

Getting the best out of your HP e3000 when configuring storage arrays

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Past Questions





Presentation Goals

- Talk about what makes MPE/iX different from HP-UX (from the storage's viewpoint)
- Describe the environment where MPE/iX performs at its best
- Describe (HP e3000) HA disk storage portfolio and their relative performance against each other
- Walk through a configuration of a VA7110 with accompanied switches, CommandVIEW SDM for native FC or fabric router attached to an HP e3000
- Q & A



Agenda

- A little history (MPE vs HP-UX)
- MPE I/O Behavior (MPE embedded features)
- Performance perceptions
- Understanding the technology
- MPE Performance Environment
- Storage solutions
- Rule of Thumb
- VA7110 Setup
- Q & A



Mid 1980s HP Introduces RISC

- HP-UX is ported to the PA-RISC Architecture
- MPE is ported to the PA-RISC Architecture





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Imbedded Features

- File access similar to DMA
- MPE cache mechanism
- •Asynchronous I/O
- XM facility
- Extent Striping



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Performance perceptions





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Performance perceptions









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Understanding the technology





MPE Environment

- Server memory
- Connection technology
- Ldev and spindle count



Connection technology

- •SCSI-2 (HVD 20Mbytes max)
- •SCSI to FC (Router)
- •1Gbit FC (effective 100MBytes per second)
- •2Gbit FC (effective 200MBytes per second)



Router Information

- A5814A direct connect to XP512
- •A5814A-003 supports FC switches, VAs and XPs





Ldev and spindle Count

- Extent striping
- •Asynchronous I/O
- •XM facility







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Mirrored Disk/iX

- Built on JBOD
- Inexpensive

- Harder to manage recovery
- Not recommended for storage above 50 75Gbytes
- Prone to false Mirrored Disables due to high I/O loads



VA7100, VA7110 and VA7410

- VA7100 was slightly faster than 12H AutoRAID
- Cheaper than XPs
- Command View SDM accessible through attach PC (REQUIRED)

- Command View SDM accessible through attach PC
- Not as fast as XPs or Mirrored Disk running newer JBOD
- Tweaks for HP-UX can have devastating impact on MPE performance and availability (Queue Threshold)



EVA3000, EVA5000

- Cheaper than XPs
- First indications is that it performs better than the VAs

- Not supported on HP e3000 (no plans to)
- Not recommended for Enterprise HP-UX (yet)



XP256

++++

- Older HVD SCSI-2 connection (only)
- Faster than EMC Symmetrix 3430
- Only SCSI device supported for HAFO
- Support BC, CA and RAID Mgr

• No longer available

• MPE not supported if converted to FC



XP512 & XP48

- New FC devices
- More reliable than XP256
- Supports 1Gbit FC, A5814A Router (Direct connect only) and newer A5814A-003 Fabric Router (for NIO based machines)
- Supports BC, CA and RAID Mgr

[•] No longer available (after market only)



XP1024 & XP128

- New 2 Gbit FC device
- More reliable than XP512
- Supports 2Gbit FC and the newer A5814A-003 Fabric Router (for NIO based machines)
- Supports BC, CA and RAID Mgr



Rules of Thumb

- 1. MPE likes lots of little Ldevs instead of a few large ones
- 2. Use User Volume sets
- 3. Collect performance data before migration to help in the planning
- 4. FC 16 Ldevs per bus
 HVD-SCSI 8 Ldevs per bus
 SE-SCSI 4 Ldevs per bus
- 5. Purchase for availability and reliability and set proper expectation for performance



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Typical MPE/iX SAN Configuration

- HP e3000 Server (A-Class, N-Class or 9xx-Class)
- Native FC on A-Class/N-Class requires MPE/iX version 7.5
- NIO Class systems require Fabric Router solution A5814A #003 (because Native FC is not supported on these systems)
- VA7110 dual ports (required) (CSY recommends maximum the cache for each controller)
- CommandView SDM 1.07 on attached workstation (Required) (HP-UX or PC running Win2K is acceptable)
- A switch capable of single initiator zoning is required (if deployed)



Steps

- Prepare PC (or storage management station)
 - Install FC card
 - •Install CV SDM 1.07 onto management station
- Create backup tapes for restore/system reload
- Power on equipment BUT DO NOT CONNECT
- Configure switch zones (very good paper by Jim Hawkins on jazz/mpeha)
- Configure VA7110 through "dumb terminal" serial port
- Connect all equipment
- Do an ARMDISCOVER on the PC (lookout for the dreaded Windows Disk Signature)
- Configure VA7110 through PC
- Configure MPE/iX
- Install/Reload system



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VA7110 Serial Port Activities

- Logon
- Set the Redundancy (RAID) level
- Create Lun0 (may have to delete current Lun0 first)
- Set port ID, Behavior (Win2k) and Topology for the PC
- Set port ID, Behavior (MPE) and Topology for HP e3000
 Topology = Point-to-Point



Connect Equipment





Using (GUI) CV SDM

hp StorageWorks Command View SDM		
File Actions Tools Help		
♦ Warning		(D)
localhost : 127.0.0.1		
Devices		
localhost VA7410-HA04 VA7400-HA03 VA7100-HA02 VA7100-HA01	Host: ha756811.cup.hp.com Alias Name: VA7410-HA04 Product: A6218A Device File: \\\PHYSICALDRIVE36 Device Tvoe: DIRECT ACCESS DEVICE Worldwide Name: 50060b000014f3f8 Serial Number: 00USE00003DX State: Readv	



Identify Tab





Configuration Tab





Array Settings

Configuration : Edit Array Setti	ngs 🔀
Alias Name:	VA7410-HA04
Data Resiliency:	Normal
Subsystem Level RAID Control:	HP AutoRAID 🔻
Hot Spare Mode:	Automatic 🔹
Automatic Include:	• Enable 🔿 Disable
Auto Format Drive:	Enable O Disable
ок	Cancel

	Configuration : Edit	Array Setti	ngs	
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	Subsystem Level RAI	D Control:	High Perforn Restricted N Normal	mance Iormal
	Hot Spare Mode:		Secure Single Contr	roller
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Data Res	iliency:	Normal		•
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Hot Spare	e Mode:	HP Autor RAID 1+0	AID	
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Port Settings

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Port Settings

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Port Settings

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Configuring Luns

🙆 hp S	itorageWor	ks Command Vi	ew SDM								
0	Status:	Ready									0
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Important Information is Available @

- Jazz.external.hp.com/mpeha
 - •HA and storage matrix for the HP e3000
 - •Switch/Router paper by Jim Hawkins
 - •Updated MPE disk performance white paper
 - •FC/MPE Addressing
 - •How-To's
 - •Configuring HAFO (presentation slides have MP3 audio stream)
- HP.Docs contains communicator for FC
 HAFO Configuration Guide