



IBM's Virtualised Disk Solution

Storage Virtualisation Made Easy

PulseANZ2010

Meet the people who can help
advance your infrastructure





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What is Virtualisation?

Logical representation of resources not constrained by physical limitations

- Enables user flexibility
- Centrally manage many resources as one
- Dynamically change and adjust across the infrastructure
- Create many virtual resources within single physical device
- Eliminates trapped capacities



IBM Virtualisation

A comprehensive platform to
help virtualise the infrastructure



Business Problems Driving Virtualisation

- Speed to market
- Green business Initiatives
- Need to respond quickly to business demands
- Lack of skilled IT staff to meet business needs
- Explosive IT costs





Why IBM Virtualisation

- Over 40 years experience with virtualisation technologies
- Over 30 years experience with storage virtualisation
- Industry's first and leading mainframe virtualised tape system
- Industry leading disk block virtualisation system
- Complete range of virtualisation assessment, planning and implementation offerings
- IBM offers an integrated range of virtualisation and management offerings to address all portions of the IT infrastructure





IBM IT Infrastructure Virtualisation

“The combination of server and storage virtualisation makes sense and over time should become requisite in the data center, in one form or another. In fact, the more pervasive that server virtualisation becomes, the greater contrast it will create with non-virtualised storage environments and the inefficiency of these solutions will become more apparent.”

Enterprise Strategy Group, January 2008

- Server virtualisation is only one part of the answer
- IBM has proven best practices and strategy required for comprehensive virtualisation plan
- IBM has best of breed offerings for end-to-end infrastructure virtualisation

Server virtualisation alone enhances only a portion of the IT infrastructure

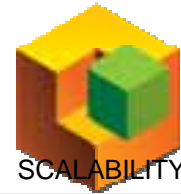


What if there was a storage system that could ...

- ... scale without disruption up to large enterprise requirements yet was priced to appeal to SMBs
- ... transparently migrate data from your existing storage
- ... integrate new storage with your existing storage, reducing the need for more investment
- ... include sophisticated replication and thin provisioning functions with no need for extra hardware or server software
- ... simplify management and double productivity
- ... improve storage utilization by as much as 30%
- ... include management functions to automate provisioning and monitor end-to-end SAN health

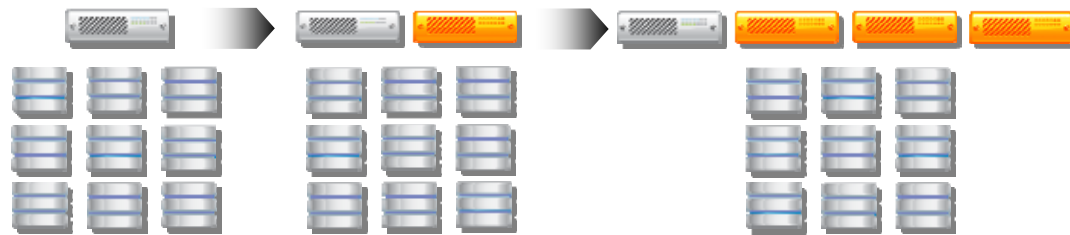


Features: *Scalability*



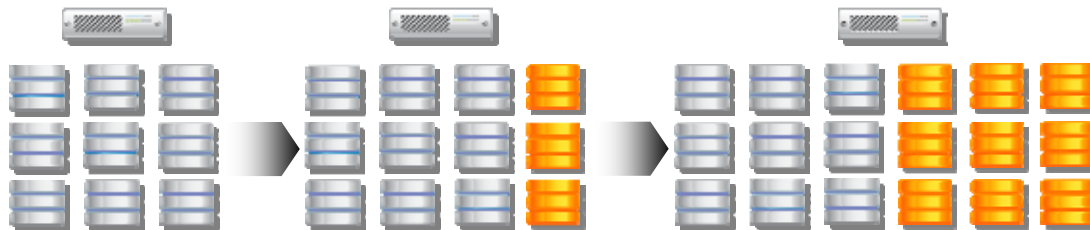
Dynamically scale ...

... performance



- ✓ For performance sensitive applications, dynamically add more performance to your existing capacity by adding controller pairs.
- ✓ ...or mix with additional capacity...

... capacity



- ✓ For high capacity applications such as archive, dynamically add capacity by adding disk enclosures.
- ✓ ...or mix with additional performance...

