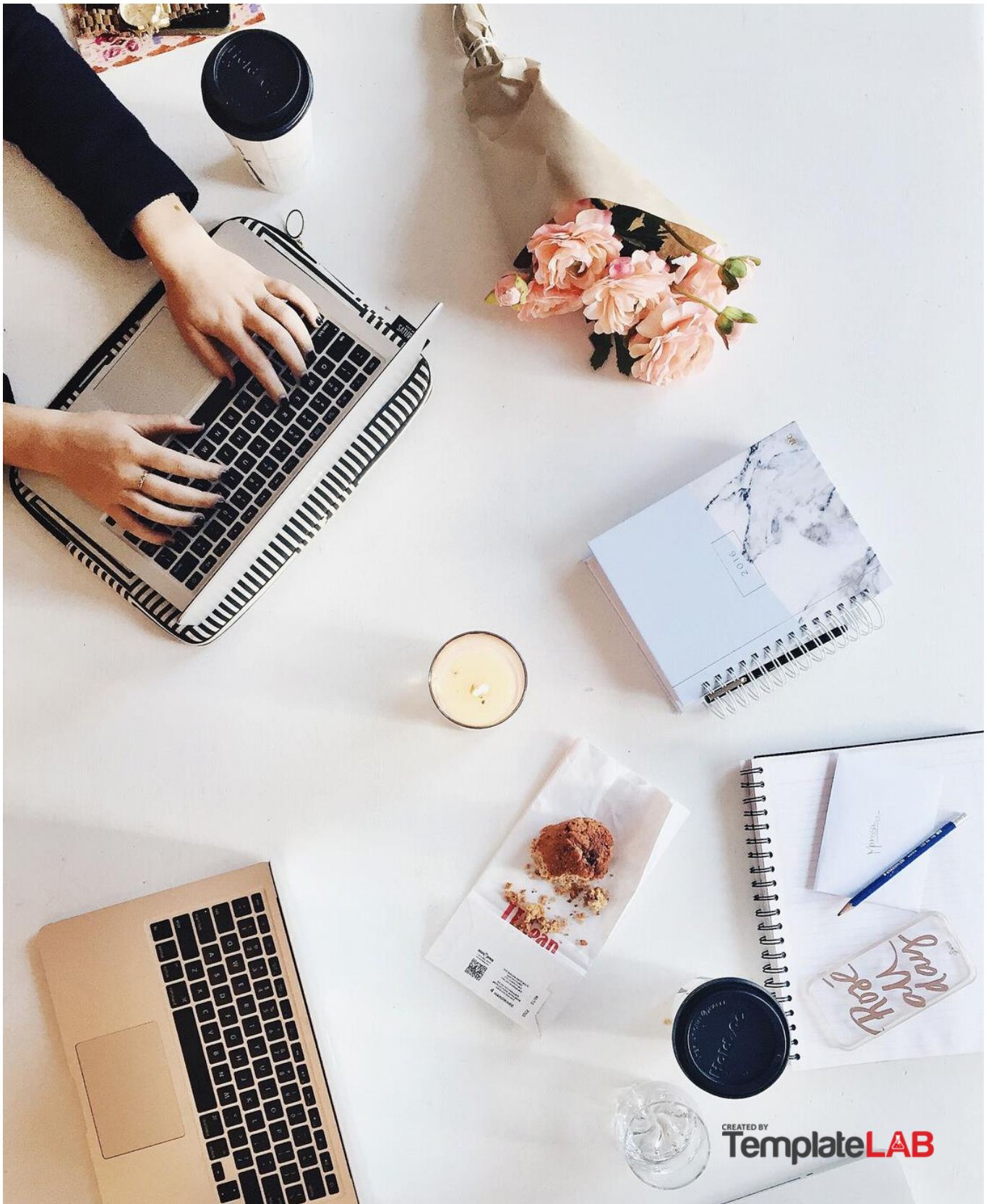
14 AUGUST 2023

NSIKELELO KUMALO

CLDV6212

ST10075585

Ice Task 2 CLDV6212



	Describe	Advantages	Disadvantages	Usage (optimization)
Table storage	Table Storage holds enormous amounts of organised data. The service is a NoSQL datastore that supports authenticated requests from both inside and outside the Azure cloud. Azure tables are suitable for storing organised, non-relational data. (tamram, 2022)	High performance, scalability (through partitioning), and low cost are all advantages. (Sajeetharan, 2019)	only Partition and Row keys may be indexed, making queries on values inefficient. (Sajeetharan, 2019)	• TBs of structured data storage capable of serving web-scale applications • Datasets that do not require sophisticated joins, foreign keys, or stored procedures and may be denormalized for rapid access are stored. • Querying data quickly with a clustered index • Using the WCF Data Service.NET Libraries to access data via the OData protocol and LINQ queries (tamram, 2022)
Blob storage	Blob Storage is Microsoft's object storage solution for the cloud. It's optimised for storing vast amounts of unstructured data. Unstructured data is information	• There are numerous storage choices available depending on your needs: a blob, an archive, a queue, a file, or a disc. • You will receive $200 to use in Microsoft Azure services after enrolling (within 30 days) and for the next	• To receive direct support, you must purchase a support subscription, which starts at 29 USD per month. • Other services,	optimised for storing vast volumes of unstructured data, such as text or binary data. Blob Storage is perfect for: • Serving pictures or documents to

