Practical examples of migrations to Firebird 5: databases 1.5Tb and 810Gb

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Hardware specifications

- 1.5Tb
- Windows Server
- Physical server
- U.2 PCIe Gen 4 nVME SSDs
- CPU 32 cores/64 threads cores
- 521Gb RAM
- Original version 3.0 (HQbird)

- 810 Gb
- Oracle Linux 8
- VM (Oracle Cloud)
- Fast IO disk plan
- CPU 24 cores
- Original version 3.0 (HQbird)

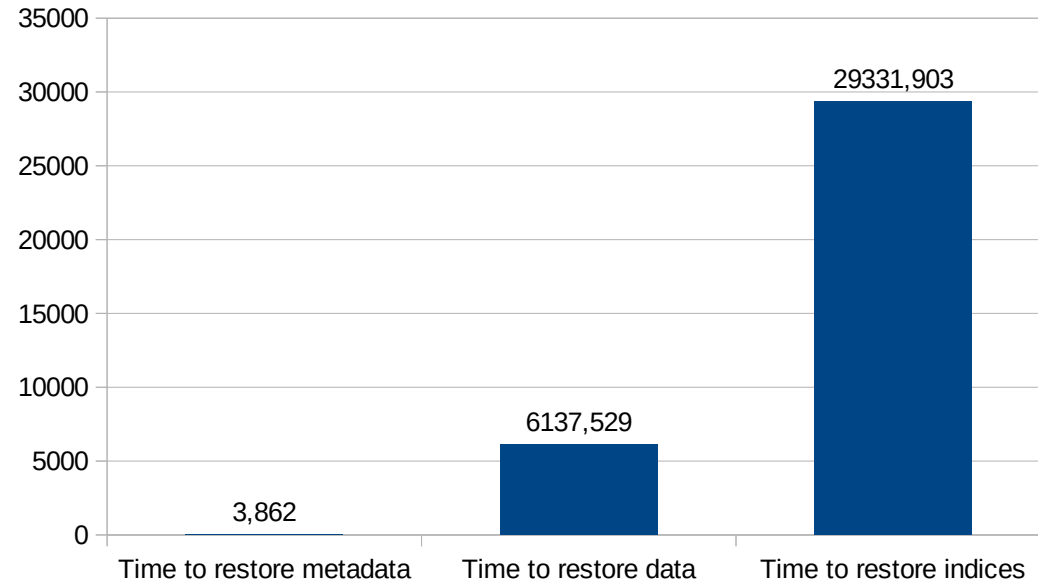# Backup time 1.5Tb

- Parameters
  - -se … -par 24
- Time: less than 2 hours, with 24 parallel threads
  - gbak: 6325.998   0.000 93712736   130 total statistics

Restore time 1.5 Tb

- Parameters
  - -se … -par 24
- Time: less than 10 hours
  - `gbak: 35473.294 0.000 18274562 19357375 total statistics`

Restore steps, in seconds

Backup time 810 Gb

- Parameters
  - -par 10
- Backup time: less than 6 hours
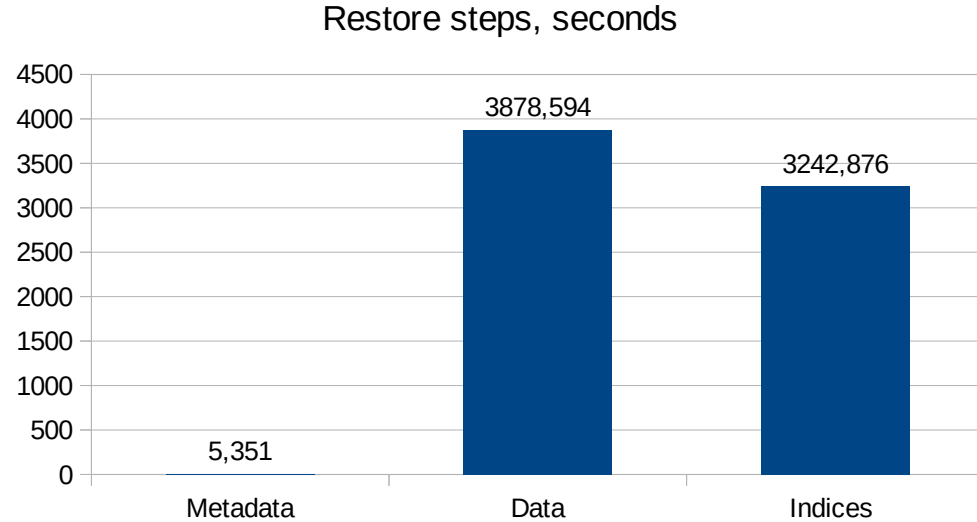 - gbak: 20737.232 0.188 52547498   1006 total statistics

Restore time 810 Gb

- Parameters
  - -par 12

- Time: less than 2 hours!
  - gbak: 7126.821 0.000 2259949 13515198 total statistics

Restore steps, seconds

Why it is faster than backup?

- There are 3 reasons why restore can be faster than backup

    1) New VM, most likely on new host

    2) Using -par 12

    3) There are a lot of garbage in the original database, so gbak need to bypass garbage (with option -g)

Timeline of problemless migration

1) Collect traces from the original database
2) Create test suite on the basis on traces to simulate
   load on Firebird 5
3) Perform tests and optimize performance
   - Apply changes to original to v3 if possible
   - Prepare post-migration script for v5
   - Test applications
4) Test conversions of database to v5
   - We need to know exactly how much time needed
   - Find the best options for backup and restore
5) Real migration
   - backup/restore,
   - recompilcation of metadata
6) Resolve possible post-migration problems

Materials for migration

- Practical Migration Guide to Firebird 5

  - https://ib-aid.com/download/docs/fb5migrationguide.html

Thank you!

- Questions: ak@firebirdsql.org