

Pulse

Comes to You



IBM

Managing the World's Infrastructure

Optimizing IT in a Dynamic Infrastructure

Subram Natarajan

Executive IT Consultant,
Systems and Technology Group



© 2009 IBM Corporation

➔ Static “Links“ Between Servers and Storage.

➔ In-efficient Utilization of Storage Capacity

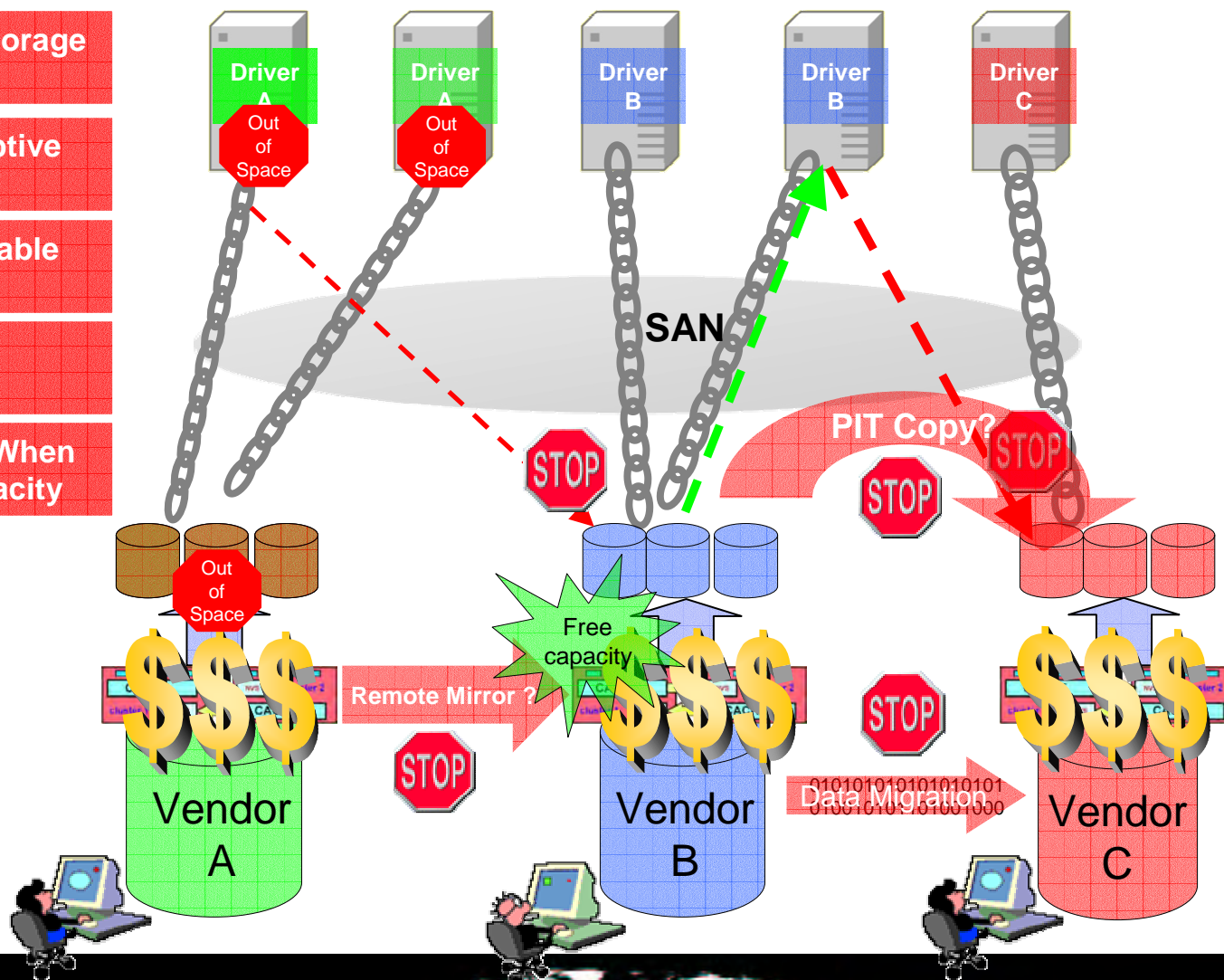
➔ Migration of Data IS Disruptive and Time Consuming

➔ Proprietary, Non-interoperable Copy Services

➔ No Common Storage Management Interface

➔ Paying for Functionality - When You Really Just Need Capacity

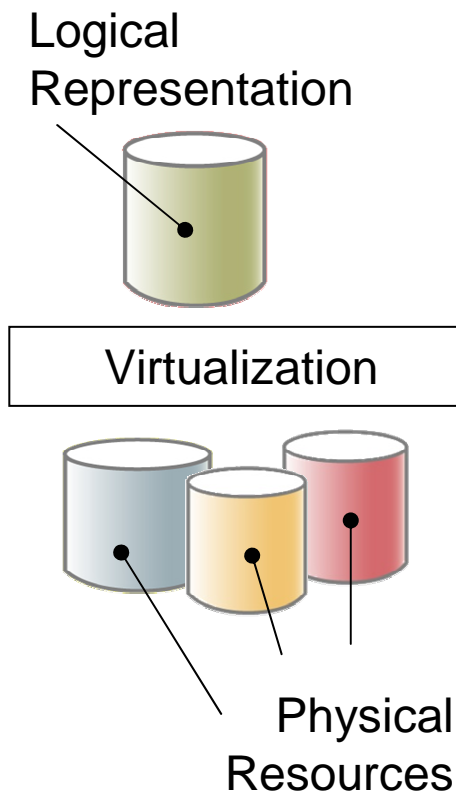
Do You Recognize These Issues?



