

# Virtual machine storage overview

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## Disks used by VMs

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- **Operating system disk** - Every virtual machine will have an operating system disk.
- **Temporary disk** - Each VM contains a temporary disk. The temporary disk provides short-term storage for applications and processes
- **Data disk** - A data disk is a VHD that's attached to a virtual machine to store application data, or other data you need to keep.

## Performance tiers

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- **Standard storage**

- Standard Storage is backed by HDDs, and delivers cost-effective storage while still being performant.
- Ideal for Dev/Test, non-critical, Infrequent access
- Max throughput and IOPS per disk is 60MB/s and 500 respectively

- **Premium storage**

- Premium Storage is backed by SSDs, and delivers high-performance, low-latency disk support for VMs running I/O-intensive workloads
- Production and performance sensitive workloads
- Max throughput and IOPS per disk is 250MB/s and 7500 respectively

## Type of disks

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- **Unmanaged disks**

- It is the traditional types of disks that have been used by VMs
- You create your own storage account (SA) and specify SA when you create the disk
- You need to make sure that scalability targets of SA (20,000 IOPS) are not exceeded

- **Managed disks**

- Managed Disks handles the storage account creation/management
- You do not have to worry about the scalability limits of the storage account
- Microsoft recommends use of Azure Managed Disks for new VMs.

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## Snapshots & Images

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- **Snapshots**

- A Snapshot is a read-only full copy of a disk.

- **Image**

- You can create an image from your custom VHD in a storage account or directly from a generalized (sys-prepped) VM

- **Image vs Snapshot**

- Image will include all of the disks attached to the VM. You can use this image to create a new VM, and it will include all of the disks.
- A snapshot is a copy of a disk at the point in time it is taken. It only applies to one disk.

## Disk encryption

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- **Storage Service Encryption**

- Azure Storage Service Encryption provides encryption-at-rest and safeguard your data to meet your organizational security and compliance commitments.
- SSE is enabled by default for all Managed Disks, Snapshots and Images in all the regions where managed disks is available.

- **Azure Disk Encryption**

- Azure Disk Encryption allows you to encrypt the OS and Data disks used by an IaaS Virtual Machine
- For Windows, the drives are encrypted using industry-standard BitLocker encryption technology
- For Linux, the disks are encrypted using the DM-Crypt technology