	that does not conform to a specific data model or description, such as text or binary data. (tamram, 2023)	12 months in certain services. • Well-written documentation that is simple to use. It's not as comprehensive as Amazon AWS, but it's sufficient to develop around the API. • With the Hot class, you can get really good costs (about 0.018 USD per GB/month). The archive class price is among the lowest in the business (about 0,002 USD per GB/month). • Different storage classes are available for each requirement: Hot (for frequent use), Cool (for occasional use), and Archive (for long-term storage). • High tensile strength. With the default replication approach, RA-GRS, Microsoft Azure Blob Storage delivers 99.99999999999999% (16 9's) durability of items over a given year. This % outperforms every other provider on the list. • It is entirely free to download data from the Hot class. If you routinely retrieve files, this is a wonderful price. (Vidal, 2018)	such as Back blaze B2, have lower prices for Standard access (about 0.005 USD per GB/month). • All of the many storage options can be perplexing. It's not obvious to a newcomer when to utilise Blob service over File service, for example. Amazon AWS and Google Cloud Storage, in my opinion, do a better job of describing and simplifying the service.	a browser directly. • File storage for dispersed access. • Video and audio are being streamed. • Data storage for backup and restoration, disaster recovery, and archiving. • Data storage for analysis via an on-premises or Azure-hosted service. (tamram, 2023)
Queue storage	Queue Storage is a service that allows you to store a huge	• Azure Queue Storage is not pricey when compared to similar services. This is due to	• There is no provision or ability to specify any	queue storage gives you asynchronous message queueing for communication

	number of messages. Authenticated HTTP or HTTPS calls allow you to access messages from anywhere in the world. A queue message can have a maximum size of 64 KB. A queue can hold millions of messages, up to the storage account's overall capacity limit. Queues are frequently used to build a backlog of work that may be processed asynchronously. (normesta, 2022)	the fact that they are priced on a pay-per-use basis. You will be paid based on the degree of redundancy needed, the quantity of storage space required, and the number of transactions (read, write, delete). • Data in Queue Storage is significantly more secure because it must be accessed via apps using the HTTP or HTTPS protocol. • You only need to pay for storage and operations. A Service Bus or an Event Hub, for example, has no continuing expenditures. (ParTech Media, 2022)	message order sequence; therefore, messages may be received by the queue service randomly from multiple producers. • There is no subscription system for the Azure Queue service. To determine whether new messages have arrived, we must do a pull to delete the new messages. • Each message can only be 64 KB in size. (ParTech Media, 2022)	between application components, whether they are running in the cloud, on the desktop, on-premises, or on mobile devices. (Lapusan, 2023)
File storage	File Storage is a cloud-based file storage solution with unlimited capacity, available for remote mounting on any operating system. It can be used on virtual or local machines, with the option to	**Fully managed service** Azure Files does not require management of hardware or operating systems. It can replace an on-premises file server with minimal maintenance overhead. **2. Shared access** Azure File Storage supports the SMB protocol which is used by most on-premises applications, allowing you to replace existing file shares with Azure file shares without	**1. Security and access** Azure file shares require using the storage account key, which provides access to your entire storage account. You have to distribute this key to users, which can cause severe security issues. File shares are also	**Replace or supplement on-premises file servers**: Azure Files can be used to replace or supplement traditional on-premises file servers or network-attached storage (NAS) devices. Popular operating systems such as Windows, macOS, and Linux can directly

