

# E20-526<sup>Q&As</sup>

XtremIO Solutions and Design Specialist Exam for Technology Architects

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### QUESTION 1

A storage administrator has 20 TB of storage provisioned to their ESXi cluster from a 10 TB XtremIO storage array. The administrator is concerned about running out of physical capacity on the XtremIO.

Which recommendation will assist the administrator?

- A. Enable VAAI TPSTUN
- B. Increase the compression ratio on the XtremIO
- C. Disable VAAI XCOPY
- D. Thick provisioned eager zero all VM virtual disks

Correct Answer: A

TPSTUN is a VAAI primitive that enables the array to notify vSphere when a LUN is running out of space due to thin provisioning over-commit. The command causes suspending all virtual machines on that LUN. XtremIO supports this VAAI primitive.

Incorrect Answers:

C: The XtremIO features for VAAI support include:

Clone Blocks/Full Copy/XCOPY

Used for copying or migrating data within the same physical array (VMware term:

HardwareAcceleratedMove).

On XtremIO, this allows VM cloning to take place almost instantaneously, without affecting user I/O on active VMs.

D: The XtremIO features for VAAI support include: Zero Blocks/Write Same

Used for zeroing-out disk regions (VMware term: HardwareAcceleratedInit).

This feature provides accelerated volume formatting.

References: <https://itzikr.wordpress.com/2015/12/16/host-configuration-for-vmware-vsphere-on-emcxtremio/>

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### QUESTION 2

A customer has a VMware vSphere environment running Native Multipathing (NMP). Which path selection policy should be set for optimal performance when connected to an XtremIO cluster?

- A. Fixed AP
- B. Most Recently Used
- C. Fixed
- D. Round Robin

Correct Answer: D

Configuring vSphere Native Multipathing.

For best performance, it is recommended to do the following:

Set the native round robin path selection policy on XtremIO volumes presented to the ESX host.

References: <https://itzikr.wordpress.com/2015/12/16/host-configuration-for-vmware-vsphere-on-emcxtremio/>

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### QUESTION 3

Which multipathing software is supported by XtremIO?

- A. PowerPath/VE and NMP on ESXi hosts
- B. MPIO on non-clustered Microsoft Windows hosts only
- C. PowerPath/VE on Microsoft Windows VMs hosted by ESXi
- D. Native MPIO on IBM AIX clusters

Correct Answer: A

Noting the inefficiencies in VMware's NMP driver, EMC developed a set of drivers specifically designed to overcome these limitations and improve the performance and reliability of the data passing between an array and a server. EMC developed the PowerPath family of products optimized specifically for Linux, Microsoft Windows, and UNIX Operating Systems as well as PowerPath/VE for VMware vSphere and Microsoft Hyper-V hypervisors.

PowerPath is installed on hosts to provide path failover, load balancing and performance optimization VPLEX engines (or directly to the XtremIO array if VPLEX is not used).

Note: VMware, with the cooperation of its storage partners, developed a Native Multipathing Plug-in (NMP). VMware NMP was designed to distribute the load over all the available paths and provide failover protection in the case of path, port or HBA failure, but it has not been fully optimized to work with the controllers in a storage systems. VMware's NMP Round Robin policy does not have the intelligence that PowerPath has as PowerPath uses testing and diagnostics to continually monitor an environment to determine the optimal path for queuing requests and will adapt to current conditions.

References: <https://www.emc.com/collateral/analyst-reports/emc-taneja-group-powerpath-tb.pdf>

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### QUESTION 4

You have been asked to design an XtremIO storage array solution that will be used for two large applications workloads. One workload will generate approximately 150,000 write IOPs with an average 4 kB I/O size. The second write workload will have an average I/O size of 128 kB and will generate approximately 2 GB/s of throughput.

At a minimum, how many X-Bricks are needed in a single cluster to meet this requirement?

- A. 2
- B. 4

C. 6

D. 8

Correct Answer: A

Second write workload IOPS = 2 GB/s divided by 128 kB =  $2 \times 1,073,741,824 / (128 \times 1,024) = 16384$

IOPs.

Total IOPS required would be 150,000, from the first workload, plus 16384, totaling 166384.

A 2 X-Brick cluster provides 300K Read/write IOPS so it would be adequate.

Storage capacity and performance scale linearly, such that two X-Bricks supply twice the IOPS, four X-Bricks supply four times the IOPS, six X-Bricks supply six times the IOPS and eight X-Bricks supply eight times the IOPS of the single X- Brick configuration.

Note: Choose an EMC XtremIO system and scale out linearly by adding more XtremIO X-Bricks.

System	Raw Capacity	Read/Write IOPS	Read IOPS
Starter X-Brick	5 TB	150K	250K
1 X-Brick	10, 20, or 40 TB	150K	250K
2 X-Brick Cluster	20, 40, or 80 TB	300K	500K
4 X-Brick Cluster	40, 80, or 160 TB	600K	1M
6 X-Brick Cluster	120 or 240 TB	900K	1.5M
8 X-Brick Cluster	160 or 320 TB	1.2M	2M

References: <https://store.emc.com/en-us/Product-Family/EMC-XtremIO-Products/EMC-XtremIO-All-FlashScale-Out-Array/p/EMC-XtremIO-Flash-Scale-Out>

## QUESTION 5

A customer is considering migrating their existing non-EMC storage arrays to an XtremIO array. The current environment consists of 350 servers running VMware ESXi 5.5 with 5000 virtual machines. The customer has various tools in place to monitor performance and collect statistics. On average, their service time is 32 ms and utilization is at 75%. In the past, the customer has had performance issues.

Based on Little's Law, what is the calculated response time on the existing environment?

A. 128 ms

B. 192 ms

C. 256 ms

D. 332 ms

Correct Answer: A

Disk service time  $T(s) = 32$  ms (service time for one I/O).

Response time  $T(r)$  is calculated as:  $T(s) / (1 - \text{Utilization})$ , which here calculates to  $32 \text{ ms} / (1 - 0.75) = 128$

ms.

References: <https://community.emc.com/thread/145100?tstart=0>

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