

# Pulse

IBM SolutionsConnect 2013



# Introducing SmartCloud Virtual Storage Centre

*Using capabilities to achieve better business  
outcomes*

13 June 2013



Effective  
Technology  
and People



- A few years working in IT!
  - Started working with Tivoli Storage Manager when it was ADSM v2
  - Has worked with Tivoli Storage Productivity Center for 4 years.
  - Certified for Tivoli Storage, including being a Tivoli Certified Trainer
  - Can help you if you want a Butterfly study!
- 
- Have helped customers over the years with there UNIX (AIX, HP-UX, Solaris and LINUX); Storage, SAN, Windows, Application (particularly SAP & JD Edwards), Database (Mainly Oracle and DB2) and VMware environments (operational).

Advent One delivers IT solutions that address clients business objectives in the following key areas:

- IT infrastructure
  - Fraud & Compliance
  - Business Solutions
  - Managed Services
- 
- The stand is opposite the door ... drop in and say hello!

## Our Business Philosophy

- Investment in the customer relationship through thought leadership and a consultative and value added approach to customer account management.
- Continual investment in the technical and personal development of our people through mentoring and technical certification.
- Focus on the business objectives of technology solutions.
- Recognition that, in today's dynamic business world, constant change is inevitable and that flexibility and adaptability are key to solution delivery.

## 2013 Global IBM Beacon Award Winner



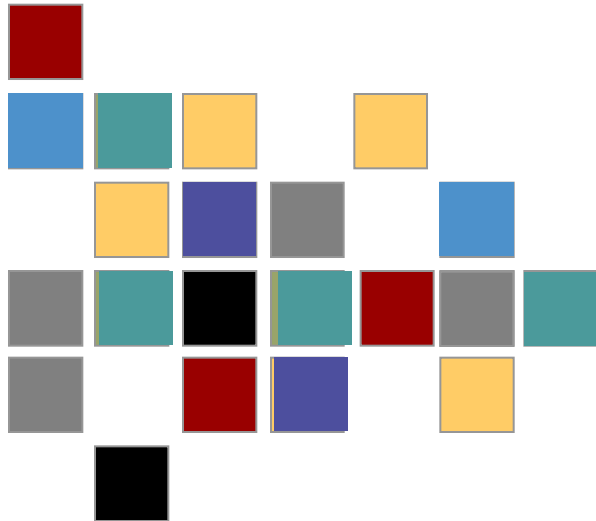
Outstanding Technical Excellence  
Expert Integrated Systems - PureSystems



Mark Hennessy, general manager, IBM Global Business Partners:

*"The winners ... who not only delivered superior innovation through their award winning solution, but also offered unique client value by using their skills and expertise to deliver the business capabilities their clients need to achieve success in their own business ventures. We congratulate **Advent One** on winning the Beacon Award for **Outstanding Technical Vitality** and demonstrating its ability to provide value by incorporating and demonstrating a deep knowledge and skill set in both IBM Hardware and Software."*

# Agenda



- Introduction
- Overview of Business value
- Overview of underlying enabling technologies
- Examples; Business Value & underlying technologies
- Conclusion

- **Server hypervisor** has a well understood value connotation
  - Pooled physical resources are consumed by virtual machines resulting in high asset utilization
  - Virtual machines are mobile giving CIO's their choice of physical server device
  - A common set of value capabilities and centralized management are provided for virtual machines regardless of what physical server they are sitting on
  - ...cost savings and flexibility!

