

Backup and Recovery Basics, tips, tricks and optimization

Kaloyan Kosev



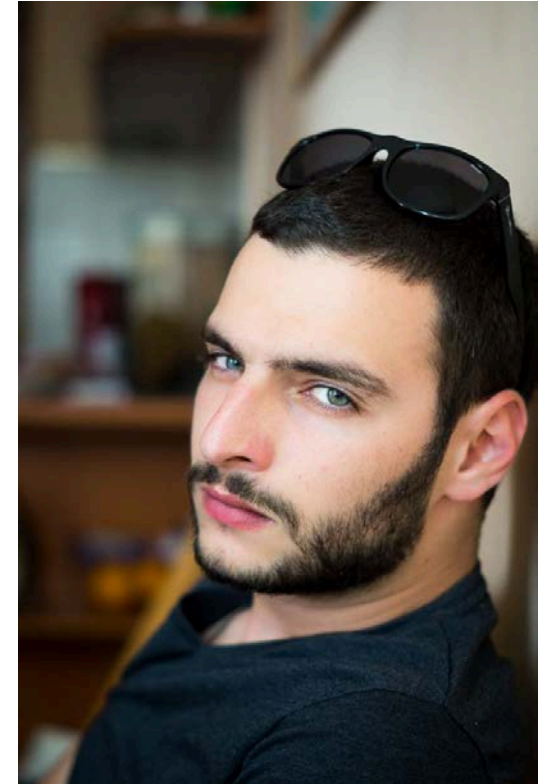
Sponsors



About me

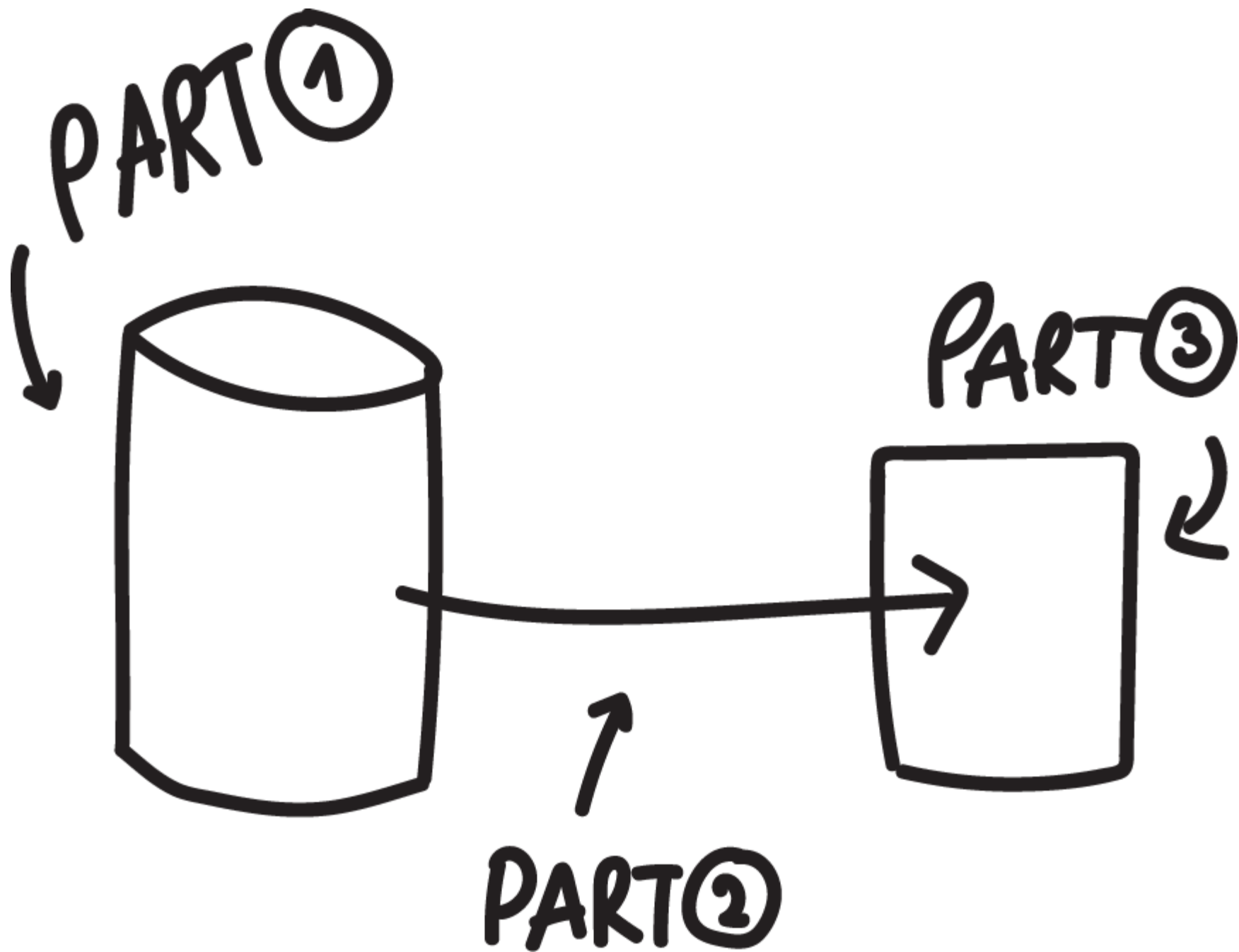
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Over 5 years of production DBA experience dealing with large
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Agenda

