



IBM Forum 2008

IT na plný výkon!



Virtualizace úložných systémů a diskových polí

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Důvody, které vedou k Virtualizaci

- Růst nákladů v datových centrech
- Neschopnost IT oddělení rychle reagovat na měnící se požadavky produkčních oddělení
- Nízká spolehlivost a dostupnost IT
- Nedostatek zkušených odborníků pro administraci mnoha odlišných systémů
- Nízká utilizace některých systémů, naopak přetížení jiných



Co je to Virtualizace?

Logická prezentace IT zdrojů není omezoována jejich fyzickými parametry :

- ▶ Lze vytvořit více logických zdrojů na jednom fyzickém zařízení
- ▶ Lze vytvořit jeden logický zdroj z více fyzických zařízení
- ▶ Lze vidět a spravovat více odlišných zařízení jako by to bylo jedno zařízení
- ▶ Logické i fyzické zdroje lze nezávisle a dynamicky modifikovat bez toho aby se navzájem ovlivňovaly



IBM Virtualization Engine

A comprehensive platform to
help virtualize the infrastructure

IBM Virtualization Offerings

Server virtualization

- IBM System p, System i, System z LPARs, VMware ESX
- Virtually consolidate workloads on servers



File virtualization

- IBM General Parallel File System
- Virtually consolidate files in one namespace



File system virtualization

- IBM System Storage N series Virtual File Manager
- Virtually consolidate file systems into one namespace



Block storage virtualization

- IBM System Storage SAN Volume Controller
- Virtually consolidate storage into pools



Tape virtualization

- IBM VTS TS7700 , IBM VTL TS7520
- Virtually consolidate backup tapes into one tape or library



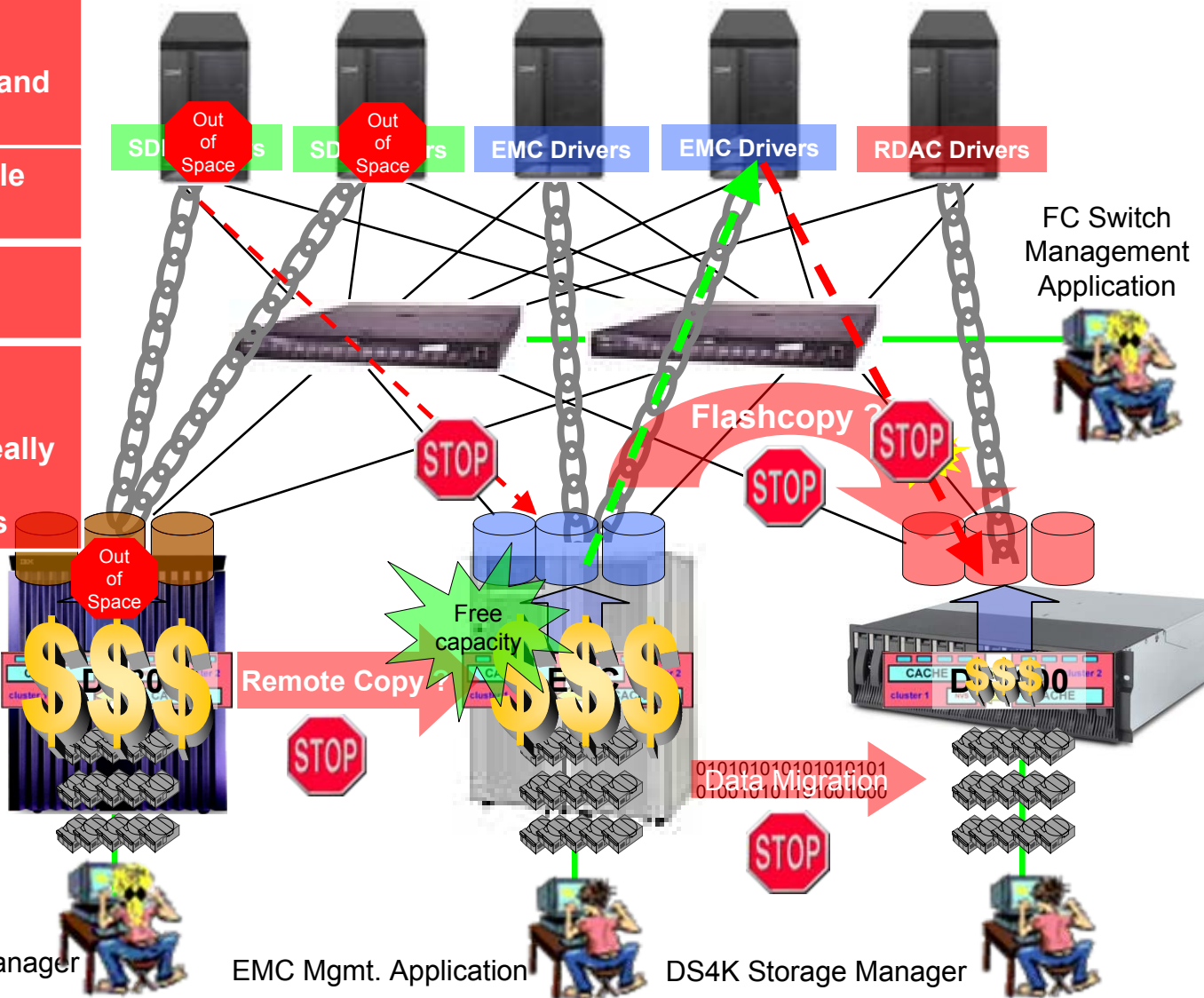


Virtualize More, Manage Less:

