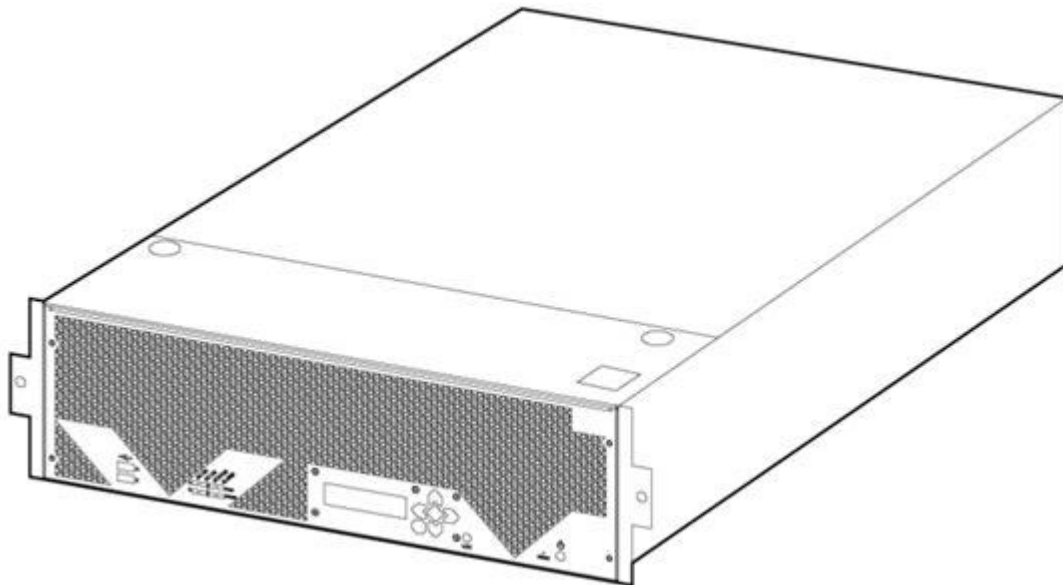


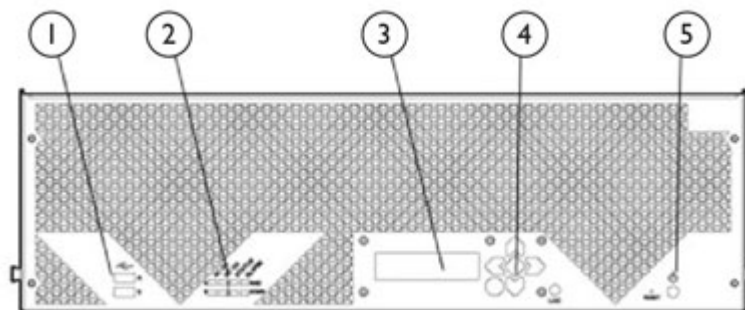
Overview

Hewlett Packard's VMA-series Memory Arrays are external systems offering high capacities of solid state storage, using hot-swappable flash memory devices. The VMA-series Memory Arrays feature rackable external solid state storage in capacities ranging from 5TB to 10TB per Single-level Cell (SLC) array. Multiple arrays can create scalable capacities up to petabytes of solid state storage.

The arrays are designed for customers who need low-latency response times, very high I/O performance, and large capacity. Solid state memory technology provides these storage products with no-moving-parts reliability and low power and cooling requirements. These arrays offer a choice of PCIe-direct attach or Fibre Channel SAN attach. PCIe-direct attach with rackmount servers offers lowest latency speeds for single-server applications. Fibre Channel SAN attach with either blade or rackmount servers allows multiple servers to operate on the same shared data, with practically unlimited amounts of solid state storage.



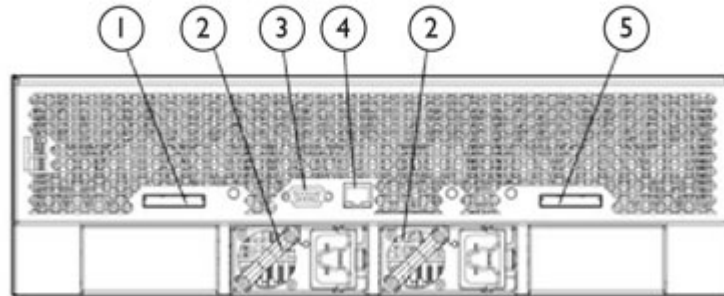
HP VMA3205/VMA3210 SLC Memory Array



HP VMA3205/VMA3210 SLC Memory Array - Front View

- | | |
|---------------------------|---|
| 1. Management ports | 4. Navigation (reserved for future use) |
| 2. System Status LEDs | 5. Power LED and power on/off |
| 3. Front panel status LCD | |

