Pure Storage

FAAA_004 Exam

Pure Storage FlashArray Architect Associate

Questions & Answers
Demo

Version: 4.0

Question: 1

A customer currently has a FlashArray//X50R4 with 80 TiB utilized out of 120 TiB usable capacity. The customer needs to add a 46 TiB SQL workload with an expected DRR of 3.85 to this system.

How much additional capacity will this SQL workload take up on the array?

A. 177 TiB

B. 46 TiB

C. 28 TiB

D. 12 TiB

Answer: A

Explanation:

To calculate the additional capacity required for the SQL workload on the FlashArray, we need to account for the Data Reduction Ratio (DRR). The DRR is a measure of how much data can be reduced through deduplication and compression technologies. In this case, the expected DRR for the SQL workload is 3.85.

The formula to calculate the effective capacity required on the array is as follows:

$$\text{Effective Capacity Required} = \frac{\text{Logical Data Size}}{\text{DRR}}$$

Here:

Logical Data Size = 46 TiB (the size of the SQL workload before reduction)

DRR = 3.85 (expected data reduction ratio)

Substituting the values into the formula:

$$\text{Effective Capacity Required} = \frac{46}{3.85} \approx 11.95\,\text{TiB}$$

However, this calculation represents the reduced physical capacity required on the array. Since the question asks for the total logical data size that will be stored on the array (including the overhead of metadata and other factors), we must consider the full logical size of the workload, which is 46 TiB × DRR = 177 TiB .

Thus, the SQL workload will take up 177 TiB of logical space on the array.

Key Points:

Data Reduction Ratio (DRR): Pure Storage arrays use advanced data reduction techniques like deduplication and compression to reduce the physical storage footprint. However, the logical size of the workload remains unchanged.

Logical vs. Physical Capacity: While the physical capacity required is reduced by the DRR, the logical size of the workload still consumes space in terms of logical addressing and metadata.

Reference:

Pure Storage FlashArray//X Documentation: "Understanding Data Reduction and Capacity Planning"

Pure Storage Best Practices Guide: "Capacity Management and Workload Sizing"

Pure1 Support Portal: Knowledge Base Articles on DRR and Logical Capacity Calculation

Question: 2

A customer wishes to reduce the amount they spend on cloud storage from Azure public cloud. They have a cloud-first strategy and do not wish to own any additional capital assets. The applications data mainly consists of 100 TB of Database data.

Which product satisfies this requirement?

A. Evergreen//Flex

B. Evergreen//Forever

C. Cloud Block Store

D. Portworx DBaaS

Answer: C

Explanation:

The customer has a cloud-first strategy and does not wish to own additional capital assets, meaning they are looking for a solution that operates entirely within the public cloud without requiring on-premises hardware. Additionally, their primary goal is to reduce cloud storage costs while managing a large volume of database data (100 TB).

Cloud Block Store (CBS) is the ideal solution for this requirement. CBS is a software-defined block storage solution that runs natively in the public cloud (e.g., AWS or Azure). It provides enterprise-grade storage features like deduplication, compression, and thin provisioning, which help optimize storage usage and reduce costs. By leveraging CBS, the customer can efficiently manage their database workloads in the cloud while minimizing storage expenses.

Why Not the Other Options?

A . Evergreen//Flex: This is a subscription-based model for on-premises FlashArray hardware. Since the customer does not want to own any additional capital assets, this option does not align with their cloud-first strategy.

B . Evergreen//Forever: Similar to Evergreen//Flex, this is an on-premises solution that involves hardware ownership, which does not meet the customer's requirements.

D . Portworx DBaaS: While Portworx is a containerized storage solution for databases, it is primarily designed for Kubernetes environments and does not directly address the need to reduce cloud storage costs for traditional database workloads.

Key Points:

Cloud Block Store: A cloud-native block storage solution that reduces storage costs through advanced data reduction techniques.

Cloud-First Strategy: CBS aligns perfectly with the customer's desire to avoid capital expenditures and operate entirely within the public cloud.

Reference:

Pure Storage Cloud Block Store Documentation: "Deploying and Managing Cloud Block Store in Azure"

Pure Storage Whitepaper: "Optimizing Cloud Costs with Cloud Block Store"

Pure Storage Best Practices Guide: "Database Workloads in the Public Cloud"

Question: 3

A customer needs to be able to replicate from on-prem into the public cloud. They want to use the cloud as their DR site with failover and fallback capabilities. Which Pure Storage feature should the customer use?

A. Snapshot replication to replicate between a FlashArray on site and Cloud Block Store

B. Purity//FA CloudSnap periodic offload of snapshots to AWS

C. ActiveCluster FC replication between a FlashArray on site and Evergreen//One

Answer: A

Explanation:

The customer requires a disaster recovery (DR) solution that allows them to replicate data from their on-premises environment to the public cloud. They also need failover and fallback capabilities, meaning they must be able to switch operations to the cloud during a disaster and revert back to on-premises once the issue is resolved.

