

## Storage

Questions	AWS	Azure		Google Cloud Platform	IBM Cloud	OTC	OVH
Which kinds of storage are available? - Object / Blob Storage - File Storage - Block Storage	yes (S3 / Glacier) yes (EFS) yes (EBS)	yes (Azure Blob Storage) yes (Azure Disk Storage) yes (Azure Files)		yes (Google Cloud Storage) yes (Google Drive / Persistent Disk) yes (Google Persistent Disk)	yes (IBM Cloud Object Storage) yes (IBM Cloud file storage) yes (IBM Cloud block storage)	yes (Object Storage Service) yes (Scalable File Service) yes (Elastic Volume Service)	yes (Object Storage) yes (File Storage) yes (Block Storage)
Block - Different tier-classes? SATA, SSD, SAS	yes - S3 Standard - S3 Intelligent-Tiering - S3 Standard-IA - S3 One Zone-IA+ - S3 Glacier - S3 Glacier Deep Archive - S3 Outposts	yes - Hot - Cool - Archive		yes - Standard Storage - Nearline Storage - Coldline Storage - Archive Storage	yes - Standard - Vault - Cold Vault	yes - Standard - Warm - Cold	yes - Standard - High Speed
Which objects storage-engines are offered?	Amazon S3	Azure Blob Storage		Buckets (like S3)	- S3 - Swift	- S3 - Swift	- S3 - Swift
File - Accessing file storage via (cluster) file system.	- EFS	- GlusterFS - BeeGFS - Luster		- Google Cloud Storage FUSE - Google Cloud Filestore	- NFS	- NFS	- NFS
Storage capacity limits	Overall size: Unlimited 5 TB per S3 object	Maximum number of blob containers: Unlimited Maximum storage account capacity: 5 PiB		Overall size: Unlimited 5 TB per individual object	Object storage - Unlimited File / Block storage - 12 TB	50 TB of Object storage 32 TB of Block Storage 10 PB of File Storage	216 TB
Duration of provisioning?	13 sec	79 sec		12 sec	22 sec	7 sec	13 sec
Throughput IOPS (only Block- and File-Storage) - Random Reads - Async mode - 8K block size - Direct IO - Random Writes - Async mode - 64K block size - Direct IO - Random Read/Writes - Async mode - 16K block size - Direct IO 90% Reads/10% Writes Sequential Reads - Async mode - 8K block size - Direct IO Sequential Writes - Async mode - 32K block size - Direct IO	- Random read: bw = 24.39 MB/s, iops = 3048 - Random write: bw = 135.38 MB/s, iops = 2115 - Random Read and write: - read : bw = 43.74 MB/s, iops = 2735 - write: bw = 5.05 MB/s, iops = 315 - Sequential read: bw = 24.27 MB/s, iops = 1422 - Sequential write: bw = 97.62 MB/s, iops = 3050	- Random read: bw = 32.63 MB/s, iops = 4078 - Random write: bw = 32.64 MB/s, iops = 509 - Random read and write: - read: bw = 29.24 MB/s, iops = 1828; - write: bw = 3.34 MB/s, iops = 210 ; - Sequential read: bw = 32.61 MB/s, iops = 4076 - Sequential write: bw = 32.64 MB/s, iops = 1020		- Random read: bw = 22.50 MB/s, iops = 2749 - Random write: bw = 42.90 MB/s, iops = 655 - Random read and write: - read: bw = 40.50 MB/s, iops = 2472 - write: bw = 5.68 MB/s, iops = 277 - Sequential read: bw = 20.71 MB/s, iops = 2715 - Sequential write: bw = 40.79 MB/s, iops = 1245	- Random Read: bw = 24.10 MB/s, iops = 3010 - Random Write: bw = 48.11 MB/s, iops = 751 - Random Read and write: - read: bw = 43.00 MB/s, iops = 2687 - write: bw = 5.00 MB/s, iops = 309 - Sequential Read: bw = 24.06 MB/s, iops = 3009 - Sequential Write: bw = 47.61 MB/s, iops = 1488	- Random Read: bw = 82.10 MB/s, iops = 10000 - Random Write: bw = 381 MB/s, iops = 5818 - Random Read and write: - read: bw = 140 MB/s, iops = 8987 - write: bw = 15.7 MB/s, iops = 1002 - Sequential Read: bw = 101 MB/s, iops = 12300 - Sequential Write: bw = 201 MB/s, iops = 6123	- Random Read: bw = 24.42 MB/s, iops = 3049 - Random Write: bw = 195.31 MB/s, iops = 3052 - Random Read and write: - read: bw = 48.88 MB/s, iops = 3050 - write: bw = 5.56 MB/s, iops = 347 - Sequential Read: bw = 24.48 MB/s, iops = 3050 - Sequential Write: bw = 96.72 MB/s, iops = 3019
Costs per month - total price for 50 GB Disk which is mounted to the VM	\$ 2.43 / 50GB / gp2	\$ 4.80 / 50GB / Standard SSD		\$ 10.20 / 50GB / Persistent SSD	\$ 9.89	\$ 2.49	\$ 2.25