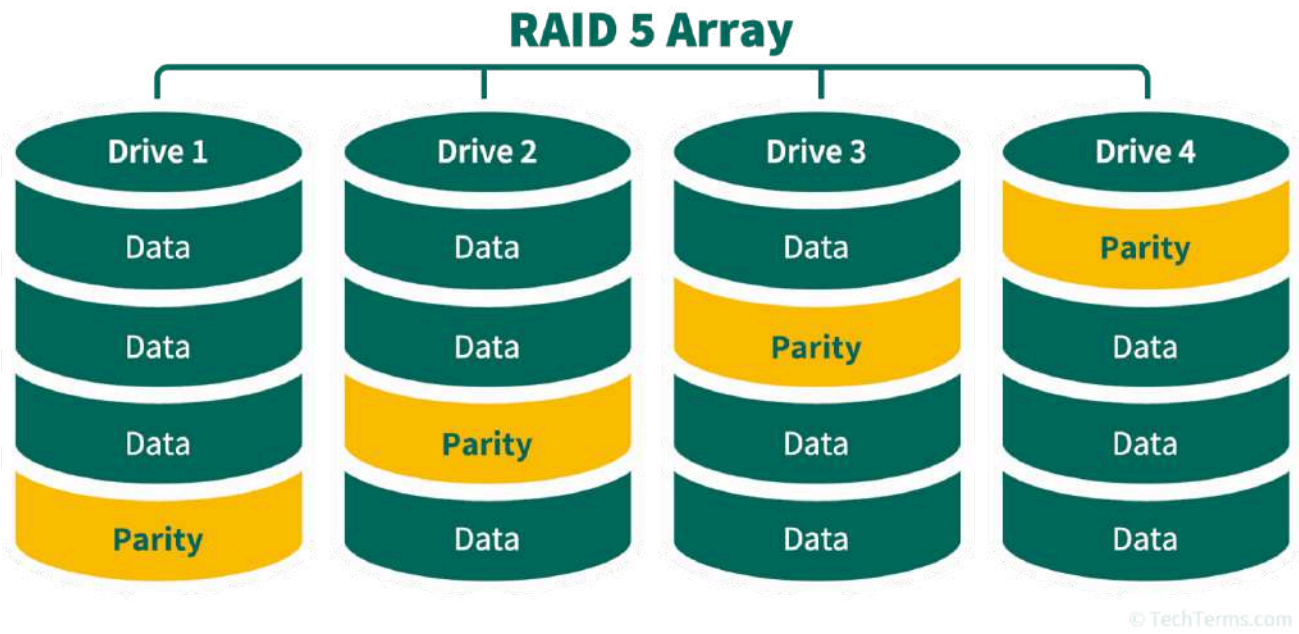
RAID

Stands for "**Redundant Array of Independent Disks**."

RAID is a method of seamlessly storing **data** across multiple physical **disk drives**. The disks in a RAID array appear to a computer's **operating system** as a single storage **volume** instead of multiple independent disks. In addition to providing a large amount of data storage, using a RAID array can improve disk performance and provide redundancy that helps prevent data loss in the event of a disk failure.

RAID arrays spread data across multiple disks using a technique called "striping." Blocks of data, typically a few **megabytes** in size, are interleaved between drives equally, which spreads out **I/O** activity equally among all the disks. While RAID does not require all disks in an array to be the same size, using identical disks is more efficient since an array's total **capacity** is based on the size of the smallest drive. **NAS** devices and **file servers** often use RAID arrays to increase fault tolerance and merge multiple disks into a single volume.



RAID 5 distributes parity data across every disk in the array

RAID Levels

There are multiple levels of RAID that provide different benefits. Some are focused on maximizing storage space, while others focus on redundancy and fault tolerance. While not an exclusive list, the most common levels are described below:

- **RAID 0** stripes data evenly across multiple disks, providing a single large storage volume equal to the combined size of both. This level can increase read and write speeds by spreading I/O activity across multiple disks. It does not offer redundancy or data protection — if one disk fails, the entire array fails.
- **RAID 1** mirrors the contents of one disk to another. It only provides the storage space of the smaller disk in the array, but since the second disk in the array is a complete copy of the first, it allows either disk to fail without data loss. RAID 1 requires a pair of disks.