**Question 1: describe What type of Azure Storage account would be ideal for this scenario, and how would you configure it for optimal performance?**

* **High throughput** for large file uploads and downloads.
* **Low latency** for quick access to files during processing.
* **Scalability** to handle varying workloads, including periods of heavy traffic.
* **Geo-redundancy** to ensure data durability and availability across regions.

**Ideal Azure Storage Account Type:**

For this scenario, the **Azure Blob Storage account** with **Premium Performance Tier** would be ideal. The reasons include:

* **Premium Performance:**
* Offers high throughput and low latency, which are critical for media processing applications.
* Provides consistent, high-performance I/O, which is essential when working with large media files.
* **Blob Storage Account:**
* Specifically optimized for storing massive amounts of unstructured data like videos, images, and logs.
* Supports features like Cool and Archive access tiers for cost-effective storage of data that is infrequently accessed.
* **Geo-Redundant Storage (GRS):**
* Ensures that your data is replicated across different regions, providing high availability and disaster recovery capabilities.
* You could also consider Read-Access Geo-Redundant Storage (RA-GRS), which allows read access to the data in the secondary region, further improving availability.

**Configuration for Optimal Performance:**

* **Blob Storage Tiers:**
* Use the **Hot Tier** for frequently accessed videos during processing.
* Use the **Cool Tier** for videos that are accessed less frequently.
* Archive older videos that are no longer needed regularly but need to be retained for compliance or archival purposes.
* **Premium Storage Account:**
* Opt for the **Premium LRS (Locally Redundant Storage)** if the workload is primarily within a single region and requires ultra-low latency. This might be more cost-effective than GRS if global access isn’t a priority.
* **Data Partitioning:**
* Use **container-level partitioning** to distribute workload across different containers, ensuring better performance by avoiding hot spots.
* Consider **using multiple storage accounts** if you need to further distribute the load and ensure high scalability.
* **Access Patterns:**
* Implement **Azure CDN** in front of your storage account to reduce latency and improve access speed for end-users.
* Use **Azure Storage Lifecycle Management** to automatically transition blobs to cooler storage tiers based on access patterns.
* **Networking and Security:**
* Enable **Azure Private Link** to ensure secure and private access to your storage account.
* Implement **firewall rules** to restrict access to trusted networks and enable **Azure Storage encryption** to protect data at rest.

This configuration should provide the necessary performance, scalability, and redundancy required for a large-scale media processing application.