Disk Virtualization is . . .

Technology that makes one set of resources look and feel like another set of resources

A logical representation of physical resources



- Hides some of the complexity
- Adds or integrates new function with existing services
- Can be nested or applied to multiple layers of a system

Source: Evaluator Group

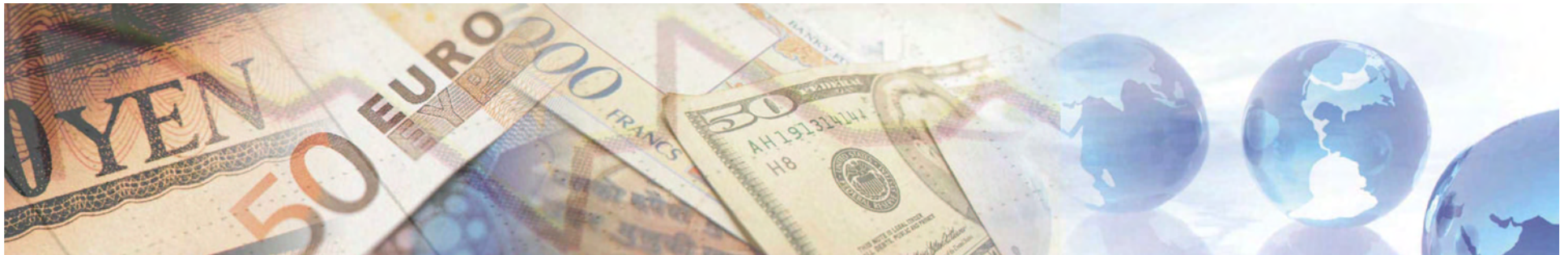


Why Disk Virtualization?

- **Radically changes your views on storage . .**
 - ▶ **Becomes more flexible**
 - ▶ **Becomes more responsive to change**
- **It complements server virtualization very well**
 - ▶ **Increase flexibility**
 - ▶ **Enables quicker responses to threats or opportunities**
- **Makes disk storage management automatic, time-saving and non-disruptive to the business**



Disk Storage Virtualization Delivers Value



- Enterprise Strategy Group reports that early virtualization adopters on average *every year* save:
 - 24% on hardware costs
 - 16% on software costs
 - 19% on SAN administration costs
- With a \$1 million budget spending \$500,000 on hardware, \$200,000 on software, and \$300,000 on administration

