

XtremIO Solutions and Design Specialist Exam for Technology Architects

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Question 1

A user attempts to create a quorum disk for a host cluster. Volume parameters are:

- Size = 1000 kB

- Name 1MB_Vol

However, the volume creation fails. What caused the process to fail?

Options:

A. Quorum disks cannot have an 8kB block size

B. Volume size is too small

C. Volume name is invalid

D. XtremIO volumes cannot be quorum disks

Answer: B

Explanation:

The volume size must be specified in MB, GB, TB, and not in KB.

Incorrect Answers:

D: Quorum disks on XtremIO

The SAN Volume Controller cluster will select disks that are presented by the XtremIO storage system as quorum disks. To maintain availability for the cluster, ideally each quorum disk should reside on a separate disk subsystem.

The quorum device can be any disk device that is shared between two or more nodes. EMC Symmetrix, VNX series, or XtremIO devices are commonly used for this purpose.

References: <https://vcdx133.com/2014/09/14/emc-xtremio-provisioning-a-lun/>

Question 2

<https://www.certification-questions.com>

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?

Options:

- A. 2
- B. 4
- C. 6
- D. 8

Answer: A

Explanation:

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-Flash-Scale-Out-Array/p/EMC-XtremIO-Flash-Scale-Out>

Question 3

How can REST API commands be run to manage and monitor an XtremIO cluster?

Options:

- A. From the REST API CLI built into each X-Brick
- B. From the REST API GUI built into each X-Brick
- C. From a third-party GUI
- D. From the REST API tab in the XMS GUI

Answer: C

Explanation:

The XtremIO's RESTful API allows HTTPS-based interface for automation, orchestration, query and provisioning of the system. With the API, third party applications can be used to control and fully administer the array.

Normally you would access the API using some form of programming/scripting language, such as Python or

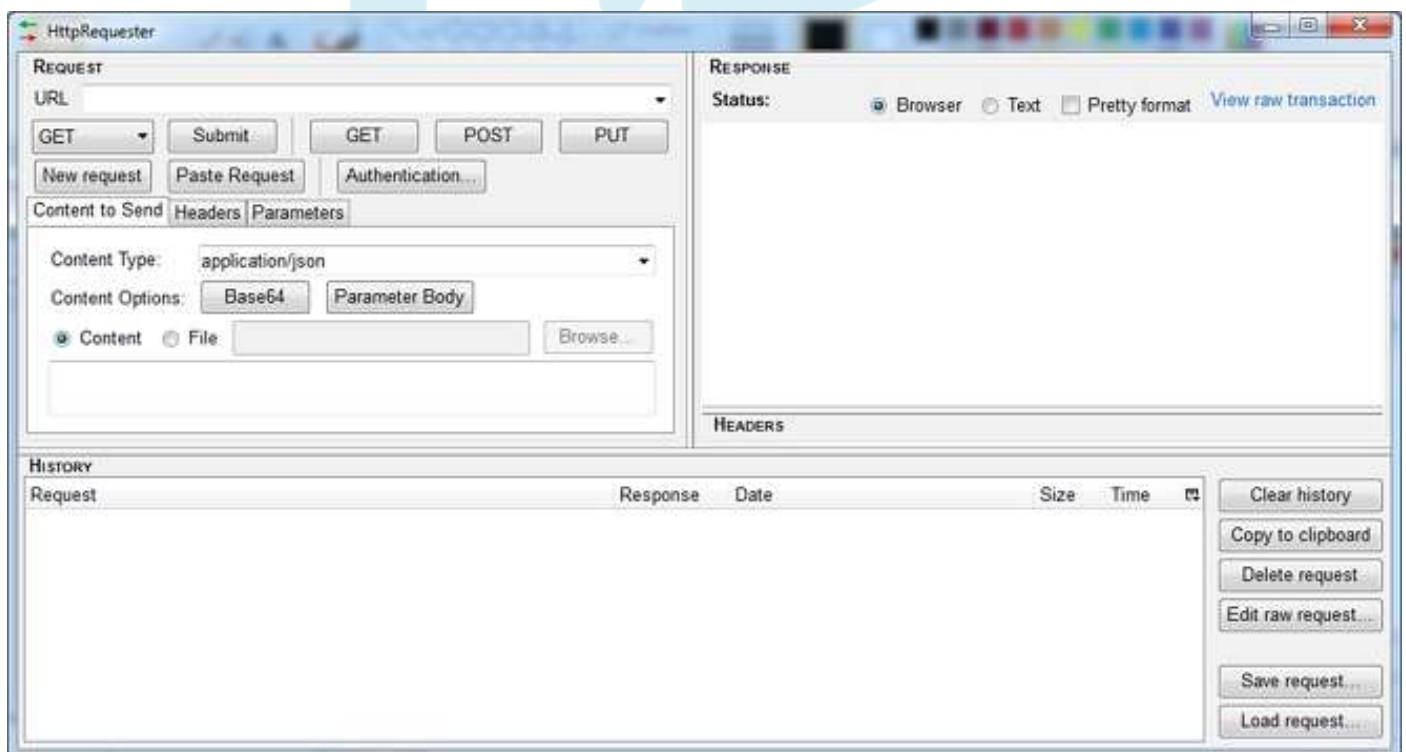
Perl. However for the purposes of learning or testing concepts there are a number of tools that work better, such as HTTPRequester and curl.

