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Question 1

Question Type: MultipleChoice

What will RAID 6 (7+2) change into after dynamic reconstruction of OceanStor Dorado if one SSD failed in a 9-SSD storage pool?

Options:

A- RAID 6 (6+2)
B- RAID 5 (5+1)
C- RAID 6 (7+1)
D- RAID 6 (5+2)

Answer:

A

Explanation:

Huawei OceanStor Dorado utilizes RAID 2.0+ block virtualization technology, which supports Dynamic RAID Reconstruction. In a traditional RAID environment, if a disk fails, the RAID group continues to operate in a 'degraded' mode until the disk is replaced. However, in Dorado's RAID 2.0+, the system uses a distributed spare space policy where spare capacity is spread across all disks in the pool.

When one SSD fails in a storage pool originally configured with RAID 6 (7 data chunks + 2 parity chunks), the system identifies that it no longer has enough physical disks to maintain a 7+2 stripe width. To maintain the same level of protection (dual parity) while utilizing the remaining 8 disks, the system dynamically adjusts the RAID policy for new writes and reconstructed data to RAID 6 (6+2). This ensures that the data remains protected by two parity chunks even with a reduced disk count. This 'shrinkage' of the stripe width allows the system to remain in a 'healthy' protected state rather than staying in 'degraded' mode indefinitely.

Question 2

Question Type: MultipleChoice

Which statements about OceanStor Dorado reliability are correct? (Choose all that apply)

Options:

A- RAID-TP tolerates the failure of three SSDs. The full-mesh architecture tolerates the failure of seven out of eight controllers.
B- Global wear leveling and anti-wear leveling are used for SSDs.
C- SAN and NAS HyperMetro solutions are provided.
D- Disk enclosure failure can be tolerated through redundancy protection.

Answer:

A, B, C, D

Explanation:

The Huawei OceanStor Dorado series is engineered for 99.9999% availability using multiple layers of reliability. Option A is correct as RAID-TP (Triple Parity) is a unique Huawei feature that uses three parity chunks to tolerate the simultaneous failure of any three SSDs in a disk group. Furthermore, the SmartMatrix full-mesh architecture in high-end models allows the system to remain operational even if seven out of eight controllers in a controller enclosure fail, ensuring extreme service continuity.

Option B is correct because Huawei utilizes Global Wear Leveling to distribute writes across all SSDs to extend their lifespan, and Anti-Wear Leveling to prevent multiple SSDs from reaching their end-of-life simultaneously, which avoids multi-disk failure risks. Option C is correct as the system supports HyperMetro (Active-Active) for both block (SAN) and file (NAS) services, providing zero RTO and RPO across sites. Option D is correct because Dorado supports high-reliability disk enclosure connection technologies; in a multi-enclosure setup, the system can tolerate the failure of an entire disk enclosure without data loss by using intelligent data distribution across different enclosures.

Question 3

Question Type: MultipleChoice

OceanStor Pacific supports only three types of protocols: file (NFS/CIFS), object (S3), and HDFS?

Options:

A- TRUE
B- FALSE

Answer:

B

Explanation:

The statement is False because Huawei OceanStor Pacific is a multi-protocol storage system that supports more than just the three mentioned protocols. While File (NFS/CIFS), Object (S3), and HDFS are the core protocols for mass data access, the system also supports:

DPC (Distributed Parallel Client): A specialized parallel file system interface that supports standard POSIX and MPI-IO, enabling high-performance computing (HPC) clients to connect directly to multiple storage nodes for balanced I/O.

Block Storage: Certain configurations of OceanStor Pacific can provide block storage services, making it a truly unified distributed platform.

S3 Versioning and Advanced Object APIs: It supports native S3 semantics for object versioning and other advanced cloud-native features.

Because it supports high-performance parallel interfaces (POSIX/MPI-IO) via DPC in addition to the standard protocols, it is technically incorrect to say it supports only three types.