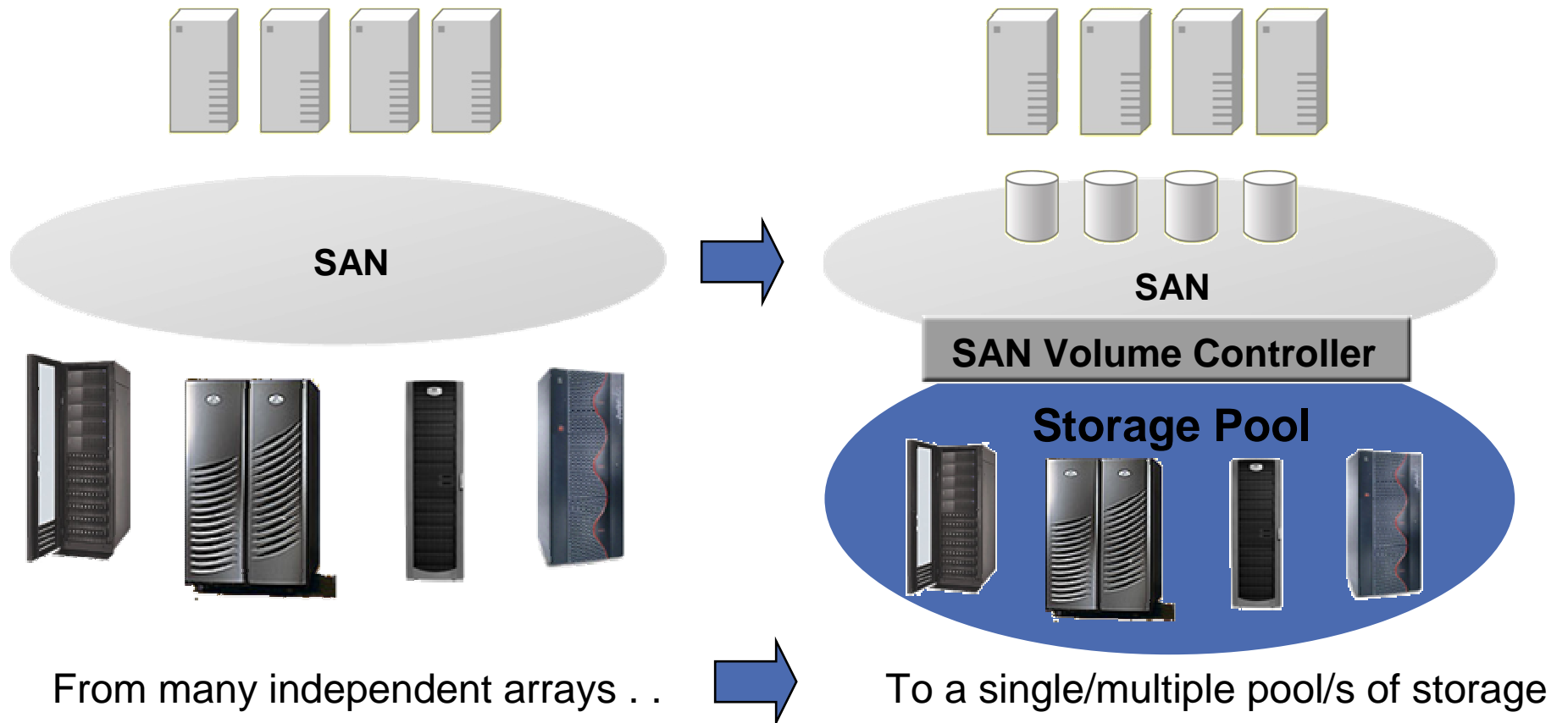
Annual savings would be \$209,000

Source: http://searchstorage.techtarget.com/tip/1,289483,sid5_gci1122304,00.html



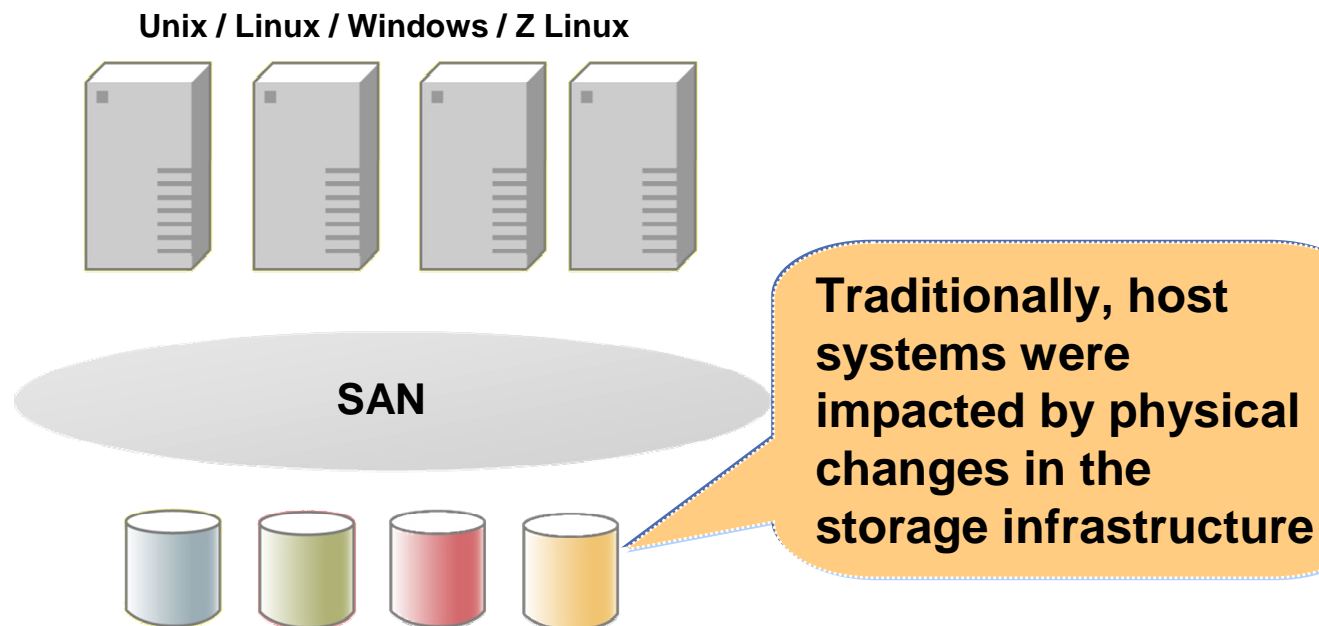
Basic Disk Storage Virtualization Concept