## On Intel systems

server virtualization platform (VMware vSphere) and  
server virtualization management (VMWare vCenter)

## On Power systems

server virtualization platform (IBM PowerVM) and  
server virtualization management (IBM Director VMControl)



- **Storage hypervisor** is a rapidly emerging way of describing the same value points in a storage context

- Virtualization characteristics

(think VMware vSphere)

- **Common device driver**

iSCSI or FC host attach

- **Common capabilities**

Thin provisioning

I/O caching

Easy Tier automated tiering to Solid-state Disks

Snapshot (FlashCopy)

Mirroring (Synch and Asynch)

Real Time Compression

- **Data mobility**

Transparent data migration among arrays and across tiers

Snapshot and mirroring across arrays and tiers

- Management characteristics

(think VMware vCenter)

- **Manageability**

Integrated SAN-wide Management

Integrated IBM server and storage mgmt

- **Replication**

Application integrated FlashCopy

(Oracle, DB2, SAP, Exchange, SQL Server)

DR automation

(Storage failover/fail back)

Site switching with distributed HyperSwap like capability

- **High Availability**

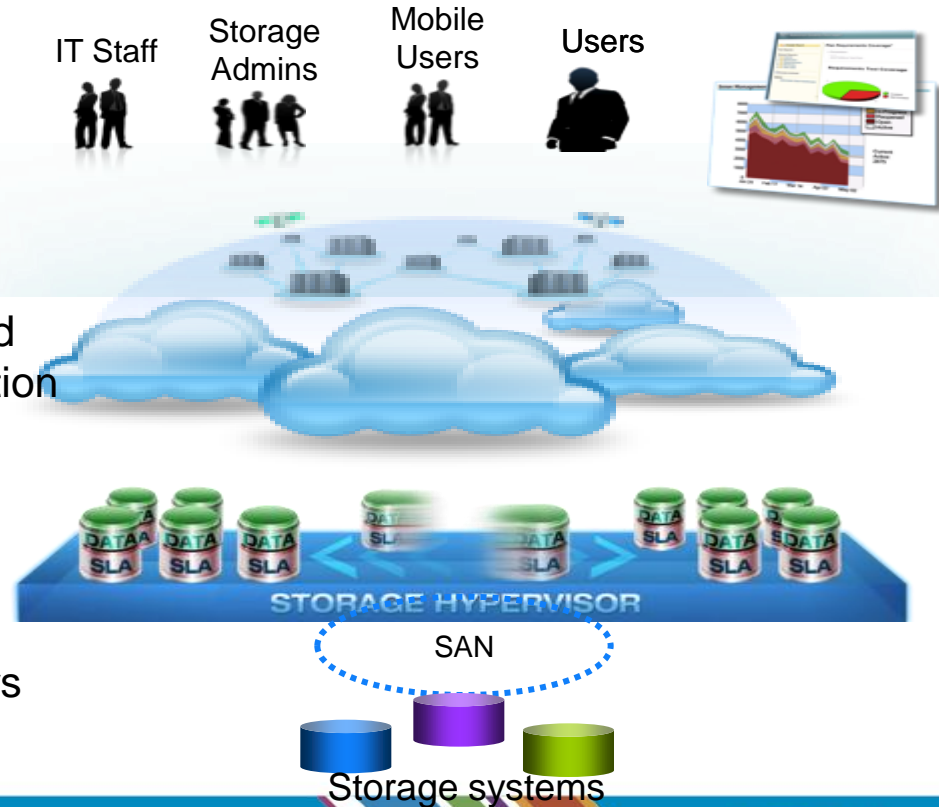
Stretch Cluster HA





## Built on IBM's Virtualized Storage foundation

- **Pooled physical resources** from multiple arrays, vendors, and datacenters – pooled together and accessed anywhere.
- **Common capabilities** regardless of storage class or vendor
- **Mobility of storage volumes** on the fly based on workload balancing policies without disruption of service
- **Centralized management** to optimize your people for the challenges of day-to-day operations
- **Pay-per-use storage resources** end users are aware of the impact of their consumption, service level choices



Incredible  
Ease of Use

Expanded  
Flexibility

Automated Data  
Protection



## SmartCloud Virtual Storage Center

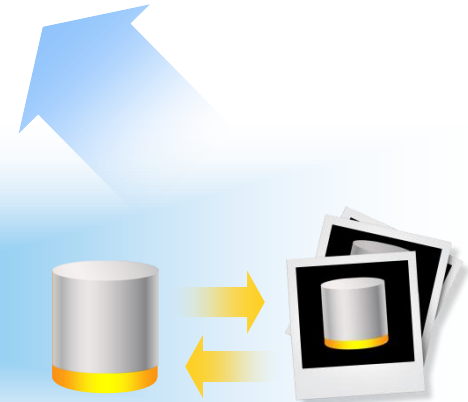
- Enables storage for cloud computing
- Easy to buy and deploy
- Pay-as-you-go pricing



