Accelerating DB Applications Through Direct Pass Caching

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Flash is a Perfect Fit for DBs

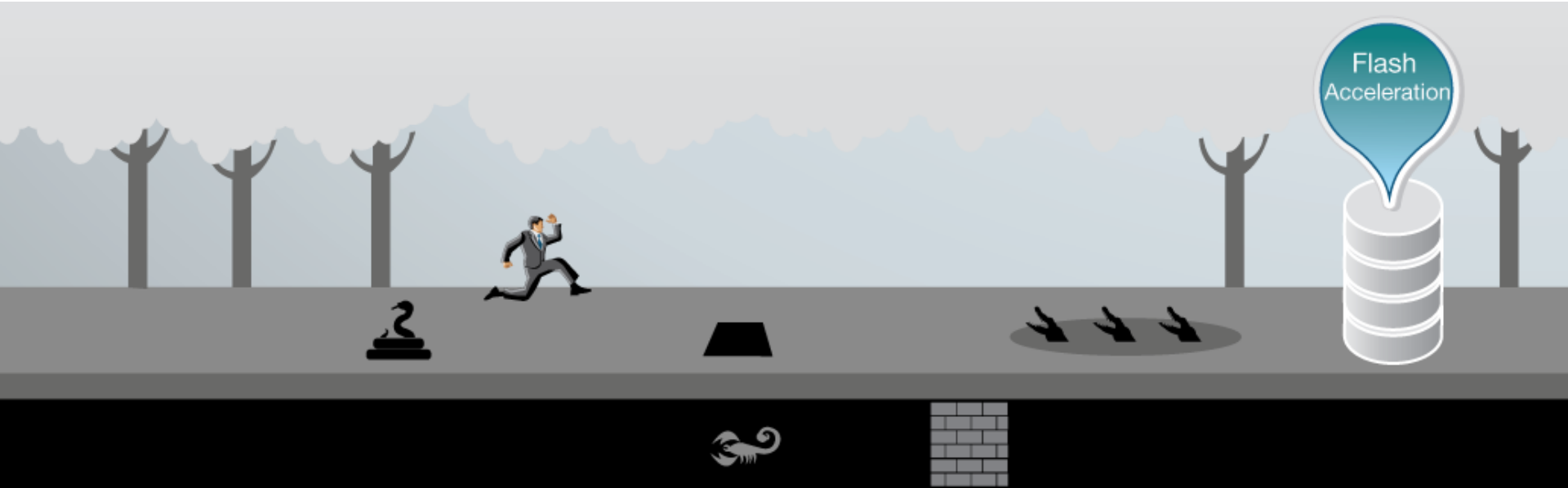
Fits both **relational** & **in-memory** database acceleration

- Performance Boost
- Lowers TCO versus ever-growing SANs
- Lowers TCO versus Terabytes of DRAM

The DBA Flash Acceleration Challenge

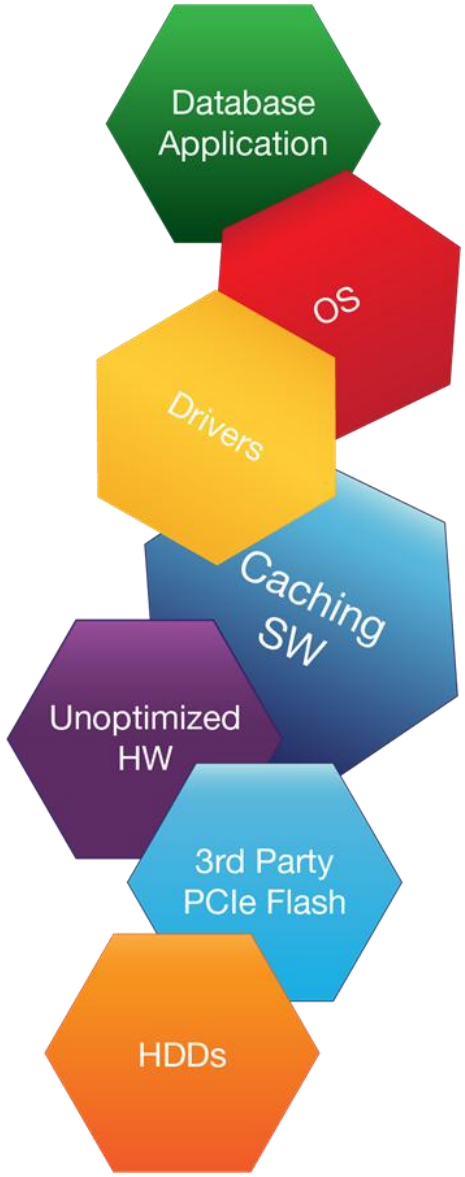
Deployment challenges hamper DBAs from reaching flash benefits