Array Pooling: SAN Volume Controller (SVC) Example



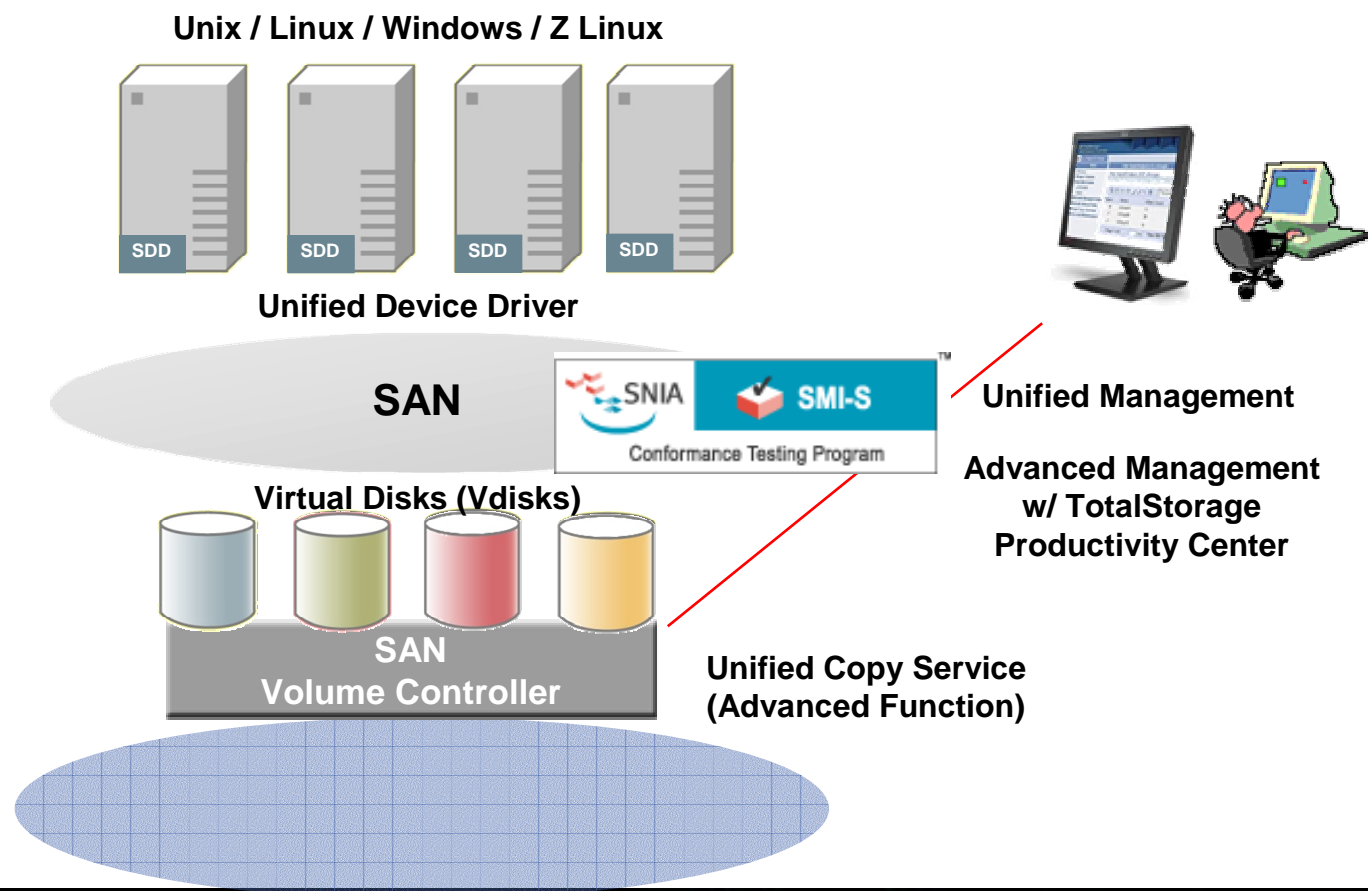
SAN Volume Controller (Disk Virtualization)

