Interview Questions: Volume Shadow Copy Service (VSS)

Easy Questions (Direct Recall)

#	Question	Marking Criteria (Scale of 1-10)
E1	What is the primary problem that the Volume Shadow Copy Service (VSS) aims to solve, according to the introductory paragraphs of the article?	• 1-4: Incorrect answer or unable to recall the problem statement. • 5-7: Mentions part of the problem (e.g., backing up large data sets) but misses the core issue of consistency with running applications. • 8-10: Correctly states the problem VSS solves is backing up data consistently while applications using the data are still running, addressing issues like open files or inconsistent states.
E2	The article describes a complete VSS solution requiring several basic parts. Besides the VSS service itself, list the three other main components mentioned.	• 1-4: Names fewer than two correct components or incorrect components. • 5-7: Correctly names two of the three main components (Requester, Writer, Provider). • 8-10: Correctly names all three main components: VSS requester, VSS writer, and VSS provider.
E3	According to the article, what are two distinct scenarios or purposes for which a shadow copy can be used?	• 1-4: Names only one or no correct scenarios. • 5-7: Names two scenarios, but may be slightly inaccurate or overlapping based on the article's list (e.g., backup and archiving as separate points). • 8-10: Correctly names two distinct scenarios from the lists provided, such as: backing up application/system state, data mining, disk-to-disk backups, fast LUN recovery, restoring individual files (Shadow Copies for Shared Folders), using transportable copies.
E4	What are the two main *types* of shadow copy providers discussed in the article?	• 1-4: Names incorrect types or only one type. Mentions 'system provider' but not as one of the two main categories. • 5-7: Names the two types but may be slightly confused about the 'system provider' relation. • 8-10: Correctly identifies the two main types as hardware-based providers and software-based providers.

#	Question	Marking Criteria (Scale of 1-10)
E5	Which built-in Windows command-line tool mentioned in the article can be used to create, delete, and list information about shadow copies, particularly those created by the system provider?	• 1-4: Incorrect tool name (e.g., DiskPart, DiskShadow) or unable to recall. • 5-7: Correctly names `VssAdmin` but may be unsure of its specific functions mentioned. • 8-10: Correctly identifies the `VssAdmin` tool and recalls its purpose as described (create, delete, list, resize diff area for system provider copies).

Medium Questions (Interpretation & Connection)

#	Question	Marking Criteria (Scale of 1-10)
M1	Explain the specific role of the VSS *writer* during the shadow copy creation process, based on the steps outlined in the article (specifically steps 2, 3, 4, 5, 8).	• 1-4: Incorrect role description or confuses writer with requester or provider. • 5-7: Partially correct; mentions preparing data or freezing/thawing but misses key details like providing metadata (XML) or ensuring data consistency. • 8-10: Accurately describes the writer's role based on the text: providing metadata (XML description), preparing data (completing transactions, flushing caches), freezing application writes upon VSS request, and thawing writes after copy creation to ensure a consistent data set for backup.
M2	According to the article, what is the key difference between a hardware-based provider and a software-based provider in terms of *where* the primary work of creating and maintaining the shadow copy is performed?	• 1-4: Cannot differentiate or provides incorrect location for work performed. • 5-7: Understands one type correctly (e.g., hardware uses storage array) but is unclear on the other, or describes the difference vaguely. • 8-10: Clearly explains based on the text: Hardware providers offload the work to the storage hardware (storage array/adapter/controller), while software providers perform the work at the software level within the operating system (typically using filter drivers).
M3	Describe the purpose of the 'application freeze' (Step 5 in the creation process). According to the article, why is this step necessary, and what component initiates it?	• 1-4: Incorrect purpose or initiating component. Confuses application freeze with file system freeze. • 5-7: Correctly identifies the purpose (prevent writes during copy) and initiating component (VSS telling writers) but explanation lacks clarity on ensuring consistency as described. • 8-10: Accurately explains VSS tells writers to temporarily freeze application *write* I/O requests to ensure the data is in a consistent state when the shadow copy is created moments later (during the file system freeze).

#	Question	Marking Criteria (Scale of 1-10)
M4	The article describes three methods providers can use: Complete copy, Copy-on-write, and Redirect-on-write. Briefly explain the *copy-on-write* method as detailed in the text. What is copied and when?	• 1-4: Incorrect description, confuses with other methods, or cannot recall details. • 5-7: Partially correct; understands it copies changes but unclear on *what* is copied (original block) or *when* (before overwrite). Mentions diff area. • 8-10: Accurately explains the copy-on-write method based on the text: It doesn't copy the original volume initially. When a change (write I/O) occurs on the original volume, the *original data block* about to be overwritten is first copied to a shadow copy storage area (diff area).
M5	Based on the article's comparison, what is the key difference between LUN resynchronization and LUN swapping concerning the usability of the shadow copy *after* the recovery operation?	• 1-4: Incorrect difference or cannot recall the comparison points. • 5-7: States one method allows reuse but not the other, but reasoning might be unclear or slightly inaccurate based on text. • 8-10: Correctly states based on the text: With LUN resynchronization, the shadow copy is *not altered* and can be used multiple times. With LUN swapping, the shadow copy is converted to read-write and takes over production, meaning it can only be used *once* for that recovery.