Question 4

Question Type: MultipleChoice

Files in the WORM (Write Once, Read Many) state can be read but cannot be modified.

Options:

A- TRUE
B- FALSE

Answer:

A

Explanation:

Huawei's HyperLock feature provides WORM (Write Once, Read Many) functionality for NAS file systems. When a file is placed in the WORM state, the storage system strictly enforces a policy

where the file's data can be accessed and read by authorized users, but any attempt to modify, overwrite, or delete the file is blocked by the storage controller.

In the Huawei OceanStor system, a file enters the WORM state after it is 'locked.' Once locked, the file remains in a read-only state for a defined retention period. During this time, not even an administrator can modify the file's content or reduce its protection duration. This is critical for meeting regulatory compliance (such as SEC Rule 17a-4) and for protecting sensitive data against ransomware, as it ensures that once data is archived, it remains immutable and verifiable. Only after the retention period has expired can the file be deleted, though it can still never be modified.

Question 5

Question Type: MultipleChoice

In safe city video storage scenarios, if a customer needs to deploy 10,000 cameras, which of the following Huawei storage products is recommended?

Options:

A- OceanStor Dorado NAS
B- OceanStor hybrid flash storage NAS
C- OceanStor Pacific
D- OceanProtect

Answer:

C

Explanation:

For 'Safe City' projects involving massive video surveillance (such as 10,000+ camera streams), Huawei recommends the OceanStor Pacific series (distributed storage). Large-scale video surveillance generates immense volumes of unstructured data that must be written continuously and stored for long periods. A traditional centralized NAS or SAN often faces performance bottlenecks at the controller level when handling thousands of concurrent high-definition video streams.

OceanStor Pacific uses a scale-out architecture that allows performance and capacity to scale linearly. For 10,000 cameras, the system can aggregate the bandwidth of dozens or hundreds of nodes, providing the high throughput required for video ingestion and the massive capacity

required for long-term retention. Additionally, OceanStor Pacific supports high-ratio Erasure Coding (EC), which provides better disk utilization (up to 91%) than traditional RAID, significantly reducing the Total Cost of Ownership (TCO) for petabyte-scale surveillance archives.

Question 6

Question Type: MultipleChoice

Through what feature does Dorado support stable and convenient system upgrade?

Options:

A- SmartMatrix
B- Non-disruptive Upgrade
C- HyperZoom
D- HyperCDP

Answer:

B

Explanation:

Huawei OceanStor Dorado supports Non-disruptive Upgrade (NDU), which allows the storage system's software (firmware) to be upgraded while services are running. In a traditional storage environment, an upgrade might require a system reboot or cause a failover that interrupts I/O for several seconds or minutes. However, Dorado's NDU leverages the multi-controller architecture and advanced caching mechanisms.

During an NDU, the system upgrades controllers one by one or in batches. While one controller is being upgraded and rebooted, its workloads are transparently taken over by other active controllers in the same cluster. Because the host-side multipathing software handles the path failover and the storage system maintains cache mirroring, the application servers experience zero downtime and negligible performance impact. This feature is essential for mission-critical environments that require 24/7 availability and cannot afford scheduled maintenance windows for routine software updates.

Question 7

Question Type: MultipleChoice

Which of the following are supported by OceanStor Dorado high-end models? (Choose all that apply)

Options:

A- Tolerance of the failure of one controller enclosure
B- Symmetric active-active controllers
C- Smart disk enclosures
D- Automatic tiering between SSD and HDD

Answer:

A, B, C

Explanation:

Huawei OceanStor Dorado high-end models (such as the 18000 series) utilize the SmartMatrix 4.0 architecture to provide industry-leading resilience. Option A is correct because these models can tolerate the failure of an entire controller enclosure (containing 4 controllers) without interrupting services, as the other enclosure in the cluster continues to handle all I/O. Option B is correct because Dorado features a Symmetric Active-Active design where any LUN is not owned by a specific controller; instead, any controller in the cluster can directly access any LUN, eliminating the performance bottleneck caused by traditional ALUA (Asymmetric Logical Unit Access) and ensuring load balancing.