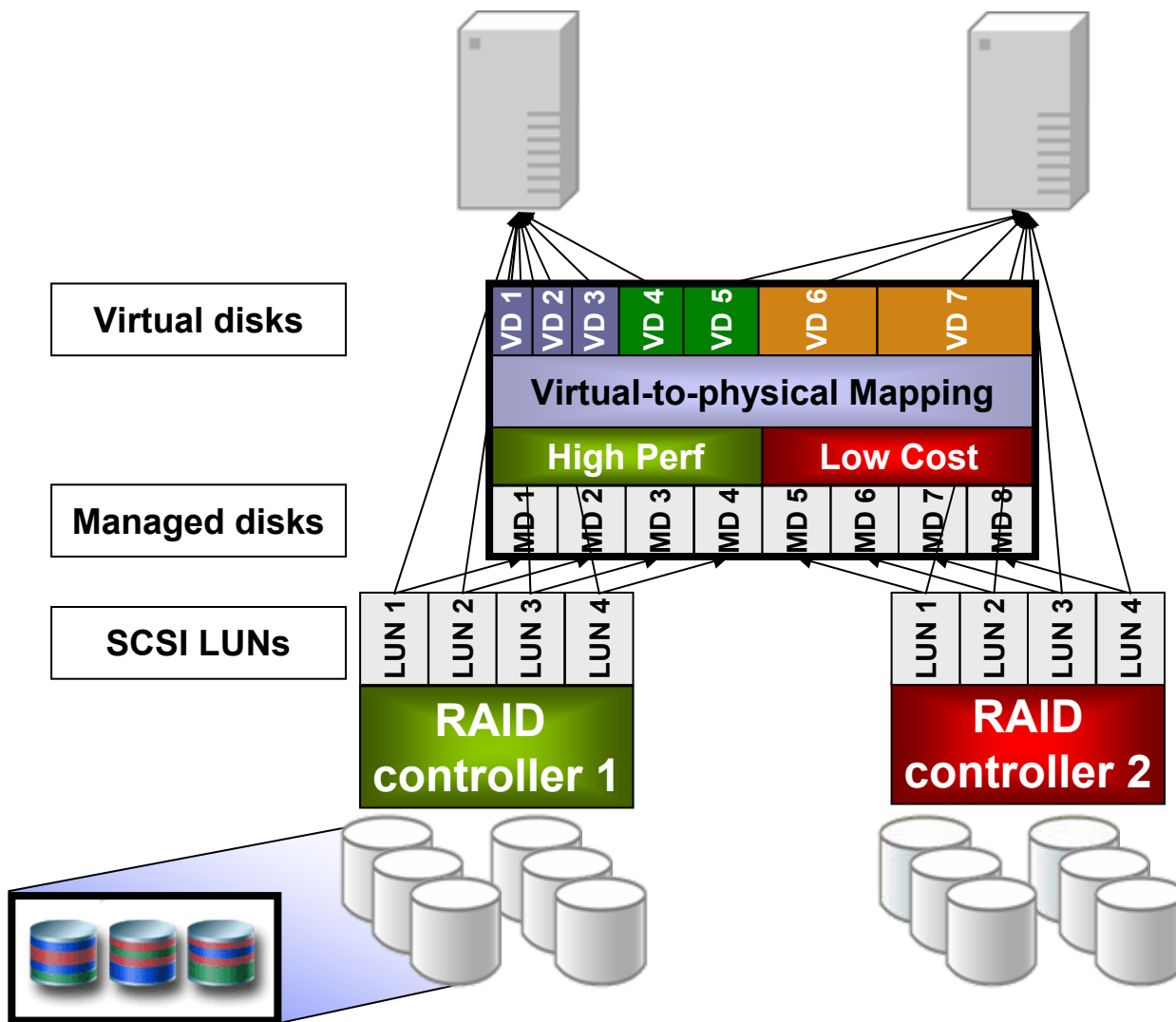
IBM System Storage SAN Volume Controller