- How to optimize flash for database queries?
- Flash volume or flash caching?
- How to maintain high availability
- How to setup quickly without interruption?

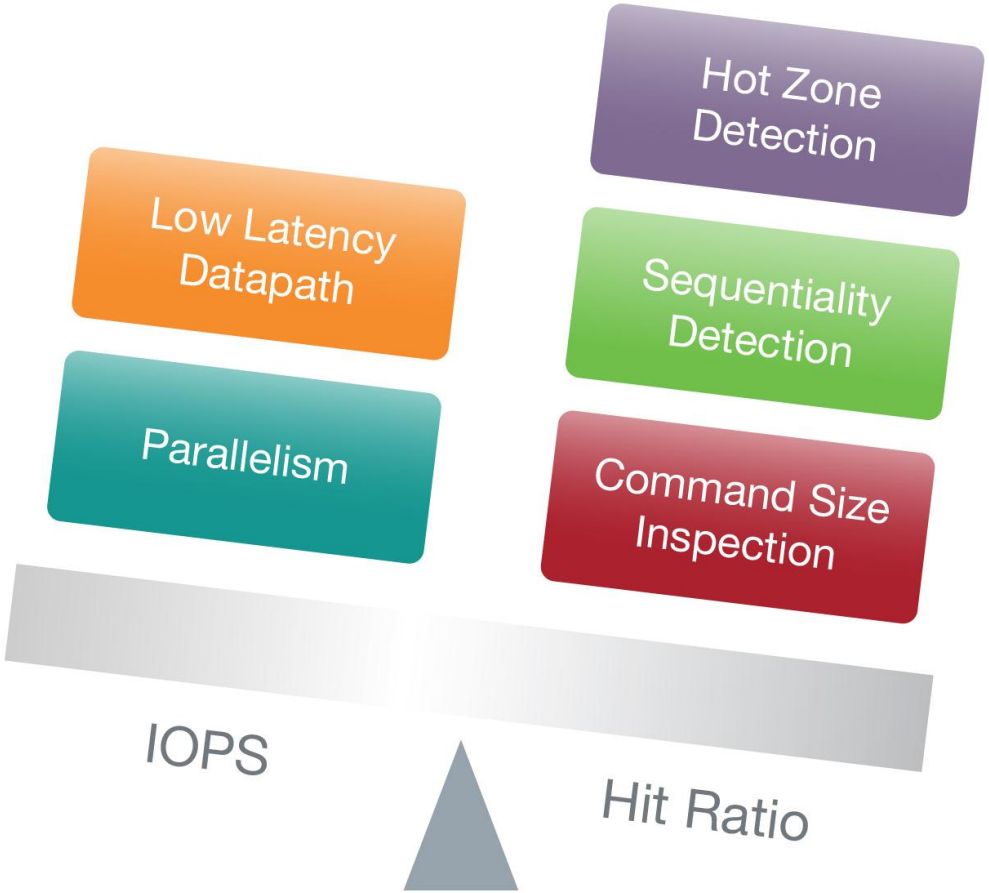


