MSIM Physical Slot Number (TLV type 02h).
MSIM Slot Number (02h)	01h	MSIM's LSSM Slot Number. Notes: • If an IOM is inserted into a MISM then this is the LSSM slot connector on the MSIM. • Example: For a MSIM that is identified by TypeCode=32h and TypeSubCode=10h then the MSIM Slot Number value will be 03h when MSIM is located in HSSM bay 7 or 9. • Example: For a MSIM that is identified by TypeCode=32h and TypeSubCode=10h then the MSIM Slot Number value will be 04h when MSIM is located in HSSM bay 8 or 10) • This TLV is only written for an IOM installed in a MSIM.
Chassis/MM Type Codes (03h)	04h	Chassis Type Code/Subtype-Code and MM type/subtype 1. Byte 1: Chassis Type Code 2. Byte 2: Chassis Type SubType-Code 3. Byte 3 : MM Type Code 4. Byte 4 : MM Type SubType-Code Note: See Type and SubType Code Table
UUID (04h)	16 (10h)	Chassis UUID See Block 0 @ 009Fh for reference on UUID
MTM (05h)	7-29[A1][B]	Chassis Machine Type Model. See Block 0 @ 000Eh for reference on MTM. ASCII data with no null termination.

<table>
<tr><th>Type[A]
(1 byte)</th><th>Len
(1 byte)</th><th>Value
(variable)</th></tr>
<tr><td>MSN
(06h)</td><td>7[A2]-29[B]</td><td>Chassis Machine Serial Number. This data is obtained from the Chassis Midplane VPD. ASCII data with no null termination.</td></tr>
<tr><td>Lane Information
(07h)</td><td>04h</td><td>Internal Midplane Data Ports and Intra-IOM Ports. Binary Data. Intended for IO Module components
Byte 1: Hex Number of Total x1 Lane(s) on Midplane connector(s)
Byte 2: Hex Number of Number of Intra-IOM x1 lanes BM=Bridge Module
Byte 3: Hex Number of Total x4 Lane(s) on Midplane connector(s) HSSM=High-speed SM
Byte 4: Hex Number of Number of Intra-IOM x4 lanes LSSM=Low-speed SM
<table>
<tr><th>Byte / Chassis</th><th>Byte 1
x1 Lanes on Midplane conn</th><th>Byte 2
Intra-IOM x1 lanes</th><th>Byte 3
x4 Lanes on midplane conn</th><th>Byte 4
Intra-IOM x4 lanes</th></tr>
<tr><td>BCE LSSM</td><td>14</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>BCT LSSM</td><td>8</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>BCH LSSM</td><td>14</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>BCH HSSM</td><td>0</td><td>0</td><td>16</td><td>2 (BM)</td></tr>
<tr><td>BCH BM</td><td>0</td><td>0</td><td>2</td><td>2 (HSSM)</td></tr>
<tr><td>BCHT LSSM</td><td>14</td><td>2 if ISL interposer is installed in this bay

0 if non-ISL interposer is installed in this bay</td><td>0</td><td>0</td></tr>
<tr><td>BCHT HSSM</td><td>0</td><td>0</td><td>16</td><td>4 (2-HSSMs/2-BMs) if ISL interposer is installed in this bay

2 (BM) if non-ISL interposer is installed in this bay</td></tr>
<tr><td>BCHT BM</td><td>0</td><td>0</td><td>2</td><td>2 (HSSM)</td></tr>
<tr><td>BCS LSSM 1</td><td>14</td><td>2 (LSSM3/4)</td><td>0</td><td>0</td></tr>
<tr><td>BCS LSSM 2</td><td>14</td><td>2 (LSSM3/4)</td><td>0</td><td>0</td></tr>
<tr><td>BCS LSSM 3</td><td>8</td><td>2 (LSSM1/2)</td><td>0</td><td>0</td></tr>
<tr><td>BCS LSSM 4</td><td>8</td><td>2 (LSSM1/2)</td><td>0</td><td>0</td></tr>
</table>
IOMs in ( ) represent the Intra-IOM lanes wired to in the various chassis. The information in ( ) is not provided in the TLV data.</td></tr>
<tr><td>FEh
Block Continuation</td><td>02h</td><td>Offset pointer value in the VPD EEPROM that is a continuation of this Chassis Information TLV block.
Note: This TLV will be used in the case of future if space limitations in the main Chassis Information TLV block occurs.</td></tr>
<tr><td>08h – FDh, FFh</td><td>02h</td><td>Reserved for future use</td></tr>
</table>

Lane information is customized for the various IOM bay(s). In addition for dual use bays LSSM and BM the lane counts are customized based on installed module type.

