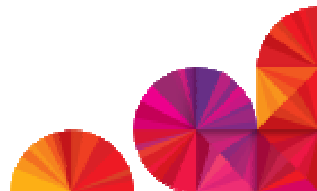
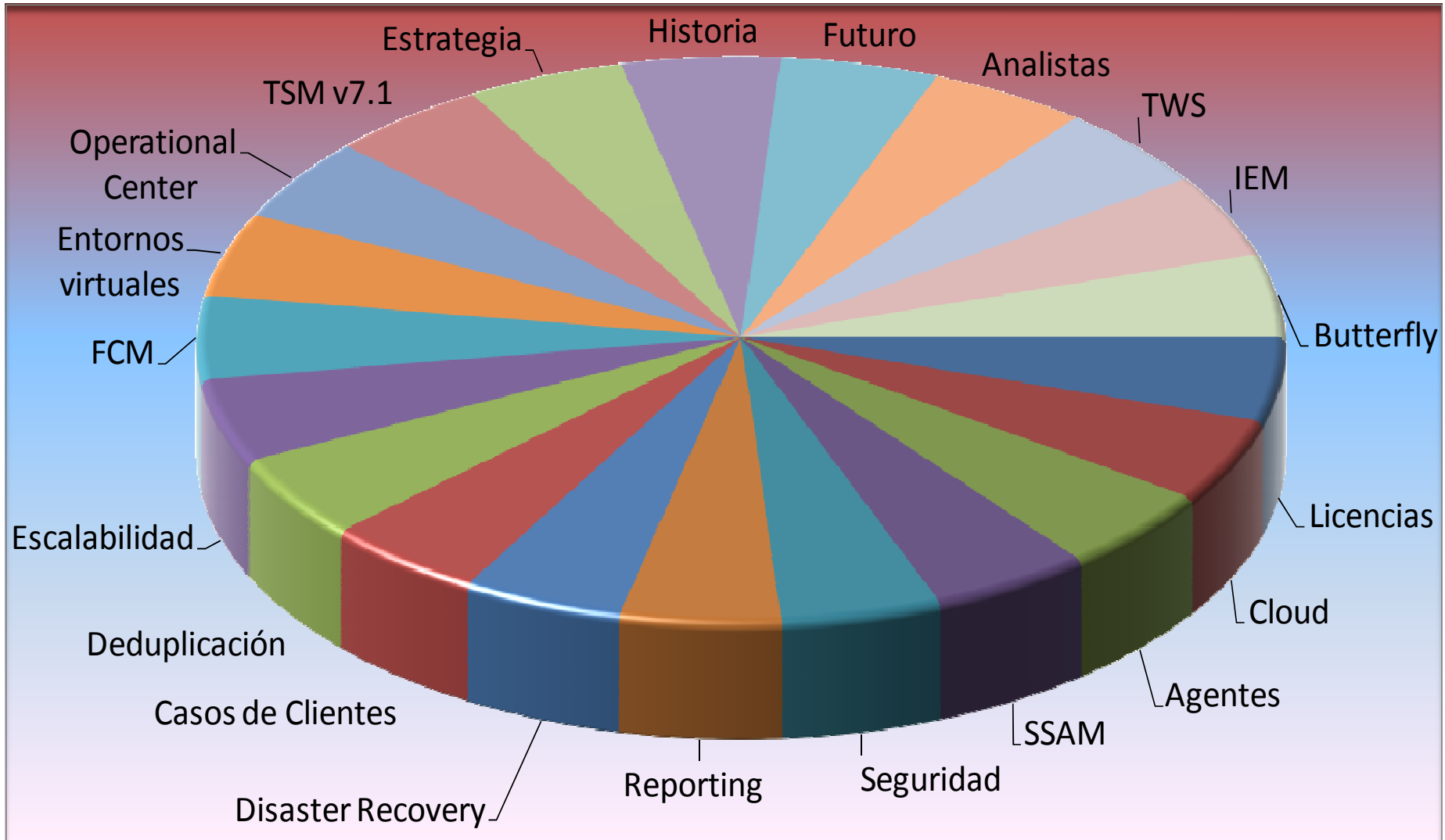


Desayuno TSM 11 Diciembre 2013

IBM Tivoli Storage Manager



Agenda



Comunidad Storage IBM España

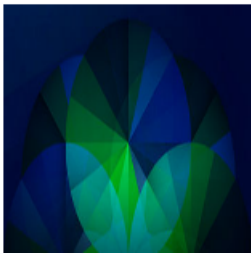
Communities

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Community Description

Tags: fcm, management, storage, tivoli_storage_manager, tsm

Soluciones Tivoli Storage Líderes en el Mercado ?



