- ## Requirement:

  There will be concurrent write of 1 lakh request where each request writing a data of 20 KB into a particular disk. This 1 lakh request concurrency per sec. in a day maximum I have 5 lakhs records. So, I want to estimate following things:

  - What is the disk required
  - What is the disk type required
  - What is the IOPS and Throughput of the disk
  - What is the storage queuing size for a particular request
  - What is the network bandwidth required
  - What is the storage capacity required for a month

- ## Give data and calculated IOPS and Throughputs:

Parameters	Value	Description	Comments
IO Size	20 KB	Data input size	
Concurrent Request	1 Lakh	Concurrent request	
Maximum Request Per Day	5 Lakhs	Max per day transaction	
Storage capacity per Day	9.53 GB	(Concurrent request per day * IO Size)	(500000 * 20)/(1024*1024) = 9.5367 GB
Storage capacity for a Month	287 GB	(Maximum Request Per Day * IO Size) * 30	(500000 * 20) * 30 = 300000000/(1024 * 1024) = 286.1023 GB
Storing Data for a Year	102.299 TB	(Storage capacity per Month * 365)	(287 * 365)/1024 = 102.2998
IOPS	100000	1 Lakh concurrent request	
Throughput	1953.1MBps	(IOPS * IO Size)	(100000 * 20)/1024 = 1953.125

- Need to find correct VM with Disk that can manage above requirement:
  - Virtual Machine for Azure

Type	Sizes	Description
General purpose	B, Dsv3, Dv3, Dasv4, Dav4, DSv2, Dv2, Av2, DC, DCv2, Dpdsv5, Dpldsv5, Dpsv5, Dplsv5, Dv4, Dsv4, Ddv4, Ddsv4, Dv5, Dsv5, Ddv5, Ddsv5, Dasv5, Dadsv5	Balanced CPU-to-memory ratio. Ideal for testing and development, small to medium databases, and low to medium traffic web servers.
Compute optimized	F, Fs, Fsv2, FX	High CPU-to-memory ratio. Good for medium traffic web servers, network appliances, batch processes, and application servers.
Memory optimized	Esv3, Ev3, Easv4, Eav4, Epdsv5, Epsv5, Ev4, Esv4, Edv4, Edsv4, Ev5, Esv5, Edv5, Edsv5, Easv5, Eadsv5, Mv2, M, DSv2, Dv2	High memory-to-CPU ratio. Great for relational database servers, medium to large caches, and in-memory analytics.
Storage optimized	Lsv2, Lsv3, Lasv3	High disk throughput and IO ideal for Big Data, SQL, NoSQL databases, data warehousing and large transactional databases.
GPU	NC, NCv2, NCv3, NCasT4_v3, NC A100 v4, ND, NDv2, NGads V620, NV, NVv3, NVv4, NDasrA100_v4, NDm_A100_v4	Specialized virtual machines targeted for heavy graphic rendering and video editing, as well as model training and inferencing (ND) with deep learning. Available with single or multiple GPUs.
High performance compute	HB, HBv2, HBv3, HBv4, HC, HX	Our fastest and most powerful CPU virtual machines with optional high-throughput network interfaces (RDMA).

  - Disk type comparison

	Ultra Disk	Premium SSD v2	Premium SSD	Standard SSD	Standard HDD
Disk type	SSD	SSD	SSD	SSD	HDD
Scenario	IO-intensive workloads such as SAP HANA, top tier databases (for example, SQL, Oracle), and other transaction-heavy workloads.	Production and performance-sensitive workloads that consistently require low latency and high IOPS and throughput	Production and performance sensitive workloads	Web servers, lightly used enterprise applications and dev/test	Backup, non-critical, infrequent access

Max disk size	65,536 GiB	65,536 GiB	32,767 GiB	32,767 GiB	32,767 GiB
Max throughput	4,000 MB/s	1,200 MB/s	900 MB/s	750 MB/s	500 MB/s
Max IOPS	160,000	80,000	20,000	6,000	2,000, 3,000*
Usable as OS Disk?	No	No	Yes	Yes	Yes

- Design
  - Recommended Azure Virtual Machine(s)

Instance	vCPU(s)	RAM	Temp. Storage	Processor	Pay as you go	Region	Details	
D8as v5	8	32 GiB	N/A		$3,585.76/month	East US	View details	

  - Selected Disk

Disk type	Instance	Count	Size	Max IOPS	Max throughput (MB/s)	Region	Price
Premium SSD v2	- - -	3	100 GiB	20000	512	East US	$331.31/month
Premium SSD$_1$	P30	4	1024 GiB	5000	200	East US	$540.68/month

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