Our **Purpose,**
Values & Practices

DESAYUNO

TIVOLI STORAGE MANAGER

Francisco García Molero – C&SI Storage Client Technical Professional
Gonzalo Casado - European Storage Virtualization Sales Leader

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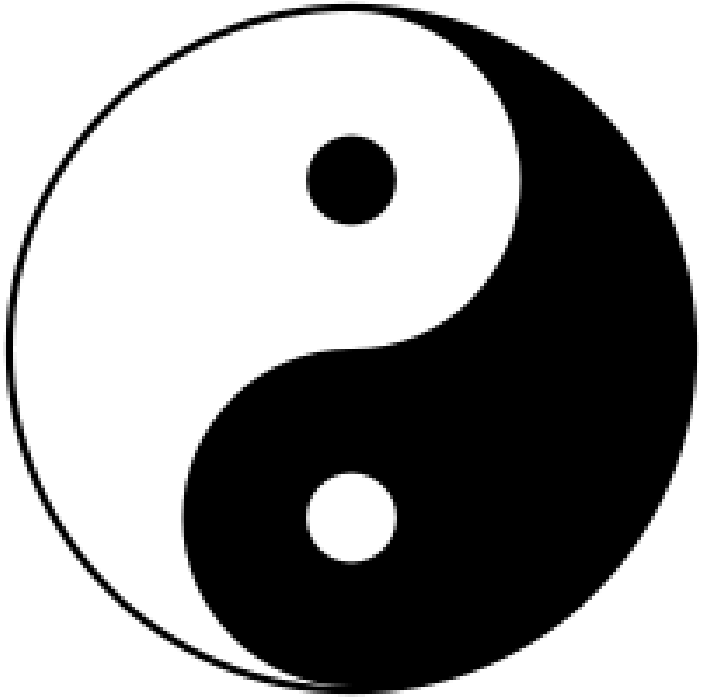
IBM



El **yin y yang son dos conceptos del** taoísmo, que exponen la dualidad de todo lo existente en el universo. Describe las dos fuerzas fundamentales opuestas y complementarias, que se encuentran en todas las cosas. El yin es el principio femenino, la tierra, la oscuridad, la pasividad y la absorción. El yang es el principio masculino, el cielo, la luz, la actividad y la penetración. Según esta idea, cada ser, objeto o pensamiento posee un complemento del que depende para su existencia y que a su vez existe dentro de él mismo.

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¿Quién eres?

¿De dónde vienes?

YIN – Di algo bueno

de nuestra solución!!!

YANG – Dinos algo no tan bueno!!

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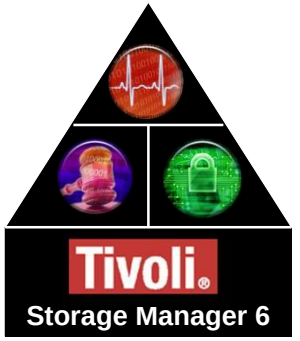

Ultimas Actualizaciones

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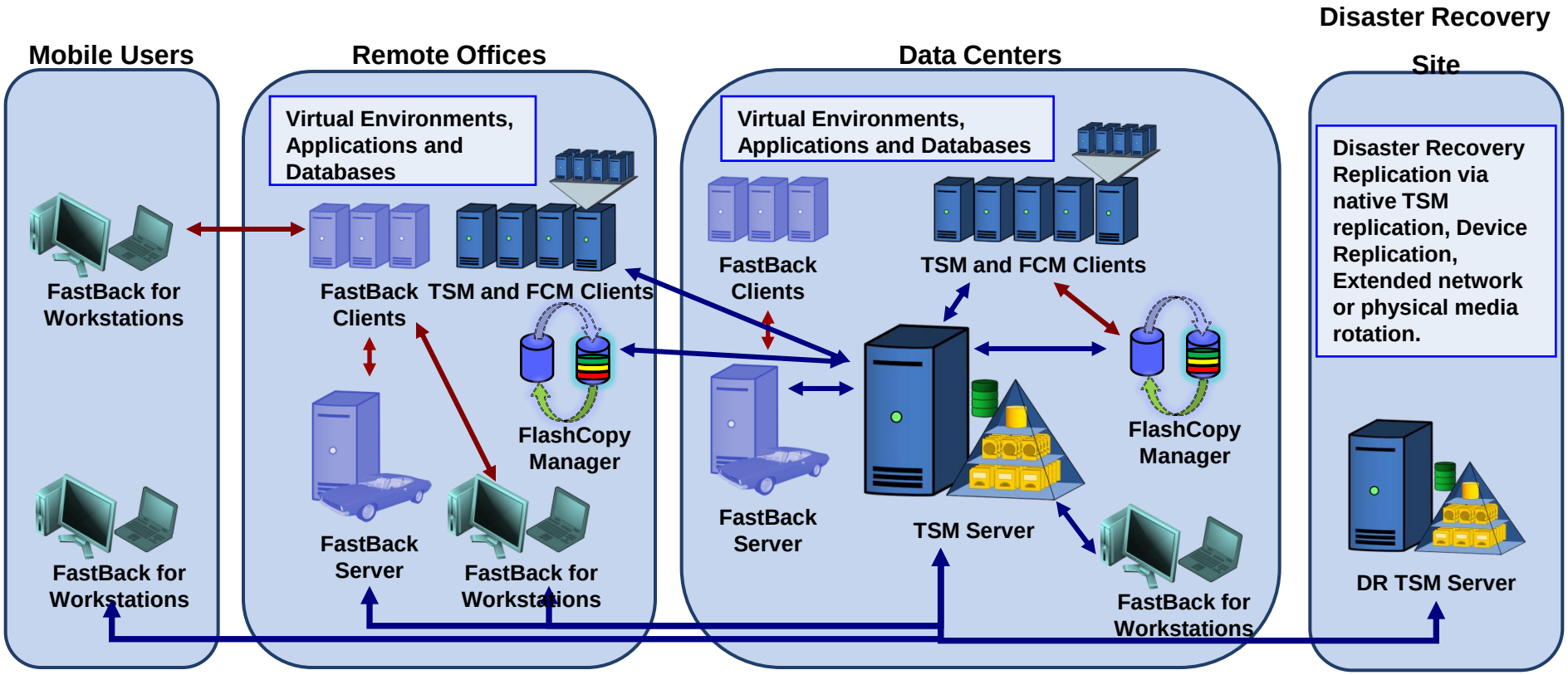
Tivoli Storage Manager Family *offers unified recovery management*



- ***TSM FastBack for Workstations:*** Continuous data protection for desktops & mobile users
- ***TSM FastBack:*** Block Level Incremental Forever & CDP protection for critical servers, deduplication
- ***FlashCopy Manager:*** Robust application protection using hardware snapshot
- ***Tivoli Storage Manager:***
  - ✓ Industry leading scalability, performance, availability, deduplication
  - ✓ Advanced tape and Disaster Recovery support
  - ✓ Broad OS and HW platform support, application protection

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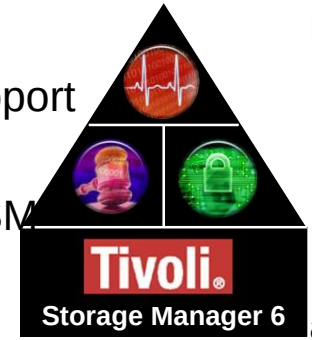
Continuing to Lead the Way

TSM 6.1
GA 3/27/09

Tivoli Storage Manager 6 released back in 2009 and designed to address our customers' most challenging issue: the continuing tidal wave of data growth.

TSM 6 Highlights:

- ✓Integrated DB2 Database
  - ✓Data deduplication for disk storage pools
  - ✓Customizable reporting and near real-time monitoring
  - ✓Improved TSM Administration Center
  - ✓Enhanced support for IBM Nseries and NetApp Filers
  - ✓Item Level Recovery for Microsoft Exchange
  - ✓Granular Support for Windows Active Directory
  - ✓LAN Free to disk using GPFS
  - ✓Enhanced support for VMware
  - ✓IBM XIV storage system snapshot support
  - ✓A simple, wizard driven approach to configure FastBack server backup to TSM



Improved Scalability

Tested internally with **1 Billion** objects

Deduplication

Deduplication technology provided as part of the base offering, at no extra charge, and includes both source or target side deduplication.

Simplified management

N-Series/NetApp support

Backup filers using traditional methods, NDMP directly to tape or our unique IBM/Netapp "Snapshot Differencing API"

VMware support

Full vStorage API with the standard b/a client

New **TSM for Virtual** Environments with advanced backup and restore capabilities

© 2009 IBM Corporation

TSM Family – what was new in 2010 (partial list)

TSM 6.2

GA 4/16/10

Data Reduction

- ✓ TSM Source (client) side deduplication
- ✓ FastBack for Workstation support for Source (client) side dedupe

Virtualization

- ✓ VMware vStorage API integration (file and image)
- ✓ Auto discovery of VM guests
- ✓ Hyper-V backup
- ✓ TSM for Virtual Environments (1Q/11)

User Experience

- ✓ TSM automatic client updates

Disaster Recovery

- ✓ TSM offsite Vaulting Using DB2 HADR
- ✓ FastBack WAN deduplication – FastBack integrated like a TSM TDP

Scalability

- ✓ Tested internally with 2 billion objects
- ✓ Simultaneous write during storage pool backup

Platform and Application Coverage

- ✓ Exchange 2010, SharePoint 2010
- ✓ ASR for Windows Vista, 7 and 2008
- ✓ FastBack Instant Restore for Linux
- ✓ Flashcopy Manager – expanded offering to Solaris ® SPARC and Linux® x64
- ✓ Flashcopy Manager - custom applications and filesystems support

Unified Recovery Management

- ✓ Fastback for Workstation management from TSM
- ✓ Fastback replication into TSM server
- ✓ FCM Expansion to new OSs (Linux/Solaris)

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TSM Family – what was new in 2011 (partial list)

TSM 6.3
GA 11/18/11

Data Reduction

- ✓ TSM for Space Management enhancements for efficient data movement between storage pools.
- ✓ Setting deduplication object size thresholds, more efficient deduplication.

