Driving Down Healthcare Costs with Flash

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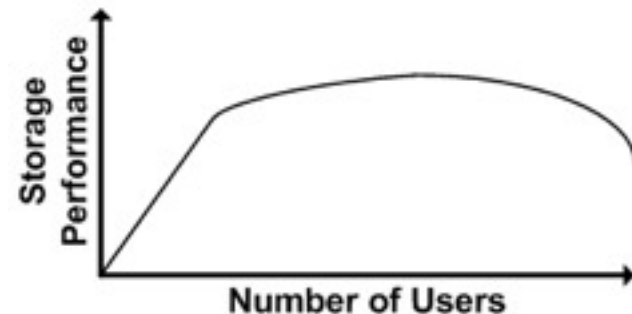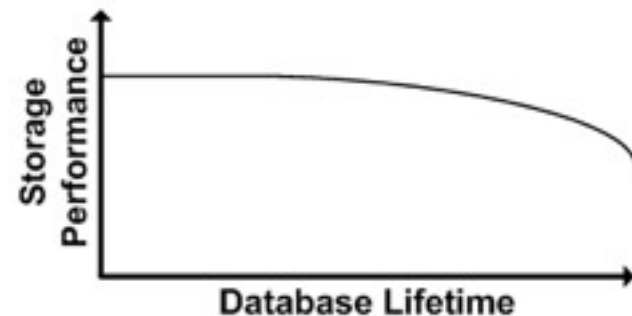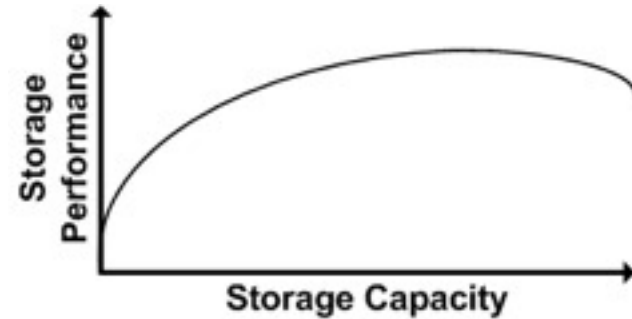
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Big Data in Healthcare ($1B company)

- Oldest and Largest PPO network in NA
  - 900,000 Healthcare Providers
  - 57M Consumers
  - 110M Claims per year
- Diverse needs within shared data environment
  - Continuous Random Access (consumer records)
  - Planned Reporting (financials, fee schedules)
  - Business Intelligence (plan modeling)
- Secure and Regulated environment (HIPPA)

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Data Center Environment

- Equipment
  - Tier 1 Servers, Fabric and Storage
  - Audited Oracle deployment
  - >100TB of physical storage footprint

- Challenges
  - Security and Regulatory compliance
  - SLA to providers
  - Productivity of Internal Modeling
  - Growth and Scale