... features



FlashCopy
 SAN Visualization
 Performance management
 Metro Mirror
 Global Mirror

Practice DR recovery
 Automated failover / fail-back
 Thin Provisioning
 Performance optimization
 Virtualisation

- ✓ Many features are included.
- ✓ Software is preinstalled in the system and management console for easy setup.
- ✓ Premium features are already installed.
 - Enabled with only a license file.

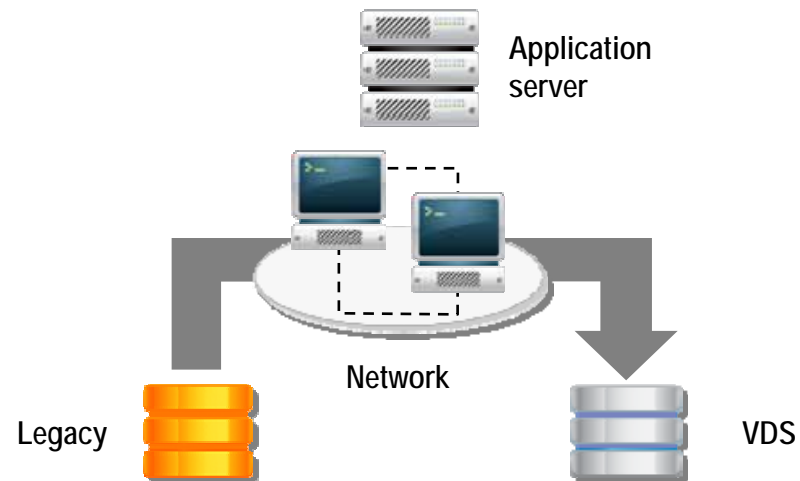


Features: *Migration*



MIGRATION

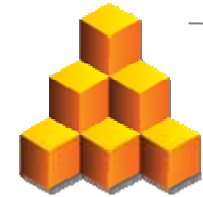
Transparent data movement



- ✓ Efficiently manage technology upgrades and lease terminations by transparently moving application data from legacy disk arrays to the new system.



Features: *Efficiency*



EFFICIENCY

Thin provisioning



Without thin provisioning, pre-allocated space is reserved whether the application uses it or not.

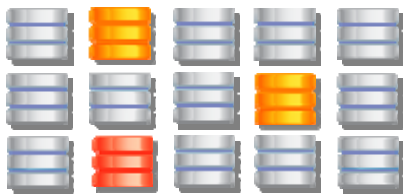


Dynamic growth

With thin provisioning, applications can grow dynamically, but only consume space they are actually using.

- ✓ More productive use of available storage.
- ✓ Across all supported host platforms.

Performance optimization



Hot-spots due to poor data layout.

Transparent reorganization



Optimized performance and throughput.

- ✓ Analyze system performance and throughput.
- ✓ Transparently rearrange the data to eliminate hot-spots and balance utilization of all components.

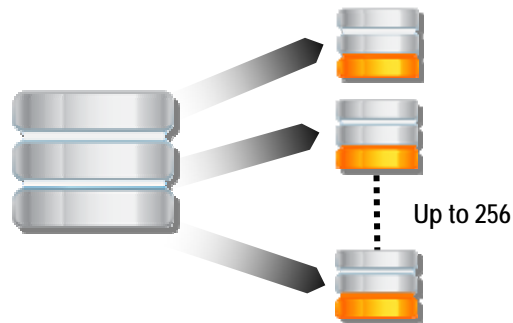


Features: Availability



AVAILABILITY

FlashCopy



- ✓ Create instant application copies for backup or application testing.
- ✓ Make better use of space with incremental (only changed blocks) or space-efficient (thin provisioned) snapshots.

FlashCopy Manager

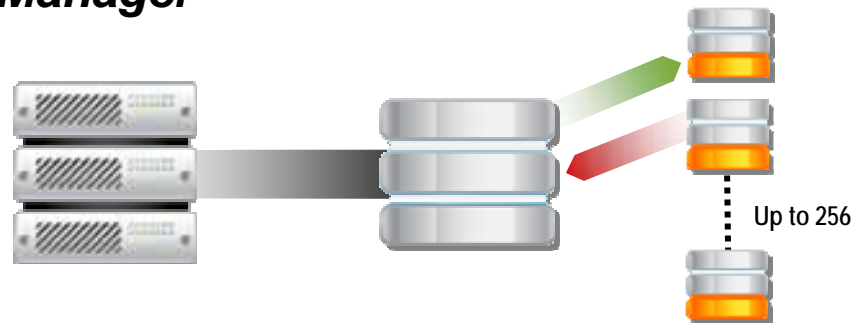
ORACLE

DB2

SAP

Microsoft
SQL Server

Microsoft
Exchange
Server



- ✓ Integrated, instant copy for critical applications
- ✓ Virtually eliminate backup windows
- ✓ Rapidly create clones for application testing
- ✓ View inventory of application copies and instantly restore



Features: *Availability*



AVAILABILITY

Local Mirror



- ✓ For ultra-high availability applications, synchronously mirror application data between two separate disk enclosures attached to the same system.