Virtualization

- ✓ vCenter UI to manage TSM for VE and Flashcopy Manager
- ✓ Support VMware datastores backups through Flashcopy Manager
- ✓ Hyper-V backups that leverage hardware snapshots

User Experience

- ✓ New MMC interface for MS SQL and MS Exchange
- ✓ TSM automatic client updates (for non-Windows)
- ✓ Cognos reporting engine, Install, configure and use reporting and monitoring within 2 hours
- ✓ Microsoft Windows client configuration wizard

Disaster Recovery

- ✓ TSM native replication
- ✓ Incremental and deduped data movement protects bandwidth

Scalability

- ✓ Tested internally with 4 billion objects
- ✓ Multi stream TSM DB backup and restore
- ✓ Journal based backup for Linux clients

Platform and Application Coverage

- ✓ TSM for z/OS media bring TSM 6.x capabilities to z/OS
- ✓ vSphere 5.0 Support for FCM and TSM for VE
- ✓ Flashcopy Manager – HP-UX
- ✓ Flashcopy Manager - custom applications and filesystems support for Windows

Licensing

- ✓ TSM Suite for Unified Recovery (SUR) – capacity based licensing, benefit from smart data management and data reduction

Unified Recovery Management

- ✓ Protect VMware environments with FCM and TSM for VE transparently moving data from hardware snapshots to disk to tape

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Double the capacity of the TSM Server – *AGAIN!!*

Data growth of 40%-60% per year?

NO PROBLEM

- The best-in-class in scalability just GREW 100% for the 3rd straight year
- Now managing up to **4 BILLION** data objects in a single TSM Server
  - Files and chunks of deduplicated files
  - Databases
  - Images
- Single server architecture
  - No need for additional "media servers" as you scale
  - **87.5%** reduction in the number of backup servers needed to manage 4B objects (vs. TSM v5.5)

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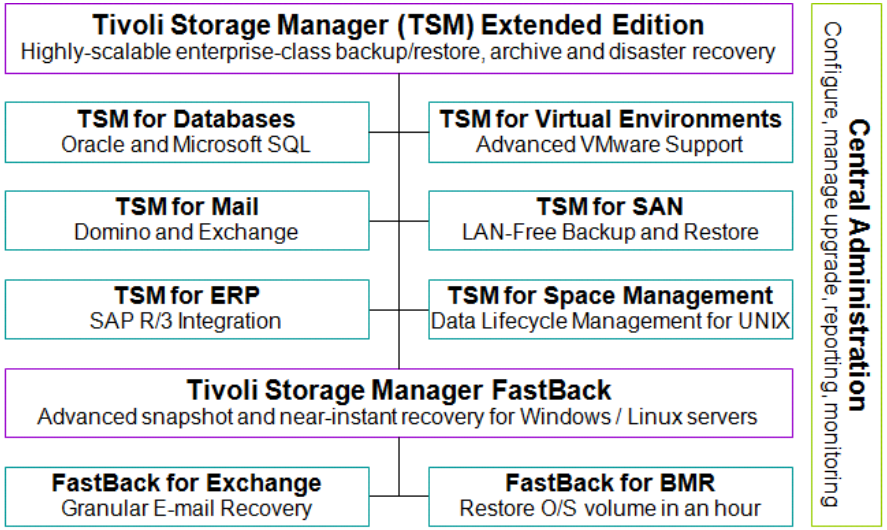
TSM Suite of Unified Recovery Entry

Enterprise class protection at a mid-market price

- Same broad functionality and benefits as the standard TSM SUR, at a much lower per TB price point
- Designed for small and mid-sized clients to manage up to 100 TB of backup data with 2 TSM server
  - A single TSM Server can manage up to 4 billion data objects, and can easily manage 100 TB of backup data
  - The 2nd TSM Server can be used for off-site disaster recovery (no charge for the replicated data)
- A “trade-up” license is available to grow beyond the Entry capacity

TSM SUR and TSM SUR Entry Include..



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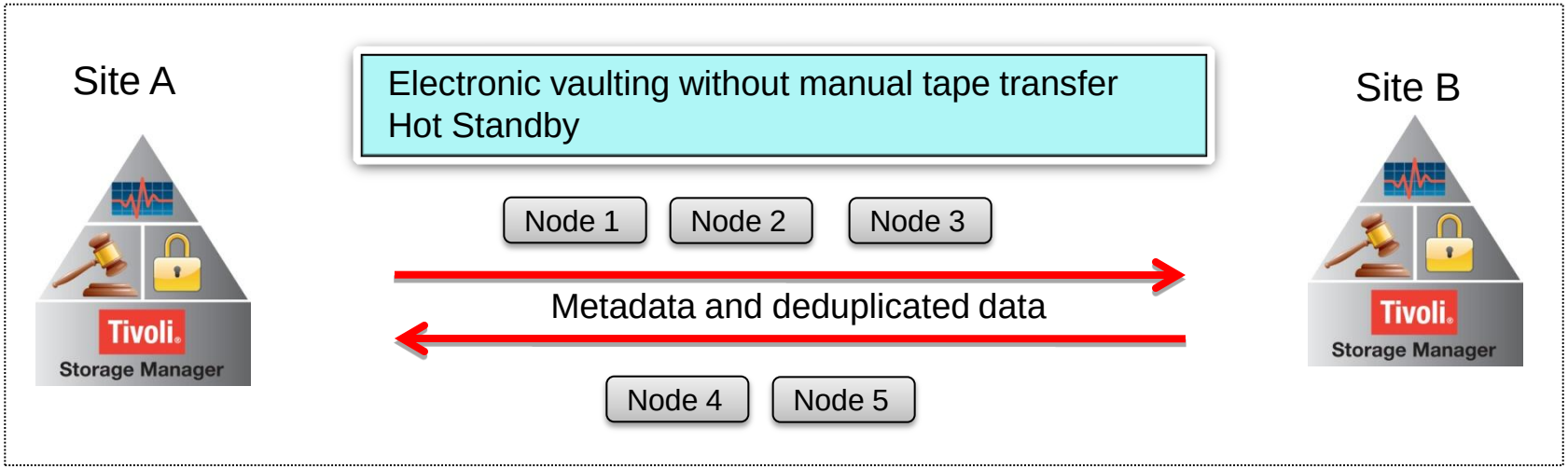
Online replication to meet disaster recovery needs

TSM 6.3
GA 11/18/11



What this is:

- Built in replication of data and meta data for selected TSM client node
- Incremental transfer of deduplicated data
- Transactional consistency
- Allows many to one replication
- Allows different hardware and config at primary and remote sites
- Can use previously exported data as a starting point for replication

Benefit to our customers:

- Hot Standby at remote site results in improved RTO for DR operations
- Incremental and deduped data movement protects bandwidth
- One Remote DR site can serve multiple primary sites
- Flexibility of configuration
- Can use exported data to reduce initial replication data movement

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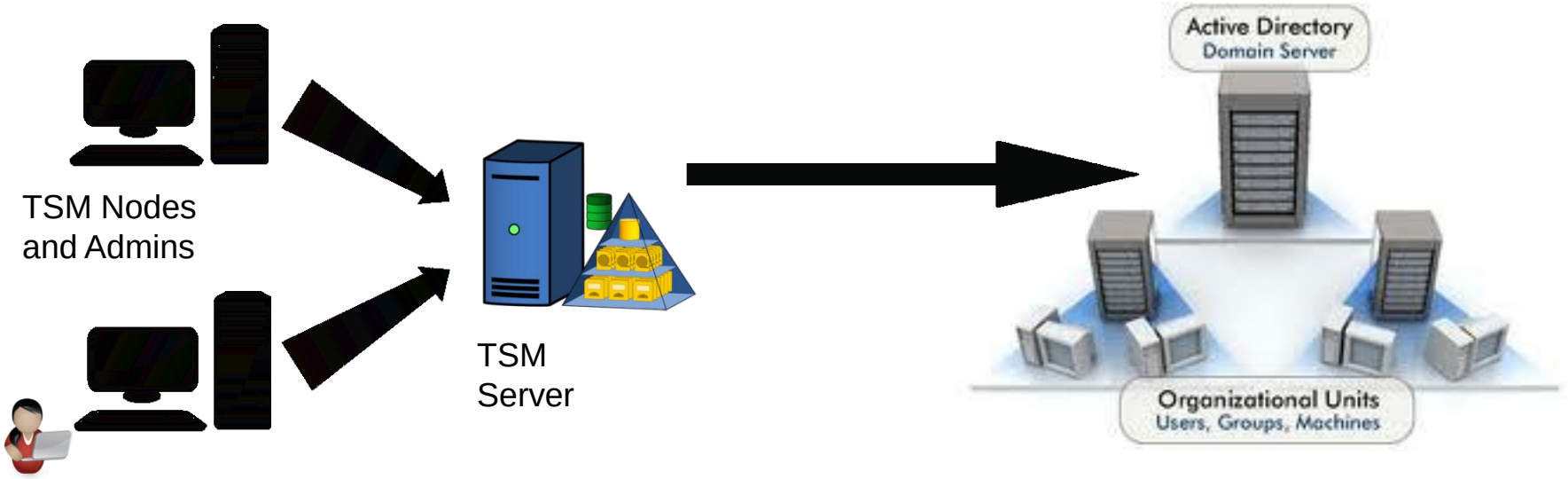
External Directory Support Overview

TSM 6.4
GA: 2H 2012

- TSM node and admin passwords will no longer be required to be stored in the TSM database. This will be specific to each node and admin.
- TSM node and admin passwords can be stored in an external directory. Password rules will be enforced by the external directory server.
  - External Directory servers will allow enforcement of complex passwords with much broader password policies and rules.



