Module 3: Exercise 2

RAID

Business Profile:

A telecom company, involved in mobile wireless services across the country, has about 5000 employees worldwide. This company has 7 regional offices across the country. Although the company is financially doing well, they continue to feel the competitive pressure. As a result, the company needs to ensure that the IT infrastructure takes advantage of fault tolerant features.

Current Configuration and Challenges:

- The company uses an accounting application that is hosted on an individual server with disks configured as RAID 0.
- It is now the beginning of a new financial year and the IT department has an increased budget. You are called in to recommend changes to their database environment.
- You investigate their database environment closely and observe that the data is stored on a 6-disk RAID 0 set. Each disk has an advertised formatted capacity of 200 GB and the total size of their files is 900 GB.
- The amount of data is likely to change by 30 % over the next 6 months and your solution must accommodate this growth.
- The application performs around 40% write operations and the remaining 60 % are reads.

Tasks:

1. Recommend a RAID level that the company can use to restructure their environment and fulfill their needs.
2. What is the cost of the new solution?
3. Justify your choice based on cost, performance, and data availability of the new solution.

Note: A new 200 GB disk drive costs $1000. The controller can handle all commonly used RAID levels, so will not need to be replaced.

Solution:

Each 200 GB drive can hold 186.3 GB of data. There is currently 900 GB of data, which will increase to 1170 GB in the next 6 months. That amount of data will fit on 7 disks, with space left over.

The environment uses a high proportion of writes, so parity-based RAID is not an option. RAID 1 will not provide required capacity, so our choice is RAID 1+0. This RAID level uses mirroring and striping. So, for the 1170 GB of data, we need 7 disk pairs – 14 disks.

We already have 6 disks. So, we need to purchase an additional 8, for a total cost of $8000.

RAID level to use:	RAID 1+0
Advantages:	Excellent protection, very good performance in environments with a high proportion of writes Minimal disruption if a disk failure occurs
Disadvantages:	Highest cost of all RAID solutions