Getting from Applications to Storage

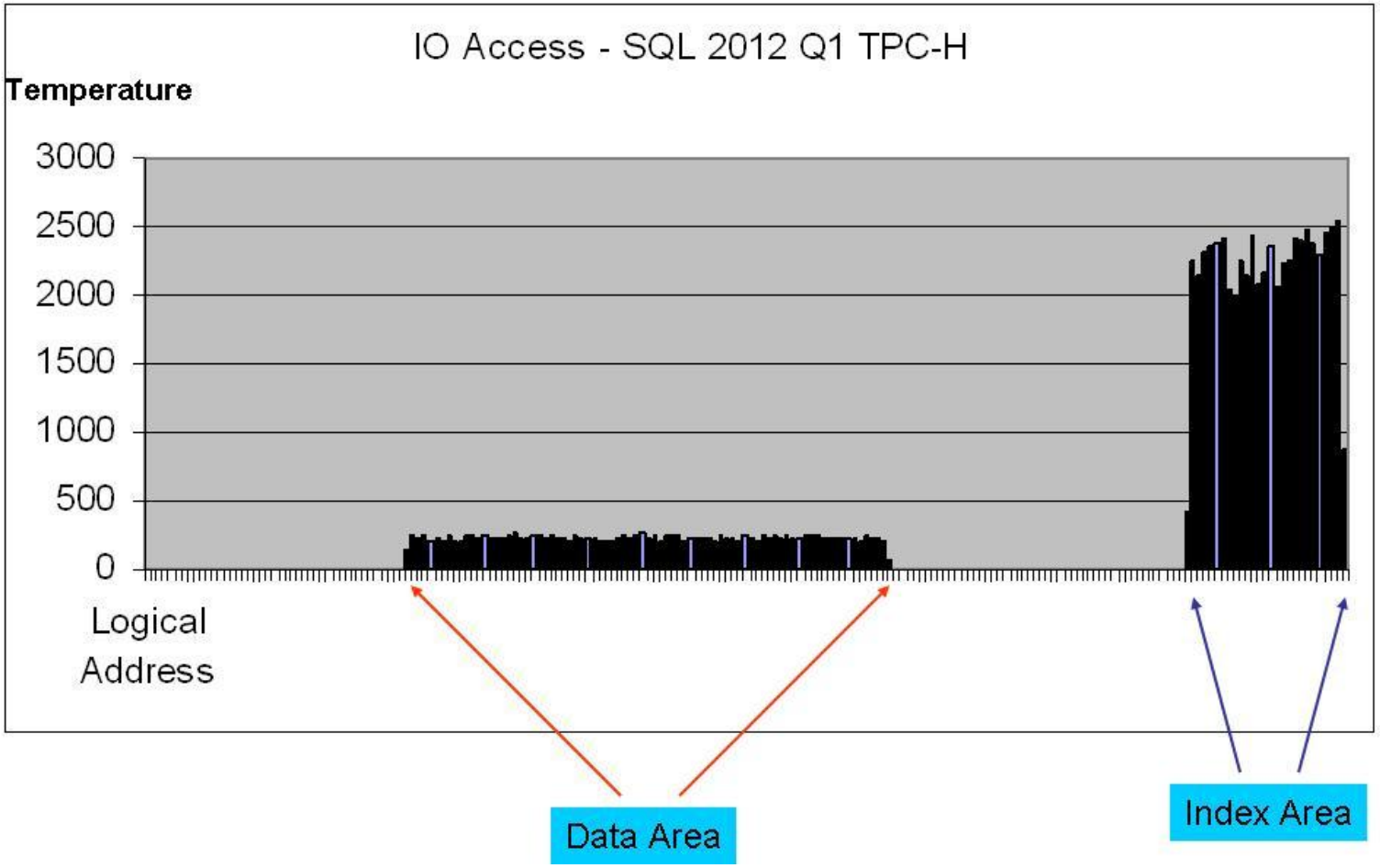
- The Storage Stack
  - Application
  - OS
  - Caching Software
  - Drivers
  - Firmware
  - Flash
  - HDDs