Storage Problems and Limitations Today

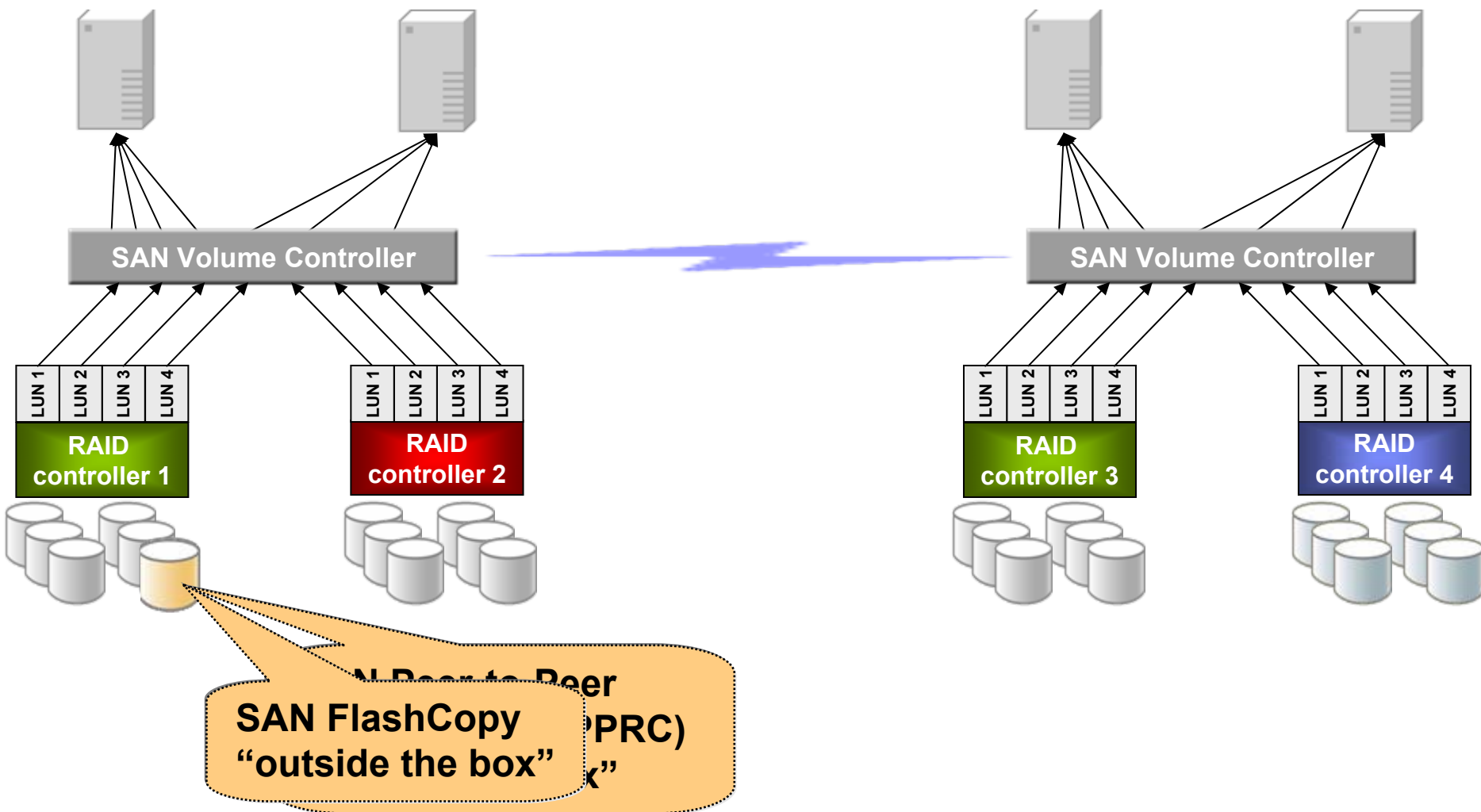
- ➔ Static relationship between servers and storage systems
- ➔ Inefficient use of storage resources
- ➔ Migration of data disruptive and time consuming
- ➔ Proprietary, non-interoperable Copy Services
- ➔ No common storage management interface
- ➔ Monolithic, potentially expensive storage devices
- ➔ Pay for functionality when really just need capacity
- ➔ Use SVC and TPC to address