- Part 1 Database compression
IO throughput optimization
- Part 2 IO throughput optimization
BufferPool
MaxTransferSize
- Part 3 BlockSize
Backup compression



START

Initialize .BAK
container

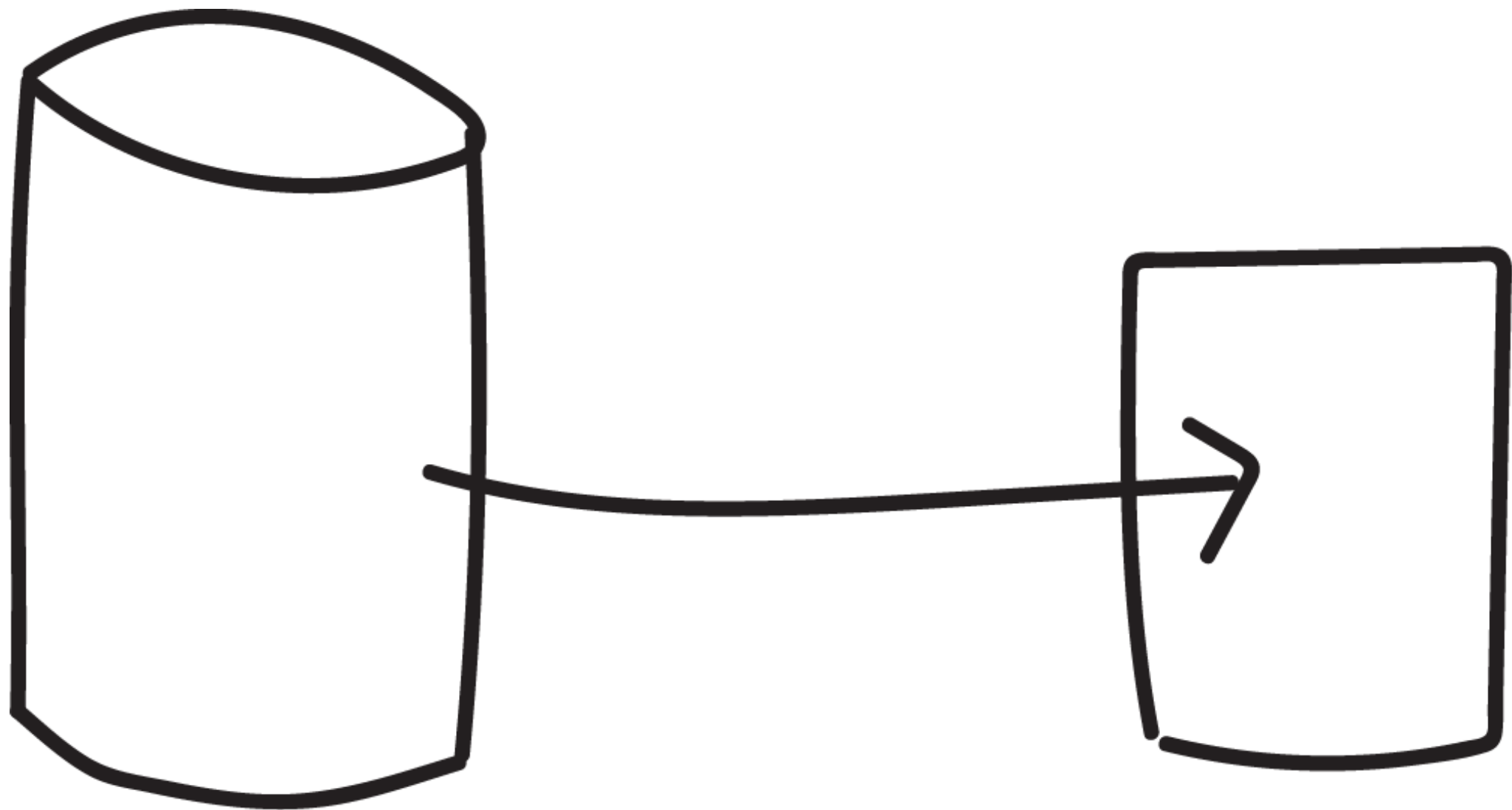