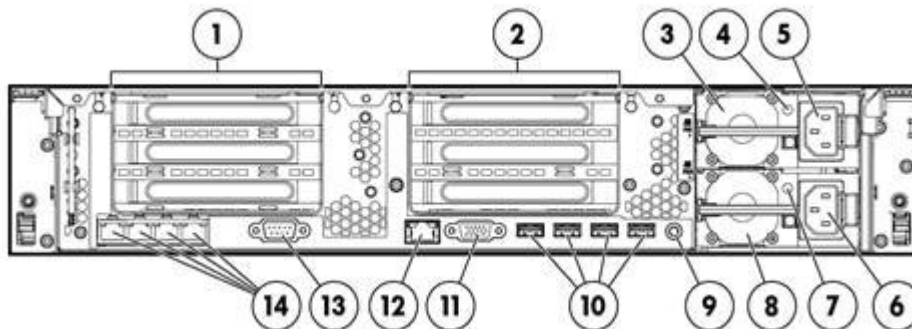
Overview



HP VMA3205/VMA3210 SLC Memory Array - Rear View

- | | |
|------------------------|------------------------|
| 1. Primary PCIe port | 4. Management LAN port |
| 2. Power Supplies | 5. Secondary PCIe port |
| 3. Serial connect port | |

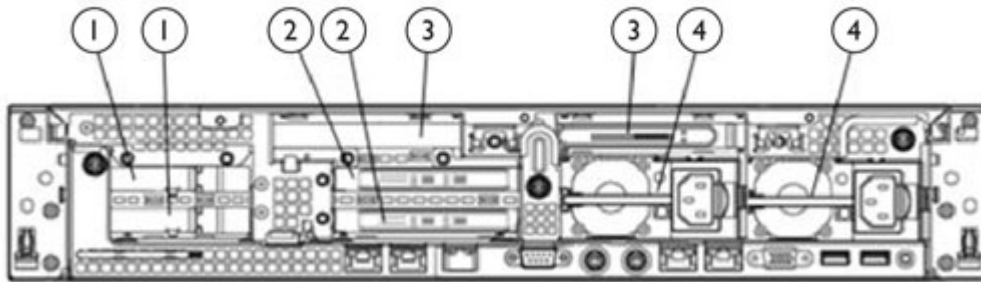
The optional Fibre Channel **VMA SAN Gateway** can be used to connect VMA-series Memory Arrays to a Fibre Channel SAN. The SAN Gateway is a 2U rackable appliance that comes standard with two dual-ported 8Gb Fibre Channel connections, redundant power supplies and fans, and VMA controller and management software. One PCIe pass-thru card is required for each Array that will be attached to the SAN Gateway. A maximum of two Arrays may be attached to one Gateway. No other hardware or software can be installed on the SAN Gateway.



HP VMA Gen8 SAN Gateway (A0R65A)

- | | |
|---|--|
| 1. PCIe 3.0 Slots 1, 2, 3-PCIe 2.0 top to bottom | 8. Power supply 2 |
| 2. PCIe 3.0 Slots 4-6 top to bottom | 9. Unit ID LED/Button |
| 3. Power supply 1 | 10. USB connectors (4) |
| 4. Power supply 1 Power LED | 11. Video connector |
| 5. Power supply 1 Power connection (with Intelligent PDU communication) | 12. iLO connector |
| 6. Power supply 2 Power connection (with Intelligent PDU communication) | 13. Serial connector |
| 7. Power supply 2 Power LED | 14. FlexibleLOM ports (Shown: 4 ports 1Gb each /Optional: 2 ports 10Gb each) |

Overview



HP VMA SAN Gateway (AM465A)

- 1. 8Gb FC HBA card expansion (optional)
- 2. 8Gb FC HBA cards (standard)
- 3. I/O slots for PCIe Pass-thru Cards (must be ordered separately)
- 4. Power Supplies

What's New

- Support with Windows Server 2012
 - o PCIe direct connect and
 - o VMA SAN Gateway for shared access and clustering

Benefits

The VMA-series Memory Array (VMA) is a 3U appliance that provides solid state storage to servers. The VMA-series Memory Array eliminates the seek-bound limitations of rotating disk storage and delivers significant application performance benefits over traditional storage systems that utilize hundreds of hard disk drives (HDDs). VMA-series Memory Arrays have practically unlimited scalability - the very large capacities that can be created with VMA-series arrays enable users to place entire databases into solid state memory without needing to architect their solution around limited capacity solid state drives.