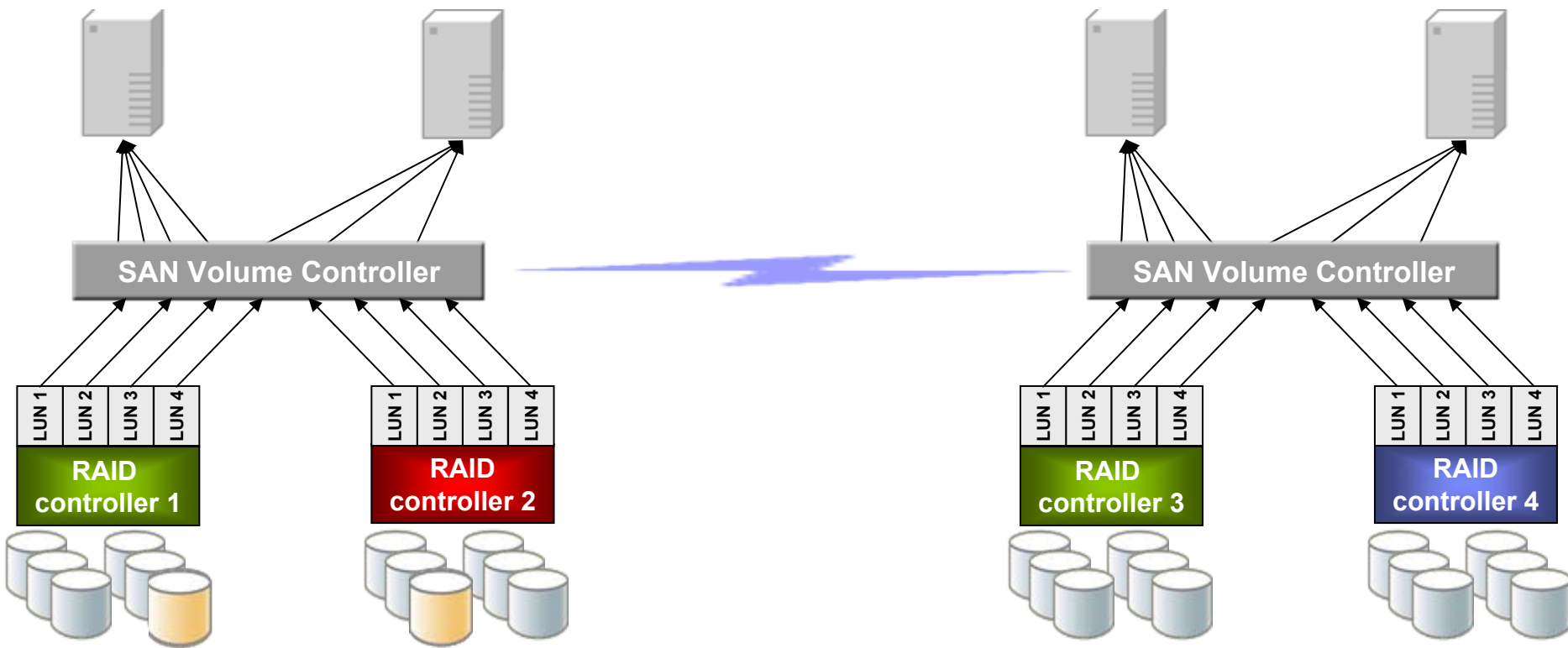
IBM TotalStorage SAN Volume Controller



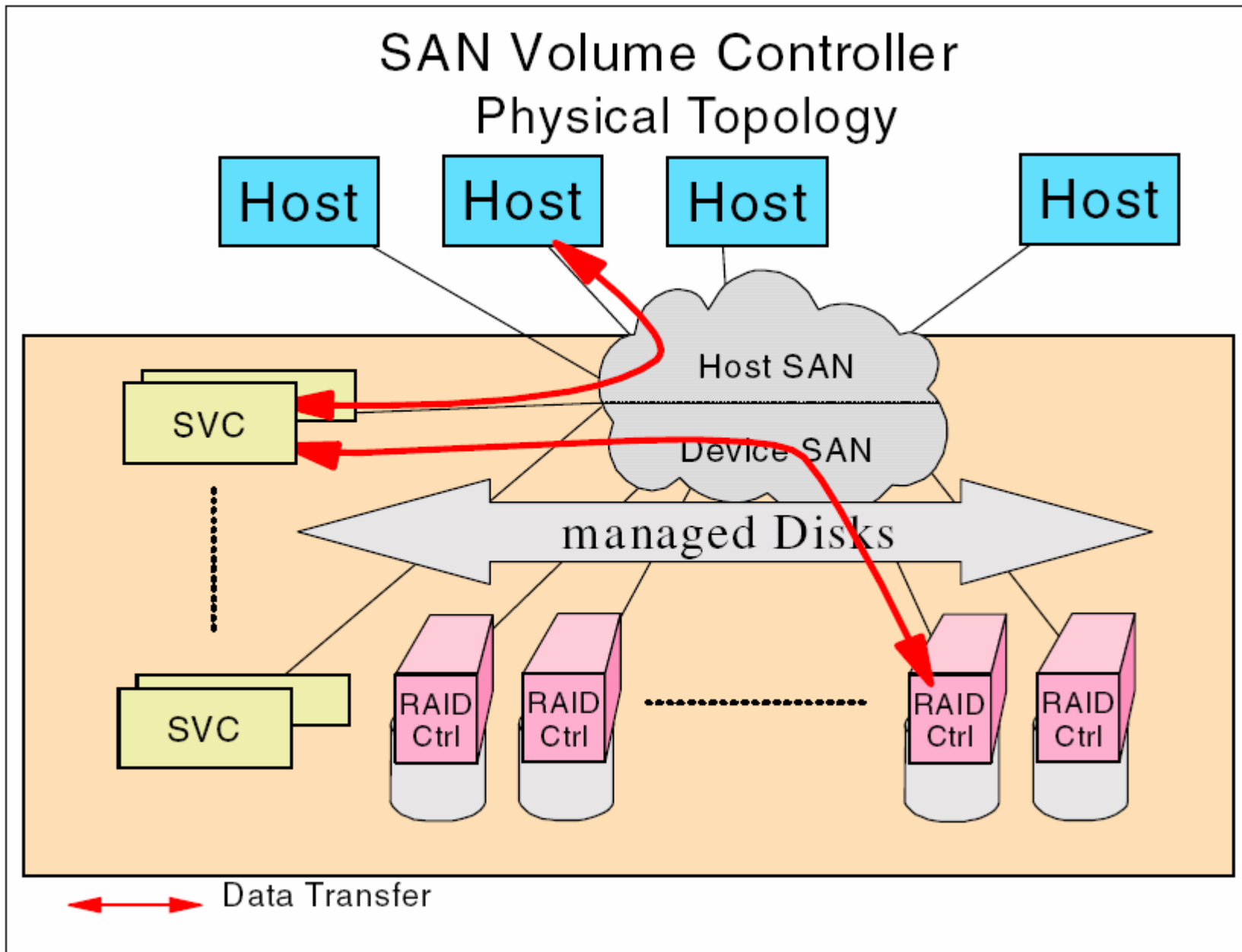
TotalStorage SAN Volume Controller Copy Services