* Curl is a command-line tool that exists in all Linux distributions, and is available for most other Unix OSes as well as Windows.

To use curl to access XtremIO you'll need to pass it a few options, such as the username/password to access the array (any valid account on the XtremIO XMS will work), the URL of the API, and potentially a few options such as -k to tell curl not to validate the SSL certificate (presuming you don't have a valid certificate installed), and -s (silent) to stop curl displaying it's progress as it downloads the response.

* HTTPRequester is a browser extension that is available for both Chrome and Firefox.

As with for curl, you'll need to provide a username/password, which is done by clicking on the "Authentication..." box, which adds two boxes below the URL for the username and the password.



References: <https://blog.docbert.org/using-the-xtremio-rest-api-part-1/>

Question 4

How should a storage administrator navigate to different XtremIO clusters from the XMS GUI if the administrator has more than one cluster managed by the same XMS?

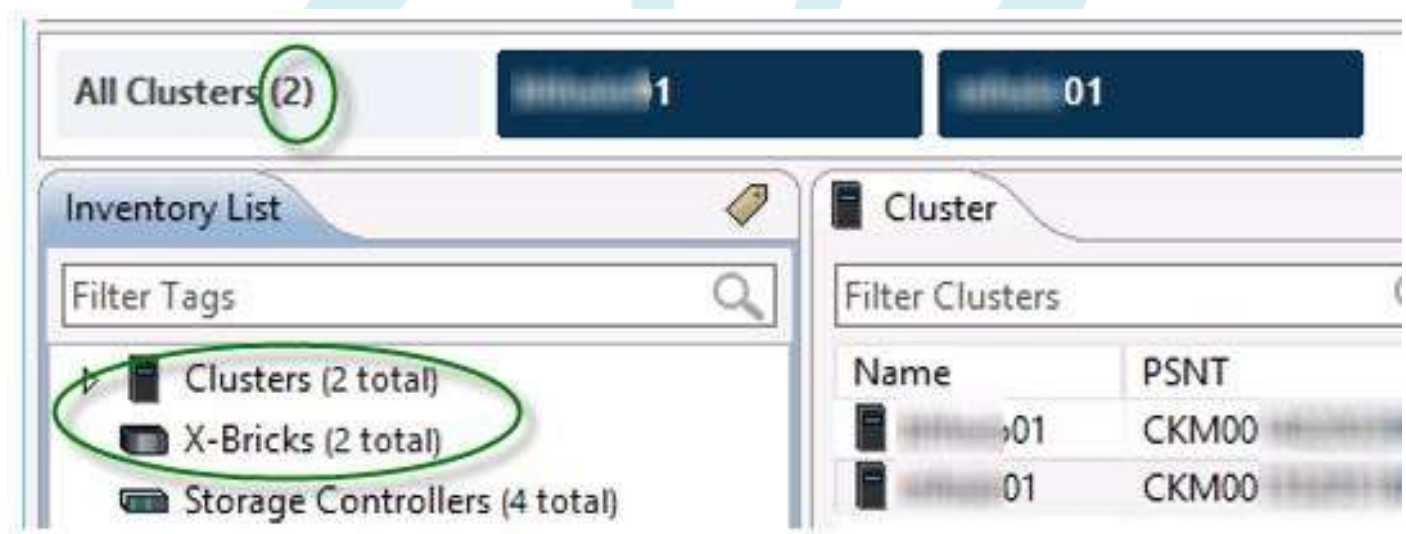
Options:

- A. Click the Cluster Name on the Menu bar near the top of the screen
- B. Click the Inventory List button on the Menu bar
- C. Click the Administration tab and locate the Cluster Name
- D. Click the Cluster Name on the Status bar at the bottom of the screen

Answer: B

Explanation:

From the menu bar, the Inventory icon is to be clicked to display the Inventory workspace. This workspace takes the place of the Hardware workspace in earlier versions of the XtremIO GUI. With the All Clusters tab selected, we can see a list of all the hardware elements in the managed clusters.