Option C is correct as Huawei employs Smart Disk Enclosures equipped with their own CPU and memory. These enclosures can offload tasks like data reconstruction (RAID rebuilds) from the main controllers, significantly speeding up recovery times and reducing the performance impact on host I/O during a disk failure. Option D is incorrect because OceanStor Dorado is an All-Flash array; it does not support HDDs and therefore does not perform tiering between flash and mechanical media (which is a function of the OceanStor Hybrid Flash series).

Question 8

Question Type: MultipleChoice

Source deduplication reduces the amount of data to be transmitted, saves network bandwidth,

and transmits non-duplicate data, improving logical backup bandwidth and shortening backup time.

Options:

A- TRUE
B- FALSE

Answer:

A

Explanation:

Huawei OceanProtect utilizes source deduplication to optimize the data protection process. In traditional backup scenarios, the entire dataset is sent over the network to the backup target, which can consume significant bandwidth and time. With source deduplication, the storage system or backup agent identifies redundant data blocks at the source---before they are sent over the network.

By comparing new data chunks against a local cache of already-transmitted fingerprints, the system ensures that only unique, non-duplicate data is physically moved across the production-to-backup link. This significantly reduces network bandwidth consumption and effectively increases the logical backup bandwidth, as the system can process larger volumes of data without being limited by physical network throughput. Consequently, the backup window is shortened, allowing organizations to meet tight RPOs even in environments with limited network resources or massive data growth.

Question 9

Question Type: MultipleChoice

What are the main application scenarios for SAN storage? (Select all that apply)

Options:

A- Big data storage
B- VMware virtualization
C- Database
D- Mass file sharing

Answer:

B, C

Explanation:

Storage Area Network (SAN) storage is designed to provide block-level data access to servers, appearing to the operating system as a locally attached hard drive. Huawei OceanStor SAN solutions (both FC-SAN and IP-SAN) are optimized for high-performance, low-latency applications.

Databases (Option C), such as Oracle, SQL Server, and DB2, are primary use cases for SAN storage because they require high IOPS and low latency for transactional processing. The block-level access allows the database management system to have granular control over data placement and caching. VMware virtualization (Option B) is another core scenario. SANs provide the shared storage necessary for advanced features like VMotion, High Availability (HA), and Distributed Resource Scheduler (DRS). In these environments, multiple ESXi hosts connect to a centralized SAN to access VMFS (Virtual Machine File System) volumes. While Option A (Big Data) and Option D (File Sharing) often use Distributed Storage (OceanStor Pacific) or NAS, the high-concurrency, structured nature of Databases and Virtualization makes them the definitive scenarios for SAN.

Question 10

Question Type: MultipleChoice

What are the topologies of a Fibre Channel (FC) network? (Choose all that apply)

Options:

A- Fabric
B- Bus
C- Point-to-point
D- Arbitrated loop

Answer:

A, C, D

Explanation:

According to Huawei's storage networking guides, Fibre Channel (FC) supports three primary physical topologies to facilitate communication between servers (initiators) and storage arrays (targets).

Point-to-point (Option C): This is the simplest topology where two nodes are directly connected. It provides dedicated bandwidth but lacks scalability.

Arbitrated loop (FC-AL) (Option D): In this setup, devices are connected in a loop shared by all nodes. While more scalable than point-to-point, only one pair of nodes can communicate at a time, leading to performance bottlenecks as more devices are added.

Fabric (FC-SW) (Option A): This is the most common enterprise topology, utilizing FC switches. It allows many-to-many communication, providing high scalability, redundancy, and independent bandwidth for each connection.

'Bus' (Option B) is a topology associated with older Ethernet or SCSI standards and is not a recognized topology in Fibre Channel networking. Huawei OceanStor Dorado and Hybrid systems primarily utilize the Fabric topology for large-scale data center deployments to ensure maximum availability and performance through redundant switch fabrics.