Storage Performance vs Storage Capacity

Storage Performance vs Database Lifetime

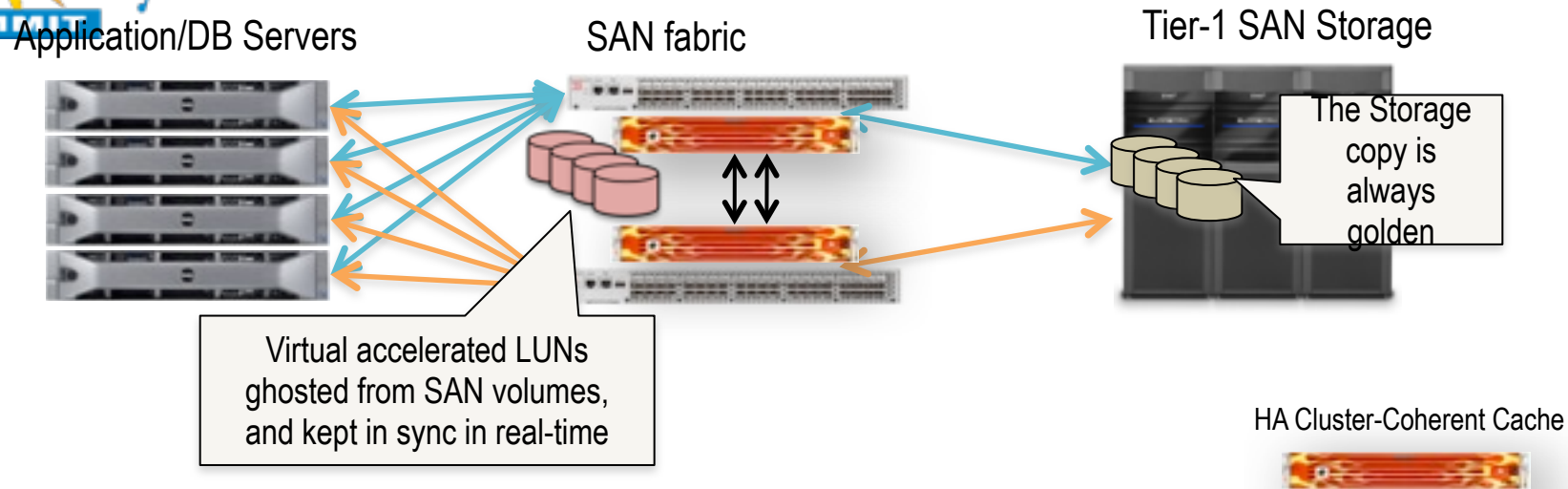Storage Performance vs Number of Users

Relative Costs in Environment

- Acquisition is only first step
  - Certification and compliance
  - Migration and Process integration
  - Training
  - Support
- Performance is
  - Derived from concurrency and scale
  - Not about lowest latency
  - Measured by application users
- No new server or storage tech < $500K (before acquisition!)

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SAN Caching to Accelerate Existing Environments
Non-disruptive, Transparent Network-based Acceleration

Application/DB Servers   SAN fabric   Tier-1 SAN Storage

The Storage copy is always golden

Virtual accelerated LUNs ghosted from SAN volumes, and kept in sync in real-time

HA Cluster-Coherent Cache

➡ No changes to storage volumes, services or reliability

➡ Transparent Caching Appliances

- are deployed in the SAN fabric by zoning them in path

- can be deployed without application downtime with most OS/volume managers

➡ Application runs up to 10X faster

➡ Can be scaled out for high bandwidth demands for Data Warehouse

➡ SAN Storage Array read workload reduces by 90%+, improving write performance indirectly

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Benefit to Environment

Benefits

- Reduced business risk
  - Brought reporting times down to match business needs
  - Consistent high performance thru peak usage cycles
  - Scaled up to handle growth
  - Met backup windows

- Maximized usage of data assets by allowing multiple concurrent access to same databases

- Accelerated delivery of new business functions through increased productivity of developers

- Saved $400,000 in CapEx versus alternatives
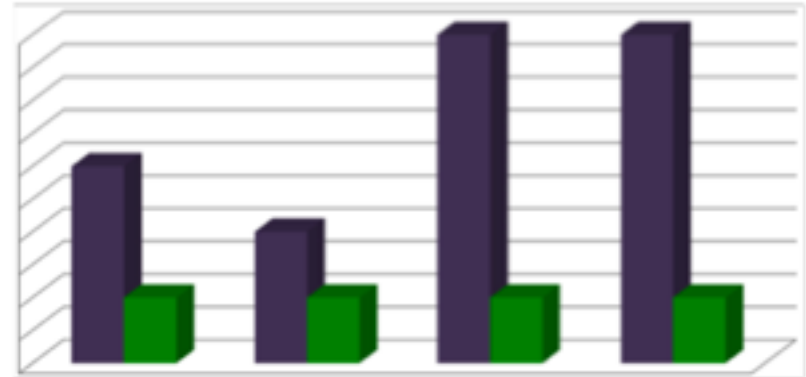
OpEx Savings incalculable – No touch to existing applications, servers or storage

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Flash Challenges for Large Data

- Lower latency solves transactional problems, not throughput problems

- Array controller bottlenecks limit cache and tiering effectiveness within storage array

- Server caching not shareable, scalable or securable – OS patching

- Concurrency enables processing scale; parallelism greater value than pure speed

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Futures of SAN-based Caching

- Stand alone?

- In the array (cabinet)?

- A fabric coprocessor?

- Application coprocessor?
  - Multipathing driver (EMC Lightning)
  - Hypervisor (VMWare IOTurbine)
  - VSM (controlled by admin)
  - Native (Oracle Smart Flash Cache)

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Thank You! Questions?

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