- Making Storage Management Simpler and Storage More Cost Effective



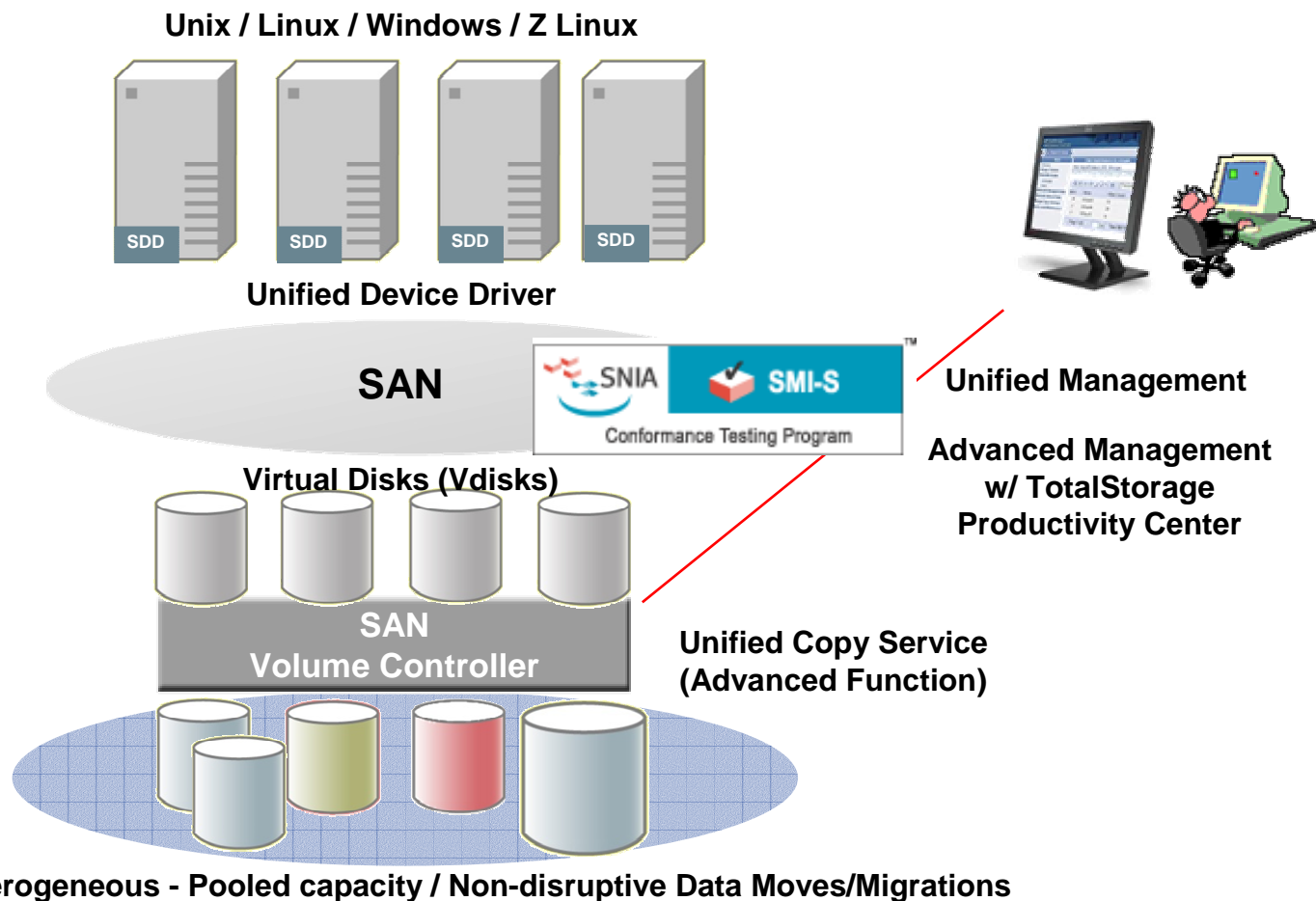
SAN Volume Controller (Disk Virtualization)