**SAN and Storage  
Resource Management**

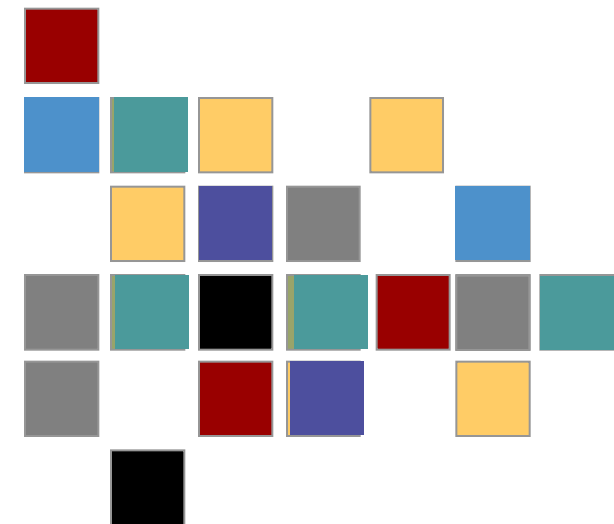


**External Storage  
Virtualization**



**Snapshot  
Management**

# Enabling Storage Optimization Technologies



## Thin Provisioning



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

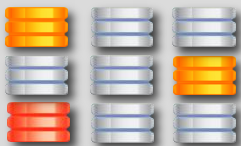


Dynamic growth

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

- ✓ Satisfy provisioning requests but allocate storage only when data is written
- ✓ Improve capacity utilization across the infrastructure
- ✓ **Value: Improve capacity utilization across the infrastructure**

## Real-time Compression

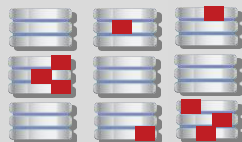


- ✓ Buy and maintain less storage
- ✓ Compress active data up to 80% without application performance degradation
- ✓ For example, VMware ~75%, Database ~80%, Exchange ~50%
- ✓ **Value: Store more data with less disk**

## IBM Easy Tier SSD Management

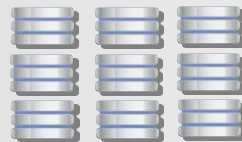
SSDs

HDDs



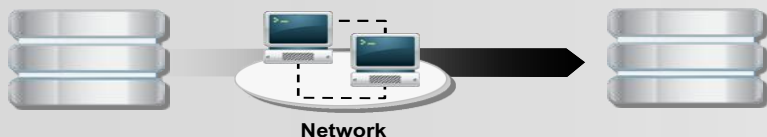
SSDs

HDDs



- ✓ Busiest data automatically moved to highest performing Solid-state Drives
- ✓ Up to a 3x performance improvement with as little as 5% SSD
- ✓ **Value: Optimized performance at lower overall cost**

## High Availability Configurations



- ✓ Synchronous and asynchronous mirroring between sites
- ✓ Real-time data mobility between sites complements VMware vMotion and PowerHA Live Partition Mobility
- ✓ Integrated management with practice support
- ✓ Automated fail-back after repair
- ✓ **Value:** Enable near-continuous data availability

## Application-Aware Copies

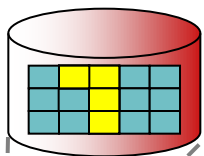


- ✓ Integrated, instant copy for critical applications
- ✓ Rapidly create clones for application testing
- ✓ View inventory of application copies and instantly restore
- ✓ **Value:** Virtually eliminate application downtime for backup

## Practice Disaster Recovery Techniques

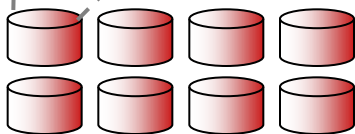


- ✓ Practice application recovery procedures
- ✓ Detect mirroring failure and automate failover
- ✓ **Value:** Train staff and prove business continuity plans work without disrupting applications



