Unit 11 – Evaluation of Grandfather-Father-Son Backup Procedure

Summary

The Grandfather-Father-Son (GFS) backup procedure is a disaster recovery strategy which structures backups into three distinct cycles:

- Daily (son) for incremental backups.
- Weekly (father) for full backups.
- Monthly (grandfather) for archival full backups.

GFS is a particularly effective method for backing up large databases as it reduces the resource and capacity burden on networks and disks. As incremental (son) backups are used, the system will only replicate data which has been changed since the preceding backup, as opposed to the entire dataset (Guan et al, 2022). This enables heavier, more significant backups (weekly/father and monthly/grandfather) to be scheduled during periods of low traffic, such as over weekends, ensuring that the database and its performance is unaffected during peak hours.

Evaluation of GFS Compared to Other Methods

Compared to other methods, such as First-In-First-Out (FIFO) or Incremental Forever (IF), GFS prioritises meeting recovery point objectives. Unlike FIFO, which can prematurely overwrite historic data, GFS provides a ‘safety net’ which allows for the long-term recovery of historical data (Tahir et al, 2020). Compared to IF, which does not repeat full backups to reduce storage demands, GFS provides better adherence to data integrity principles and compliance. Frequent full backups serve as periodic ‘snapshots’ that mitigate the risk of a long chain of corrupted incremental files (Gryz, 2012).

Despite its age, GFS's ability to provide multiple granular restoration points makes it a resilient choice for disaster recovery in enterprise environments.

References

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