- Making Storage Management Simpler and Storage More Cost Effective



SAN Volume Controller (Disk Virtualization)

- Making Storage Management Simpler and Storage More Cost Effective



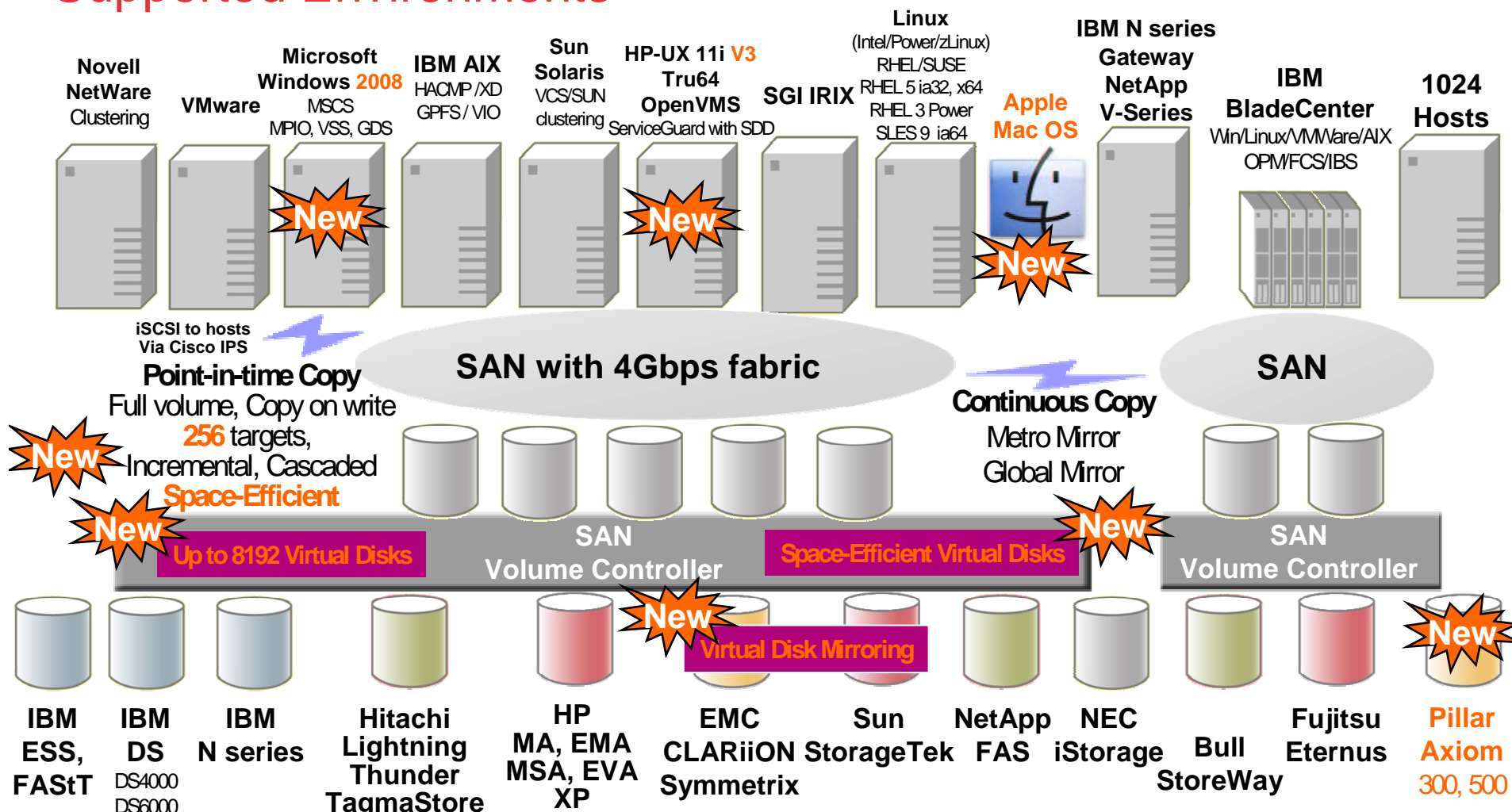
SAN Volume Controller Facts

- IBM has **45 years experience** in virtualization technologies
- IBM has shipped **over 16,000 SVC engines** (SVC nodes) running in more than **5000 SVC systems** (SVC Clusters)
- There are more than **150 customer references** and **24 customer case studies** for **SAN Volume Controller**
 - ▶ 60% to SMB customers
 - ▶ 40% to Large Enterprise customers
- **SAN Volume Controller** is a **proven offering** that has been delivering benefits to customers for five years
- **SAN Volume Controller** demonstrates **scalability** with the **fastest Storage Performance Council benchmark** results
- **SAN Volume Controller** can **virtualize IBM** and **non-IBM** storage (over 120 systems from IBM, EMC, HP, HDS, Sun, Dell, NetApp, Fujitsu, NEC, Bull)



SAN Volume Controller Version 4.3

Supported Environments



Manage Different Tiers and Different Vendors

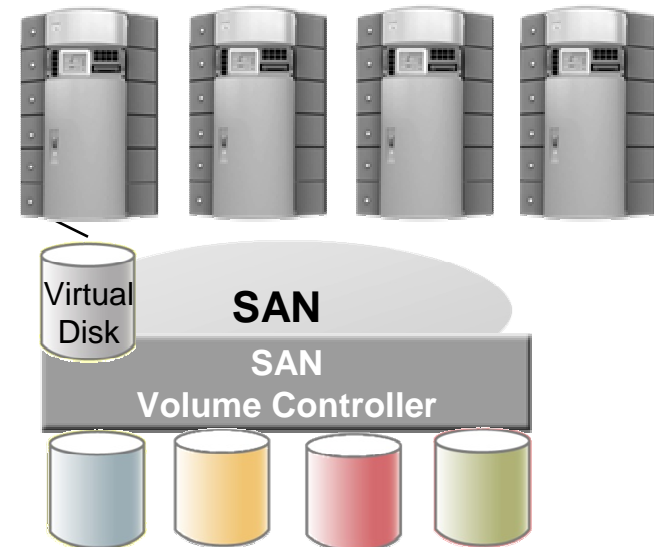
Traditional SAN

1. Different device types and storage tiers
2. Different multi-pathing drivers
3. Different management interfaces



SAN Volume Controller

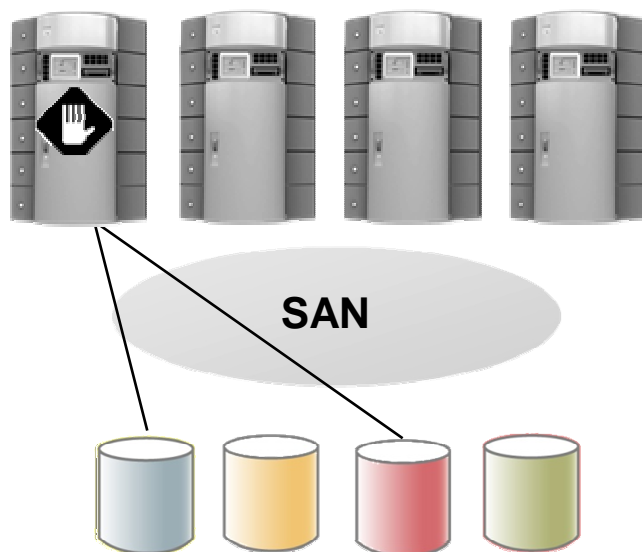
1. All virtual disks look the same to the hosts: one type, one driver, one management interface
2. Manage different storage for Tiered Information Infrastructure
3. Support Multi-Vendor strategy