Using a massively parallel architecture with distributed garbage collection implemented in hardware, each VMA-series Memory Array with Single Level Cell (SLC) NAND Flash delivers sustained DRAM-like performance that is an order of magnitude faster than a similar size HDD array:

- 1.4 GB/s bandwidth
- 350K Random Read IOPS
- Up to 240K Sustained Random Write IOPS (4K block with RAID)
- Up to 10TB raw capacity and an average of 8TB usable flash storage
- Low latency Flash 4 + 1 parity RAID
 - o Reads: 80 micro seconds
 - o Writes: 25 micro seconds
 - o Non-blocking Erases ensures consistent low-latency Reads
- Significant application acceleration
- 90% reduction in cost, power, and cooling for similar performance
- Power-safe writes without batteries

Each VMA-series Memory Array has 84 sockets for hot-swappable VMA-series Memory Array (VMA) memory modules based on Single-Level Cell (SLC) flash memory devices. The VMA3205 model comes loaded with 42 memory modules loaded and can be expanded to double the capacity. The VMA3210 model comes with all 84 sockets loaded. Built-in switched memory technology and flash RAID

Overview

provide the system with its industry-leading scalability, data reliability and efficiency:

- Hardware-based 4+1 parity RAID with 4 spares (VMA3210) or 2 spares (VMA3205)
- Consistent "spike-free latency" system performance
- Hot swappable VMA memory modules
- Power efficiency as low as 50W per useable Terabyte
- Distributed wear enhances lifetime and minimizes erase cycles
- Endurance: Up to 8TB writes per hour for 5 Years

Storage array manageability and health monitoring is built into the system

- Supports from 1 to 1024 LUNs
 - Integrated management processor with detailed Flash statistics, logging, and alarm functions
 - Multiple user interfaces: web-based GUI, Telnet, SSH, and Command Line Interface
 - Console port (DB-9 DTE port) and 10/1000 Ethernet Management Port
 - Internal status LEDs on each memory board
 - System log file with alarm/event logging
 - SNMP management alerts
-

Key Features

The **HP VMA3200 series arrays** are populated with up to 84 x 128GB solid state memory modules based on SLC flash memory devices. The VMA3200 utilizes switched memory technology and integrated Flash RAID.

- Density: up to 10.5TB SLC Flash in a 3U rack mountable chassis
- Useable Capacity: 8TB when used in RAID mode
- Hot swappable memory modules with 4+1 parity RAID and up to 4 spares
- RAID striping across memory modules and RAID groups - each group can tolerate a single memory module failure with no loss of data
- 1 - 1024 Logical Unit Numbers (LUNs)
- System power: less than 120W per Useable Terabyte
- Endurance: up to 8TB writes per hour for 5 Years without need for memory module replacement

Redundant power supplies and cooling are provided in all VMA-series Memory Array systems and VMA SAN Gateways.

Each VMA-series Memory Array has two rear-mounted PCIe connection ports and ships with one PCIe connection cable which is used to connect the VMA's primary PCIe port to a **PCIe pass-thru card** installed either in an external rackmount server (for PCIe direct attach to one server) or in a SAN Gateway (for SAN attach to multiple blade or rackmount servers). PCIe pass-thru cards must be ordered separately. The VMA's secondary PCIe port is used for redundant gateway configurations.

The optional Fibre Channel **VMA SAN Gateway** can be used to connect VMA-series Memory Arrays to a Fibre Channel SAN. The SAN Gateway is a 2U rackable appliance that comes standard with two dual-ported 8Gb Fibre Channel connections, redundant power supplies and fans, and VMA controller and management software. One PCIe pass-thru card is required for each Array that will be attached to the SAN Gateway. A maximum of two Arrays may be attached to one Gateway. No other hardware or software can be installed on the SAN Gateway.