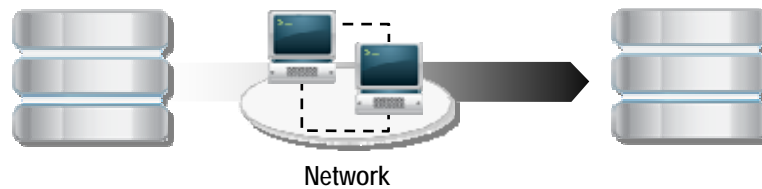


Features: *Business Continuance*



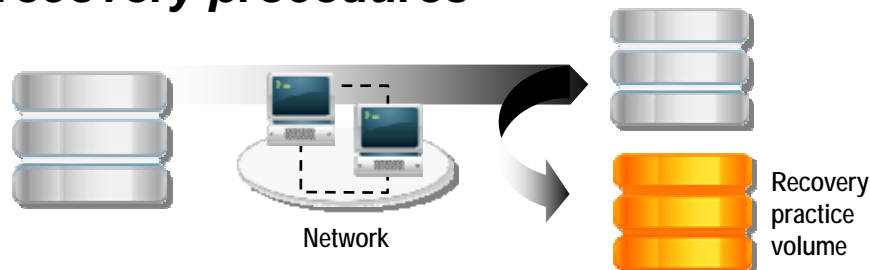
BUSINESS
CONTINUANCE

Mirror data off-site



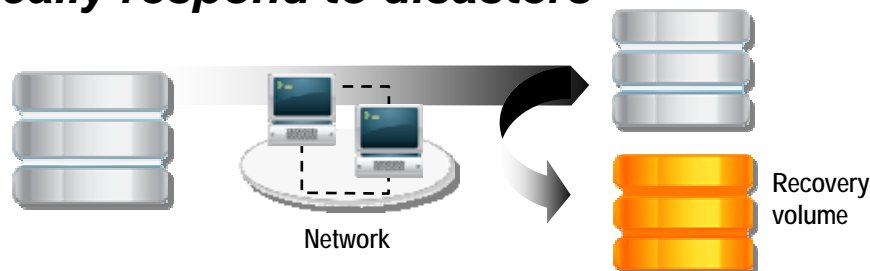
- ✓ Synchronously over Metro distances.
- ✓ Asynchronously over Global distances.
- ✓ Application-level consistency groups.

Practice recovery procedures



- ✓ For critical application consistency groups, freeze the Mirror and take a consistent FlashCopy.
- ✓ Practice application recovery procedures from the FlashCopy.

Automatically respond to disasters



- ✓ Detect mirroring failure and automate failover to Recovery volume.
- ✓ Execute practiced application recovery procedures.
- ✓ Automate fail-back after repair.