	mount multiple shares. Available in Standard and Premium Storage versions, Premium Storage Services run on SSD for faster file operations. Azure File Storage targets internal file handling and can be used in various scenarios, such as replacing local file servers with cloud-based ones or simplifying cloud access to files. (O'neill, 2023)	any change to legacy applications. Your applications can continue sharing files between multiple machines, whether located on-premises or in the Azure cloud. **3. Redundancy** Azure File offers geo-redundancy, ensuring your data is always stored in multiple Azure data centres. This provides 99.999999999% durability for your data. Keep in mind durability does not equal high availability—data may not be available at the Recovery Time Objective (RTO) or Recovery Point Objective (RPO) your organization requires. **4. Easy automation** Azure Files can be automated using tools familiar to most programmers, including PowerShell and the Azure CLI, as well as by administrators using the Azure Portal and Azure Storage Explorer. **5. Easy APIs** Azure File Storage offers convenient file system APIs including Azure Storage Client Libraries and Azure Storage REST API. (Maayan, 2019)	accessible externally using the UNC path and key, and there is no way to block access from outside Azure. **2. Backup** There is no snapshot mechanism or automated backup for Azure Files. Data is replicated to deal with data center or machine failure, but you won't have a solution for accidental data loss or deletion by users. The comparative Amazon service, Amazon EFS, has a similar issue where backups are not automated, and require copying entire volumes to another cloud location. **3. Performance** Azure Files offers limited throughput of 60MB/s, and various other performance-related limitations. The new Premium tier addresses some of these limitations, but it comes at extra cost. **4. Size limitations** Azure file shares have a limit of 5TB per storage account. It is possible to use up to 20 storage accounts, pushing this limit up to 100TB, provided you are able to distribute the data	mount Azure file shares wherever they are in the world. • **"Lift and shift" applications**: Azure Files makes it easy to "lift and shift" applications to the cloud that expect a file share to store file application or user data. Azure Files enables both the "classic" lift and shift scenario, where both the application and its data are moved to Azure, and the "hybrid" lift and shift scenario, where the application data is moved to Azure Files, and the application continues to run on-premises. • **Simplify cloud development**: Azure Files can also be used to simplify new cloud development projects

			between multiple storage accounts. Again, the Premium tier offers higher scalability up to 100TB. Either way, for some organizations these limits will be a major issue. **5. File system limitations** Azure Files has file system limitations of up to 1TB for individual files, 200,000 objects, and 255 characters for object names. These limitations can be encountered during migrations, especially for legacy applications with large archive files. Microsoft has formed partnerships with third-party companies, such as NetApp, to address these limitations. NetApp offers a native solution for Azure File Storage, which integrates seamlessly with Azure and can be added for $29/month. (Maayan, 2019)	Containerization: Azure file shares can be used as persistent volumes for stateful containers. Containers deliver "build once, run anywhere" capabilities that enable developers to accelerate innovation. For the containers that access raw data at every start, a shared file system is required to allow these containers to access the file system no matter which instance they run on. (tamram, 2023)

Bibliography

Lapusan, A., 2023. *Queue Storage.* [Online]
Available at: https://azure.microsoft.com/en-in/products/storage/queues#:~:text=Queue%20storage%20gives%20you%20asynchronous,premises%2C%20or%20on%20mobile%20devices.
[Accessed 14 August 2023].

Maayan, G. D., 2019. *Azure File Storage: 5 Pros and Cons You Should Know About.* [Online]
Available at: https://www.codementor.io/@giladm/azure-file-storage-5-pros-and-cons-you-should-know-about-103ol0jg7x
[Accessed 14 August 2023].

normesta, 2022. *What is Azure Queue Storage?.* [Online]
Available at: https://learn.microsoft.com/en-us/azure/storage/queues/storage-queues-introduction
[Accessed 14 August 2023].

O'neill, A., 2023. *Azure Files Vs Blob - What's The Difference?.* [Online]
Available at: https://www.c-sharpcorner.com/article/azure-files-vs-blob-whats-the-difference/#:~:text=In%20summary%2C%20the%20difference%20between,%2C%20cloud%2Dbased%20file%20system.
[Accessed 14 August 2023].

ParTech Media, 2022. *Storage.* [Online]
Available at: https://www.partech.nl/en/publications/2022/04/introduction-to-azure-queue-storage#
[Accessed 14 August 2023].

Sajeetharan, 2019. *Microsoft Azure DocumentDB vs Azure Table Storage.* [Online]
Available at: https://stackoverflow.com/questions/28928016/microsoft-azure-documentdb-vs-azure-table-storage#:~:text=Table%20Storage%20offers%20a%20high,on%20values%20is%20very%20inefficient.&text=Instead%20of%20storing%20a%20list,)%2C%20DocumentDB%20stores%20JSON%20ob
[Accessed 14 August 2023].

tamram, 2023. *Introduction to Azure Blob Storage.* [Online]
Available at: https://learn.microsoft.com/en-us/azure/storage/blobs/storage-blobs-introduction
[Accessed 14 August 2023].

tamram, 2023. *Introduction to Azure Storage.* [Online]
Available at: https://learn.microsoft.com/en-us/azure/storage/common/storage-introduction
[Accessed 14 August 2023].

tamram, D.-k., 2022. *What is Azure Table storage?.* [Online]
Available at: https://learn.microsoft.com/en-us/azure/storage/tables/table-storage-overview
[Accessed 14 August 2023].

tamram, k., 2023. *What is Azure Files?.* [Online]
Available at: https://learn.microsoft.com/en-us/azure/storage/files/storage-files-introduction
[Accessed 14 August 2023].

Vidal, J., 2018. *Microsoft Azure Blob Storage: Pros/Cons and how to use it with Javascript.* [Online]
Available at: https://itnext.io/microsoft-azure-blob-storage-pros-cons-and-how-to-use-it-with-

javascript-ca5aaf5d5ffd
[Accessed 14 August 2023].