Redundant VMA SAN Gateway Configurations

For high-availability (HA) environments, HP VMA-series Memory Arrays can be configured with redundant VMA SAN Gateways. The redundant configurations use the existing VMA products and product numbers. Current VMA customers can field upgrade their VMA configurations to HA or new VMA equipment can be purchased and configured for HA. Clustering is supported with redundant VMA SAN

Overview

Gateway configurations using HP Serviceguard for HP-UX, Oracle RAC or Microsoft Clustering (Windows Server 2008 and Windows Server 2012). In order to support the redundant configuration, the following minimum firmware/software requirements must be met.

1. HP VMA SAN Gateway (AM465A or A0R65A): A0R65A requires Gateway (vShare) software G5.5.1 or later; AM465A requires Gateway (vSHARE) software G5.1.0 or later.
2. HP VMA-series Memory Arrays (AM456A & AM457A): Require Array firmware A5.1.3 or later. The latest firmware must be downloaded and upgraded at the customer's site as the VMA-series Memory Arrays may not ship with latest firmware.

To download the latest software and firmware, go to, www.hp.com and select "Support and Drivers" and then "Drivers & Software". Enter the VMA product number or description in the resulting search field.

Models

HP VMA-series Memory Arrays	<p>VMA-series Memory Arrays (VMA)</p> <p>HP VMA3205 5TB SLC Memory Array AM456A</p> <p>HP VMA3210 10TB SLC Memory Array AM457A</p> <p>NOTE: One PCIe cable (AM463A) is included with each VMA memory array</p> <p>VMA Solid State Memory Modules</p> <p>HP VMA 128GB Single-Level Cell (SLC) Solid State Memory (SSM) Module AM459A</p> <p>HP VMA 42 x 128GB Single-Level Cell (SLC) Solid State Memory Module Kit AM460A</p> <p>NOTE: this kit can be used to upgrade a VMA3205 from 5TB to 10TB</p> <p>VMA Fibre Channel connectivity</p> <p>HP VMA Gen8 SAN Gateway AOR65A</p> <p>NOTE: The HP VMA Gen8 SAN Gateway is a preconfigured appliance based on the HP DL380 Gen8 server populated with processors, memory, DVD, SAS HDDs, VMA controller and management software, and 2x 8Gb dual-port Fibre Channel cards.</p> <p>NOTE: The only configuration options for the VMA SAN Gateway are the addition of up to two PCIe Pass-Thru cards (AM464A) and up to two additional 8Gb dual-port Fibre Channel cards (AJ764A)-a total of four 8Gb dual-port Fibre Channel cards may be installed as two are preconfigured.</p> <p>NOTE: No additional software or hardware may be installed on the HP VMA SAN Gateway.</p> <p>HP VMA SAN Gateway AM465A</p> <p>NOTE: The HP VMA SAN Gateway is a preconfigured appliance based on the HP DL380 G7 server populated with processors, memory, DVD, SAS HDDs, VMA controller and management software, and 2x 8Gb dual-port Fibre Channel cards.</p> <p>NOTE: The only configuration options for the VMA SAN Gateway are the addition of up to two PCIe Pass-Thru cards (AM464A) and up to two additional 8Gb dual-port Fibre Channel cards (AJ764A)-a total of four 8Gb dual-port Fibre Channel cards may be installed as two are preconfigured.</p> <p>NOTE: No additional software or hardware may be installed on the HP VMA SAN Gateway.</p> <p>VMA Accessories</p> <p>HP VMA 3m PCIe Cable AM463A</p> <p>HP VMA PCIe x8 Pass Thru Card AM464A</p> <p>NOTE: One PCIe Pass Thru Card is required with each Memory Array and is used to connect the Array to external servers. The card can be installed in either the target server (for the PCIe-direct attach method) or into the VMA SAN Gateway (for the SAN attach method). Use two (2) pass thru cards and two PCIe cables per array for redundant gateway configurations.</p> <p>HP VMA Power Supply AM467A</p> <p>HP VMA Fan Assembly AM468A</p>
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Family Information