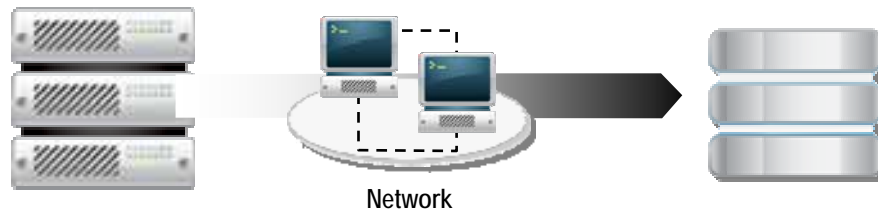


Features: *Manageability*



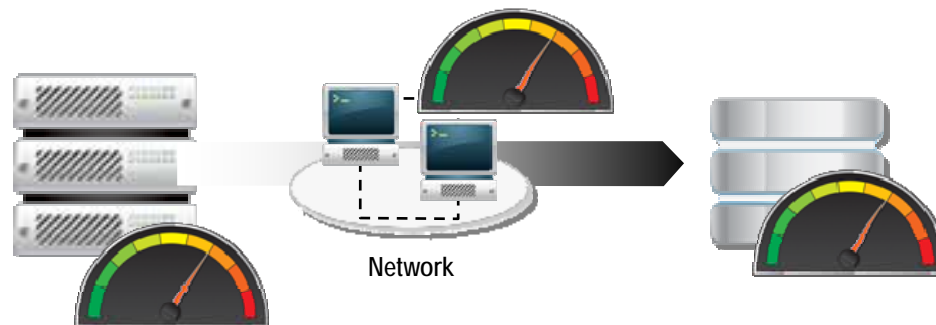
MANAGEABILITY

Visualize the SAN



- ✓ From virtual machines to the physical server they reside on, through the SAN, to the virtual and physical disk systems ...
- ✓ Physical topology and logical data path.
- ✓ Health/Status Monitoring.
- ✓ Event Management.
- ✓ Device Capacity Management.
- ✓ Policy-based Alerting.

Analyze performance



- ✓ Isolate application I/O performance problems.
- ✓ Report on performance history.

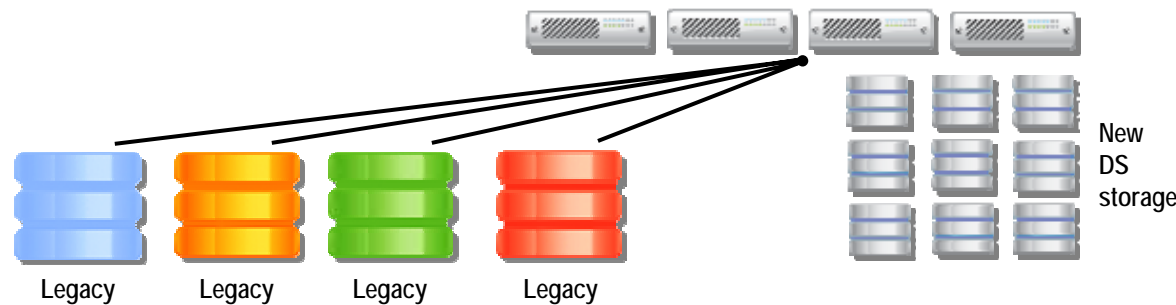


Features: Consolidation



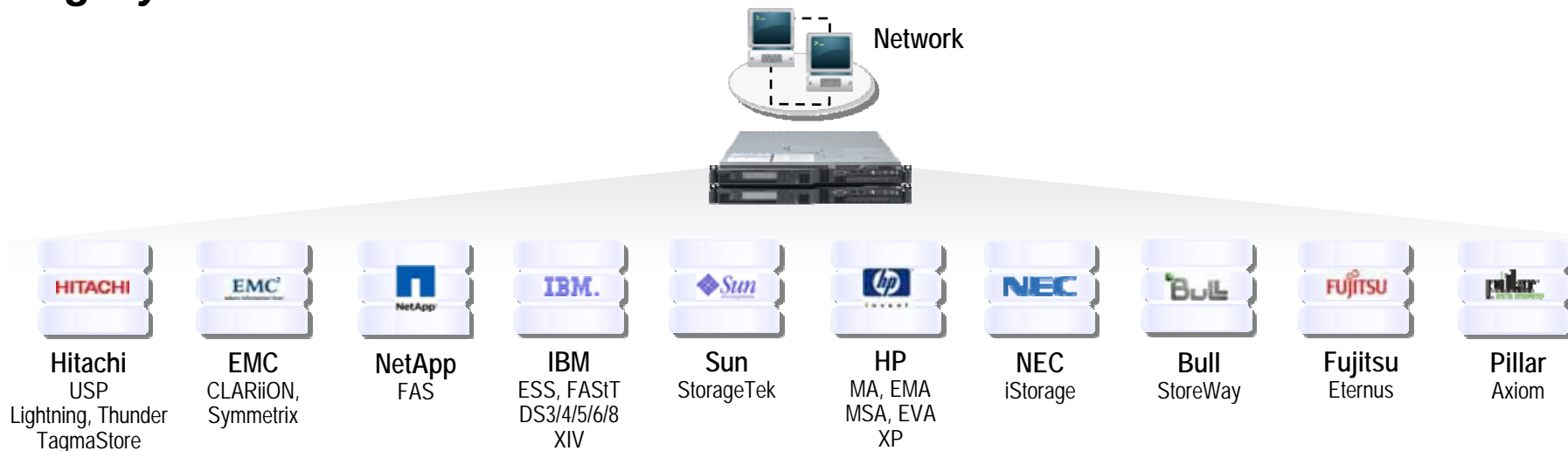
CONSOLIDATION

Virtually manage legacy disks



- ✓ Virtually add the efficiency, availability, business continuance, and manageability features of virtual disk to your legacy disks.
- ✓ Consolidate the management of your storage infrastructure.