Copy data from
MDF, NDF in .BAK

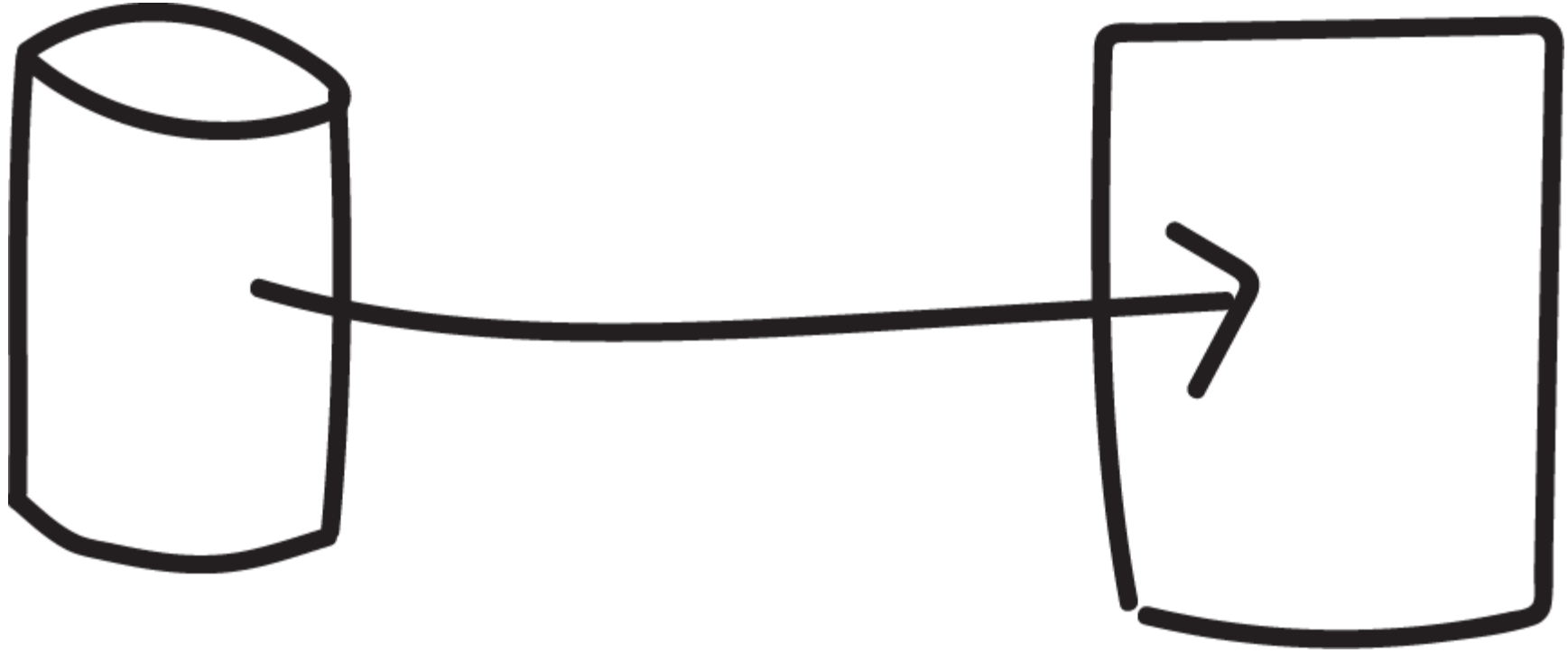
Copy data
from LDF to
.BAK

Close .BAK
container

End



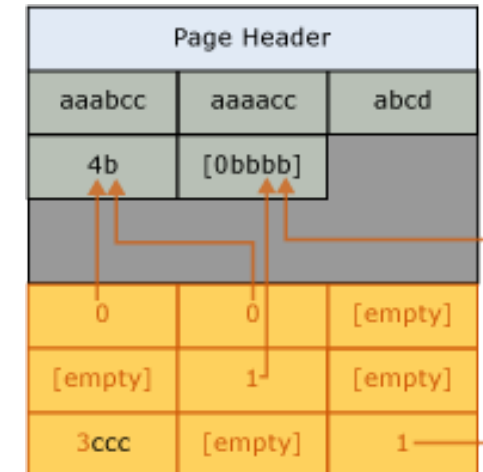
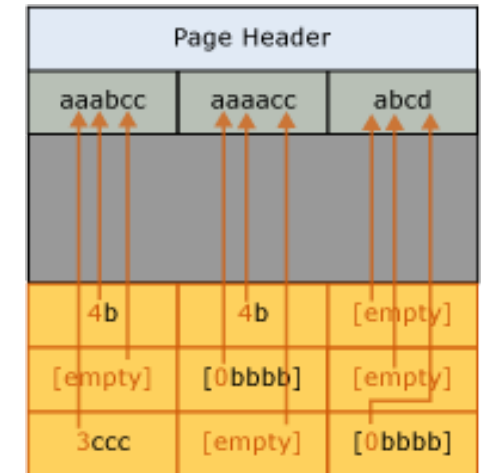




