Disk vs Volume — Understanding Windows Storage

Before using DiskPart, it is critical to understand the difference between a disk and a volume. Most recovery mistakes happen because these concepts are confused.

What Is a Disk?

A disk is a physical or virtual storage device. It is the entire container of storage capacity.

Examples of disks:

- Physical hard drive (HDD)
- Solid State Drive (SSD / NVMe)
- RAID virtual disk
- VM virtual disk (VMDK / VHDX)
- SAN storage LUN

Windows labels disks numerically:

```
Disk 0
Disk 1
Disk 2
```

A disk has no usable filesystem until it is partitioned. It is raw storage.

What Is a Volume?

A volume is a formatted section of a disk. It is the usable storage space that Windows can read and write.

Volumes:

- Have a filesystem (NTFS, ReFS, FAT32)
- Can receive a drive letter
- Contain files and folders
- Host the Windows operating system

Users interact with volumes, not disks.

Disk Structure Example

A single disk may contain multiple partitions and volumes:

Disk	Partition	Volume	Purpose
Disk 0	EFI System	(hidden)	Bootloader
Disk 0	Microsoft Reserved	(hidden)	System use
Disk 0	Main NTFS	C:	Windows OS
Disk 0	Data NTFS	D:	User files

Disk = entire drive
Volumes = usable sections inside the drive

Why This Matters in Recovery

- Drive letters change in recovery mode
- Windows may not mount volumes automatically
- You must identify the OS volume manually
- DiskPart shows the real storage structure

Viewing Disks with DiskPart

```
diskpart
list disk
```

Shows all physical disks detected by the system.

Viewing Volumes

```
list volume
```

Displays all mounted volumes and their drive letters.

Key Concept Summary

- A disk is the entire storage device
- A volume is a formatted section of that disk
- One disk can contain multiple volumes
- Windows operates on volumes, not raw disks
- Recovery requires locating the correct volume

Important Warning

? Commands like `clean` erase entire disks. They do not erase just a volume — they destroy the disk's partition table.

Always confirm disk identity before destructive actions.

Mental Model

Disk = entire pizza
Volumes = slices of pizza

You can't eat the whole disk at once. You eat slices (volumes).

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