An Inherent Catch 22

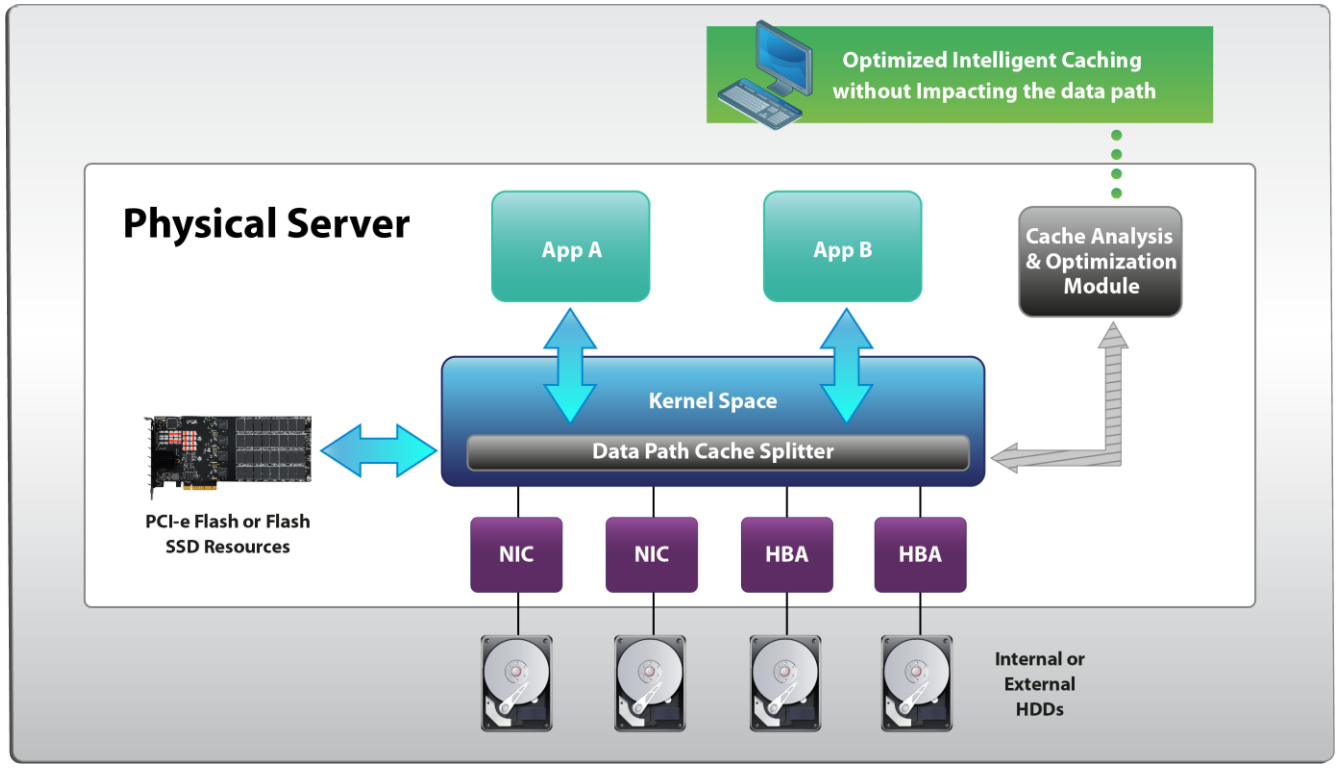


Example I: Columnar Indexes Hot Zones



Example II: Background Scans

Direct Pass Caching Architecture

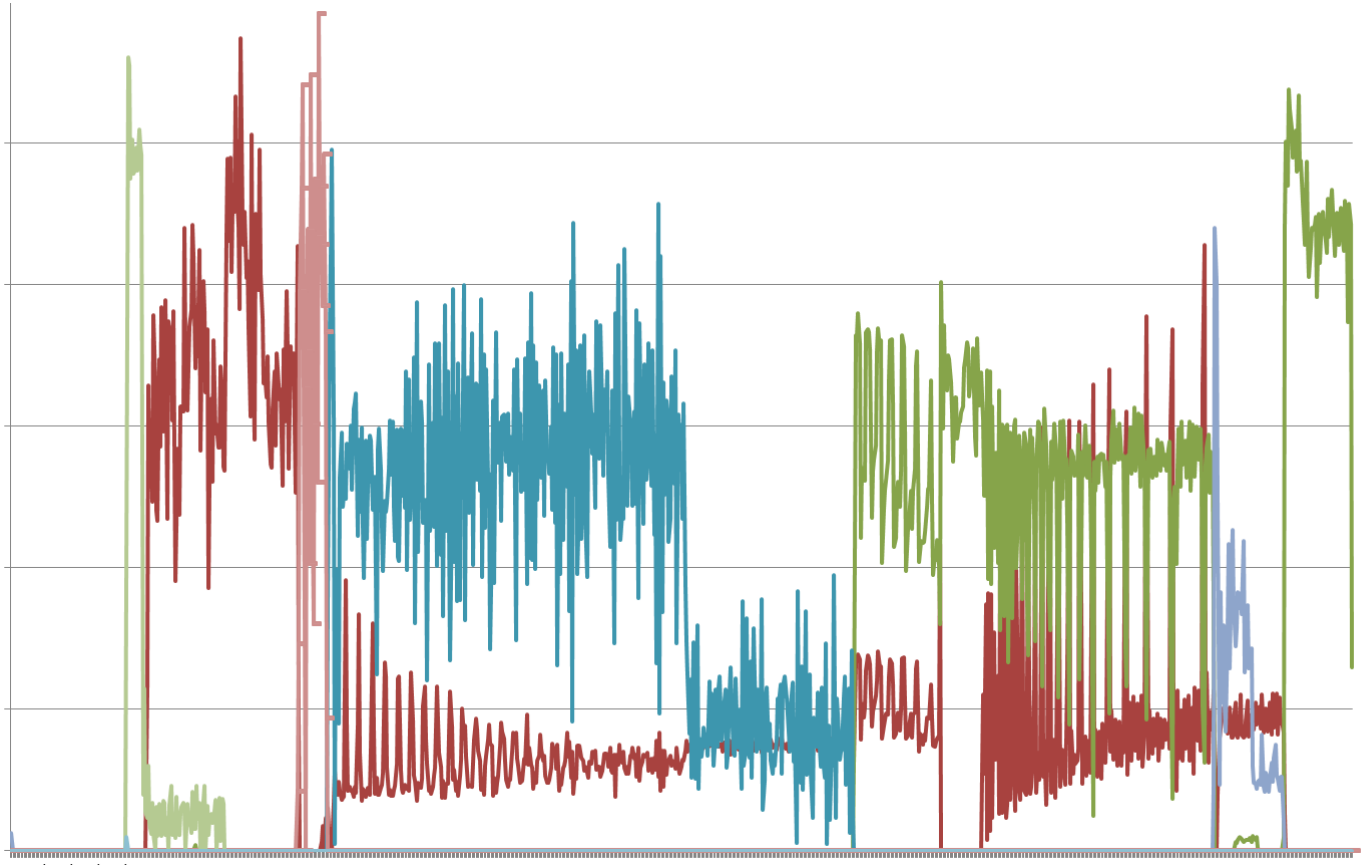


- Tight hardware and software integration allows its advanced application-optimized caching engine to run in tangent with streamlined flash drivers
- Powered by OCZ's Direct Pass Caching Technology offering optimized hit ratios with ultra-low latency access to flash