What this is:

•Complex password support and integration with external directory

Benefit to our customers:

- Passwords and usernames will be managed by a single enterprise entity
- Transparent compliance with the organization security policy, Easier TSM administration

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Enhancements to overall TSM Portfolio

TSM 6.4
GA: 2H 2012

- **Security and User Management** - Improved user authentication and management by integration with Lightweight Directory Access Protocol (LDAP)
- **Improved NetApp support** - SnapMirror and virtual controller support for NetApp snapshot-assisted progressive incremental backup
  - TSM integrates with NetApp SnapDiff backup processing in conjunction with NetApp's SnapMirror replication
  - The most typical use case is for TSM to be placed at target SnapMirror site to perform SnapDiff backups to offload backup
- **Enhanced Cognos reporting** with out-of-the-box reports and custom reporting to monitor your backup and archive environment
- **New support** of data protection and recovery for SAP HANA in-memory databases
  - Manage SAP HANA file as whole entity and automate backup to protect HANA DB
- **Enhanced Microsoft Exchange Database Availability Group** (DAG) support and SQL 2012 release
- **Currency support** for Windows 2012 (B/A Client, TSM for Databases, TSM for VE) and vSphere 5.1

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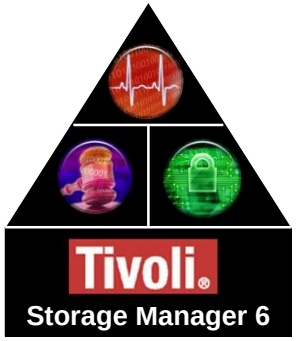

TSM for Virtual Environments

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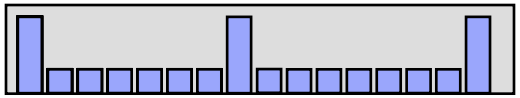
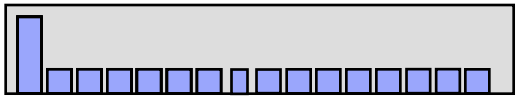
VMware Progressive Incremental Backup



Periodic full + incrementals



Initial full + incremental forever

	Data Protection for VMware 6.3, and other VMware backup solutions	Data Protection for VMware 6.4
Backup methodology	Periodic full + incrementals	Initial full + incremental forever
Scheduling of backups	Separate schedules for full and incremental backups	One schedule for incremental forever backup
Restore methodology	Restore full and apply required incrementals (could be multiple restores of same block)	Restore required blocks only once
Restore operations	▪Full VM restore ▪Volume instant restore ▪File-level restore	▪Full VM restore ▪Volume instant restore ▪File-level restore
Retention of file versions	Applied to each backup chain (full backup and associated incrementals)	Applied to each backup version
Recovery of space from stored blocks	Full backup allows blocks from older backup chains to become eligible for deletion	Incremental backup allows consolidation of used blocks and removal of unused blocks

- Reduced backup time
- Simplified scheduling of backup operations
- Reduced resources for host/vStorage servers, network, storage pool

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Tivoli Storage Manager for Virtual Environments v6.4 extends IBM's leadership in data protection on VMware platforms

- **What's new:**

Enhancements in TSM for VE

- Progressive incremental backup of VMs.
- Backup multiple VMs in parallel.
- Configuration wizard to simplify install and configuration
- Application-aware backups of Microsoft SQL Server, Exchange running within a VM

- **Client Value:**

Reduced storage and networking requirements, and reduced application downtime due to the elimination of periodic full VM backups and the parallel processing of backup jobs

Simplified administration, faster time to value

The TSM for VE 6.4 client was able to reduce storage requirements up to 66%, and reduce the backup window up to 53%.

- Tony Palmer, Enterprise Strategy Group

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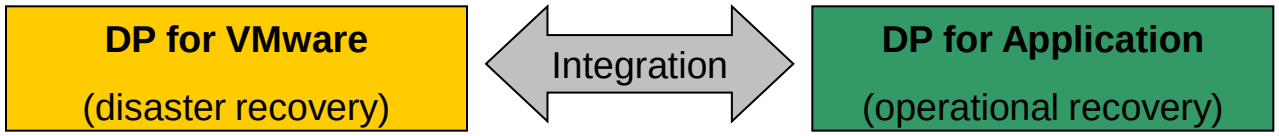
Unified Application/Database Protection

- To achieve protection of applications/databases hosted in a VMware environment
  - Many TSM customers today use DP for Application (Exchange, SQL, etc.) running in VM
  - Future goal is to provide application protection that is integrated and unified with DP for VMware
- Priority applications
  - Microsoft Exchange
  - Microsoft SQL
- Solution will be staged over multiple releases and could involve integration of product features from
  - DP for VMware provides common disaster recovery across all VMs
  - DP for Application provides application awareness and operational recovery



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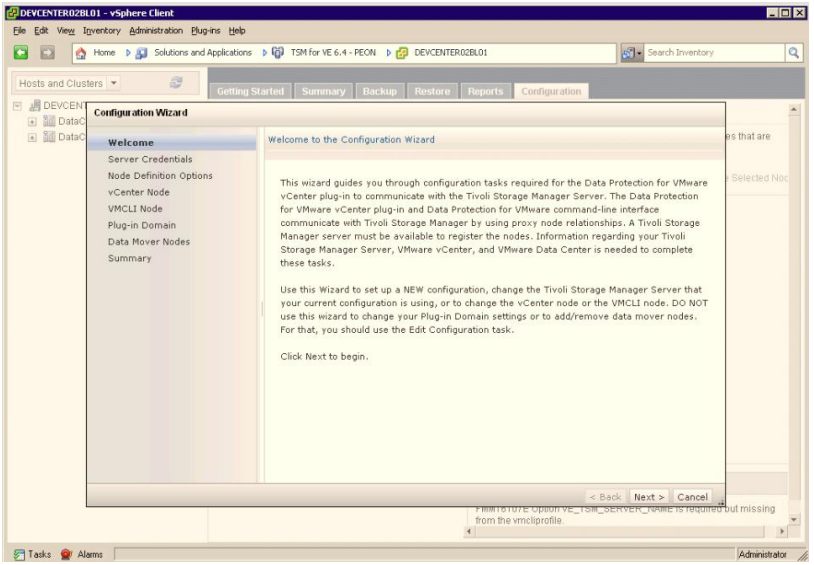
Key 2012 TSM for VE Enhancements

TSM 6.4
GA: 2H 2012

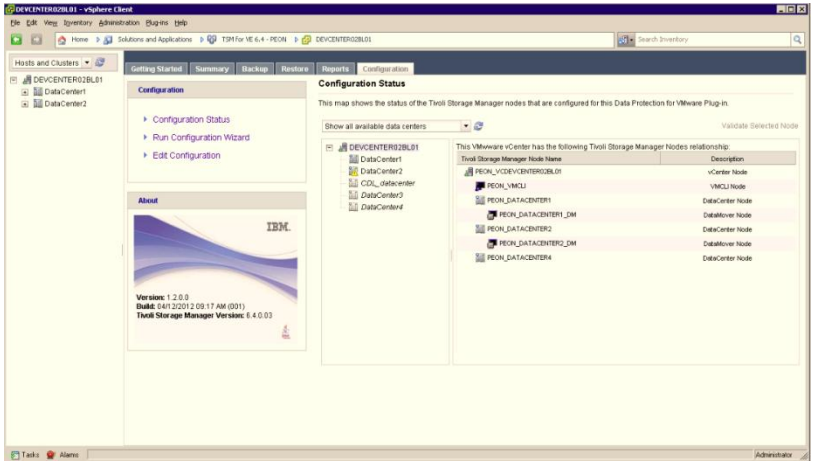
Optimized Performance and Simplified Backup

- Improved performance with multiple backup processes in parallel
- Increased Managed Entities to simplify backup and restore operations (host cluster, datastore, specific VM)



New Configuration Wizard

- Automate most of the configuration and deployment steps to make protecting VMware more consumable
- For the configuration not automated, configuration status will be checked to make sure all components are ready