P1: Database compression

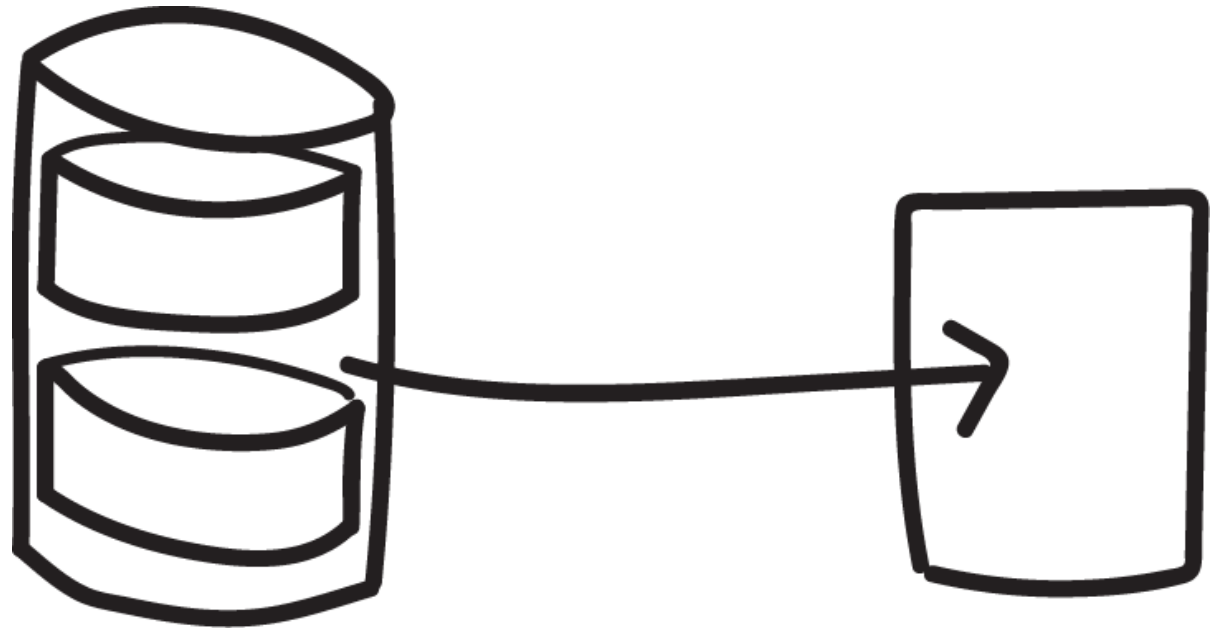
- Row compression
- Page compression
- CPU overhead
- What can and can't be compressed