Product Technology

NAND memory	Single level Cell (SLC). SLC stores one bit per cell and has higher endurance characteristics than Multilevel Cell (MLC) technology.
PCIe direct attach	PCIe Gen 1 x8 interface (memory array)
SAN Gateway accessory	2U rackable appliance with factory-installed VMA controller and management software. Standard features: <ul style="list-style-type: none">• Four 8 Gb Fibre Channel ports (two dual-port FC HBA)• Supports up to two VMA-series Memory Arrays, any model• Redundant power supplies and cooling, standard• Requires one PCIe Pass-thru card for each VMA-series Memory Array attached to the gateway, maximum of two, may be factory integrated Options: <ul style="list-style-type: none">• Additional 8 Gb FC HBA cards, up to two. May be factory integrated.
Block Mode	512B recommended
RAID	4+1 parity RAID over multiple memory modules, pre-defined, no user options. Memory module sparing
Reliability	24 bit error correction per 4K block (ECC) Additional 128 bit integrity check over 4K block
Performance	PCIe direct-attach or 8Gb Fibre Channel SAN attach: Up to 350K IOPS Read (4K block) Up to 250K IOPS Write (4K block)
Latency	Less than 100 microseconds of latency in PCIe-direct attach operation 80 microsecond Reads 25 microsecond Writes Less than 200 microsecond of latency in SAN attach operation
Bandwidth	PCIe direct-attach or 8Gb Fibre Channel SAN attach: 1.4GB/s bandwidth
Wear-leveling	On-board processing for garbage collection (reclamation of locations with stale data) and wear-leveling (distributing re-writes and erasures evenly to minimize wear) without using the host's CPU cycles provides VMA systems with sustainable I/O performance over time.
Endurance	Up to 8TB writes per hour for 5 years (VMA3210) Up to 4TB writes per hour for 5 years (VMA3205)
On-line memory module replacement	Hot-swappable VMA memory modules. To ensure proper system cooling, the unit cover cannot be open for more than 2 minutes.
Server Compatibility	Supports these HP Integrity and HP ProLiant servers <ul style="list-style-type: none">• HP Integrity BL8x0c i2 and BL8x0c i4 blades and HP Superdome 2 running HP-UX 11iv3 update 9 (1109) or later support the VMA-series Memory Arrays via the Fibre Channel VMA SAN Gateway attach option.• HP ProLiant DL980 G7 and DL580 G7 servers, running Windows and Linux, support the PCIe-direct attach option. HP ProLiant DL980 G7, DL580 G7, and BL680 G7 servers, running Windows and Linux, support the Fibre Channel VMA SAN Gateway attach option. When using the PCIe-direct attach option, up to eight VMAs, of any model or configuration, may be directly attached to one DL980 G7

Family Information

- Target server OS Support:** server.
- PCIe Direct attach**
- Linux: D5.5.0.6**
- Windows 2008: D4.5.3**
- Windows 2012: D5.5.1.3**
- Target server OS Support:**
- Fibre Channel SAN attach with Gateway 5.5.1 & Array F/W A5.1.4****
- Microsoft Windows Server 2008 R2 (DL980 only) and R2 SP1
 - Microsoft Windows Server 2012 (DL980 only)
 - Red Hat Enterprise Linux (RHEL) 5.8 (DL980 only) and 6.2
 - SLES 11 SP2 (DL980 only)
 - Oracle Linux (UEK & RHCK) 5.7 (DL980 only) and 5.8 and 6.1
 - HP-UX 11i v3 update 10 (or later)
 - Microsoft Windows Server 2008 R2 SP1
 - Microsoft Windows Server 2012
 - Red Hat Enterprise Linux (RHEL) 5.8 and 6.2
 - SLES 11 SP2
 - Oracle Linux (UEK & RHCK) 5.7 and, 5.8

** When the VMA SAN Gateway is running Gateway 5.5.1 (G5.5.1) software, the VMA-series Memory Arrays must have Array 5.1.4 (A5.1.4) firmware. DL580 and BL680 require VMA Gen8 SAN Gateway.

- Target server OS Support:**
- Fibre Channel SAN attach with Gateway 5.1.0 & Array F/W A5.1.3 (No DL580/BL680 support)**
- HP-UX 11i v3 update 9 (or later)
 - Microsoft Windows Server 2008 R2 and R2 SP1
 - Red Hat Enterprise Linux (RHEL) 5.7 and 6.2
 - SLES 11 SP1
 - Oracle Linux (UEK & RHCK) 5.7

- Target server OS Support:**
- Fibre Channel SAN attach with Gateway 5.0.2 & Array F/W A3.7.3 (No DL580/BL680 support)**
- HP-UX 11i v3 update 9 (or later)
 - Microsoft Windows Server 2008 R2 and R2 SP1
 - Red Hat Enterprise Linux (RHEL) 5.7
 - SLES 11 SP1

Service and Support, HP Care Pack, and Warranty Information

Service and Support

HP Technology Services

HP Technology Services offers you consultants and support experts to solve your most complex infrastructure problems. We help keep your business running, boost availability and avoid downtime.