TotalStorage SAN Volume Controller Copy Services



Cross-device consistency groups



New SVC Engines - 2145-8G4



- New SVC engine based on IBM System x3550 server
 - ▶ Two dual-core Intel Xeon 5160 processors at 2.33GHz
 - ▶ Front side bus 1333Mhz (x336 is 800Mhz)
 - ▶ 8GB of cache
 - ▶ four 4Gbps fibre channel ports
- Supported only with F/C 8115 UPS and SVC Version 4.2
- Significantly improved performance compared with previous nodes
 - ▶ SMP tuning and dedication of resources cut processing overhead greatly
 - ▶ Tuned cache algorithms and reduced locking contention/processing
 - Older nodes benefit from these 2 changes improving their performance considerably
- New nodes may be intermixed in pairs with older nodes in cluster
- Non-disruptive node upgrades may be used to replace older nodes
 - ▶ Order F/C 3905 for each 2145-8G4 in an order when replacing existing engines

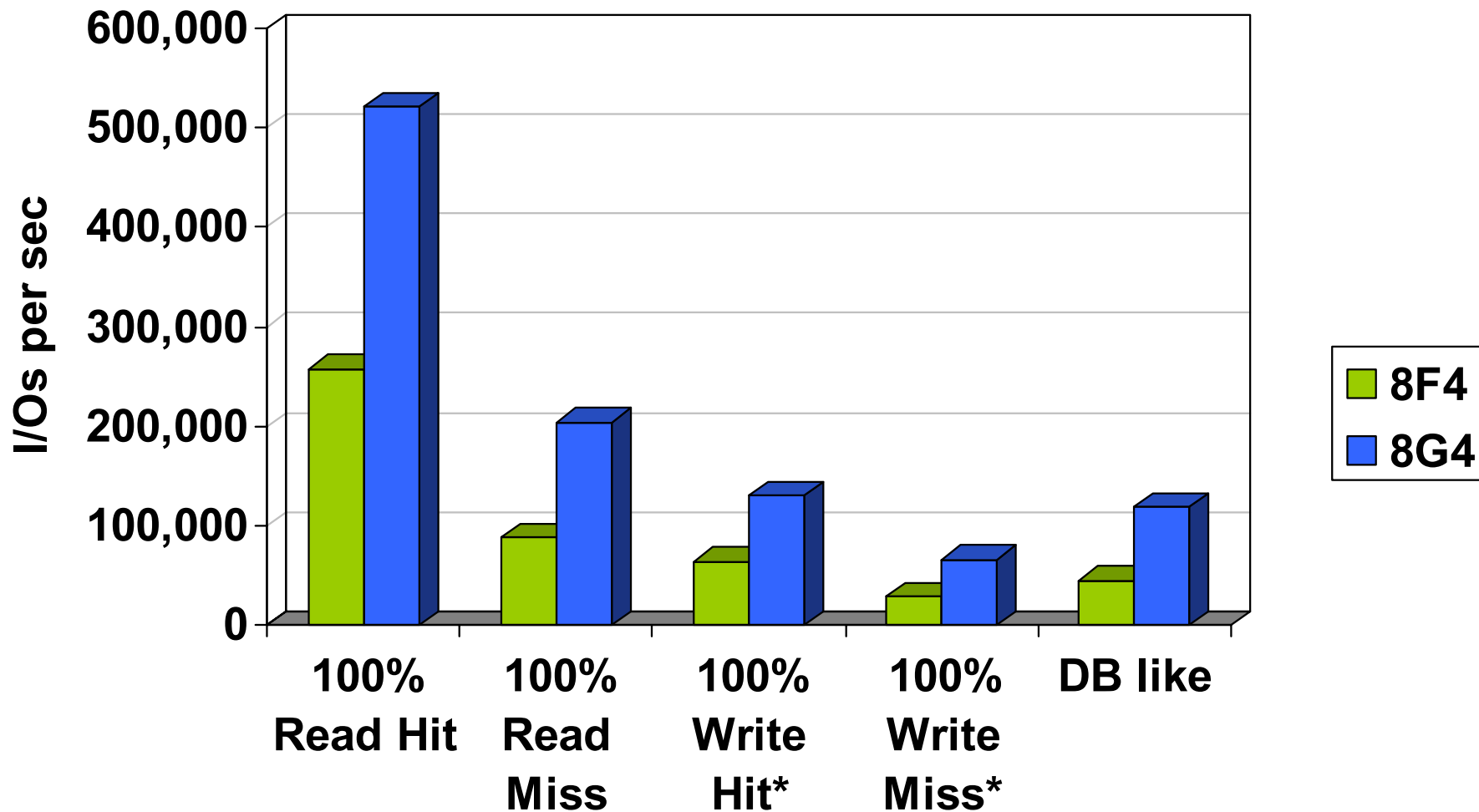
New Master Console

- Based on IBM System x3250 server
 - ▶ Single dual-core Intel Xeon 5160 processors at 2.13GHz
 - ▶ 4GB of system memory
 - ▶ Dual 160GB SATA disk drives with mirrored operating system
- Software installed is:
 - ▶ Microsoft Windows 2003 Server
 - ▶ PuTTY
 - ▶ SVC GUI Console software
- Software only version of master console package available
 - ▶ Customer supplies Microsoft Windows 2003 license