## Easy Tier Volume

- Created from pool of SSD's and HDD's
- Automatically moves the most active data to SSDs to improve performance
- Optimizes SSD by moving sub-volume extents within the Easy Tier pool



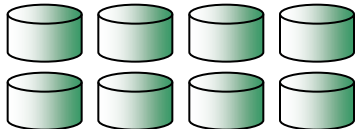
## Tier 0/1

- Highest performance SSD's, or combination of SSD's and HDD's leveraging Easy Tier technology



## Tier 2

- High performance HDD's, possibly from older storage systems and lower priority workloads

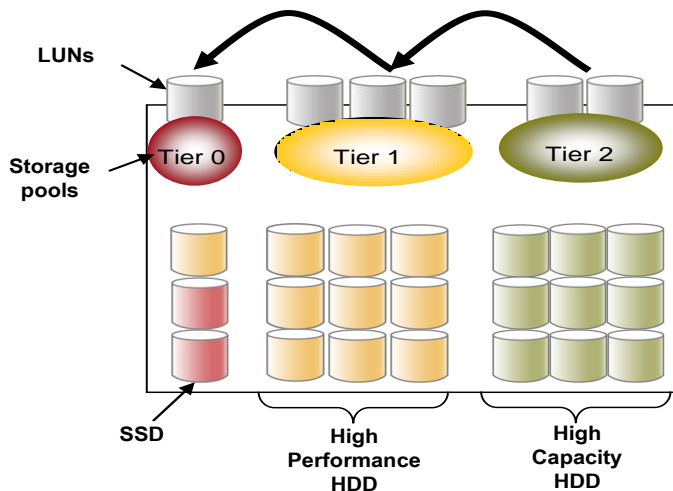


## Tier 3

- Cost effective, high capacity HDD's for workloads with lower performance requirements

