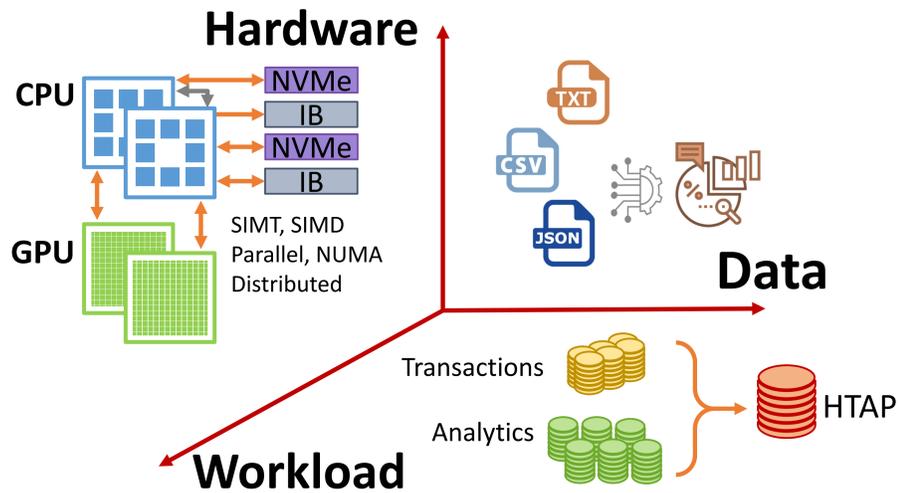


Proteus: taming heterogeneity through virtualization & JIT adaptivity

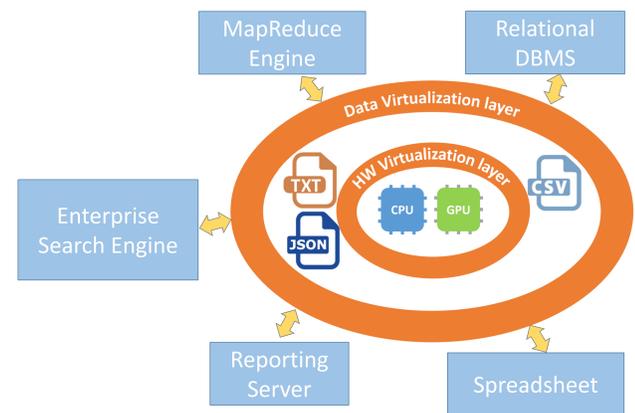
Data-Intensive Applications and Systems Laboratory

Catching up with an Evolving Landscape

Data, Hardware & Workload Virtualization



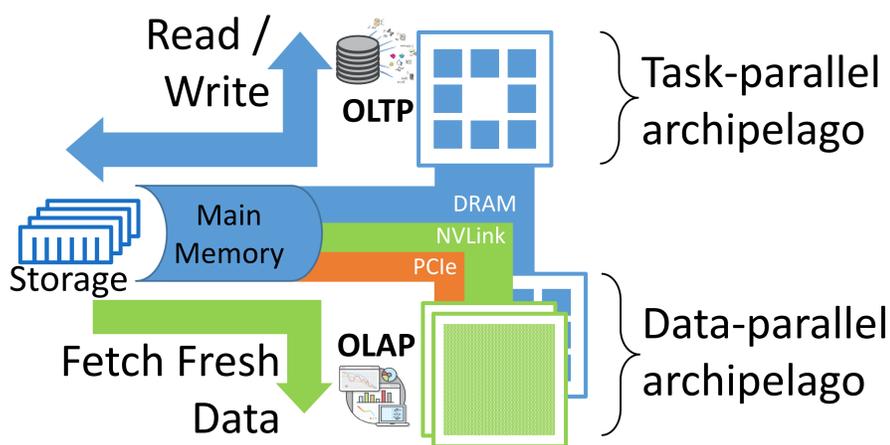
Next generation systems must adapt



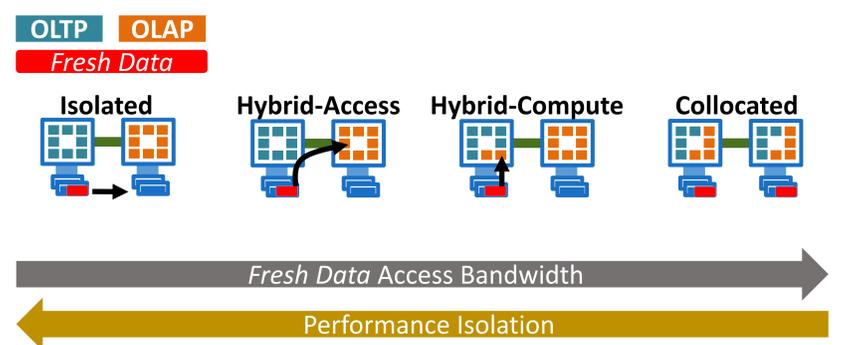
Virtualize and JIT specialize to remove overheads