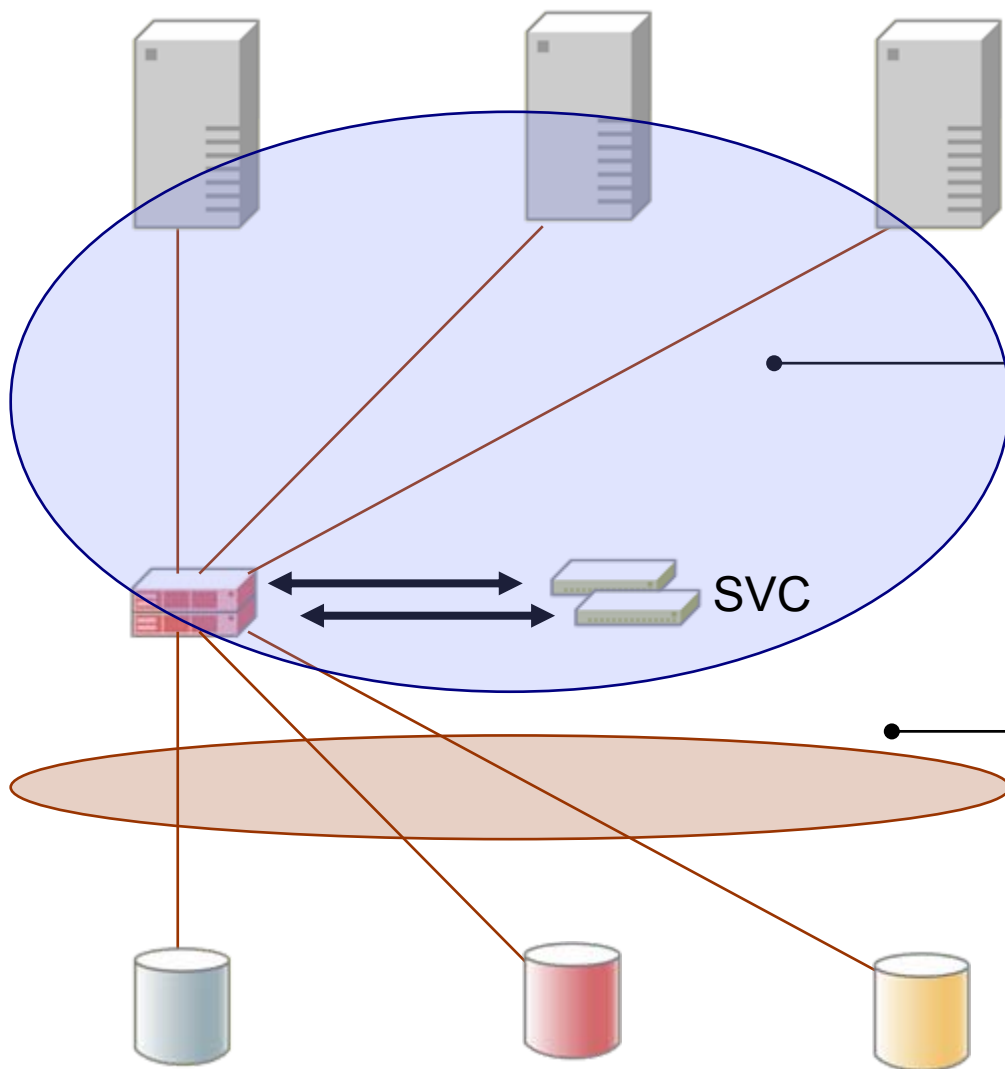
2x UPS (1U) for each SVC engine

SVC 8G4 Transactional Performance

SVC Two-Node Configuration; 4KB Transfers



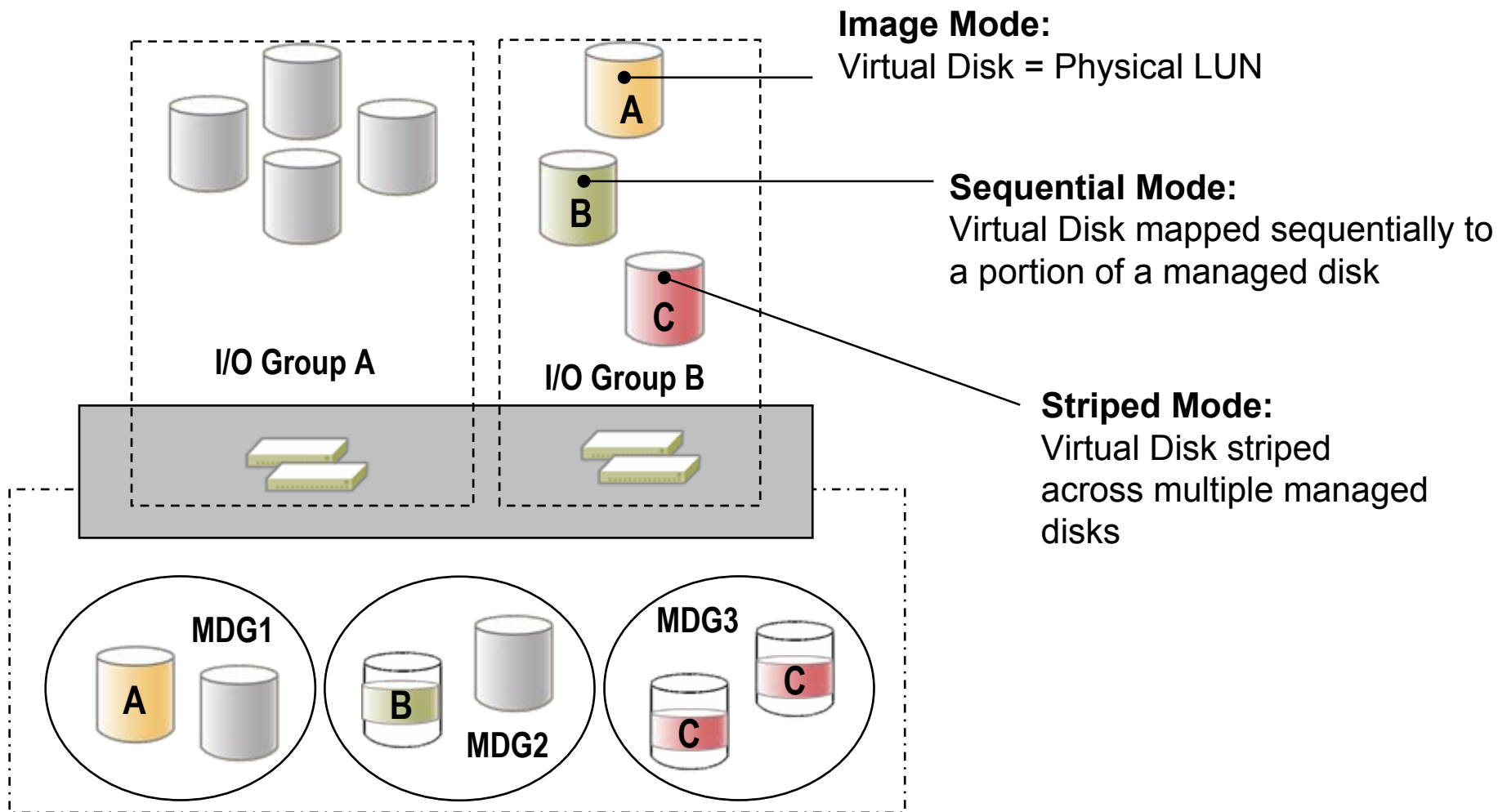
SAN Volume Controller - Zoning



Host Zone:
Hosts zoned only to SAN
Volume Controller
See only Virtual Disks
that SAN Volume
Controller allows each
host to see

Device Zone:
Devices zoned only to SAN
Volume Controller
See only SAN Volume Controller
Nodes as connected hosts

SAN Volume Controller – Virtual Disk Modes



SAN Volume Controller Graphic User Interface

The screenshot displays the IBM TotalStorage SAN Volume Controller GUI. The main window is titled "Managed Disks" and shows a list of managed disks. The left sidebar contains a navigation tree with categories like "Manage Cluster", "Work with Nodes", "Work with Managed Disks", "Work with Virtual Disks", "Manage Copy Services", and "Service and Maintenance".

Viewing Managed Disks
 Click on a managed disk (MDisk) to view its details, or select an MDisk and an action from the list, and click Go. Discover MDisks by selecting that action from the list and click Go.

Select	Name	NativeStatus	Mode	MDisk Group ID	MDisk Group Name	Capacity (MB)	Controller Name
<input type="radio"/>	mdisk0	Online	Managed	0	stg0	34,652	controller0
<input type="radio"/>	mdisk1	Online	Managed	0	stg0	34,652	controller0
<input type="radio"/>	mdisk2	Online	Managed	0	stg0	34,652	controller0
<input type="radio"/>	mdisk3	Online	Image	0	stg0	34,723	controller1
<input type="radio"/>	mdisk4	Online	Unmanaged	-	-	69,430	controller1
<input type="radio"/>	mdisk5	Online	Unmanaged	-	-	69,430	controller1

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SVC – reference !?