Non-disruptive Data Migration

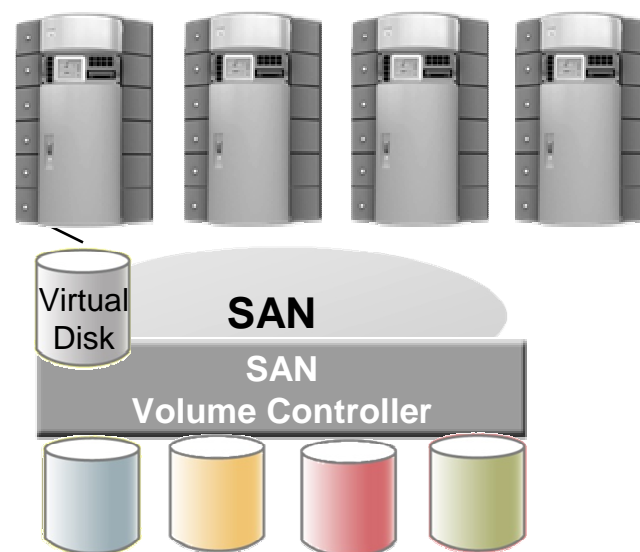
Traditional SAN

1. Stop applications
2. Move data
3. Re-establish host connections
4. Restart applications



SAN Volume Controller

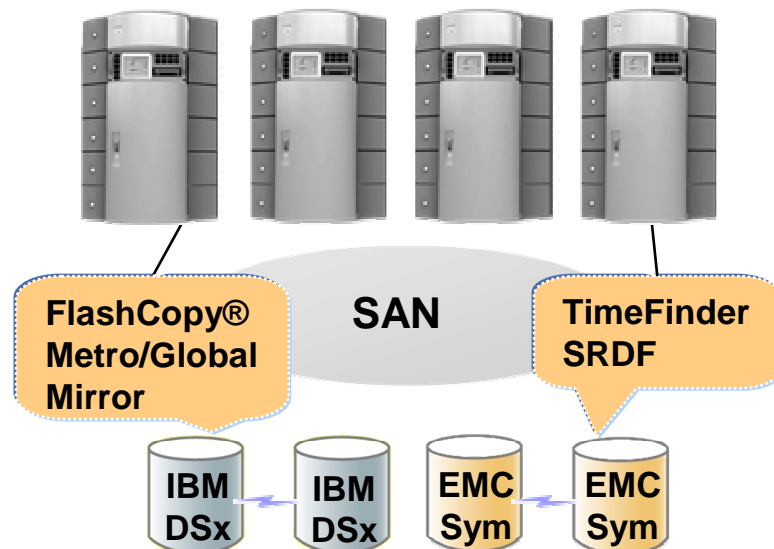
1. Move data
- Host systems and applications are not affected.



Business Continuity with SVC

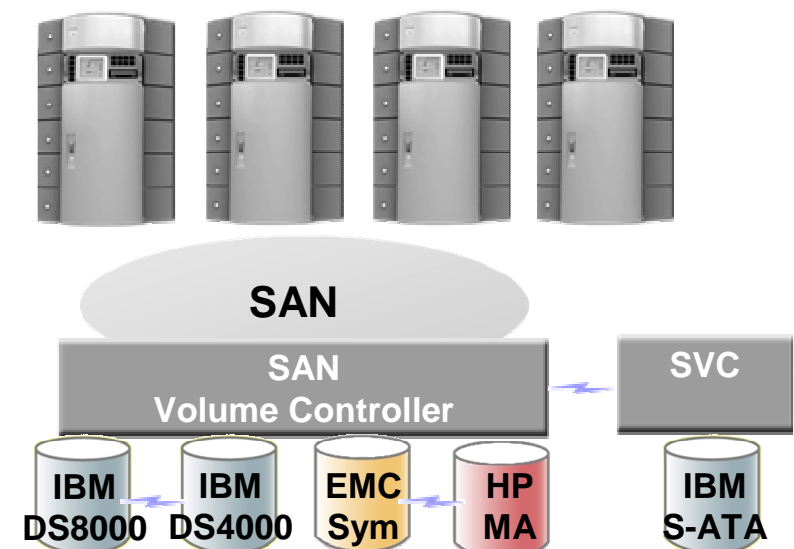
Traditional SAN

- Replication APIs differ by vendor
- Replication destination must be the same as the source
- Different multipath drivers for each array
- Lower-cost disks offer primitive, or no replication services



SAN Volume Controller

- Common replication API, SAN-wide, that does not change as storage hardware changes
- Common multipath driver for all arrays
- Replication targets can be on lower-cost disks, reducing the overall cost of exploiting replication services



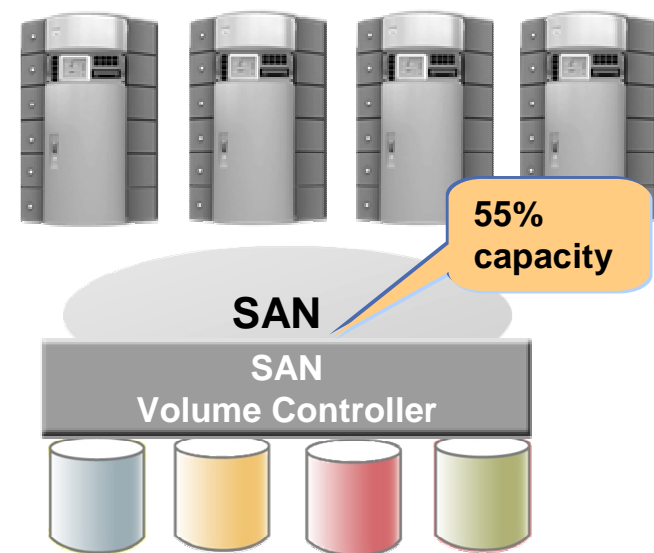
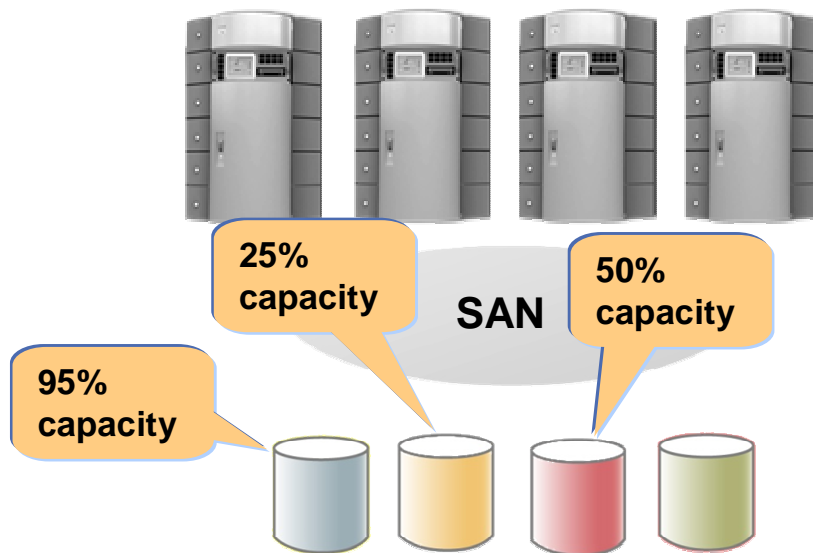
Manage Storage as a Resource, Not Separate Boxes