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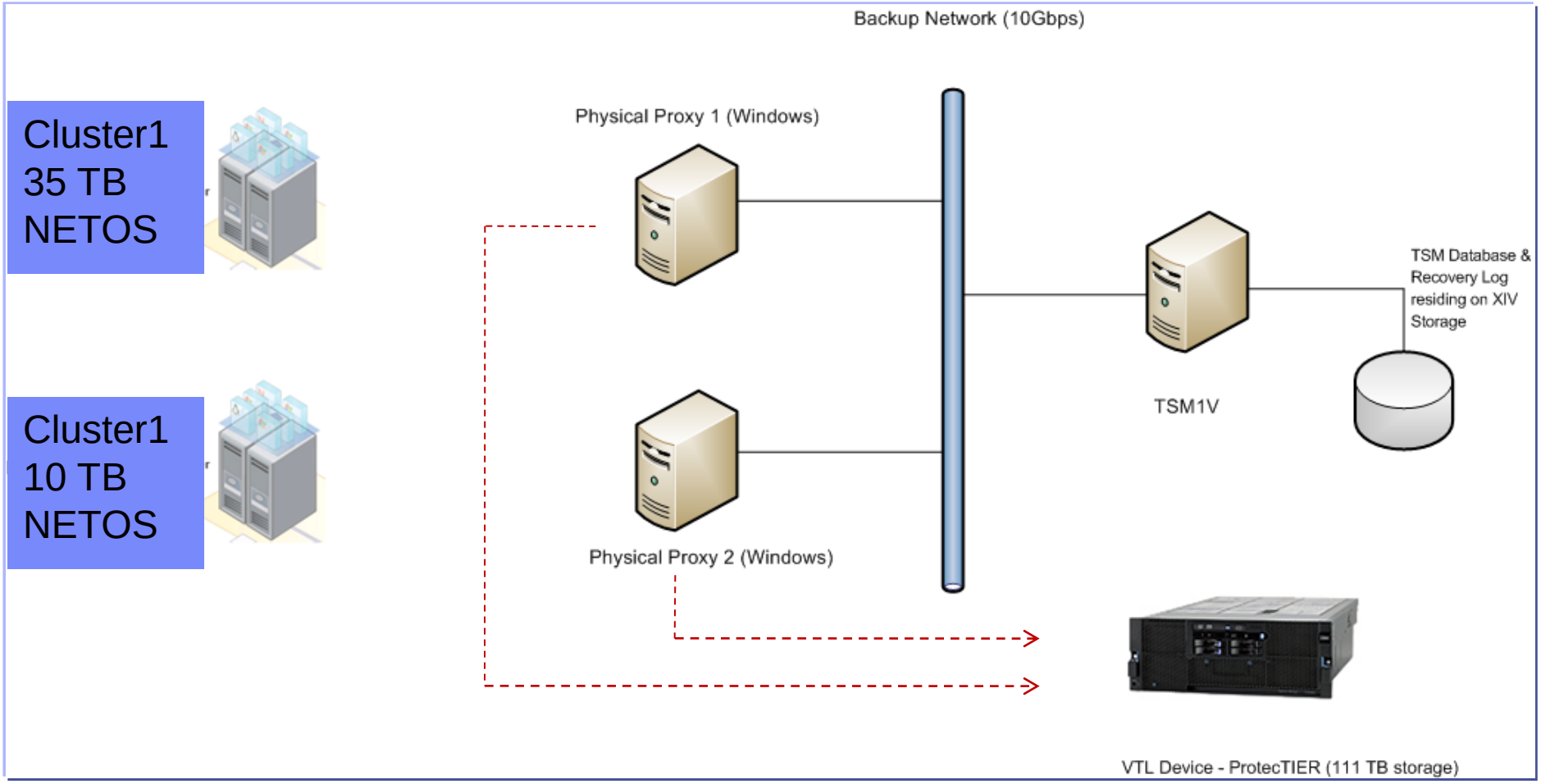
Arquitectura de Alto Nivel de la solución implantada en el piloto



= LAN-Free path

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Resultados obtenidos para Backup de Virtuales (I)

- ✓ Backup diario del 100%* de las VMs dentro del alcance del piloto, consumiendo menos de la mitad de la ventana disponible.
- ✓ Backup mensual (al menos dos ciclos completos) del mismo conjunto de VMs, en ventana de fin de semana, consumiendo un tercio de la ventana disponible.

		Backups realizados				Datos backup diario			
Cluster1	#VMs	Diario Full inicial	Diario Inc.	Mensual 1	Mensual 2	Elapsed time	Failed	% Backups NO QUIESCE	Ratio de Error
Cluster2	512	OK	OK	OK	OK	4h	0	3.1% (16VMs)	0%
	182	OK	OK	OK	OK	3h 30'	0	5.5% (10VMs)	0%
Total	694	OK	OK	OK	OK	4h	0	3.7%	0%

- ✓ Infraestructura estable durante los dos meses del piloto: 100% de disponibilidad del servidor durante toda la duración del piloto.
- ✓ Reducida tasa de errores individuales, alcanzando el 0% durante la última semana.
- ✓ Determinación y resolución del 100% de errores de los backups.

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Resultados obtenidos para Backup de Virtuales (II)

- ✓ Reducción por Snapshot incremental equivalente al 90%.

- ✓ Conseguidos los objetivos de throughput (alcanzados 2000GB/h sin saturar)* y deduplicación en PT (5:1 con dos mensuales únicamente).

- ✓ Realizadas diversas pruebas de recuperación de servidores completos
- ✓ Realizada prueba de recuperación granular de ficheros.
- ✓ Número de servidores reducido gestionando un único pool de backups facilita una administración simplificada, manteniendo la flexibilidad del entorno virtual.
- ✓ El backup de virtuales se realiza sin cargar la LAN de backup, permitiendo la concurrencia de otros backups.

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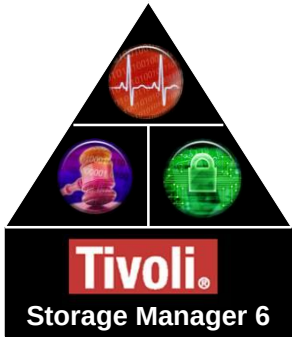

FlashCopy Manager

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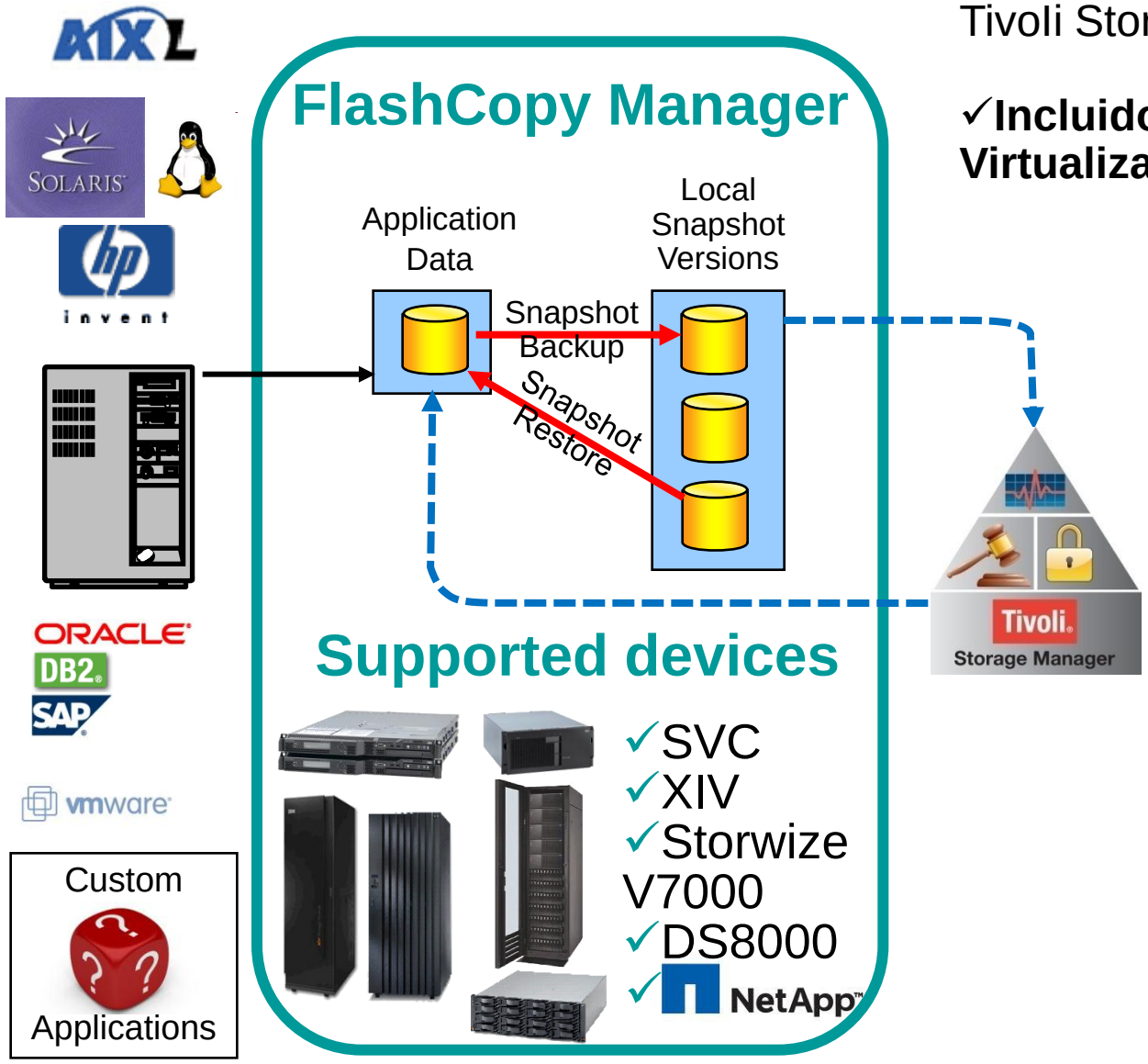

Tivoli Storage FlashCopy Manager

✓Incluido con VSC dentro de la Virtualización del Almacenamiento.