## Storage Analytics Engine

- Recommends migrating whole volumes between storage pools

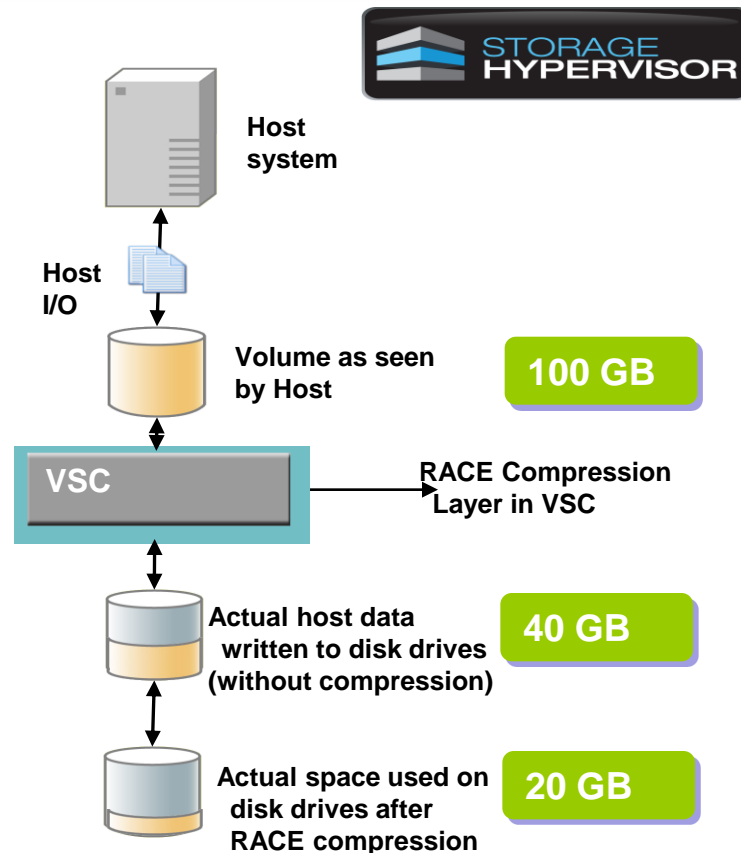


## What this is

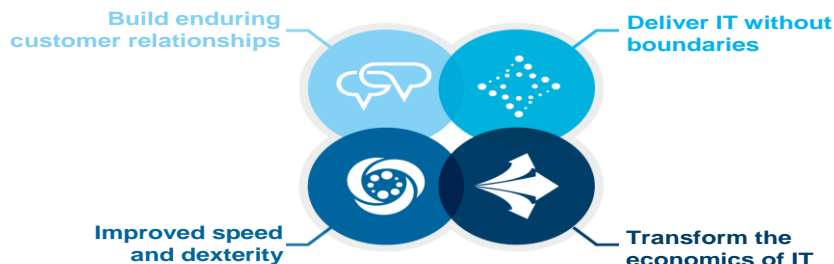
- IBM acquired the company known as Storwize (that name has now been applied to the new IBM Storwize V7000) which produced appliances that sit in front of NAS (network-attached storage) arrays and compress data being written to the array, using Lempel-Ziv algorithms in its Random Access Compression Engine (RACE).
- This RACE technology will be embedded into our code to provide the same compression capabilities for block storage

## Why it matters

- Growing customer data demands more disk space and drives up the cost of storage in the data center
- The RACE engine, which can achieve upwards of 50 per cent data reduction, allows customers to reduce the amount of disk required for their data



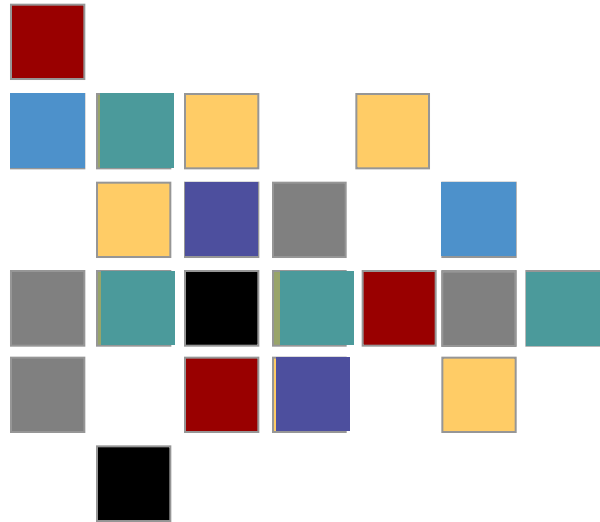
## Cloud Ready



- ✓ Automated storage provisioning for compute clouds using OpenStack Nova-volume driver and RESTful API
- ✓ Chargeback capabilities with *optional* SmartCloud Cost Manager
- ✓ Standardized storage services catalog to streamline provisioning and volume management
- ✓ Integrated with optional IBM Intelligent Storage Services Catalog
- ✓ **Increase IT and business alignment**



# Examples: Business Value & Underlying Technologies



# City of Casey Streamlines Infrastructure with Storage Efficiency

## Problem:

Accommodate growing storage needs  
Pains around the performance and management of existing storage solution.

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## Technology Used:

- Storage Virtualization
- Tiered Storage Optimization
- Storage Resource Management
- Remote Clusters / Mirroring

## Benefits:

The IBM virtualized storage solution provides efficient, cost-effective storage for the data center, enabling:

- **Better management** of the storage environment
- leverage existing investment in tier 2 storage
- Automating tiering and migration reduces administrator tasks and risks; gives better performance.

# Australian Company Constrains Storage costs with Storage Efficiency

## Problem:

Storage infrastructure poor utilisation/Utilization by “at sleep” data. Limited ability to monitor storage and storage infrastructure

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## Technology Used:

- Storage Resource Management

## Benefits:

The IBM Storage Resource Management solution enables:

- **Better management** of the storage environment
  - Identify data that is “at sleep”
  - Enable higher, better, and more appropriate tier utilization of storage
  - **Save** on storage costs in the next financial year

## Problem:

Meeting backup windows;  
Recover time objective not optimal

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## Technology Used:

- Snapshot Management

## Benefits:

The Snapshot Management solution enables:

- **Near Instant** recovery of their Oracle databases
- Improving recovery time and recovery point objectives.