Protect your business beyond warranty with HP Care Pack Services

When you buy HP Options, it's also a good time to think about what level of service you may need. HP Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business need.

Recommended HP Care Pack Services for optimal satisfaction with your HP product

Recommended Services **HP Foundation Care 24x7 Service**

HP Foundation Care 24x7 connects you to HP 24 hours a day, seven days a week for assistance on resolving issues - hardware onsite response within four hours and software call back within two hours after opening your case. Three years' coverage recommended with HP Care Pack Service.

<http://www8.hp.com/us/en/services/services-detail.html?compURI=tcm:245-600116&pageTitle=Hardware-Support>

Supports HP VMA3205 SLC Memory Array (PN AM456A) HA104A3 #QVQ

Supports HP VMA3210 SLC Memory Array (PN AM457A) HA104A3 #QVR

Supports HP VMA 128GB SLC SSM Module (PN AM459A) HA104A3 #QVS

Supports HP VMA 42 x 128GB SLC SSM Module Kit (PN AM460A) HA104A3 #QVT

Supports HP VMA SAN Gateway (PN A0R65A or AM465A) HA104A3 #QVU

HP ProLiant Server and HP VMA-series Memory Arrays Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

http://www8.hp.com/us/en/services/services-detail.html?compURI=tcm:245-811828&jumpid=reg_r1002_usen

Install HP VMA SLC Memory Array HA113A1 #5S9

Related HP Care Pack Services to enhance your HP product experience

Related Services

HP Foundation Care Call To Repair Service

HP Foundation Care Call-To-Repair Service connects you to HP around the clock for assistance on resolving issues -this includes our commitment to repair hardware within six hours after opening your case and response to software questions within two hours. Three years' coverage recommended with HP Care Pack Service.

<http://www8.hp.com/us/en/services/services-detail.html?compURI=tcm:245-600116&pageTitle=Hardware-Support>

Supports HP VMA3205 SLC Memory Array (PN AM456A) HA105A3 #QVQ

Supports HP VMA3210 SLC Memory Array (PN AM457A) HA105A3 #QVR

Supports HP VMA 128GB SLC SSM Module (PN AM459A) HA105A3 #QVS

Supports HP VMA 42 x 128GB SLC SSM Module Kit (PN AM460A) HA105A3 #QVT

Supports HP VMA SAN Gateway (PN A0R65A or AM465A) HA105A3 #QVU

Warranty

3-year parts/3-year labor/3-year onsite. Three-year limited warranty, parts exchange Next Business day delivery

NOTE: Supplies and consumable parts are not supported and will not be provided as part of this service;

Service and Support, HP Care Pack, and Warranty Information

[standard warranty terms and conditions apply to supplies and consumable parts.](#)

The VMA has been designed with customer self-repairable parts to minimize repair time and provide greater flexibility in performing defective parts replacement.

Parts and materials

HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Supplies and consumable parts will not be provided as part of this service; standard warranty terms and conditions apply. Parts and components that have exceeded their maximum usage limitations as set forth in the technical product data sheet will not be provided, repaired or replaced as part of this service.

Defective Media Retention

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded their maximum usage limit as set forth in the technical data sheet are not eligible for the defective media retention service feature option.

Coverage

For ProLiant servers and storage systems, this service covers HP-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

Customer Technical Training

HP Education Services

In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, HP offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.

For more information

To learn more on services for HP ESSN Options, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: <http://www.hp.com/services/proliant> or www.hp.com/services/bladesystem

Configuration Information

Configure to Order Program Information

The VMA may be factory installed in a rack and configured for either PCI-direct attach to a ProLiant DL980 G7 server, or configured for connection to a VMA Fibre Channel SAN Gateway.