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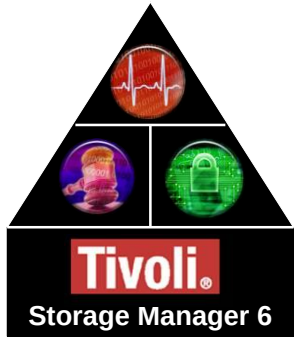

Deduplicacion

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ProtecTIER: Deduplication Advantages

Performance

2,500 MB/s ingest
3,200 MB/s restore

Delivers industry leading dedup performance, Improves TSM mount performance

Capacity

Up to 1 PB physical capacity per node

Delivers industry leading dedup capacity
Nearly 2x Data Domain's largest system
Increased # of drives for TSM

Special TSM Support

Optimization of TSM data

Deduplication for very large TSM objects
Efficient dedup for small TSM objects
Special parsing for TSM data
Butterfly analysis for ProtecTIER target

Non-disruptive Deployment

Simple VTL Design

Easily integrates with TSM
Enables LANfree dedup for TSM
Offloads dedup processing to ProtecTIER
Uses any disk incl Virtual Storage Center

Continuous Availability

Dual node design for high availability

The only HA solution available

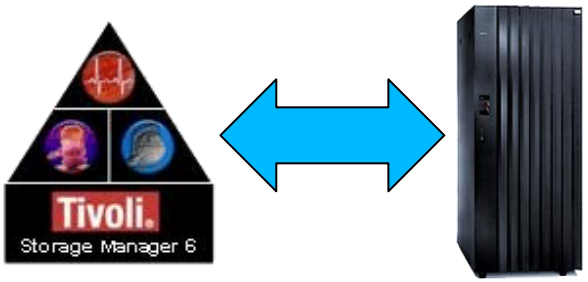
Global Deduplication

Deduplicates ALL data

Provides superior deduplication ratios

TSM and ProtecTIER Synergy

- TSM and ProtecTIER are the highest scaling data protection and deduplication solutions in the industry…and they work great together!
- TSM capacity pricing now gives credit for ProtecTIER deduplication
- ProtecTIER incorporates special TSM parsing for more efficient deduplication of TSM data
- TSM 6.3 ‘VTL awareness’ significantly increases TSM VTL mount performance and number of virtual drives
- TSM can be used with ProtecTIER replication (for data) and HADR (for TSM database)
- ProtecTIER File System Interface (FSI) simplifies Disaster Recovery operations with TSM
- White Paper & Best Practices available on efficient TSM and ProtecTIER planning and operations (see links on last page)
- You can use both TSM and ProtecTIER deduplication but not typically on same data



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When To Use ProtecTIER or TSM Native Deduplication

IBM has a family of storage solutions which offer the benefits of data deduplication for client storage efficiency

- Greatly reduced storage capacity requirements
- Lower operational costs, TSM license costs, energy usage and TCO
- Faster recoveries with more data on disk (can leverage VSC as optimized disk for primary, TSM and ProtecTIER)

Use ProtecTIER Deduplication for:

- Very high performance to reduce backup / recovery times
  - Up to 1600 / 2200 MB/sec (2500 / 3200 MB/s with 2 node cluster) inline deduplication
- Objects >300GB or for daily ingests >10TB (also great for smaller data amounts)
- Capacity scaling up to PBs of primary data to be deduplicated is required
- Deduplicating across multiple backup servers to maximize deduplication

IBM ProtecTIER

Use TSM Built-in Deduplication When:

- Network utilization needs to be minimized using client (source) side deduplication
- Sufficient TSM server resources can be made available and you desire deduplication operations be completely integrated within TSM
- Benefits of deduplication are desired without additional investment

TSM

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Backup deduplication options:

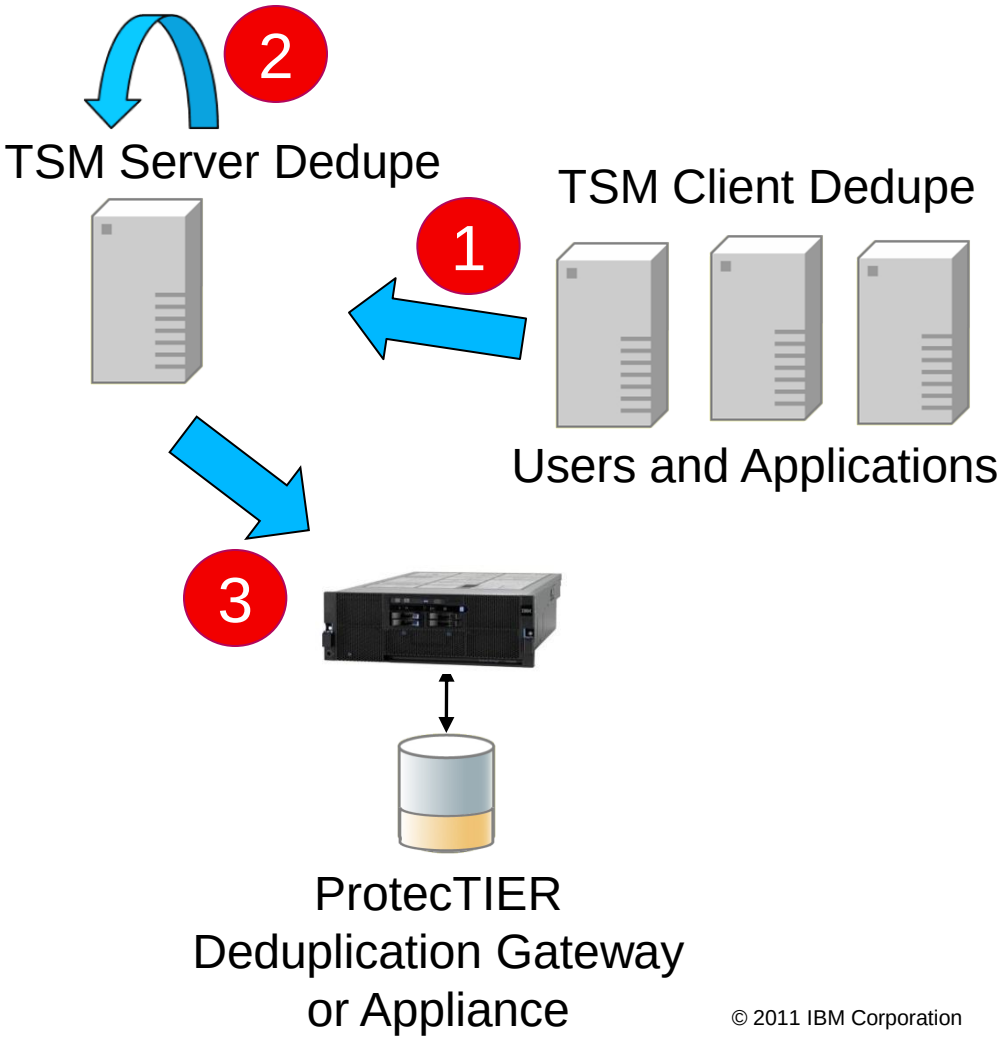
User systems, backup servers, storage systems

It's not whether to deduplicate, but where

1. TSM Client dedupe is most effective (in terms of network bandwidth and storage), but only if user systems have sufficient resources. TSM client dedup works with TSM server dedup

2. TSM Server dedup has no impact on user systems, but requires resources on the TSM Server

3. ProtecTIER dedup has no impact on user systems or TSM Servers



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TSM OC and Reporting

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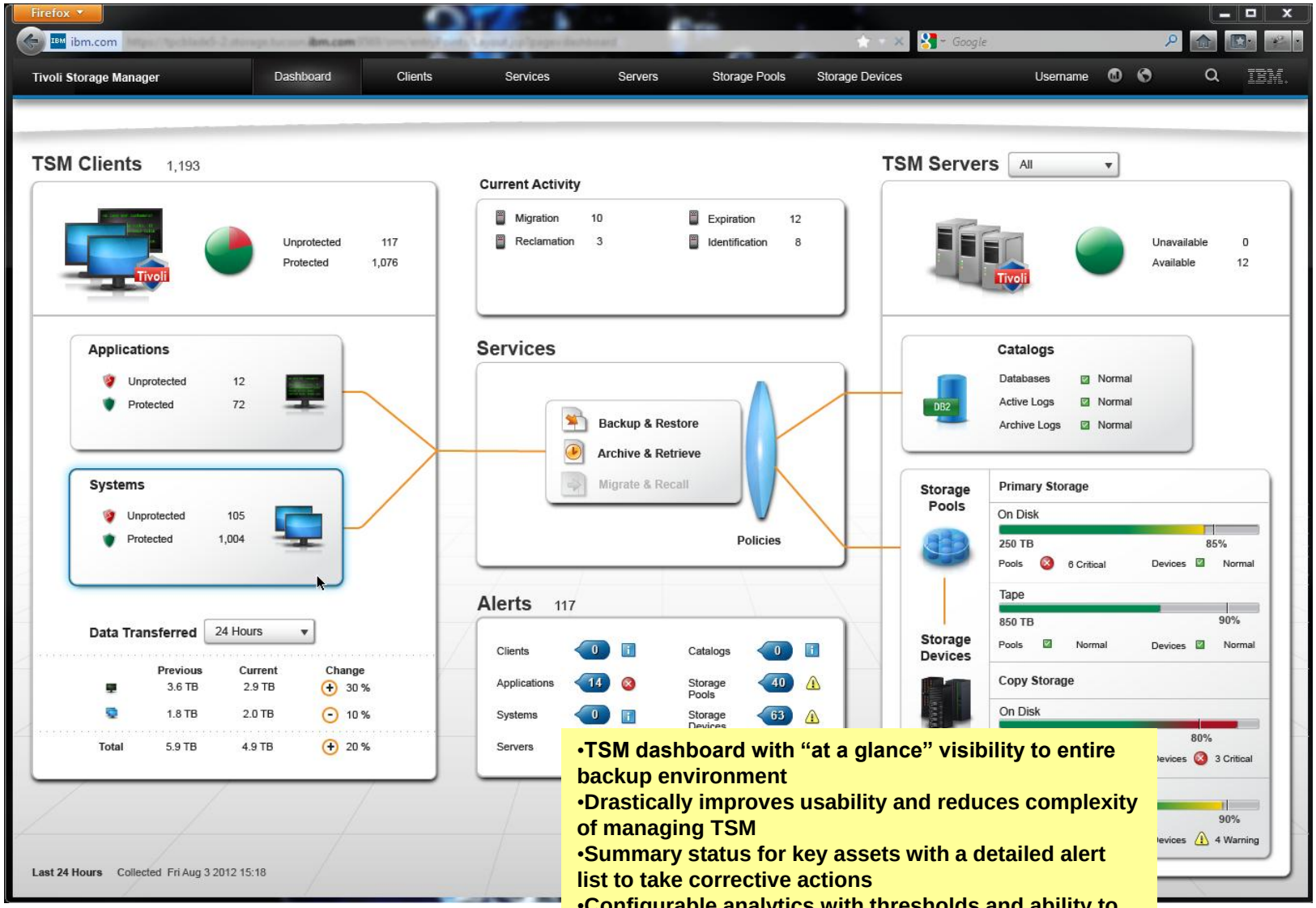
Consolidated Backup and Restore Dashboard