(A) – 00h and 20h are reserved type codes and cannot be used. A SM will determine if the block is valid by reading a value other than 00h or 20h. When writing a new Chassis Information TLV Block the MM is required to set the entire Chassis Information TLV Block to 00h before writing the block in order for the component to interpret TLV's correctly.

(B) – Normally these fields are 7 bytes in length. When the chassis is configured as an OEM chassis then this information will contain the OEM 'Content' field from the chassis midplane VPD. When this is the case the data length (N) may be as large as 29 bytes (no null terminator included). This field will not contain the OEM 'Label' field.

6.3 Blocks 4 – 7 (Reserved)

Table 6-4 Reserved Block

Format	Offset	Byte Length	Fixed Value	Written By	Component Usage	Description
Word	0000h	2	0000h	Mfg	Blades	Reserved, set to 00h
Word	0002h	2	03FEh	Mfg		Length of valid Block 4 VPD data -2
Byte	0004h	1	04h	Mfg		Block ID = 4
Byte	0005h	1	00h	Mfg		Flag (Reserved set to 00h)
Byte	0006h	1018d	00h	Mfg		Reserved and set to 00h

Table 6-5 Reserved Block

Format	Offset	Byte Length	Fixed Value	Written By	Component Usage	Description
Word	0000h	2	0000h	Mfg	Blades	Reserved, set to 00h
Word	0002h	2	03FEh	Mfg		Length of valid Block 5 VPD data -2
Byte	0004h	1	05h	Mfg		Block ID = 5
Byte	0005h	1	00h	Mfg		Flag (Reserved set to 00h)
Byte	0006h	1018d	00h	Mfg		Reserved and set to 00h

Table 6-6 Reserved Block

Format	Offset	Byte Length	Fixed Value	Written By	Component Usage	Description
Word	0000h	2	0000h	Mfg	Blades	Reserved, set to 00h
Word	0002h	2	03FEh	Mfg		Length of valid Block 6 VPD data -2
Byte	0004h	1	06h	Mfg		Block ID = 6
Byte	0005h	1	00h	Mfg		Flag (Reserved set to 00h)
Byte	0006h	1018d	00h	Mfg		Reserved and set to 00h

Table 6-7 Reserved Block

Format	Offset	Byte Length	Fixed Value	Written By	Component Usage	Description
Word	0000h	2	0000h	Mfg	Blades	Reserved, set to 00h
Word	0002h	2	03FEh	Mfg		Length of valid Block 7 VPD data -2
Byte	0004h	1	07h	Mfg		Block ID = 7
Byte	0005h	1	00h	Mfg		Flag (Reserved set to 00h)
Byte	0006h	1018d	00h	Mfg		Reserved and set to 00h

7 OEM VPD

The intent of the OEM VPD block is to provide a mechanism for BladeServer vendors (Intel and OEMs) to customize Manufacturing data and provide the ability to describe components using names and values that are different than those used in IBM products.

An OEM VPD block will be added to the existing VPD definition (see Figure 7-1). This additional block will be located within Block 0 of the current VPD structure at offset 280h. The POS ID extension field will be used to indicate the presence of valid data in the OEM VPD fields and must be set to FFEEh, which indicates the component is an Intel or OEM product. The OEM VPD block is only written by a manufacturing or maintenance process.

The OEM VPD block will contain valid data when POS ID extension=FFEEh and may be accessed by Systems Management software. The OEM VPD Base Block contains ASCII data in the label and content fields which may be displayed by Systems Management software (screens, logs etc.) corresponding to the appropriate type codes.

IBM/Intel shall agree to the definition of each valid Type code field. To prevent namespace collisions, a unique Company name is placed into the OEM VPD Base block..

When POS ID extension does not equal FFEEh, the OEM VPD block is considered invalid.

