

E20-526^{Q&As}

XtremIO Solutions and Design Specialist Exam for Technology Architects

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QUESTION 1

A customer has a workload with the following attributes: Generates 250,000 IOPs 100 TB in logical capacity Read/Write ratio of 1:1 Random workload with 8 kB I/O size Deduplication ratio of 2:1 Compression ratio of 2:1

Which XtremIO solution should be recommended to the customer?

- A. 1x40 TB X-Brick
- B. 2x10 TB X-Brick
- C. 3x20 TB X-Brick
- D. 4x10 TB X-Brick

Correct Answer: C

XtremIO clusters with 60 TB of physical usable flash capacity can now logically support 360 TB or more of capacity at typical 6:1 data reduction (deduplication plus compression) ratios. Here we have a 4:1 reduction ratio, so 25 TB would be enough. The 250,000 IOP requirements indicates that we need at least two 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 2

A customer is interested in transitioning their traditional infrastructure to the Cloud by implementing ViPR software-defined storage in an XtremIO environment. Which capabilities will EMC ViPR software-defined storage provide to XtremIO?

- A. Delivers SaaS Centralized management and monitoring Chargeback and billing capabilities
- B. Chargeback reporting capability Centralizes reactive monitoring capability Policy-driven configuration management
- C. Automatically grows storage volumes Slows growth of data Centralized auto-deletes of aging files
- D. Creates virtual storage pools Automates disaster recovery Replaces chargeback capabilities

Correct Answer: A

EMC ViPR Controller is a software-defined storage platform that abstracts, pools and automates a data center's underlying physical storage infrastructure. It provides data center administrators with a single control plane for heterogeneous storage systems.

ViPR enables software-defined data centers by providing features including:

* Comprehensive and customizable platform reporting capabilities that include capacity metering, chargeback, and performance monitoring through the included ViPR SolutionPack

References: Introduction to the EMC XtremIO STORAGE ARRAY (April 2015), page 60

QUESTION 3

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>

QUESTION 4

Who developed the framework for testing All-Flash arrays that is used in the XtremIO PoC?

- A. EMC
- B. Seagate
- C. Micron
- D. IDC

Correct Answer: D

IDC outlines a criteria some criteria for selecting a testing tool:

*

Generate workloads

*

Capture results for analysis: Throughput IOPS Latency

Etc.

References: http://info.xtremio.com/rs/xtremio/images/IDC_Flash_Array_Test_Guide.pdf

QUESTION 5

Block size/IOPS	Single X-Brick – FC Connectivity						
	100%R	80%/20%	70%/30%	50%/50%	30%/70%	20%/80%	100%W
512b	244,950	156,651	135,752	109,434	91,818	86,003	75,820
1K	244,840	156,814	136,096	109,300	92,150	86,103	76,293
2k	244,299	156,843	136,157	109,424	92,813	86,340	76,004
4k	243,655	156,563	135,376	109,205	93,068	86,181	75,857
8k	243,831	181,200	163,430	136,187	116,679	108,606	95,241
16k	154,240	109,849	97,069	77,777	64,731	59,666	51,776
32k	94,169	61,813	53,666	42,433	34,880	32,077	27,627
64k	50,170	32,405	28,365	22,662	18,683	17,116	14,660
128k	25,128	16,153	14,263	11,582	10,120	8,896	7,605
256k	12,116	7,692	6,841	5,695	4,886	4,522	3,885
512k	4,572	3,182	2,886	2,480	2,216	2,102	1,886
1M	2,264	1,582	1,440	1,238	1,104	1,050	944

Refer to the exhibit.

A customer has a VMware Horizon View environment with the following characteristics: One X-Brick XtremIO cluster 100% read during a boot storm 8K read/writes

What is the maximum recommended number of VDIs the XtremIO cluster can support during a boot storm?

- A. 1625
- B. 1833
- C. 3250
- D. 5094

Correct Answer: A

EMC estimates that 150 IOPS per desktop is required in a boot storm. As per table the recommended number of VDIs then is 243,831/ 150, which equals 1625.

References: <https://www.emc.com/collateral/white-papers/h14279-wp-vmware-horizon-xtremio->

designconsiderations.pdf, page 32

QUESTION 6

At which point is data compressed when a host sends data to the XtremIO storage system?

- A. Inline before data is written to the SSD
- B. Once data is written to the storage controller
- C. After data is written to the SSDs
- D. After data is in SSD cache

Correct Answer: A

XtremIO inline data deduplication and inline data compression services are inline, all the time.

References: <https://www.emc.com/collateral/faq/faq-million-dollar-guarantee-rp-2016.pdf>

QUESTION 7

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?

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

Correct Answer: B

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 8

What is the maximum speed of the Fibre Channel ports on an XtremIO storage controller?

- A. 2 Gb/s
- B. 4 Gb/s
- C. 8 Gb/s
- D. 16 Gb/s

Correct Answer: C

Each Storage Controller includes two 8Gb/s Fibre Channel (FC) ports.