## Problem:

### Growth in Student Body = Growth of Data

Challenges in managing that increased volume of data e.g. Provisioning in a timely fashion; Manage Backups and Disaster Recovery

## Technology Used:

- Storage Virtualization
- Storage Resource Management
- Data Protection

<http://www.youtube.com/watch?v=LA241yD93Uo>

## Benefits:

- **“Flexibility**, ability to change systems on the fly ..”
- **“Reduced recovery time** from days to hours ... from hours to minutes.”
- **“significant economic benefits** for example with thin-provisioning.”

“This solution has given us a lot of **insights** into the data that we store ...**the less money that I can spend on storage ...is available for the core business of the university** which is teaching the students” –**Angus Griffin**, Manager of IT Infrastructure



## Problem:

Needed to lower costs associated w/ internal storage, deploy smarter storage management, begin migration to next-generation data center and cloud

## Technology Used:

- Storage Virtualization
- Tiered Storage Optimization
- Storage Resource Management

## Benefits:

Migrating inactive data to lower cost storage frees up primary storage and its associated costs

Automating tiering and migration reduces administrator tasks and risks

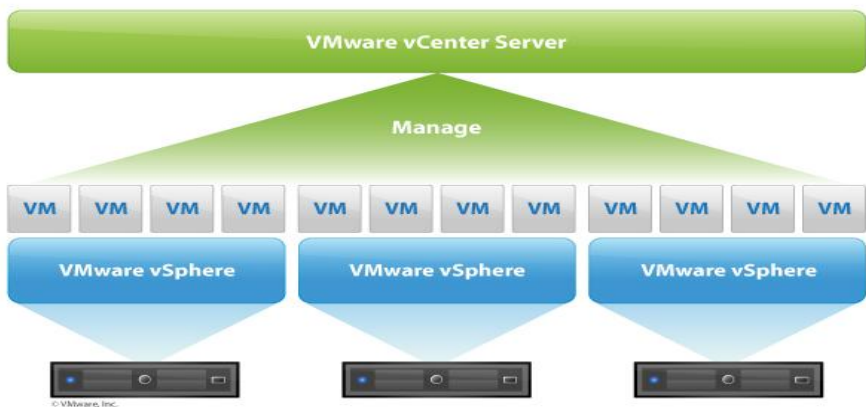
*“Automated ‘right tiering’ reduced our unit cost of storage by 50%...  
...and is projected to deliver \$13M in infrastructure cost savings over 3 years”*

