ScaleFlux®

COMPUTATIONAL STORAGE CSD 2000 SERIES

PostgreSQL

large TCO SAVINGS

75% Lower Flash Cost
Sysbench TPC-C

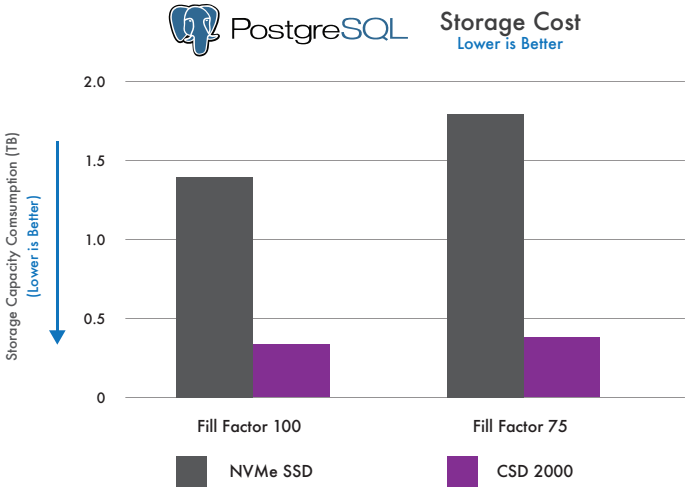

Figure 1

Configuration information for 1.4TB Sysbench TPC-C test:
Fill Factor 100: raw data set size 1.4TB (Compressed to 341GB on CSD 2000)
Fill Factor 75: raw data set size 1.4TB (Compressed to 364GB on CSD 2000)

Dramatically Reduce Storage Costs in PostgreSQL

ScaleFux Computational Storage Drives (CSD) dramatically improve database cost efficiency, granting much lower $/bit versus NVMe SSDs.

PostgreSQL does not natively support data compression. For every one GB of ordinary SSD storage, users can store at most one GB of PostgreSQL data. However, the CSD 2000 compresses data on writes, allowing users to store up to 4x as much data, delivering a 75% reduction in storage cost (Figure 1). This improvement is even more dramatic when admins want to boost PostgreSQL performance by setting a lower Fill Factor (see below).

CSD 2000 provides Penalty-Free Compression

- Perform compression/decompression in the drive, without burdening the CPU and without adding Latency
- Scale throughput with each drive and avoid CPU bottlenecks
- Improve storage efficiency: lower cost to store each byte of data

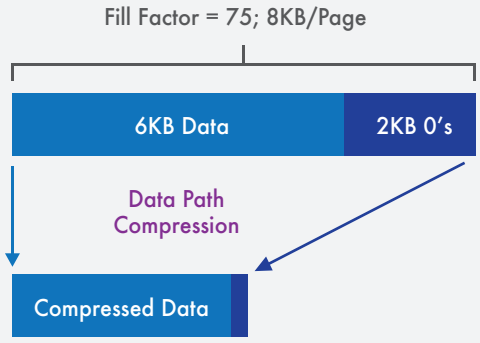

Figure 2

Fill Factor in PostgreSQL - Trading Storage Cost for Database Performance

Fill Factor (FF) is the percent of each page that is filled with user data and can be configured to trade off storage cost and performance. Higher FF = slower but cheaper; Lower FF = faster but more expensive.

Storage Cost -- The default FF setting of 100% is optimized for storage cost efficiency. Reducing FF to 75%, PostgreSQL initially fills each 8KB page with 6KB of user data and 2KB of space reserved for future updates (Figure 2). The reserved space is filled with highly-compressible data (all zeros). Ordinarily, inserting reserved space directly increases storage footprint and cost.

Database Performance -- Lower FF yields better higher PostgreSQL performance (Figure 3). Our simulated TPC-C workload saw a 35% increase in QPS when Fill Factor was set to 75%.

CSD 2000 enables users to gain the QPS benefits of lower FF without incurring its traditional drawbacks, actually achieveing a 75-80% reduction in storage cost vs an ordinary SSD.

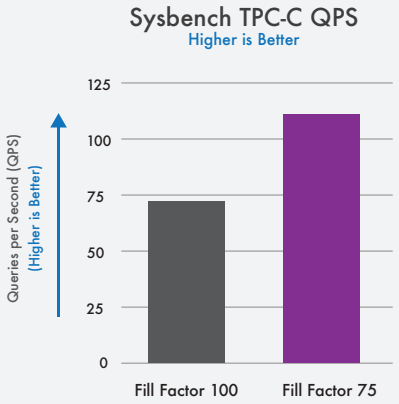

Figure 3

ScaleFlux® CSD 2000 Series

Form Factor - PCIe AIC & U.2 Drive Capacity - up to 20TB user capacity (8TB physical) Interface - PCIe Gen3 x4

SUPERCHARGE YOUR POSTGRESQL INFRASTRUCTURE! REQUEST A POC: info@scaleflux.com

ScaleFlux, Inc.
97 East Brokaw Rd, Ste 260
San Jose, CA 95112
www.scaleflux.com