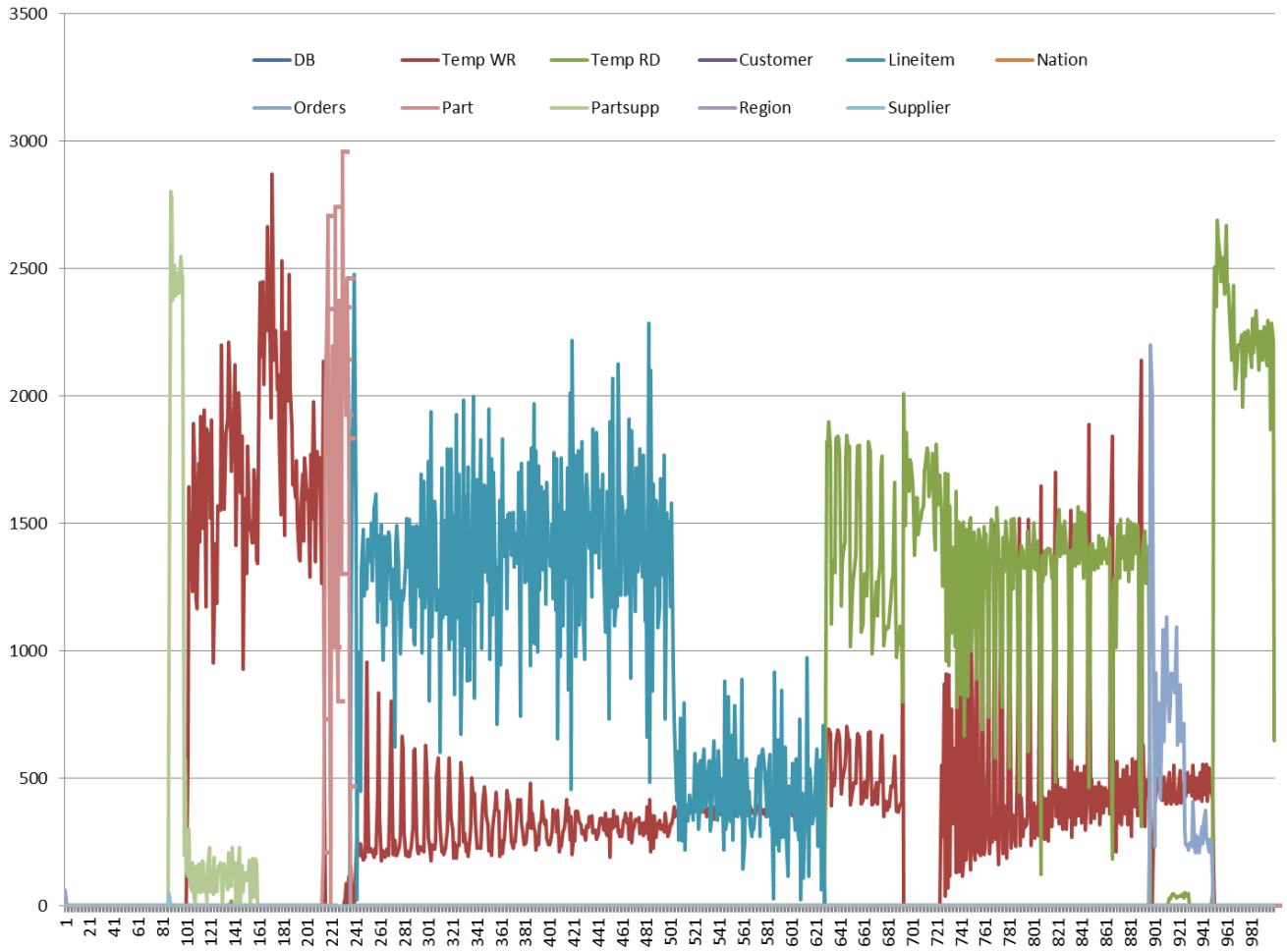
Keys to Database Acceleration

- Flash Caching
- Optimized Policies
- Flash Volumes
- Analysis and Warm-up

Pop Quiz: Seismograph or Electrocardiogram?



Answer: Temporal Table Access Pattern for TPC-H 9 Query



TempDB as Ideal Flash Volume Candidate

- Written and shortly thereafter read
- Transient
- Concurrent sequential reads and writes
- Parallelism as best practice (beware of CPU core based locks)
- Flash Volume considerations
  - Use same card as cache for cost efficiency and optimized wear leveling
  - Volume/Cache allocation flexibility is key

Dynamic Pre-Warming of Cache

- Identifies repeated access patterns and enables critical data to be pre-loaded into the cache by setting periodic time schedules
- Automatic pre-warming of the cache in advance assures that the right and relevant data resides on flash cache at the exact time database needs it!