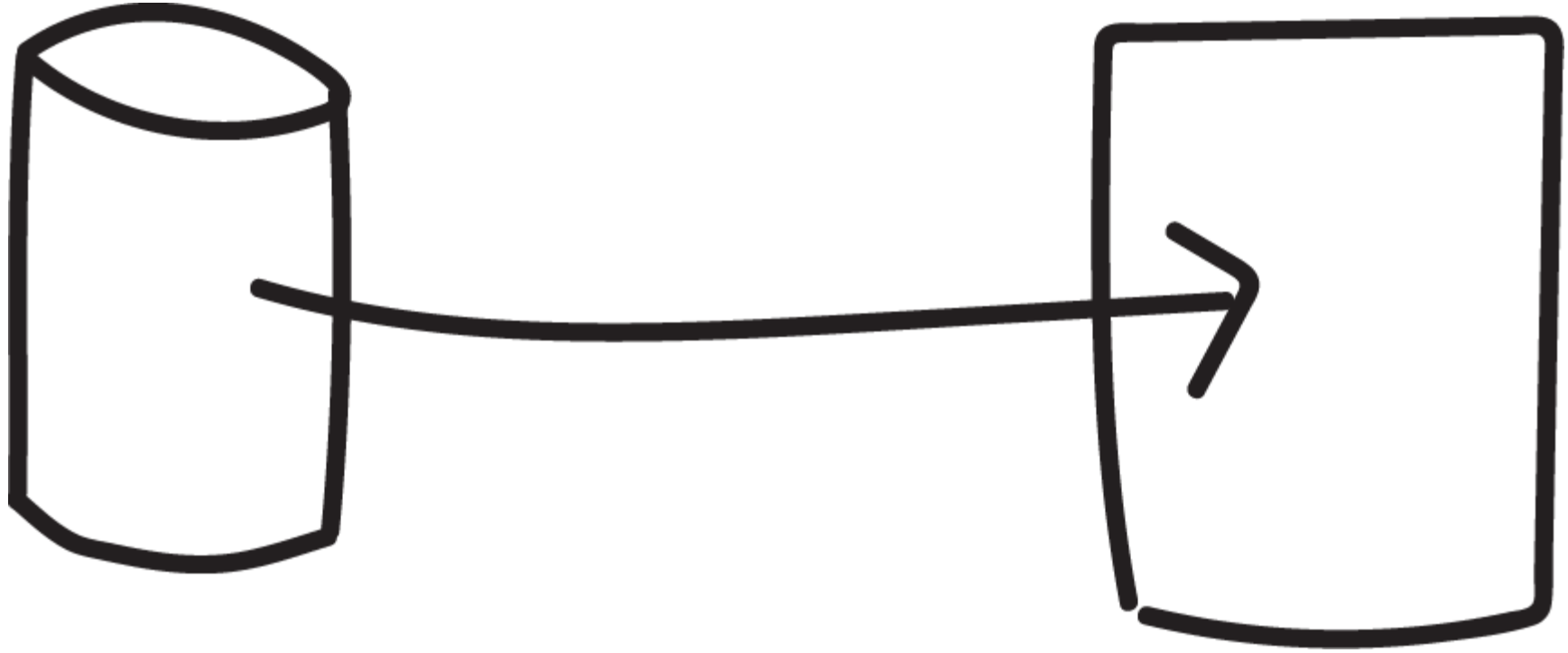
DICTIONARY

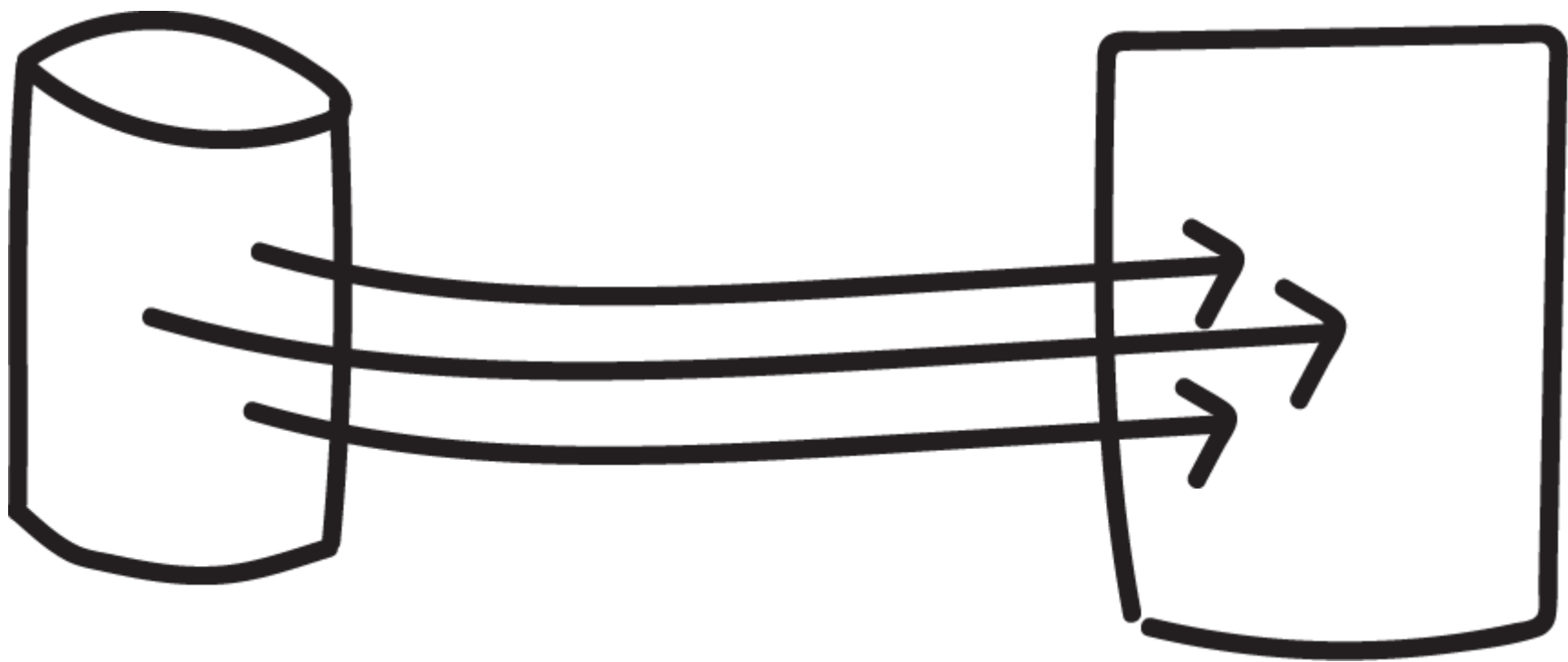


P2: IO throughput optimization

- Multiple database files
- Multiple FileGroups
- Trace flags
 - -T1117 – Equal file grow

