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Reading Assignment 1

Incident Response and Handling (ITSY-2442-007)

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Redundant Array of Indendent Disks (RAID) is a filesystem that allows for connecting multiple storage drives together to provide fault-tolerant data storage. For a Forensic Analyst, RAID is extremely important because it ensures that vital forensic data does not get corrupted or accidentally destroyed.

RAID Levels

RAID comes in different levels, which refer to the redundancy of the stored data.

RAID 0 provides maximum performance and capacity. Data is split and written across multiple drives simultaneously. This boosts read and write speeds but provides no redundancy, meaning the loss of one drive results in the loss of all of the data that was stored on that drive. This practice of splitting data between drives is called “striping” (NI, 2025).

RAID 1 provides maximum data redundancy. Data is duplicated (mirrored) on at least two separate drives. This provides 100% data redundancy, as the data remains accessible as long as one drive in the pair is operational. However, this means that capacity is limited to the size of a single drive, and performance may not be improved significantly. This practice of copying data between drives is called “mirroring” (NI, 2025).

RAID 5 and RAID 6 provide balanced performance and redundancy. Mathematical parity information is calculated and distributed across all drives in the array. This allows the system to reconstruct data from a failed drive and provides fault tolerance without requiring a dedicated parity drive like RAID 3. The benefit of this is that it doesn’t take up as much space as RAID 1, while still providing the same redundancy benefits.

RAID 10 provides a balance of high performance and high redundancy by combining mirroring (RAID 1) and striping (RAID 0). “It allows the mirroring of disks in pairs for redundancy and improved performance, following which it stripes data across multiple disks for maximum performance” (EC-Council, 2016). The benefit of this approach is that it still allows for high performance (like RAID 0), while introducing the same performance benefits of RAID 1.

Bibliography

EC-Council. (2016). *Computer forensics: Investigation procedures and response (CHFI)* (11th ed., pp. 283–189). Cengage Learning.

NI. (2025, May). *Understanding RAID Levels, Configurations & More*. https://www.ni.com/en/shop/understanding-raid.html