Description

Product

VMA-series Memory Array Chassis

HP VMA3205 5TB SLC Memory Array

AM456A#0D1

HP VMA3210 10TB SLC Memory Array

AM457A#0D1

VMA connectivity

HP VMA PCIe Pass Thru Card

AM464A#0D1

NOTE: one PCIe Pass Thru card is required with every VMA array. If selected for configure to order with a DL980 G7 server, the PCIe Pass Thru card will be factory installed into the DL980 G7 server. If selected for configure to order with a Fibre Channel Memory Gateway, the PCIe Pass Thru card will be factory installed into the Fibre Channel SAN Gateway.

Fibre Channel SAN Gateway

HP VMA Gen8 SAN Gateway

A0R65A#0D1

HP VMA SAN Gateway

AM465A#0D1

HP VMA Redundant Gateway Kit

A0R64A#0D1

NOTE: Includes: 1x AM464A - HP VMA PCIe Pass Thru Card and 1x AM463A - HP VMA 3M PCIe Cable (Installs in a second Gateway)

Customers should order A0R64A when configuring with redundant gateways

Technical Specifications

VMA-series Memory Array 3200	POWER REQUIREMENTS	
	Input Power Requirements	Rated Line Voltage: 200 to 240 VAC Rated Input Current: 5.1 A at 220 VAC Rated Input Frequency: 50 to 60 Hz Rated Input Power: 1060 W at 200 VAC
	Max BTU Rating	3700 BTU/hr
	TEMPERATURE AND HUMIDITY RANGES	
	Operating Temperature	41°F to 104°F (5°C to 35°C)
	Shipping Temperature	-40°F to 158°F (-40°C to 70°C)
	Operating Humidity	5% to 85% RH @ 104°F (40°C) non-condensing
	Non-Operating Humidity	Up to 93% RH @ 104°F (40°C)
	Operating Altitude	
		10,000 feet (3050m)
	SHOCK AND VIBRATION	
	Shock, Operational	10G's for 10 milliseconds
	Shock, Non-Operational	15G 11ms half sine
	Vibration, Operational	5-500Hz, 0.21Grms flat
	Vibration, Non-Operational	3-365-3Hz, 1.22 Grms,z-axis,0.85 Grms, X&Y axis shaped spectrum
	PHYSICAL	
	Height	5.25 in / 13.3 cm
	Depth (excluding cables)	28.4 in / 72.5 cm
	Width	17.5 in / 42 cm
	Chassis Weight (fully loaded)	75 lbs.

VMA SAN Gateway	POWER REQUIREMENTS	
	Input Power Requirements (per power supply)	Rated Line Voltage: 100 to 120 VAC, 200 to 240 VAC Rated Input Current: 5.5A (at 100 VAC), 2.6 A (at 200 VAC) Rated Input Frequency: 50 to 60 Hz Rated Input Power: 100 VAC 526 W at 100 VAC, 200 VAC 505 W at 200 VAC
	Max BTU Rating	1794 BTU/hr (at 100VAC), 1725 BTU/hr (at 200 VAC)
	TEMPERATURE AND HUMIDITY RANGES	
	Operating Temperature	50°F to 95°F (10°C to 35°C)
	Shipping Temperature	-22°F to 140°F (-30°C to 60°C)
	Operating Humidity	10% to 90% Rh @ 82.4°F (28°C) non-condensing
	Non-Operating Humidity	Up to 95% Rh @ 101.7°F (38.7°C)
	DECLARED ACOUSTIC NOISE LEVELS	
	Sound Power	A-weighted sound power LWAd=4.7 B
	Sound Pressure	A-weighted sound pressure LpAm = 28 dBA
	PHYSICAL	
	Height	3.38 in / 8.59 cm

Technical Specifications

Depth (excluding cables)	27.25 in / 69.22 cm
Width	17.54 in / 44.55 cm
Chassis Weight (fully loaded)	55 lbs. (24.94 kg)