**Mike Sylvia** Office of the CIO, IBM

# Virtualize the complete infrastructure



vmware® Virtual Server Infrastructure



IBM® hypervisor for storage

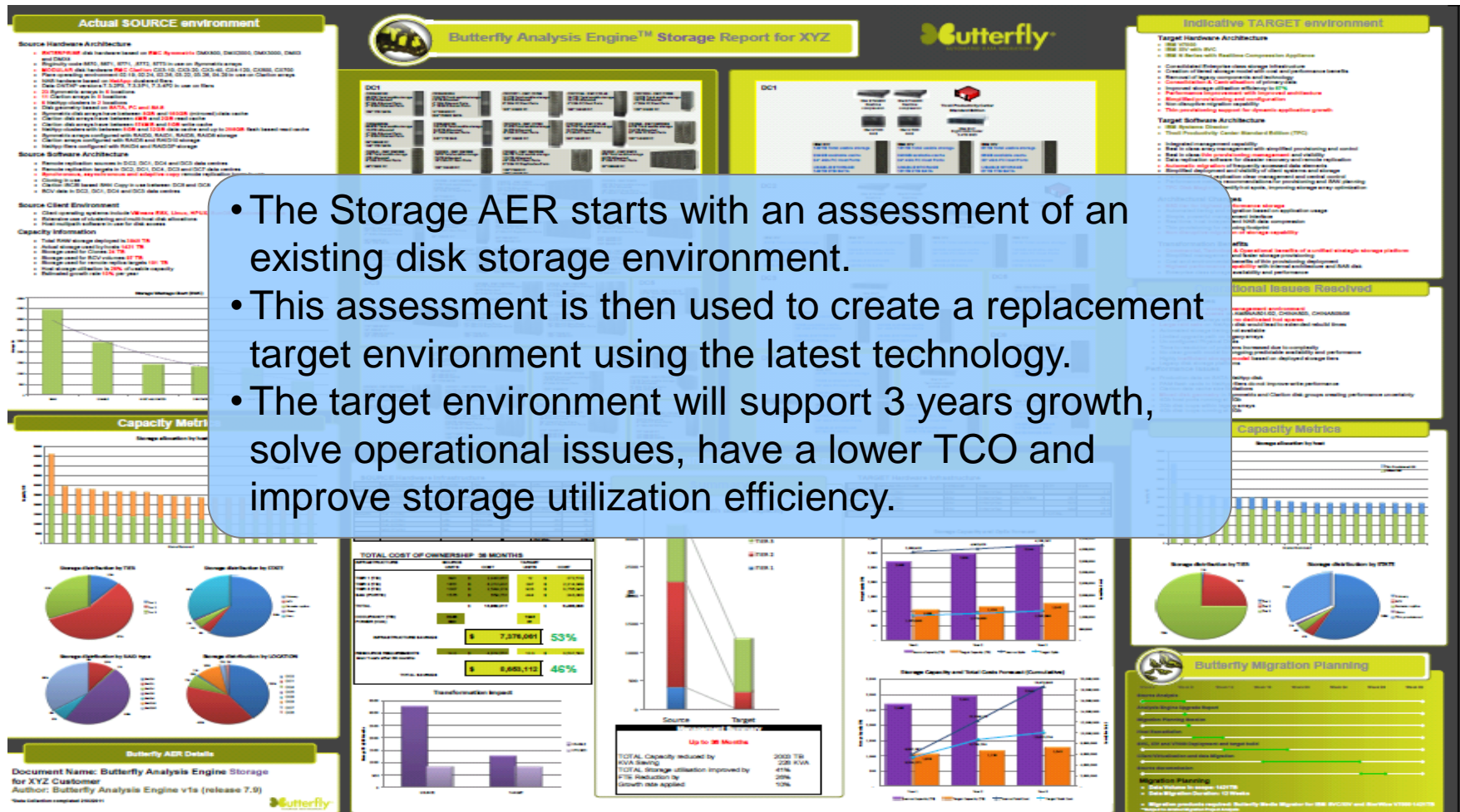


Storage Virtualization



Storage Hypervisor Management

# Sample "Analysis Engine Report" for Storage



- The Storage AER starts with an assessment of an existing disk storage environment.
- This assessment is then used to create a replacement target environment using the latest technology.
- The target environment will support 3 years growth, solve operational issues, have a lower TCO and improve storage utilization efficiency.



At **Advent One** our corporate ideals are to offer insight, innovation and clarity to benefit our clients. Remember Advent One delivers IT solutions that address clients business objectives in three key areas

- IT infrastructure
- Fraud & Compliance
- Business Solutions
- Managed Services

## Can we Help you?

- Please speak to me after the session (dianne.russell@adventone.com)
- Butterfly certified .... Would you like a Storage or Backup Analysis Engine Report?
- Drop into our stand in the exhibition hall ....we'd love to speak with you!

**Khop Khun Mak**

**Cheers**

**Sukran**

**Tack**

**Merci**

**Diolch**

**Gracias**

**Arigato**

**Kamsa hamaida**

**Danke**

**Salamat**

**kiitos**

**Efharisto**

**Thank You**

**Dankie**

**Grazie**

**Hvala**

**Xie xie**

**Kam ouen**

**Shukria**

**Tesekkurler**

**Takk**

**Köszönöm**

**Toda**

**Spasiba**