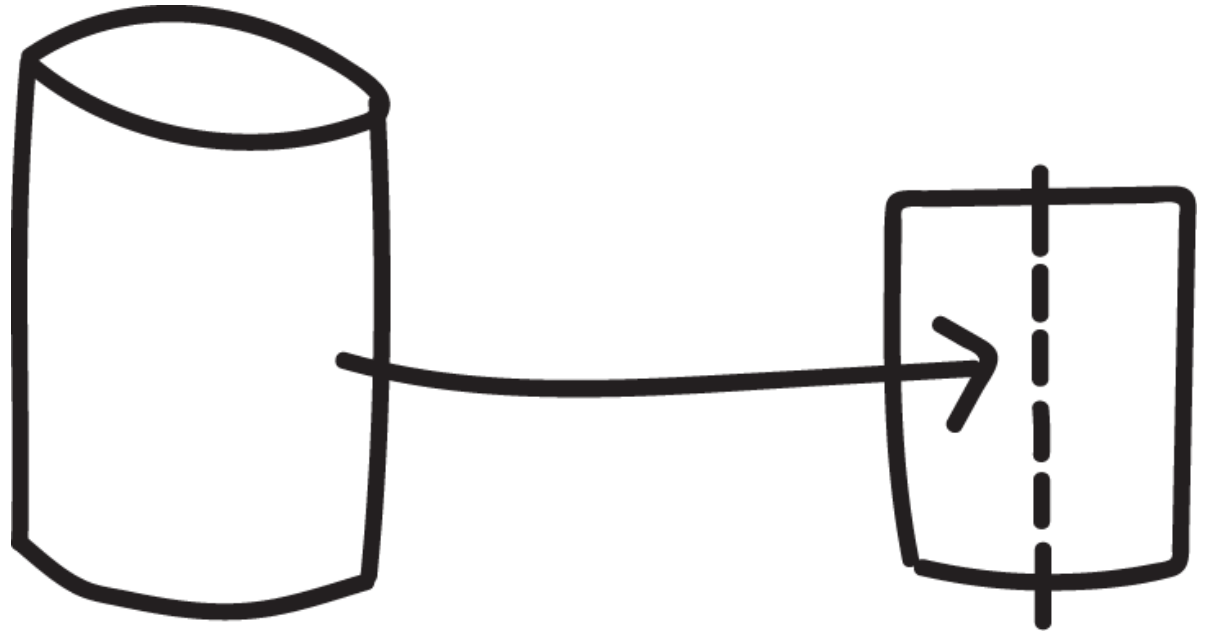


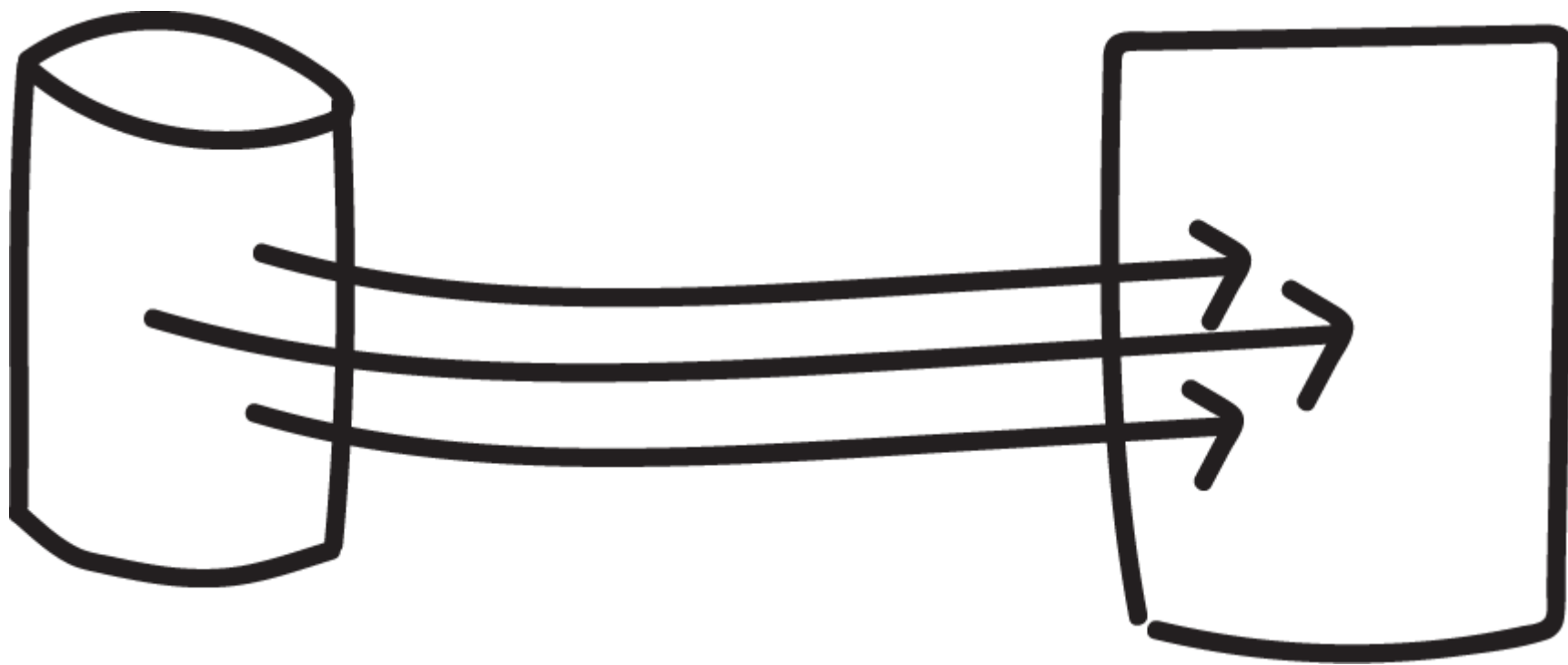


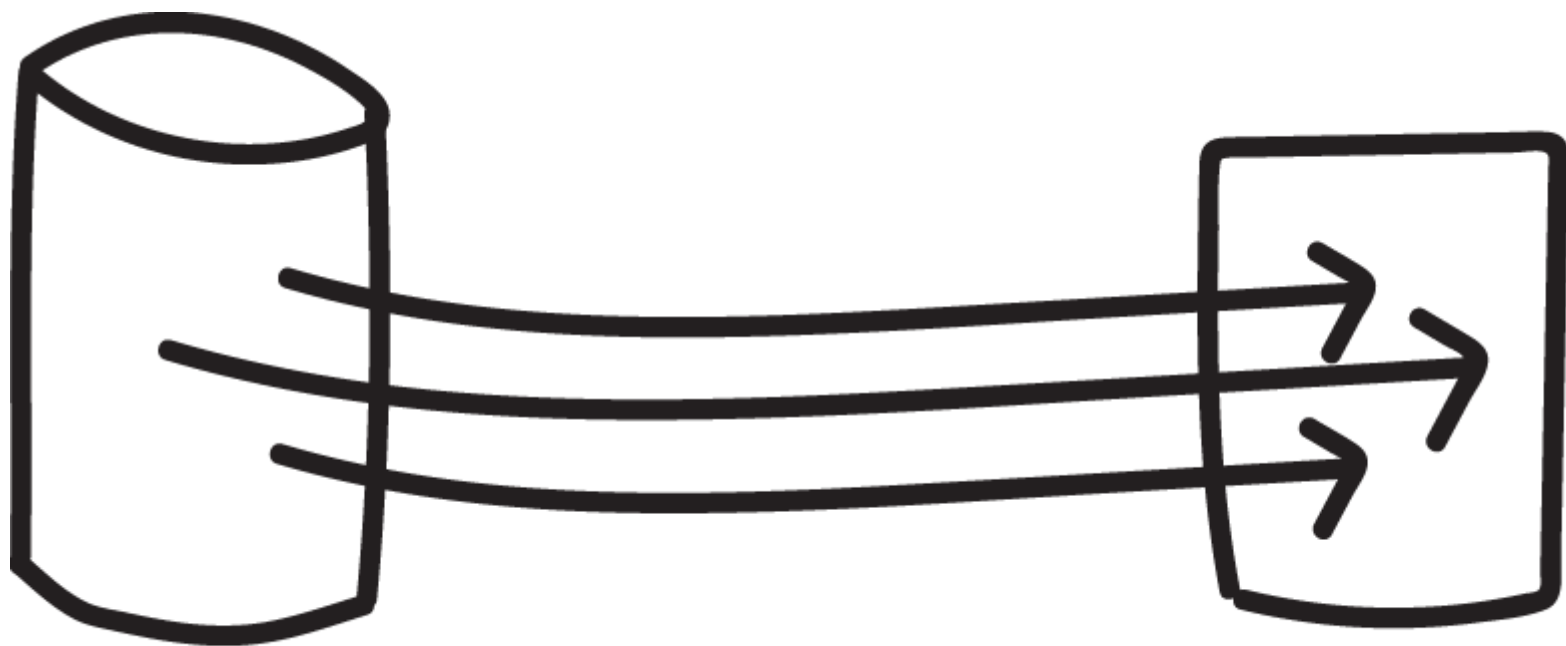


P2: The process

- IO throughput optimization
 - Multiple backup files
- BufferCount
 - memory exhaust?
- MaxTransferSize
 - 64KB → 1MB → 4MB