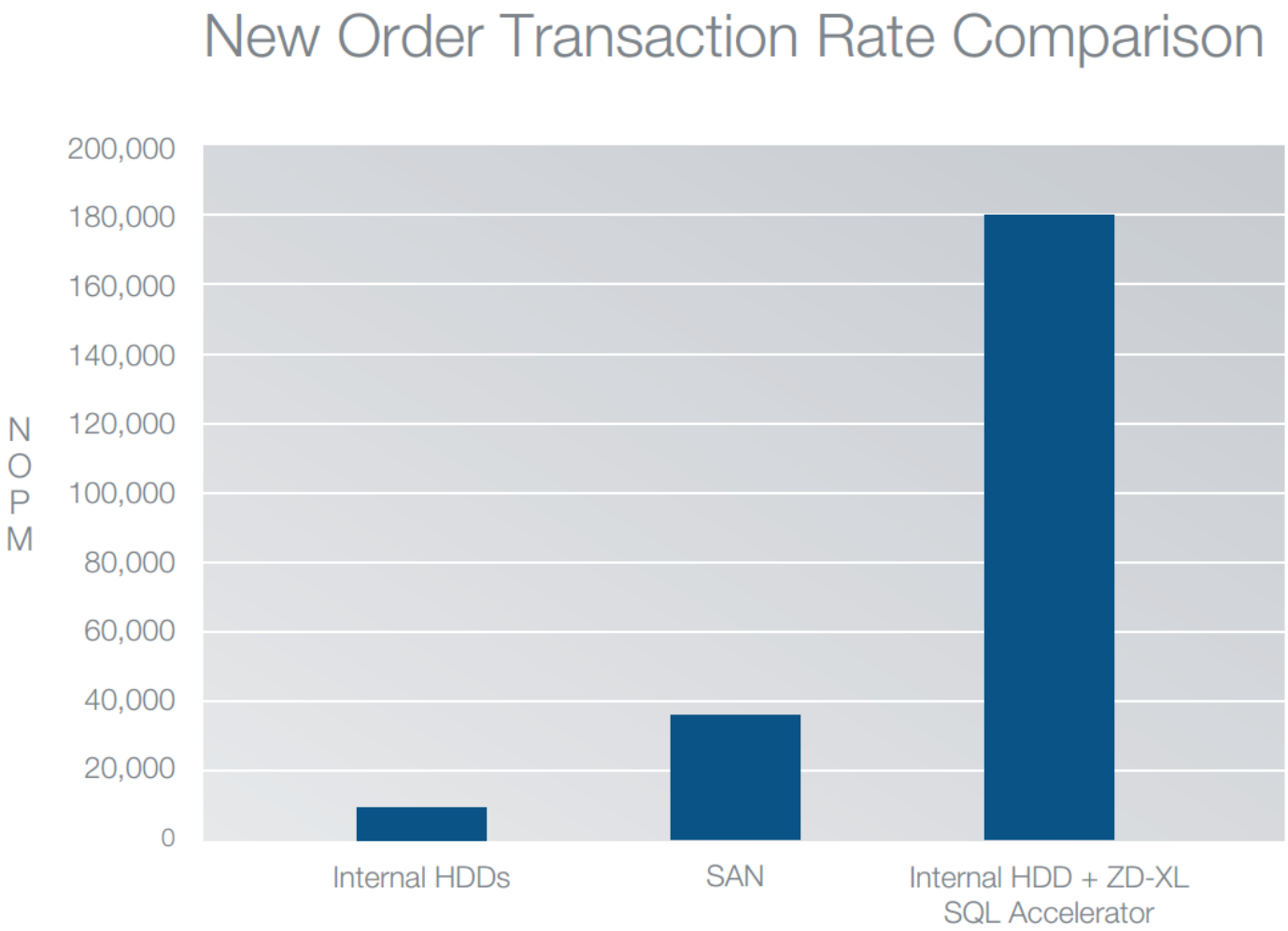
Ideal for:

- Daily, weekly, monthly reporting and analysis
- Cube and index building
- Extract/Transform/Load (ETL) processes

Reduced Storage and Server TCO

- The performance of one Accelerator could rival hundreds of HDDs in a SAN array greatly reducing TCO in the following ways:
  - Lower SAN requirements & purchases
  - Lower power & cooling consumption
  - Lower maintenance & service costs
  - Lower installation & deployment costs
- Reduces the memory requirement for target performance levels, considerably lowering server cost

DB Accelerator as SAN Replacer



OCZ's ZD-XL SQL Accelerator

- Enterprise hardware and software converging as one tightly integrated solution
- Software-defined flash delivery for SQL Server database applications to ensure that the data is right, relevant, and readily available on flash when SQL Server needs it
- Features 'implementation wizards' to guide DBAs to optimally manage flash deployments
- Won Best of Interop 2013
  (Runners up: HP and Dell)

Microsoft® SQL Server®

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Thank You

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