- IBM has **40 years experience** in virtualization technologies
- IBM has shipped** over 9900 SVC engines **running in more than 3400 SVC systems**
- There are more than 130 customer references and 24 customer case studies**
- SAN Volume Controller has **1,750 clients** and is on its 8th release
- SAN Volume Controller
 - ▶ **Provides 99.999% availability**
 - ▶ **FASTEST storage performance benchmark** ever recorded for ALL controllers
 - ▶ <http://www.storageperformance.org/>
- 13PB of client data managed today and growing!
- SAN Volume Controller can virtualize IBM & competitor's storage (EMC, HP, HDS, SUN, DELL, STK, etc)
- SAN Volume Controller can copy or replicate data between disparate controllers
- > 70% of SAN Volume Controller sales include IBM storage and replaces competitor's storage during or after the sale



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creative solutions group

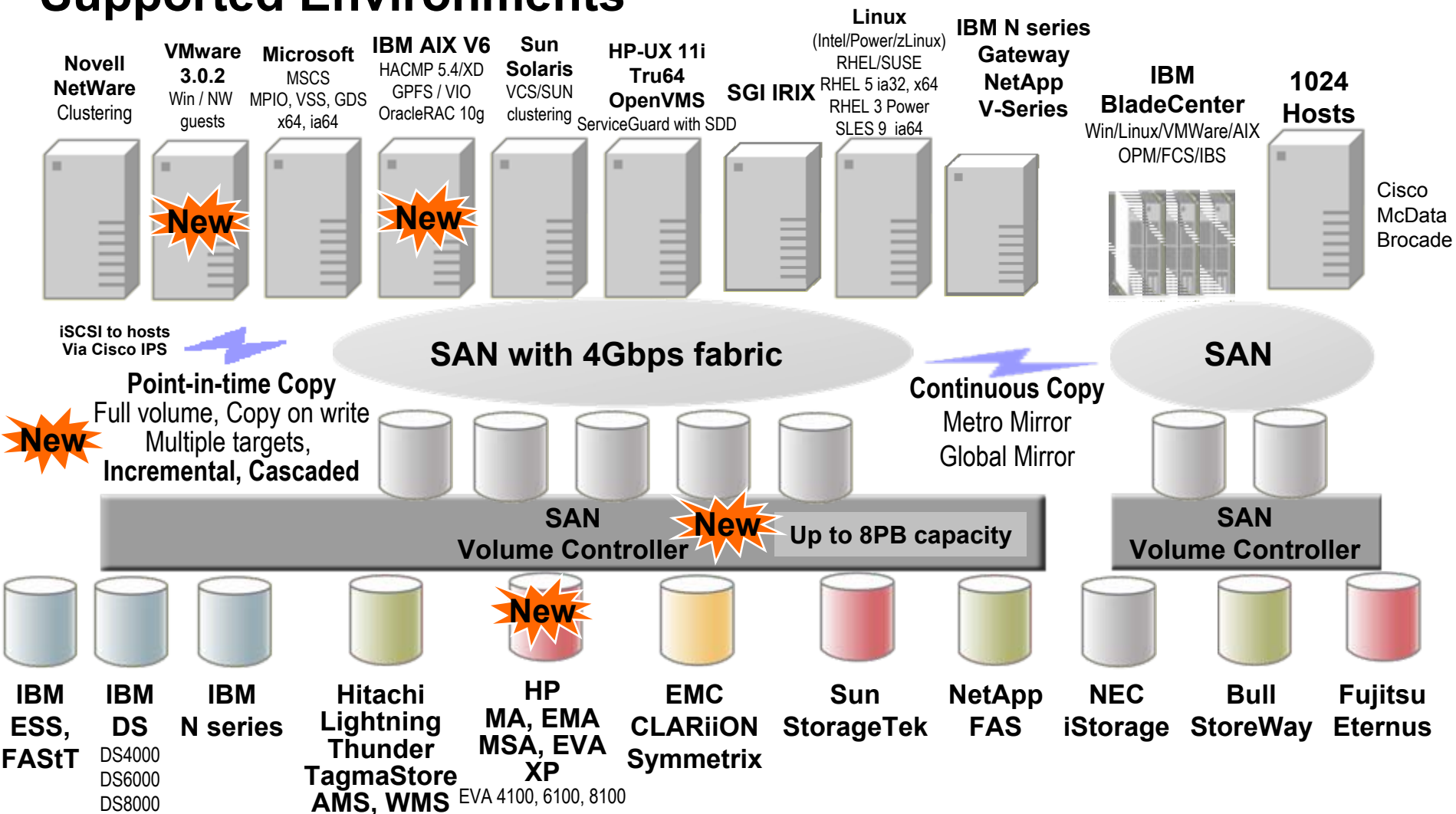


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SAN Volume Controller Version 4.2.1 Supported Environments



For the most current, and more detailed, information please visit ibm.com/storage/svc and click on "Interoperability".