- **TSM dashboard with "at a glance" visibility to entire backup environment**
- **Drastically improves usability and reduces complexity of managing TSM**
- **Summary status for key assets with a detailed alert list to take corrective actions**
- **Configurable analytics with thresholds and ability to drill down on areas of interest**
- **Common look & feel with IBM Storage Unified UI experience**

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Introducing Tivoli Storage Manager Operations Center

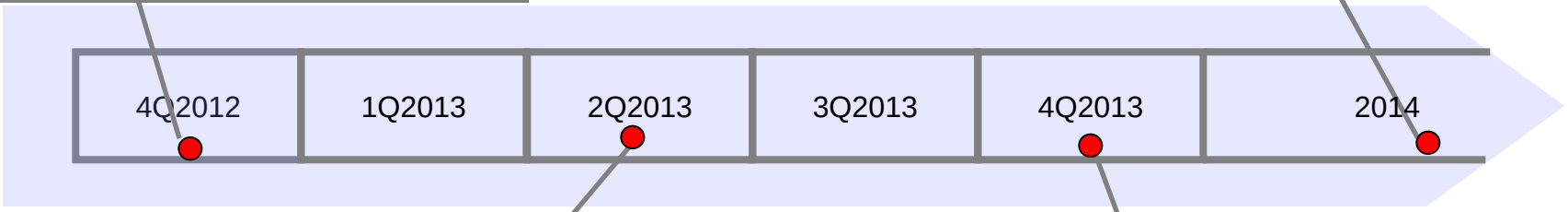
- The Next Generation of Backup Administration

Theme: Proof of Concept

Scenario/Purpose:
- Early release of content to generate awareness and gather more feedback; includes screen shots, live demos, and videos of common use cases.

Theme: Integrated Management

Scenario/Purpose:
- Continue to build out advanced management actions based on user feedback, expect to drive deeper TSM client integration.



Theme: Resource Exploration (1st GA)

Scenario/Purpose:
- Operational dashboard provides enterprise-wide rollup of entire TSM backup environment, and status highlighting known problems with alert management.
- Asset views provide resource drill-down to help troubleshoot problems.
- Command Builder provides a bridge for TSM users to make queries and take corrective actions with familiar commands from within the new user interface.

Theme: Building Out Function (2nd GA)

Scenario/Purpose:
- Fleshing out the asset management.
- Additional integrated actions / wizards for common and complex tasks to simplify user experience.

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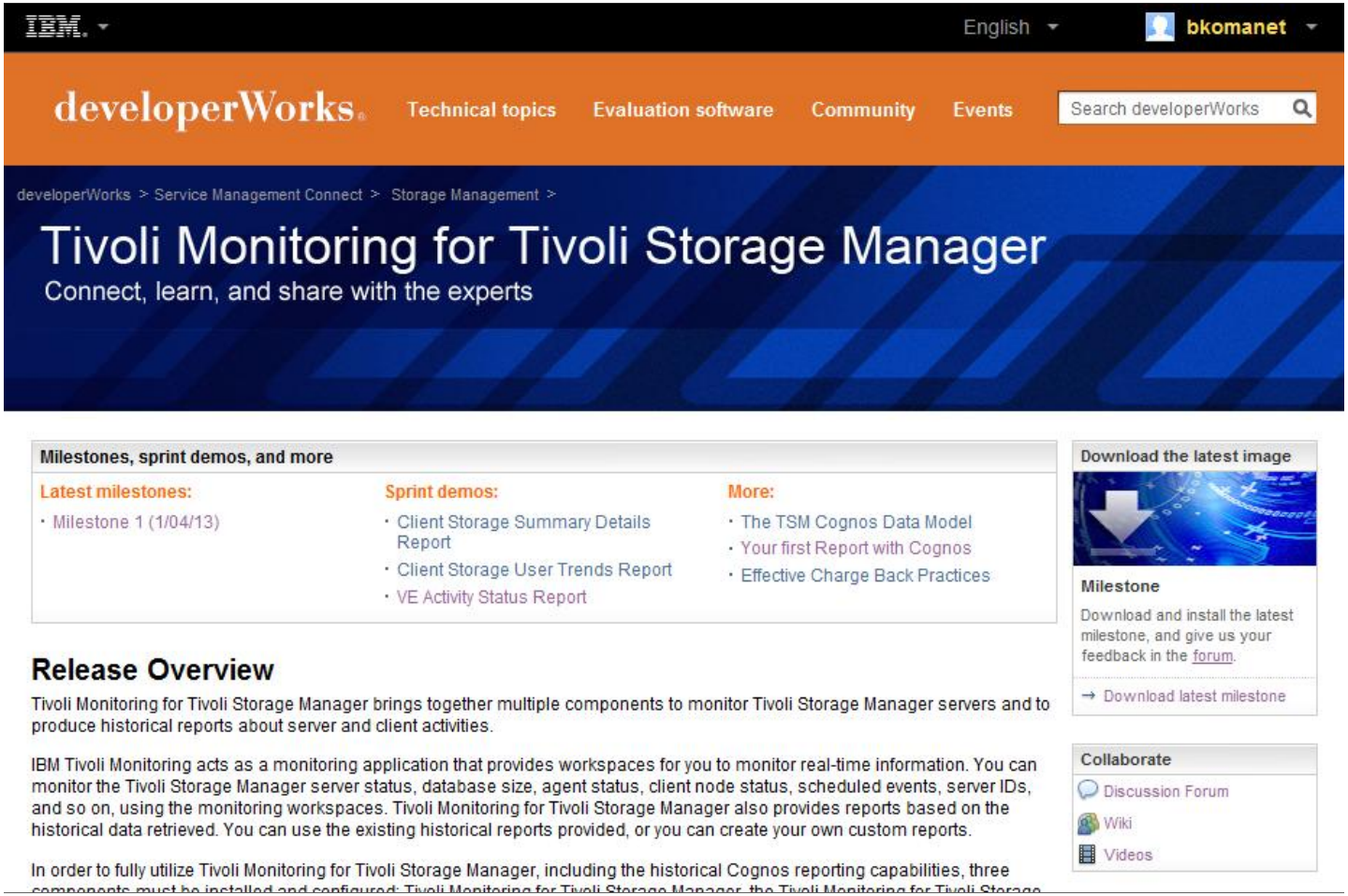
Tivoli Monitoring for Tivoli Storage Manager.