References: Introduction to the EMC XtremIO STORAGE ARRAY (April 2015), page 8

QUESTION 9

Where is the XtremIO VSS hardware provider package installed?

- A. On all X-Bricks in the cluster
- B. On the XMS
- C. Factory-installed on the array
- D. On the backup server

Correct Answer: D

In order to use the XtremIO VSS provider it must be installed on the server where we want to do an application consistent snapshot.

References: <http://muegge.com/blog/tag/xtremio/>

QUESTION 10

An administrator receives an error on an XtremIO array while performing snapshot refreshes to a production volume. What is a potential cause for this issue?

- A. Refresh of the production volume is not supported
- B. Volume was not unmapped on the XtremIO cluster
- C. Only snapshot-to-snapshot refresh is supported
- D. Volume was not unmounted on the host

Correct Answer: D

The workflow for refreshing XtremIO Snapshots, containing Oracle Database files, consists of the following five simple

steps:

1.
Shut down the database instances with files in the target Snapshot Set.
 2.
Dismount the ASM disk group (or file systems) involved.
 3.
Refresh the Snapshot via XtremIO GUI (or CLI or RESTful API).
 4.
Mount the ASM disk groups (or file system) involved.
 5.
Start the database instances.
- This entire workflow is measured in seconds (not minutes).

Incorrect Answers:

A: The refresh command is a powerful tool for test and development environments and for the offline processing use case. With a single command, a snapshot of the production volume or CG is taken and the SCSI face of the volume, which was mapped to the test and development application, is moved to it. This allows the test and development application to work on current data without the need to copy data or to rescan.

References: <https://www.emc.com/collateral/white-papers/h14485-xtremio-snapshot-refresh-oracledatabases.pdf>, page 8

QUESTION 11

Configuration	IP		Over FC
	Without compression	With compression	
Between XtremIO arrays	80	240	300
XtremIO to non-XtremIO	80	90	90
Continuous replication from non-XtremIO to XtremIO	110	300	300
Snap-based replication from VNX to XtremIO	110	150	150

Refer to the Exhibit.

A customer has the following XtremIO environment: Read/write ratio is 3:1 I/O size is 8K Write pattern is random Data is compressible

If an application generates 100,000 IOPS of traffic, how many RPAs are needed to replicate the traffic from one XtremIO array to another XtremIO array over IP?

- A. 1
- B. 2
- C. 3
- D. 4

Correct Answer: C

Required bandwidth= $100,000 * 8 * 1024$ bytes
Provided bandwidth between XtremIO arrays with compression over Fiber Channel: $300 * 1024 * 1024$ bytes

Required number of RPAs: $100,000 * 8 * 1024 / (300 * 1024 * 1024) = 800,000 / (300 * 1024) = 2.6$. Three RPAs would be enough.

QUESTION 12

Which level of granularity does XtremIO deduplication run?

- A. Variable 8 kB
- B. Variable 32 kB
- C. Fixed 8 kB
- D. Fixed 32 kB

Correct Answer: C

EMC XtremIO(All-Flash) : SAN, inline deduplication, 8K fixed chunk size;

References: <https://www.linkedin.com/pulse/deduplication-fake-reality-mike-uzan>

QUESTION 13

How many management IP addresses are required on a single XtremIO storage controller?

- A. 1
- B. 2
- C. 3
- D. 4

Correct Answer: A

References: <https://docs.openstack.org/juno/config-reference/content/XtremIO-cinder-driver.html#xtremiomanagement-ip>

QUESTION 14

What are common storage array mechanisms?

- A. Log structuring and RAID
- B. Post-processing and metadata logging
- C. RAID and metadata log structuring
- D. Metadata logging and RAID

Correct Answer: B

XtremIO's snapshot technology is implemented by leveraging the content-aware capabilities of the system (Inline Data Reduction), optimized for SSD media, with a unique metadata tree structure.

XtremIO leverages a proprietary flash-optimized data protection algorithm (XtremIO Data Protection or XDP), which provides performance that is superior to any existing RAID algorithm.

References: Introduction to the EMC XtremIO STORAGE ARRAY (April 2015), page 33

QUESTION 15

Which SCSI instructions are used to build a bitmap of the changes between the first snapshot and subsequent snapshots when RecoverPoint is used with XtremIO?

- A. SCSI Delta
- B. SCSI Transfer
- C. SCSI DIFF
- D. SCSI Update

Correct Answer: C

DIFF protocol - A vendor specific SCSI command which RecoverPoint uses to query XtremIO with in order to obtain a bitmap of changes between two snapshot sets.

RecoverPoint uses the output of DIFF command to read the actual data and transfer it to the target side.

References: EMC RECOVERPOINT REPLICATION OF XTREMIO, Understanding the essentials of RecoverPoint Snap-based replication for XtremIO, page 9 <https://www.emc.com/collateral/white-papers/h14296-wp-recoverpoint-replication-of-xtremio.pdf>

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