Traditional SAN

- Capacity is isolated in SAN islands
- Multiple management points
- Poor capacity utilization
- Capacity is purchased for, and owned by individual servers

SAN Volume Controller

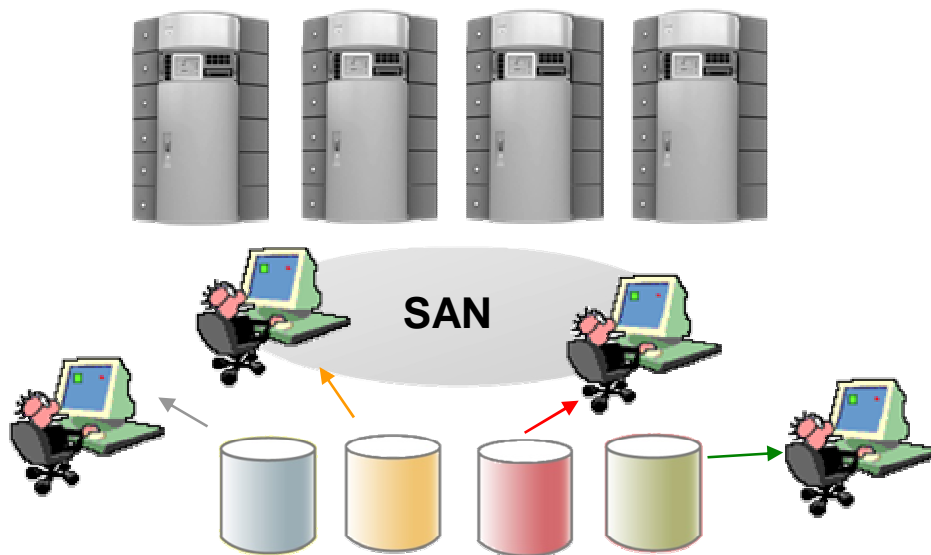
- Combines capacity into a single pool
- Uses storage assets more efficiently
- Single management point
- Capacity purchases can be deferred until the physical capacity of the SAN reaches a trigger point.



Manage Storage in a Consistent Manner

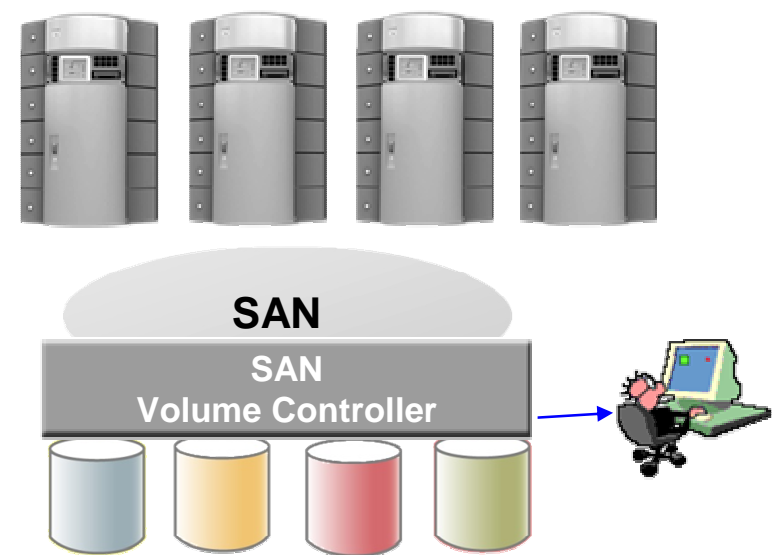
Traditional SAN

- Capacity is isolated in SAN islands
- Multiple management points
- Poor capacity utilization
- Capacity is purchased for, and owned by individual servers



SAN Volume Controller

- Single management point
- Add TotalStorage Productivity Center
 - ▶ Asset and capacity reporting
 - ▶ Configuration reporting and management
 - ▶ Performance management
 - ▶ Basic and automated provisioning



Breakthrough Performance with SVC 4.2



- **SPC-1 benchmark: Simulates I/O characteristics of OLTP workloads**
 - ▶ **SVC 4.2 delivers 272,500 SPC-1 IOPS (75% better throughput than SVC 4.1)**
- **SPC-2 benchmark: Simulates heavy sequential workloads**
 - ▶ **SVC 4.2 delivers 7080 SPC-2 MB/s (50% better throughput than SVC 4.1)**
- **SVC leads the industry in both SPC benchmarks**
- **High SVC throughput supports virtualizing multiple storage systems**

Measurements conducted using 8-node SVC configurations; SVC 4.1 used 8F4 nodes; SVC 4.2 used 8G4 nodes.
For more information, see www.storageperformance.org/results



Pulse

Comes to You



IBM

Managing the World's Infrastructure

Thank You

Subram Natarajan

subram.natarajan@in.ibm.com



© 2009 IBM Corporation