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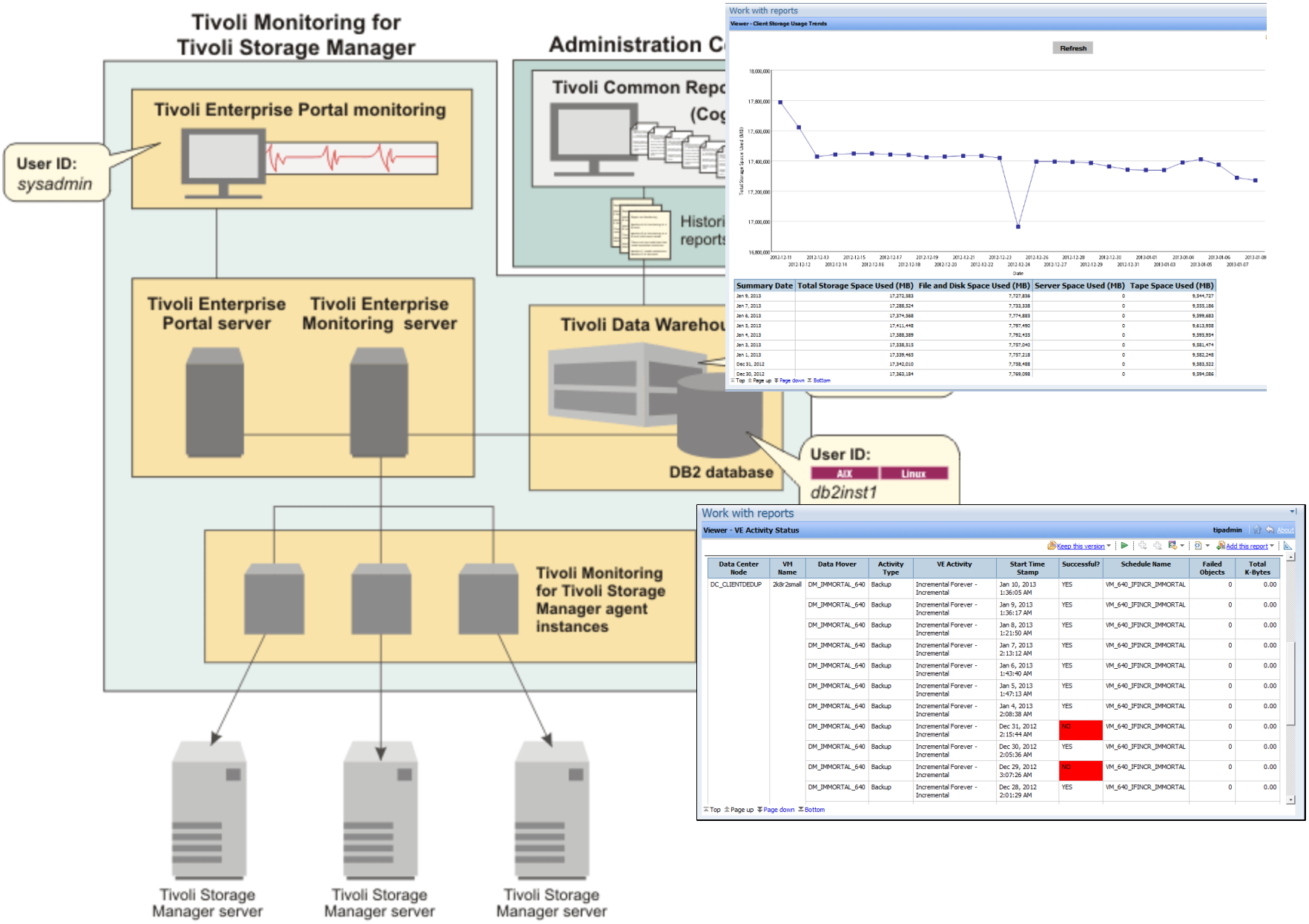
Cognos Reporting Made Monitoring Easy



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Butterfly

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Butterfly Analysis Engine™ Report for Example Customer

SOURCE NetBackup Environment

Source Software Architecture

- Source software environment based on Symantec NetBackup 5.0
- Software release date May 2004
- Environment been in production for 5 years 3 months
- Existing environment based on dual NBU Master Servers per physical datacenter
- Multiple media servers to allow backup of mixed Operating Systems
- Primary and offsite tape pools are used for media and site protection
- FULL backup methodology and policy enforced throughout the environment
- Some adaptive differential Image backups
- 4* NBU Master Servers addressing a total of 454 clients
- Data retention policy varied from 30 days to 7 years. No standard offering is created.

Source Hardware Architecture

- Master Server technology based on SUN SPARC architecture
- Tape libraries in each site are IBM 3584 with a mix of LTO2 and LTO3 generation tape drives
- Media in environment based on LTO1, LTO2 and LTO3 tape
- Total ONSITE Volumes 7734
- Total OFFSITE Volumes 9507
- Total environment library slot capacity is 9784
- Primary and offsite tape pools are used for media and site protection
- FULL backup methodology and policy enforced throughout the environment
- The IRON MOUNTAIN offsite hosted vaulting is used for DR media
- Data retention policy varied from 1 month to 7 years. No standard offering is created
- Other unmanaged legacy standalone physical tape devices

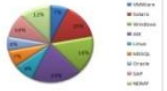
Source Client Environment

- Client operating system platforms include Windows, Solaris and LINUX
- Extensive use of VMWARE ESX 3.5 for Windows virtualised environment
- Currently 454 Backup clients currently executing backup operations
- Client environment 32% VMWare, 47% Unstructured data, 21% Structured data
- Structured data types are MS SQL
- File services provisioned from Windows x86 based infrastructure
- Total client backup data occupancy is 1520 TB

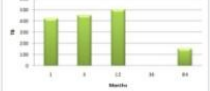
Backup Cycle

- FULL backup daily for 30 day retention
- DIFFERENTIAL weekly for 12 weeks retention
- FULL backup monthly for 12 month retention
- FULL backup yearly for 7 year retention
- ADAPTIVE DIFFERENTIAL cycles irregular

Data Occupancy by Platform

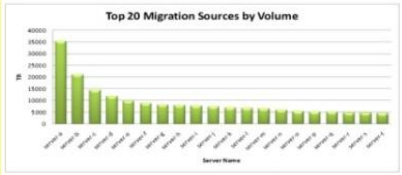


Data Occupancy by Retention



Capacity Metrics

Top 20 Migration Sources by Volume



Daily Backup Volume DC-A

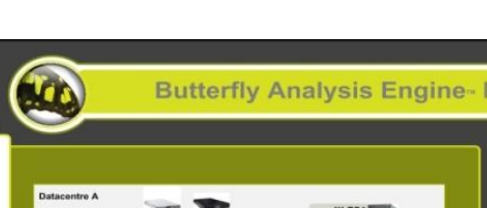
Daily Backup Volume DC-B

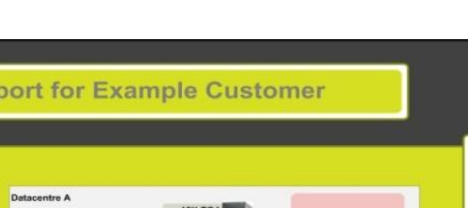
Daily File Count Summary

Occupancy by Backup Server

Butterfly AER Details

Document Name: Backup Migrator AnalysisEngine Example Customer
Author: Butterfly AnalysisEngine v1r (release 5.3)
*Data Collection completed 03092010





TARGET IBM TSM Environment

Indicative Target Architecture

Hardware Infrastructure

- Consolidated server infrastructure and removal of media mount entities
- Removal of all stand alone physical tape infrastructure
- Total tape storage consolidation
- TSM infrastructure managing replication of backup data
- Total removal of offsite manual vaulting
- Removal of all manual tape operations

TSM Software Design

- TSM v6 to be used as the management server
- TSM VCB integration to be used for VMWare backups
- TSM disk storage pool and VTL based tape storage pools to be used
- TSM incremental backup to be used
- Image backup for fast File server backup and recovery and increased deduplication benefits

Tape Library/Media Infrastructure

- Re-use of existing TS3500 chassis
- Media refresh for LTO4 tape media
- Library consolidation and TSM Library management

Architectural Changes

- Data backup to be incremented by TSM software
- Vaulting to be automated and kept within data centres
- Incremental backup methodology to reduce network/SAN load and data occupancy by 70%
- TSM Deduplication to reduce total occupancy of legacy data solution
- Consolidation resulting in simplified operation and management
- Decommission existing widespread legacy tape infrastructure

Operational Benefits

- Reduction of number of backup and recovery entities and associated headcount
- Simplification of management of disparate technology elements
- Total consolidation of physical tape
- Total removal of high-risk manual offsite vaulting
- Total removal of manual tape movements
- Reduced media numbers due to increased data density and incremental impact

Environmental Benefits

- Data centre space savings
- Data centre associated power and heat dissipation benefits

Environment Capability

- Backup data Primary and Secondary copy retained in secure data centre locations
- Automated online vaulting of backup data

Butterfly Differential Business Case

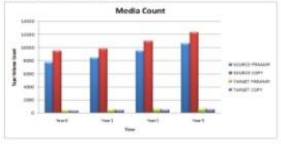
SOURCE Hardware Infrastructure

SITE	INFRASTRUCTURE	VENDOR	MODEL	QTY	KVA
A	Library	DELL	124T	1	3.2
A	Library	HP	UHDL	1	3.2
A	Drive	IBM	3584	12	9.6
A	Master Server	SERVER	MASTER	2	14
A	Media Server	SERVER	MEDIA	4	17.6
A	Drive	IBM	3703	16	7
A	Drive	IBM	3703	14	3.8
A	Drive	IBM	3703	12	3.2
B	Library	DELL	124T	1	3.2
B	Library	IBM	3584	2	6.4
B	Master Server	SERVER	MASTER	2	14
B	Media Server	SERVER	MEDIA	4	17.6
B	Drive	IBM	3703	16	7
B	Drive	IBM	3703	14	3.8
B	Drive	IBM	3703	12	3.2
			TOTAL	112	99.8

TOTAL COST OF OWNERSHIP 36 MONTHS

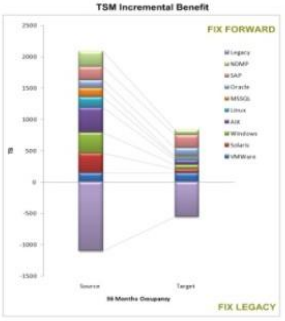
	INFRASTRUCTURE	SOURCE UNITS	SOURCE COST	TARGET UNITS	TARGET COST
TAPE VOLUMES		9707	$ 207,867.78	1221	$ 14,640.61
VAULT SLOTS		10784	$ 86,780.80	0	$ -
LIBRARY		2	$ 181,542.40	2	$ 70,274.06
TAPE DRIVES		76	$ 341,647.12	24	$ 179,502.96
MASTER SERVER		4	$ 160,491.20	2	$ 146,220.80
MEDIA SERVER		4	$ 181,542.80	0	$ -
KVA		4	$ 1,300,000.00	0	$ 1,120,000.00
TOTAL			$ 2,461,482.48		$ 1,870,793.83
OCCUPANCY (TB)		2446		937	
POWER (KVA)		100		85	
Total Saving			$ 1,078,158.55		