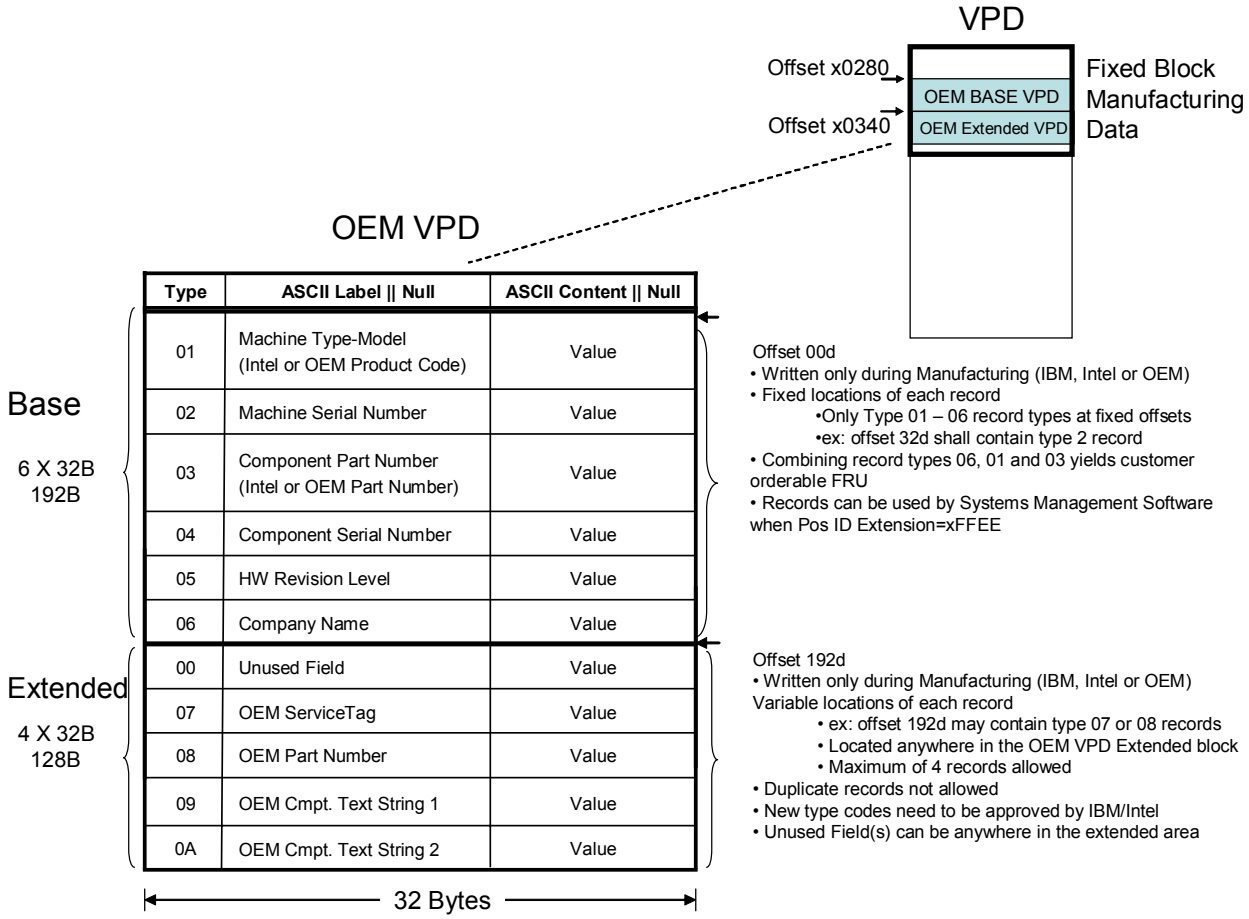

Figure 7-1. OEM VPD Layout

Figure 7-1 shows that the OEM VPD block is located in the Fixed Block Manufacturing data area of VPD. The OEM VPD contains 2 sections, Base and Extended. Both sections contain specific Type fields as described below.

Type Code Layout

Each record in the OEM VPD block must use the following format.

Table 7-1. Type Field Layout

Type 1B	Label 0 to 29B	Null x00	Content 0 to 29B	Null x00
<----------32B ---------->				

- The Label and Content fields are variable length ASCII fields terminated by a null byte.
- Label plus content are not to exceed 29 bytes not including terminator bytes.
- ASCII fields are left justified; unused bytes in the field are filled with ASCII blanks.
- The Base Type code byte will be used to equate the field to the corresponding field in VPD block 0.
- Systems Management behavior reading fields which are formatted incorrectly is undefined (for example, a record that does not contain at least 2 null bytes or an undefined type byte).