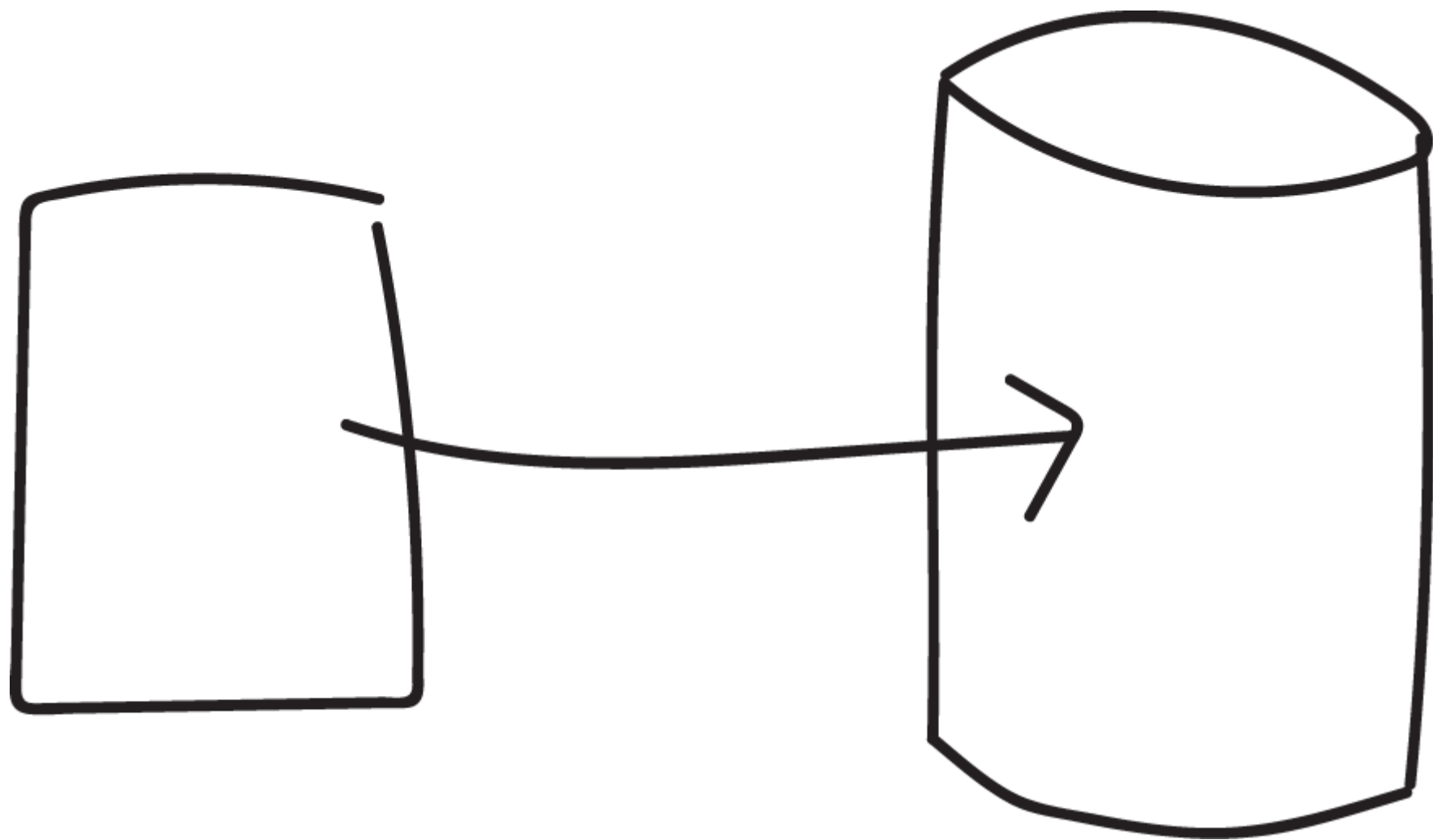




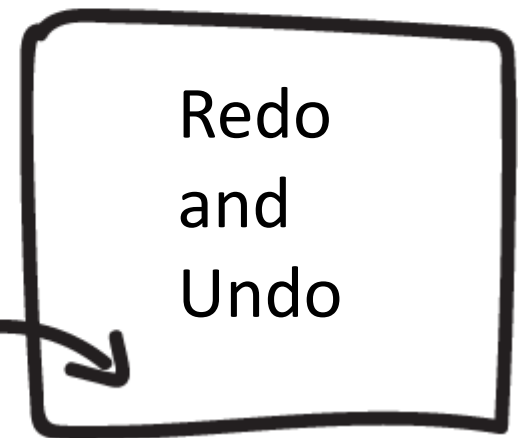
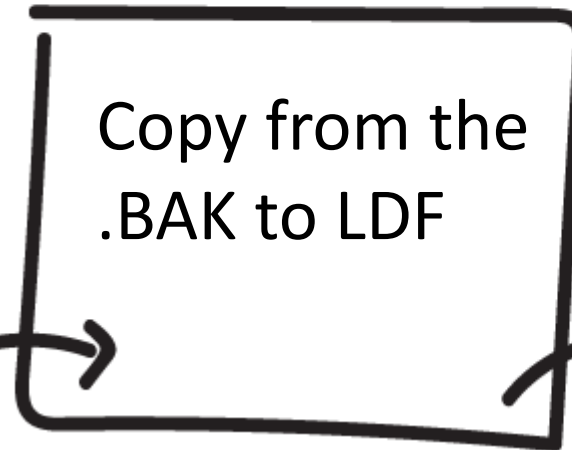
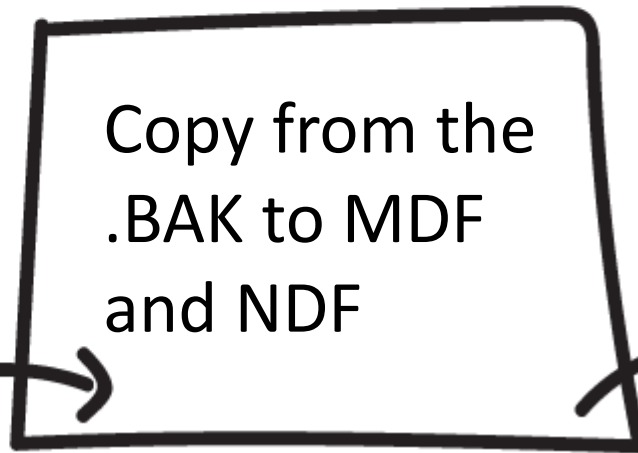


P3: The Backup

- BlockSize
- Backup compression
 - CPU Utilization
 - Resource governor
 - pre-allocation algorithm
 - Co-existence



START



End

P4: The Restore

- Instant File Initialization
 - Log cannot be skipped
- Frequent backups
- Backup media parameters
- Partial Restore

Thank you!

Sponsors



References

- <https://msdn.microsoft.com/en-us/library/ms186865.aspx>
- <https://msdn.microsoft.com/en-us/library/ms186858.aspx>
- <http://henkvandervalk.com/how-to-increase-sql-database-full-backup-speed-using-compression-and-solid-state-disks>
- <https://www.mssqltips.com/sqlservertip/2539/options-to-improve-sql-server-backup-performance/>