Hard Questions (Synthesis & Application within Article Context)

#	Question	Marking Criteria (Scale of 1-10)
H1	Describe the interaction flow between the VSS requester, VSS service, and VSS writers during the preparation phase (Steps 1-4) of creating a shadow copy, as depicted and explained in the article. What information is exchanged?	• 1-4: Incorrect sequence or roles; misses key information exchange points. • 5-7: Describes the general flow (requester talks to VSS, VSS talks to writers) but misses specifics like metadata gathering/exchange or the prepare/notify sequence. • 8-10: Accurately synthesizes from the text/diagram: 1. Requester asks VSS to start. 2. VSS enumerates writers and gathers their metadata (XML descriptions of components/stores, restore methods). 3. Requester uses metadata to select components. 4. VSS notifies writers to prepare data. 5. Writers prepare (finish transactions, etc.) and notify VSS when ready.

#	Question	Marking Criteria (Scale of 1-10)
H2	The article notes that both copy-on-write and redirect-on-write are quick methods but can become expensive under certain conditions. Based *only* on the descriptions provided, what condition mentioned might make *copy-on-write* expensive, and what condition mentioned might make *redirect-on-write* expensive?	• 1-4: Cannot identify the conditions or relates cost to factors not mentioned in the method descriptions (e.g., hardware cost). • 5-7: Correctly identifies the condition for one method based on the text but not the other, or explanations are vague. • 8-10: Accurately identifies the specific conditions mentioned in the text: Copy-on-write can become expensive if there are *many changes* (requiring many original blocks to be copied). Redirect-on-write can become expensive if there are *many read I/O requests* (as reads might need to combine data from original volume and storage area).
H3	Explain how the concept of a 'transportable shadow copy', as described in the article, leverages a specific type of VSS provider and enables scenarios like data mining or seeding test environments. What are the key steps involved according to the text/diagram?	• 1-4: Fails to connect transportable copies to hardware providers or describes the process incorrectly. • 5-7: Correctly identifies that it requires a hardware provider and enables offline use (mining/testing), but struggles to outline the transport steps described. • 8-10: Accurately synthesizes from the text: Transportable copies require a *hardware provider* designed for VSS transport. The process enables using the shadow copy on another server (or same server later) for offline tasks. Steps: 1. Create transportable shadow copy on source server. 2. Import the shadow copy (via SAN) to the target server. 3. Data is ready for use (e.g., data mining, testing).
H4	Considering the shadow copy creation process (especially steps 3-5 involving writer preparation and freeze), explain *why* VSS is crucial for achieving the goal stated early in the article: backing up applications like SQL Server or Exchange Server *while they are running* without taking them offline.	• 1-4: Vague answer about consistency or backups without linking to the specific VSS process steps described for writers. • 5-7: Explains VSS ensures consistency but doesn't clearly connect it to the writer's role in preparing data (transactions, logs, caches) and the application freeze as described in the process steps. • 8-10: Clearly connects the problem to the solution described: VSS coordinates with the application's *writer*. The writer prepares the data (e.g., completes transactions, flushes caches - Step 4) and then temporarily pauses *application writes* (Step 5) for a brief moment, ensuring the data on disk is in a known, consistent state suitable for backup *without* stopping the application entirely.

#	Question	Marking Criteria (Scale of 1-10)
H5	The article states that the *system provider* uses the copy-on-write technique and requires the shadow copy storage area (diff area) to be on an NTFS volume. Based *only* on the description of copy-on-write, why is having a dedicated storage area (diff area) necessary for this method to function?	• 1-4: Cannot explain the need for the diff area based on the copy-on-write description or gives reasons unrelated to the mechanism (e.g., "NTFS is required for VSS"). • 5-7: Understands the diff area holds *something* related to changes but struggles to articulate *why* it's essential based on the copy-on-write logic described. • 8-10: Logically explains based on the copy-on-write description: Since copy-on-write works by intercepting writes to the original volume and *first copying the original block* before allowing the overwrite, it needs a *separate location* (the diff area) to store these preserved original blocks. Without this area, the original data would be lost upon overwrite, and the point-in-time copy couldn't be reconstructed.