OEM Base Block

Type codes 01 to 06, as defined above, will be used to identify how a particular field will be handled and will correspond to existing VPD fields currently being used in BladeServer. All fields defined in the OEM VPD Base block shall be substituted for the corresponding fields in Block 0 by management software when the POS ID extension= FFEEh. All other fields contained in Block 0 must be populated, including, but not limited to, physical characteristics, manufactured date code, MAC addresses, UUID, type code, etc.

Type codes 01 to 06 are located at fixed offsets in the OEM Base Block. Type 01 shall be located at offset 00d, Type 02 shall be located at offset 32d and so on. Table 7-2 contains the definitions of Type fields 01 to 06. All fields in the OEM Base block shall be populated with valid data that complies with the field format and is unique to the particular component (i.e. blade, power supply etc).

Table 7-2. Base Type Code Definitions

Type (hex)	Offset	Definition
01h	00d	Machine Type/Model Number Systems Management code shall substitute Type 01 label and content fields instead of the corresponding fields (Machine Type/Model) in the Fixed Block Manufacturing Data of VPD. This field is also called Product code or OEM product identifier by OEMs.
02h	32d	Machine Serial Number. Systems Management code may substitute Type 02 label and content fields instead of the corresponding fields (Machine Serial #) in the Fixed Block Manufacturing Data of VPD.
03h	64d	Component Part Number Systems Management code shall substitute Type 03 label and content fields instead of the corresponding fields (Part Number) in the Fixed Block Manufacturing Data of VPD
04h	96d	Component Serial Number Systems Management code may substitute Type 04 label and content fields instead of the corresponding fields ((Serial # and Prefix Serial Number))in the Fixed Block Manufacturing Data of VPD
05h	128d	Hardware Revision Level Systems Management code may substitute Type 05 label and content fields instead of the

		corresponding fields (Hardware revision Level)in the Fixed Block Manufacturing Data of VPD
06h	160d	Company Name Systems Management code may substitute Type 06 label and content fields instead of the corresponding fields (System Manufacturer ID) in the Fixed Block Manufacturing Data of VPD The value set in the content field shall be unique and set to the company's trademark name such as "IBM", "Intel" or the company name of an OEM..
0Bh-FFh		Reserved

Combining record types 06, 01 and 03 shall represent a FRU that can be orderable by a customer.

ASCII data contained in the label and content fields for types 01to 06 will be used by Systems Management software (IBM and OEM) for screens, logs etc..

OEM Extended Block
The OEM Extended block contains field types 00, 07 and 08 which are located anywhere in the OEM VPD Extended block and valid only when POS ID extension= FFEEh. Table 7-3 shows all possible Type codes allowed in this block. The size of this block is fixed at 128B. Each Type code shall be used only once, but can be place in OEM VPD in any order (07h, 08h, 09h, 0Ah and 00h).

ASCII data contained in the label and content fields for Extended Type Codes are opaque to Systems Management software fields (screens, logs etc.).

Table 7-3. Extended Type Codes

Type	Offset	Definition
00h	00d, 32d, 64d, 96d	Field is unused. Label and Content field contain ASCII blanks followed by a Null
07h		Service ID Tag. – a type code which allows Intel or OEMs to customize Asset ID to fit the needs of Intel or OEM tracking system. Usage of this field: AssetID (in Block 0) can be written by IT Administrators. ServiceID is fixed in factory.
08h		OEM P/N – a P/N field which allows Intel or OEM to customize their own P/N to fit the needs of Intel or OEM tracking system.
09h[1]		OEM Component Text String Description 1 – a text string that allows OEM's to customize the 'Product Name Text Description' for display purposes on various management user interfaces.
0Ah[1]		OEM Component Text String Description 2 – a text string that allows OEM's to customize the 'Product Name Text Description' for display purposes on various management user interfaces.
Note 1: The OEM should only set a type of 09h within this block as long as the contents field can completely be contained in the type 09h content field. The type 0Ah is provided to allow for a case when the complete text string cannot be contained in just the type 09h. If this is the case then this block would contain both type 09h and 0Ah. If system management software determines that the OEM extended block contains both 09h and 0Ah then the content fields of these types will be concatenated into one string and the label field if provided from type 09h will be used.		