TOTAL MEDIA COUNT 36 MONTHS



Occupancy

TSM Incremental Benefit

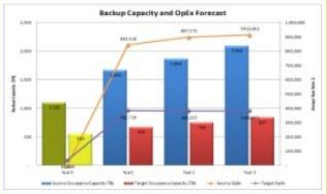


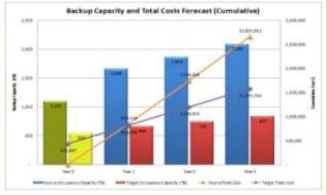
Management Summary

- FIX FORWARD Occupancy reduced by 1252 TB
- FIX LEGACY Occupancy reduced by 550 TB
- TOTAL 36 MONTH Occupancy reduced by 1802 TB
- Incremental ratios calculated on DATA TYPE, SCHEDULE, BACKUP TYPE, BACKUP FREQUENCY, PLATFORM TYPE and industry metrics
- Tape volume saving of 2324 volumes
- Saving of 78 KVA in dual data centre
- Daily change rate is reduced by 22 TB allowing a calculated incremental ratio
- Improved RECOVERY and DR times from the removal of offsite vaulting
- Improved SECURITY by keeping all data onsite.
- Network load reduced by 59.92%
- FTE reduction by 25%
- Growth Rate applied at 10%

TARGET Hardware Infrastructure

SITE	INFRASTRUCTURE	VENDOR	MODEL	QTY	KVA
A	Master Server	SERVER	MASTER	1	7
A	Library	IBM	TS3500	1	3.2
A	Drive	IBM	LTO4	12	1.2
B	Master Server	SERVER	MASTER	1	7
B	Library	IBM	TS3500	1	3.2
B	Drive	IBM	LTO4	12	1.2
			TOTAL		22.8





Operational Issues Resolved

Infrastructure Issues

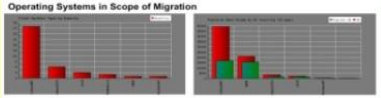
- 40 Frozen physical tape volumes due to excessive read and write errors
- LTO interoperability issues within the library frames
- High volume of physical offsite tape media with associated offsite storage costs
- Offsite volumes in primary library slots
- Failed physical tape drives: Drive03, Drive 12 in 3584 Library Data centre A
- Un-configured tape drives, installed but not used
- LTO1 tape drives with no LTO1 primary volumes
- Backup processes for FC backup hindered by insufficient physical tape mount points
- Restore processing delayed due to physical tape mount oversubscription
- Network and Fabric usage resulting in inefficient tape throughput- less that expected figures

Operational Issues

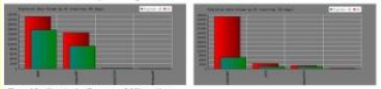
- Source software environment based on legacy Symantec NetBackup code version
- Software upgrade required to retain the support contract on the environment
- Infrastructure age means increased failures on library robotics
- Physical nature of backup servers has resulted in unbalanced server infrastructure
- Over running backup window due to insufficient mount points
- Manual reruns of failed backups consuming resources
- Manual Start Of Day checks required due to unstable physical tape infrastructure

Butterfly Migration Engine™ Planning

Operating Systems in Scope of Migration



Data Volume in Scope of Migration



Top 10 clients in Scope of Migration

- TOTAL SOURCE PRIMARY OCCUPANCY: 1520 TB
- TOTAL SOURCE MIGRATION ELIGIBLE: 1160 TB
- Migration duration 36 days
- Migration Engine components:
  - CORE engine
  - MSSQL agent
  - SPARC engine

TSM Tivoli Workload Scheduler

Planifica tus backups y cargas de trabajo

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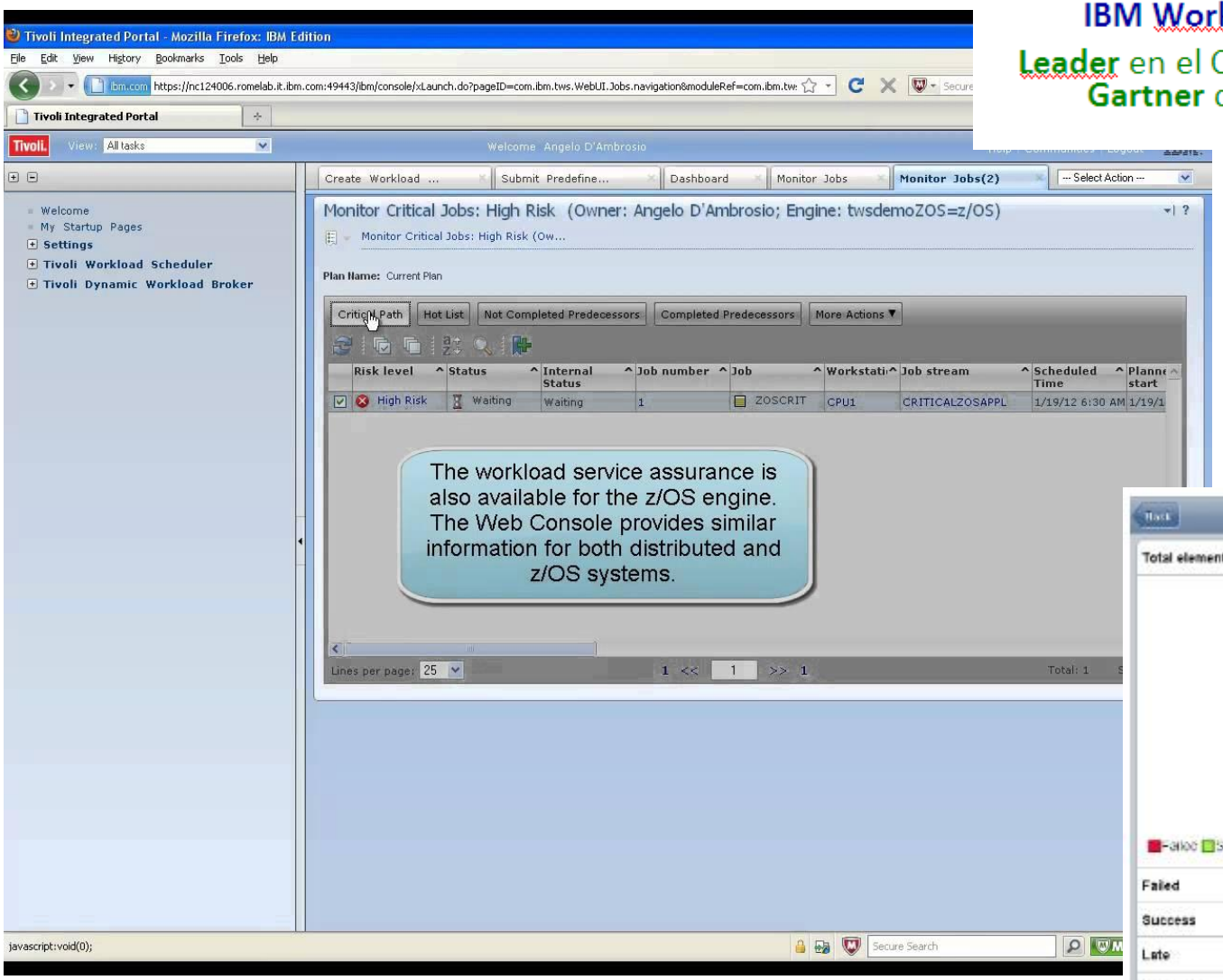
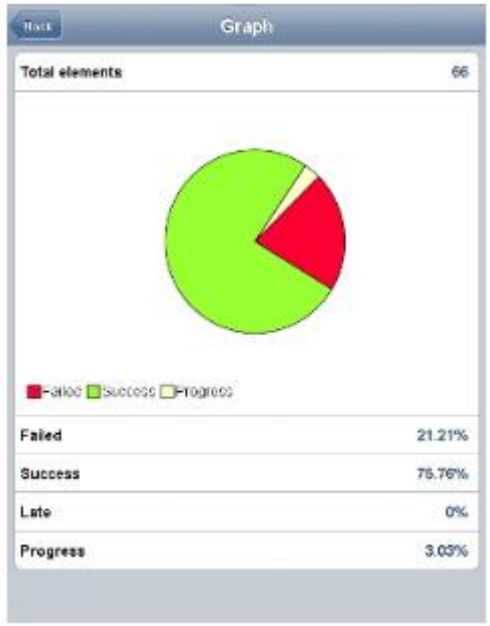
IBM Workload Scheduler

Leader en el Cuadrante Mágico de **Gartner** de Febrero 2012





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IBM Endpoint Manager

Agiliza el despliegue de agentes y los cambios de versión

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IBM Endpoint Manager

Lifecycle Management

- Patch Management
- Hardware, Software, Configuration Inventory
- Software Distribution
- OS Deployment
- Remote Control

Software Use Analysis

Power Management

Mobile Devices

Patch Management

Security and Compliance

- Patch Management
- Security Configuration Management
- Vulnerability Assessment
- Compliance Analytics
- 3rd Party Endpoint Protection Management

Core Protection

- Anti-Malware
- Firewall
- DLP / Device Control (add on)

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Madrid, 20 de noviembre de 2013

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