VMA Gen8 SAN Gateway	POWER REQUIREMENTS	
	Input Power Requirements (per power supply)	Rated Line Voltage: 100 to 120 VAC, 200 to 240 VAC Rated Input Current: For 750 W Power Supply: 8.9 A (at 100 VAC), 4.3 A (at 200 VAC) Rated Input Frequency: 50 to 60 Hz Rated Input Power: For 750 W Power Supply: 857 W (at 100 VAC), 824 W (at 200 VAC)
	Max BTU Rating	For 750 W Power Supply: 2925 BTU/hr (at 100 VAC), 2812 BTU/hr (at 200 VAC)
	TEMPERATURE AND HUMIDITY RANGES	
	Operating Temperature	50°F to 95°F (10°C to 35°C)
	Shipping Temperature	-22°F to 140°F (-30°C to 60°C)
	Operating Humidity	10% to 90% Rh @ 82.4°F (28°C) non-condensing
	Non-Operating Humidity	Up to 95% Rh @ 101.7°F (38.7°C)
	DECLARED ACOUSTIC NOISE LEVELS	
	Sound Power	A-weighted sound power LWAd=4.1 B
	Sound Pressure	A-weighted sound pressure LpAm = 25 dBA
	PHYSICAL	
	Height	3.44 in / 8.73 cm
	Depth (excluding cables)	27.50 in / 69.85 cm
	Width	17.54 in / 44.55 cm
Chassis Weight (fully loaded)	61 lbs. (27.66 kg)	

Technical Specifications

VMA-series Software	OS with PCIe direct connect Linux: D5.5.0.6 Windows 2008: D4.5.3 Windows 2012: D5.5.1.3	HP ProLiant DL980 G7 running Windows Server 2008 R2 and R2 SP1, Windows Server 2012, RHEL 5.8 and 6.2; SLES 11 SP2; and Oracle Linux (UEK & RHCK) 5.7 and 5.8 and 6.1 HP ProLiant DL580 G7 running Windows Server 2008 R2 SP1, RHEL 6.2, and Oracle Linux (UEK & RHCK) 5.8
	OS with Fibre Channel SAN Gateway connect with Gateway 5.0.2	HP ProLiant DL980 G7 running Windows Server 2008 R2 and R2 SP1, RHEL 5.7, or SLES 11 SP1 Integrity Superdome 2 and Integrity BL8x0c i2 and BL8x0c i4 blades running HP-UX 11i v3 update 9 (1109) or later
	OS with Fibre Channel SAN Gateway connect with Gateway 5.1.0*	HP ProLiant DL980 G7 running Windows Server 2008 R2 and R2 SP1, RHEL 5.7 and 6.2, SLES 11 SP1 or Oracle Linux (UEK & RHCK) 5.7 Integrity Superdome 2 and Integrity BL8x0c i2 and BL8x0c i4 blades running HP-UX 11i v3 update 10 (1203) or later <i>* When the VMA SAN Gateway is running Gateway 5.1.0 (G5.1.0) software, the VMA-series Memory Arrays must have Array 5.1.3 (A5.1.3) firmware.</i>
	OS with Fibre Channel SAN Gateway connect with Gateway 5.5.1**	HP ProLiant DL980 G7, DL580 G7, and BL680 G7 running Windows Server 2008 R2 SP1, Windows Server 2012, RHEL 5.8 and 6.2, SLES 11 SP2 or Oracle Linux (UEK & RHCK) 5.7 and 5.8 Integrity Superdome 2 and Integrity BL8x0c i2 and BL8x0c i4 blades running HP-UX 11i v3 update 10 (1203) or later <i>** When the VMA SAN Gateway is running Gateway 5.5.1 (G5.5.1) software, the VMA-series Memory Arrays must have Array 5.1.4 (A5.1.4) firmware. DL580 and BL680 require VMA Gen8 SAN Gateway</i>

VMA-series Memory Array and SAN Gateway Regulatory Info	Safety	UL 60950-1 (USA)
		CAN/CSA-C22.2 No.60950-1-07 (Canada)
		EN 60950-1 (European Union)
		GS mark (Germany)
		IEC 60950-1 (International)
	Electromagnetic Compatibility	VCCI:2009-04 Class A (Japan)
		FCC Part 15 Class A (USA)
		ICES-003:2004 Class A (Canada)
		EN55022 : (European Union Class A); CISPR 22 (International Class A)
		EN61000-3-2 : (Harmonics) (European Union)
		EN61000-3-3 : (Flicker) (European Union)
		EN 55024 (European Union, Immunity, Class A); CISPR 24 (International Immunity, Class A)
		AS/NZS CISPR 22, Class A (Australia, New Zealand)
KN22 Class A (Emissions Class A); KN24 (Immunity) (S Korea)		
RoHS and WEEE	RoHS-6/6 Compliance, China RoHS, WEEE	
Country Approvals	United States, Australia/New Zealand, Canada, European Union, Germany (GS Mark), Japan, South Korea	

Technical Specifications

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