Note: With time, additional clusters can be added to a deployed XMS. In addition, a cluster can be easily moved from one XMS to another. All management interfaces (GUI/CLI/REST) offer inherent multi-cluster management capabilities. Multiple cluster management is supported from version 4.0 and up.

References:

https://community.emc.com/community/connect/everything_oracle/blog/2015/08/27/xtremio-40-multi-array-management

Question 5

A customer has a large ESX server environment they are considering deploying to XtremIO for a VDI

implementation. To determine a baseline of the environment, you are proceeding with documenting each server's CPU, NIC, and disk utilization statistics. The customer has provided you with direct CLI access to the servers to conduct this assessment.

Which utility should be used to monitor these performance parameters?

Options:

- A. esxtop
- B. resxtop
- C. top
- D. iostat

Answer: B

Explanation:

resxtop is a command to retrieve performance statistics. This command is included in vSphere command line interface (CLI) and is part of the vSphere Management Assistant (vMA), which is an equivalent to esxtop that runs only inside an ESX service console.

Incorrect Answers:

A: esxtop runs only inside an ESX service console.

D: Use the iostat command to report statistics about disk input and output, and to produce measures of throughput, utilization, queue lengths, transaction rates, and service time.

References: www.emc.com/collateral/TechnicalDocument/docu5265.pdf, page 22

Question 6

Which multipathing software is supported by XtremIO?

Options:

- 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

Answer: A

Explanation:

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>

Question 7

A new 500 GB VM disk is created on a database that resides on an XtremIO LUN. The VMware administrator plans to provision the disk using the thick provisioned eager zeroed format. How much physical XtremIO capacity will be allocated during this process?

Options:

- A. 5 GB
- B. 10 GB
- C. 50 GB
- D. None

Answer: D

Explanation:

XtremIO storage is natively thin provisioned, using a small internal block size. This provides fine-grained resolution for the thin provisioned space.

All volumes in the system are thin provisioned, meaning that the system consumes capacity only when it is actually needed. XtremIO determines where to place the unique data blocks physically inside the cluster after it calculates their fingerprint IDs. Therefore, it never pre-allocates or thick-provisions storage space before writing.

References: Introduction to the EMC XtremIO STORAGE ARRAY (April 2015), page 22

Question 8

When using the XtremIO PoC Toolkit, what is the purpose of the Age phase?

Options:

- A. Continuously write to a specific range of logical block addresses to test Flash durability
- B. Overwrite each LUN multiple times to ensure they contain all unique data
- C. Test the performance of the All-Flash array with non-production static data

D. Scatter writes across the entire array to simulate ordinary use of the system

Answer: D

Explanation:

Proceed with filesystem aging by doing random overwrite cycles.

Question 9

An XtremIO administrator is having a problem with performance and is troubleshooting the issue. What is an accurate statement about I/O transfers?

Options:

- A. As I/O size increases, IOPs increase, and latency increases
- B. As I/O size increases, IOPs decrease, and bandwidth increases
- C. As I/O size decreases, IOPs increase, and bandwidth increases
- D. As I/O size decreases, IOPs decrease, and latency increases

Answer: A

Explanation:

Large block I/O by nature incurs higher latency.

References: Introduction to the EMC XtremIO STORAGE ARRAY (April 2015), page 6

Question 10

You are designing an XtremIO solution for a potential customer. If the server and storage information is available, which information should be documented regarding the customer's capacity expectations?

Options:

- A. Capacity requirements on a per data center basis
Expandability/scalability
Performance requirements determined on a server-to-server basis
- B. Capacity requirements on a per volume basis
Expandability/scalability
Performance requirements determined on a server-to-server basis
- C. Capacity requirements on a per volume basis
Compression rates/scalability
Performance requirements determined on a server-to-server basis
- D. Capacity requirements on a per data center basis
Expandability/scalability

Performance requirements determined holistically

Answer: B

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