Elasticity & Isolation in Heterogeneous HW

Adaptively Navigating the HTAP Spectrum



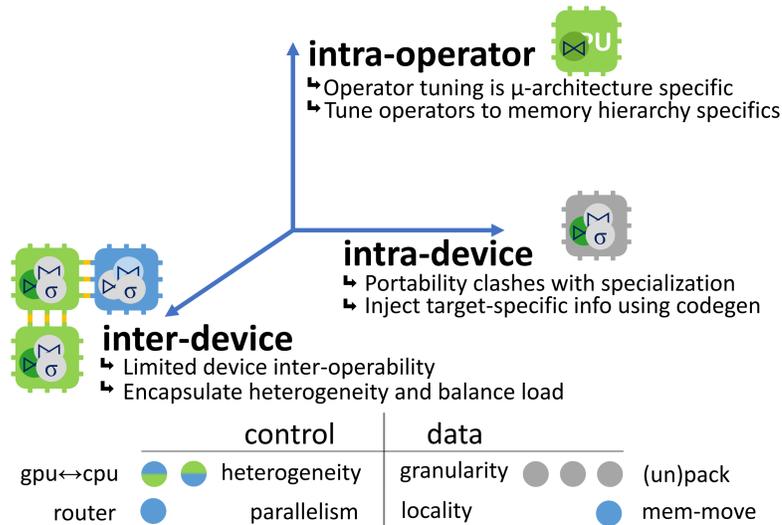
HW- to performance-isolation via logical partitioning



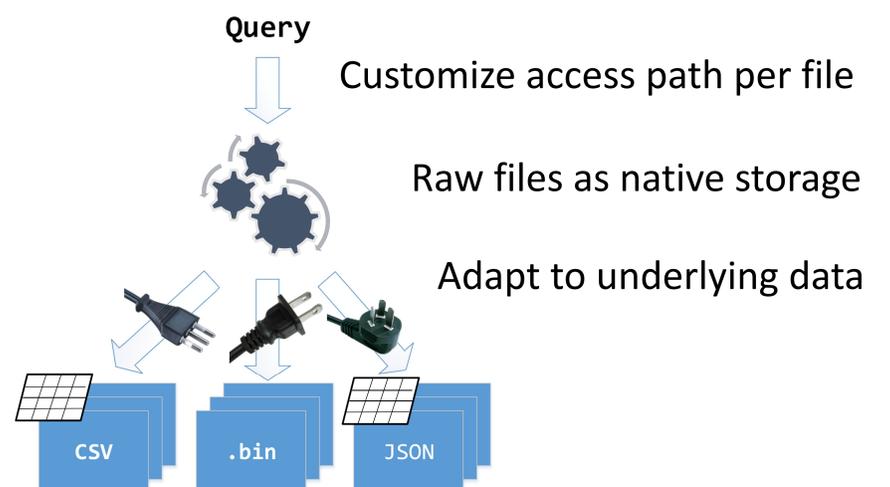
Reconcile fresh data movement with HW efficiency

Heterogeneous Hardware

Heterogeneous Data



Efficient execution via Accelerator-level Parallelism

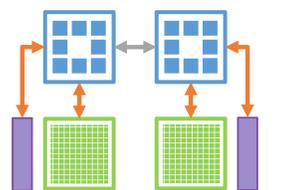


Adapt access paths to data & queries

Fast Analytics on Fresh Data through JIT Code Generation & GPU-acceleration

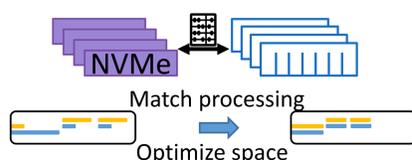
In-memory speed, fresh data

- Multi-CPU, multi-GPU execution
- Freshness-aware access paths
- JIT access & execution



More than in-memory data

- High-bandwidth NVMe arrays
- Hardware-conscious, proportional caching
- Optimize memory utilization



Faster than a scan

- Approximate to exceed hardware limits
- Line-speed sampling, reuse & cache
- Interactive data exploration