Legacy disk attach























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



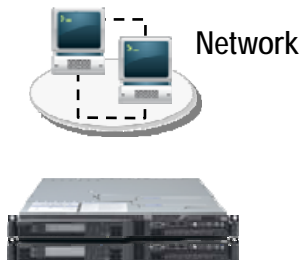
Host system attach



HOST SYSTEM
ATTACH

VMware SRM	Microsoft Windows MSCS MPIO, VSS, GDS	Novell NetWare Clustering	IBM AIX i6 VIOS HACMP /XD GPFS / VIO	Sun Solaris VCS/SUN clustering	HP HP-UX Tru64 OpenVMS ServiceGuard with SDD	SGI IRIX	Linux (Intel/Power/zLinux) RHEL/SUSE RHEL 5 ia32, x64 RHEL 3 Power SLES 9 ia64	Apple Mac OS X	IBM BladeCenter Win/Linux/ VMware/AIX OPM/FCS/IBS
									
									

Up to 1024 Hosts



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



Bringing it all together

IBM System Storage SAN Volume Controller



- Industry-leading storage virtualisation system.
- Provides host interfaces, cache, software functions.

IBM System Storage DS Storage Systems



- Affordable high performance storage.
- Wide range of RAID and disk drive types to suit all requirements.

IBM System Storage Productivity Center



- Unique management system for midrange storage.
- Visualization and management capabilities for SVC, storage, and SAN.



What makes a VDS a VDS?

- Lower specification SVC engine – 2145-8A4
 - Reduced cache size
 - Slower processor
 - 4 Gbps FC ports
 - No solid state disk (SSD) support
- SVC Entry Edition
 - Spindle rather than capacity licensed
 - Flashcopy included at no additional costs
- Attractive bundle pricing
 - SVC + SSPC + disk



IBM Virtualised Disk Solution Value



- Modular scalability, **supports independent scaling of performance, capacity, and software function** – allowing you to start small and grow large without ever changing hardware platforms.
- Integrated software functions and **management interface across the entire range of scalability.**
- Enterprise-class software capabilities, **including replication functions traditionally found in high-priced enterprise arrays, virtualisation capabilities to improve efficiency and application up-time, and management capabilities that make quick work of complex deployments.**



IBM Virtualised Disk Solution

Entry Storage Systems

SVC (2 nodes)



Up to 500 disks

800 GB

Midrange Storage Systems

SVC (4 nodes)



1000 disks

SVC (6 nodes)



1500 disks

Enterprise Storage Systems

SVC (8 nodes)



2000+ disks

2+ PB

Distributed controller architecture

Use one type or deploy mixed disk systems for tiered storage advantages

Wide range of disk drives available

SAS Disk Drives: 15K RPM (73GB, 146 GB, 300GB, and 450GB)

SATA Disk Drives: 7.2K RPM (500GB, 750GB, and 1TB)



The University of Auckland

Business challenge:

New Zealand's leading university and research facility, The University of Auckland supports approximately 40,000 students and staff members. Facing expanding data storage requirements and inadequate data availability, the university's IT organization set out to address these issues as part of a larger project to build out a new primary data center.

Solution:

Fully virtualised IT infrastructure

- VMware ESX Server
- IBM System Storage SAN Volume Controller
- IBM System Storage DS4800, DS4100

Benefits:

- Reduced data center footprint through server consolidation.
- Improved storage utilization and reduced power and cooling costs.
- Improved application availability and centralized management.
- Reduced total cost of ownership of the IT infrastructure.

"IBM's vision of storage and storage virtualisation matched our view of how it should be done."

"Virtualisation has enabled us to remove a lot of the physical infrastructure, which means we're not using as much power, we're not using as much cooling. It has reduced our carbon footprint and lowered our operating costs while giving us room to grow."

*-- John Askew, system architect,
The University of Auckland*



IBM Virtualised Disk Solution



- Scales without disruption up to large enterprise requirements yet priced to appeal to SMBs.
- Transparently migrates data from your existing storage.
- Integrates new storage with your existing storage, reducing the need for more investment.
- Sophisticated replication and thin provisioning functions with no need for extra hardware or server software.
- Helps simplify management and double productivity.
- Helps improve storage utilization by as much as 30%.
- Management functions to automate provisioning and monitor end-to-end SAN health.

Midrange storage like no other.



SAN Volume Controller Live Demonstration

- During the lunchbreak
- 12:55pm in the Demo Theatre



Simplify your IT