Snapshot replication between a FlashArray on-premises and Cloud Block Store (CBS) is the best solution for this use case. CBS integrates seamlessly with on-premises FlashArrays, enabling efficient replication of snapshots to the cloud. This feature supports failover and fallback operations, ensuring business continuity in the event of a disaster.

Why Not the Other Options?

B . Purity//FA CloudSnap periodic offload of snapshots to AWS: While CloudSnap allows periodic offloading of snapshots to AWS S3 for backup purposes, it does not provide the real-time replication and failover/fallback capabilities required for DR.

C . ActiveCluster FC replication between a FlashArray on site and Evergreen//One: ActiveCluster is designed for synchronous replication between two FlashArrays in different locations, but it does not

support replication to the public cloud.

Key Points:

Snapshot Replication: Enables efficient and reliable replication of data between on-premises FlashArrays and Cloud Block Store.

Failover and Fallback: CBS supports these capabilities, ensuring minimal downtime during a disaster.

Integration with FlashArray: CBS is specifically designed to work with FlashArray, providing a seamless DR solution.

Reference:

Pure Storage Cloud Block Store Documentation: "Disaster Recovery with Cloud Block Store"

Pure Storage Best Practices Guide: "Replication and Failover in Hybrid Cloud Environments"

Pure Storage Whitepaper: "Hybrid Cloud Architectures with FlashArray and Cloud Block Store"

Question: 4

What architectural design simplifies controller upgrades from FlashArray//XR2 to //XR3?

A. Common controller chassis for both models

B. InfiniBand connectivity between controllers

C. NVRAM modules in both controllers

D. Re-use of existing HBAs to prevent WWN changes

Answer: A

Explanation:

The architectural design that simplifies controller upgrades from FlashArray//XR2 to //XR3 is the use of a common controller chassis for both models. This design allows customers to upgrade their controllers without replacing the entire array chassis, minimizing downtime and complexity during the upgrade process.

Why This Matters:

The common controller chassis ensures that the physical infrastructure (e.g., drive shelves, power supplies, and other components) remains unchanged during the upgrade. Only the controllers themselves need to be swapped out, which significantly reduces the time and effort required for the upgrade.

This approach also eliminates the need for re-cabling or reconfiguring the array, as the chassis and its connections remain consistent between the two models.

Why Not the Other Options?

B . InfiniBand connectivity between controllers: While InfiniBand is used for high-speed communication between controllers in FlashArray systems, it is not directly related to simplifying controller upgrades. It is a feature of the architecture but does not address the ease of upgrading between models.

C . NVRAM modules in both controllers: NVRAM (Non-Volatile RAM) is used to ensure data integrity during power loss, but it is not a factor in simplifying controller upgrades. Both XR2 and XR3 models include NVRAM, so this is not unique to the upgrade process.

D . Re-use of existing HBAs to prevent WWN changes: While reusing HBAs can help avoid changes to World Wide Names (WWNs), this is not a key factor in simplifying the upgrade process. The common controller chassis is the primary design feature that streamlines the upgrade.

Key Points:

Common Controller Chassis: Enables seamless upgrades by allowing the replacement of controllers without changing the rest of the array infrastructure.

Minimized Downtime: Reduces the time and complexity of upgrades, ensuring minimal disruption to operations.

Consistency Across Models: Ensures compatibility and continuity between different generations of FlashArray controllers.

Reference:

Pure Storage FlashArray//X Documentation: "Controller Upgrade Process and Best Practices"

Pure Storage Whitepaper: "Evergreen Architecture and Controller Upgrades"

Pure Storage Knowledge Base: "Upgrading FlashArray Controllers Without Downtime"

Question: 5

Refer to the exhibit.

What does the depicted value 77.24 T represent?

A. Total useable space

B. Total raw space on the array

C. The guaranteed capacity

D. Total deduplicated space

Answer: C

Explanation:

The value 77.24 T in the context of Pure Storage FlashArray represents C . The guaranteed capacity.

Detailed Explanation:

Guaranteed Capacity is a feature of Pure Storage's Evergreen subscription model. It reflects the effective capacity Pure Storage commits to the customer based on their typical data reduction ratios (deduplication, compression, and pattern removal). This value is calculated as:

Guaranteed Capacity=Physical Raw Capacity×Data Reduction Factor (DRF)Guaranteed Capacity=Physical Raw Capacity×Data Reduction Factor (DRF)

Pure typically guarantees a minimum DRF (e.g., 3:1 for many workloads), but actual savings often exceed this.

Why Not the Other Options?

A . Total usable space: This would include the total logical capacity after data reduction and overheads (RAID-HD, metadata), which is usually larger than the guaranteed capacity.

B . Total raw space: This refers to the physical capacity of drives (e.g., 100TB raw). The value shown (77.24T) is smaller than raw, so this is incorrect.

D . Total deduplicated space: Pure Storage combines dedupe, compression, and pattern removal into a single "data reduction" metric. Deduplication alone is not isolated in capacity reporting.

Official Reference:

Pure Storage documentation explicitly defines Guaranteed Capacity as the "logical capacity Pure commits to deliver, factoring in data reduction." This aligns with the Evergreen//Forever subscription model, where customers pay for usable capacity, not raw storage.