IBM LEADER EN SOFTWARE PARA ENTERPRISE BACKUP/RECOVERY SOFTWARE SEGÚN GARTNER (JUNIO 2012)



IBM LEADER EN STORAGE MANAGEMENT AND SAN SOFTWARE SEGÚN GARTNER

Important Bookmarks

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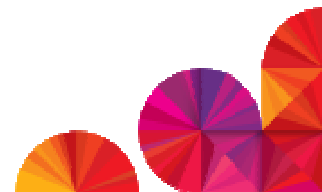
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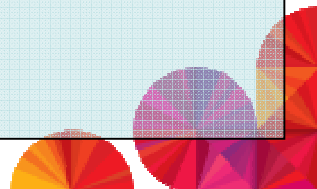
Máximo y TRIRIGA:

<https://www.ibm.com/developerworks/mydeveloperworks/groups/service/html/communityview?communityUuid=88385065-5b78-41d2-b958-7b87b282ae63>

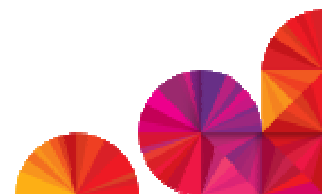
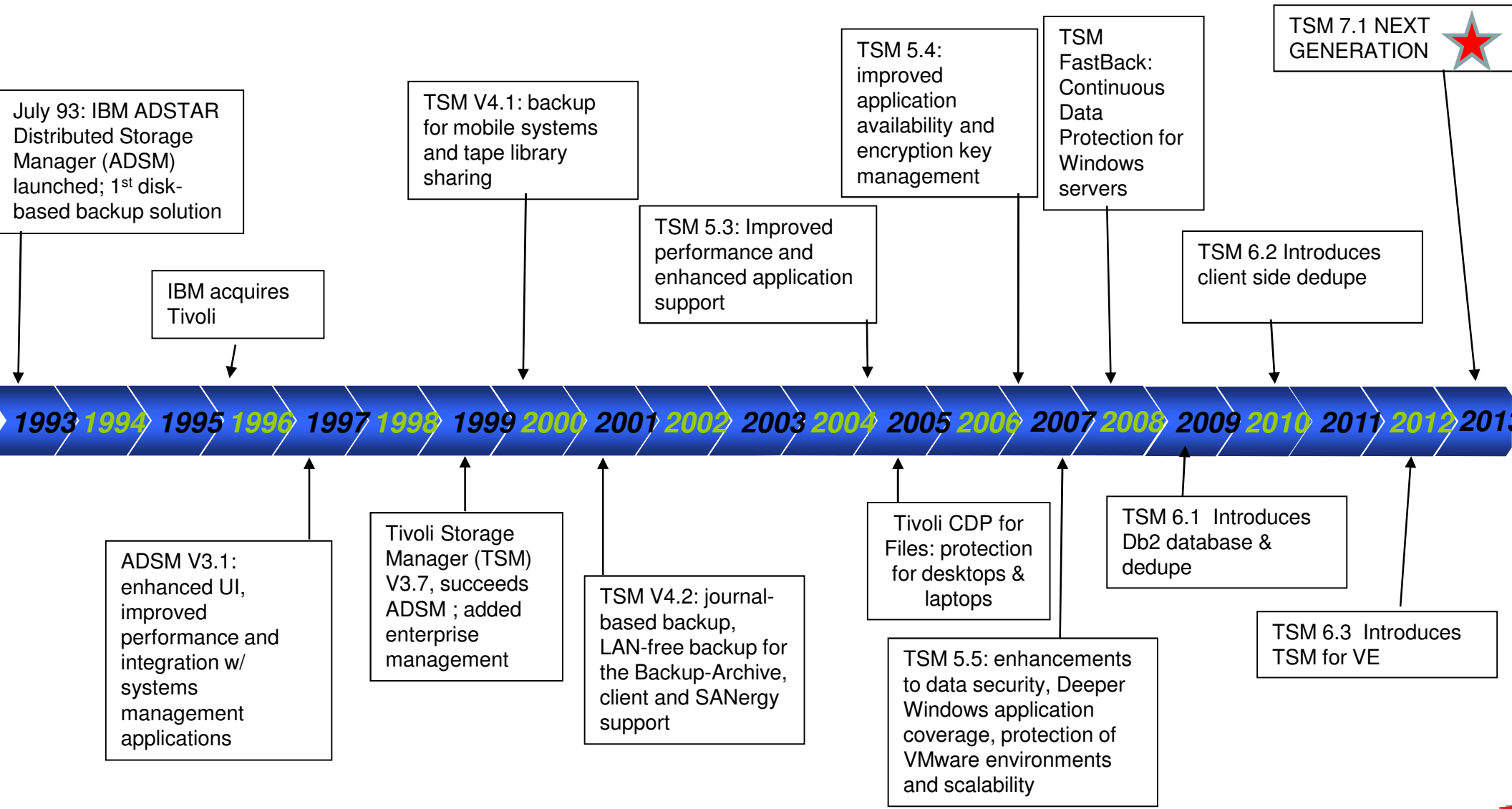
Backup/Almacenamiento:

<https://www.ibm.com/developerworks/mydeveloperworks/groups/service/html/communityview?communityUuid=acac1bd2-b755-4a5e-93a7-405fec3c5d09>

Cuando acceda al grupo de su interés, tendrá que conectarse con un usuario identificado de IBM y en caso de no tener uno podrá crearlo para poder acceder posteriormente. Una vez en el grupo, utilizar la siguiente opción para adherirse al grupo



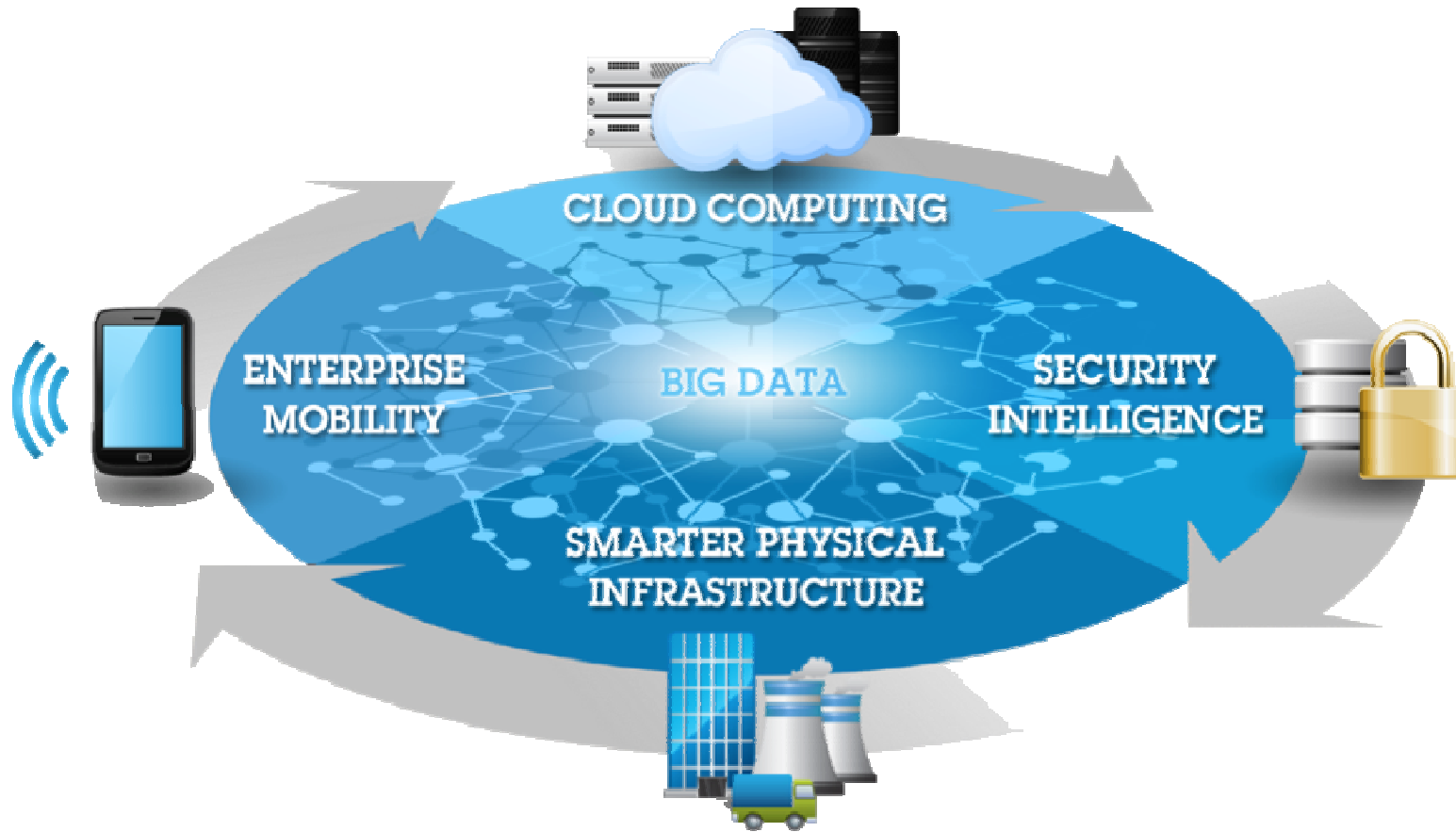
20 años líderes en protección de datos



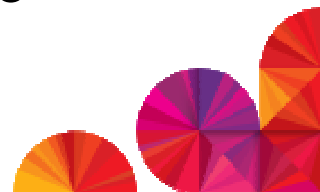
IBM Tivoli Storage Manager. Estrategia



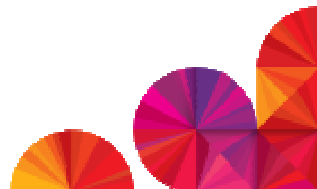
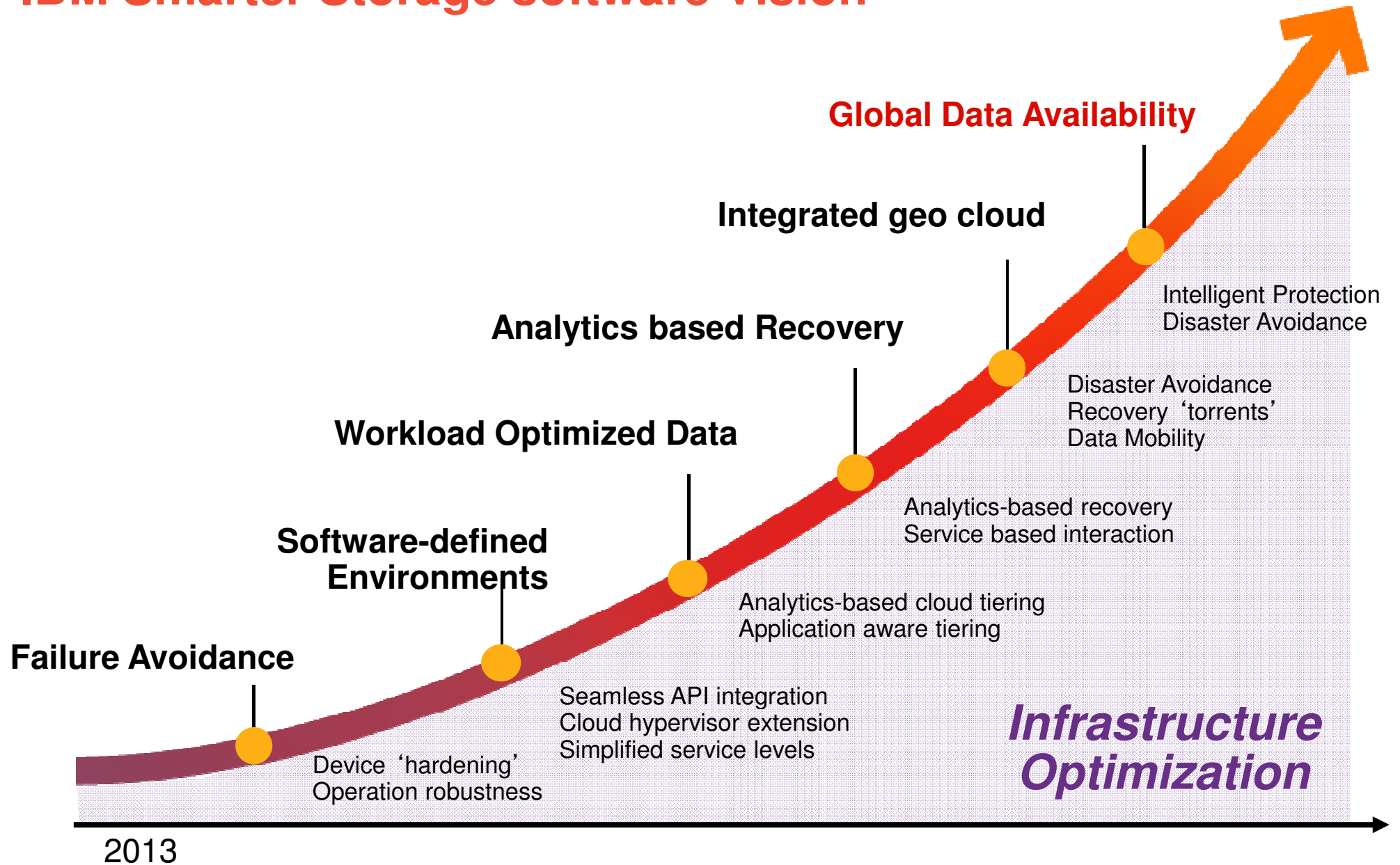
The increasing complexity, volume, and value of data



8 zettabytes of digital content created by 2015



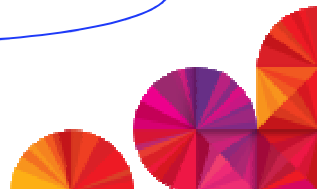
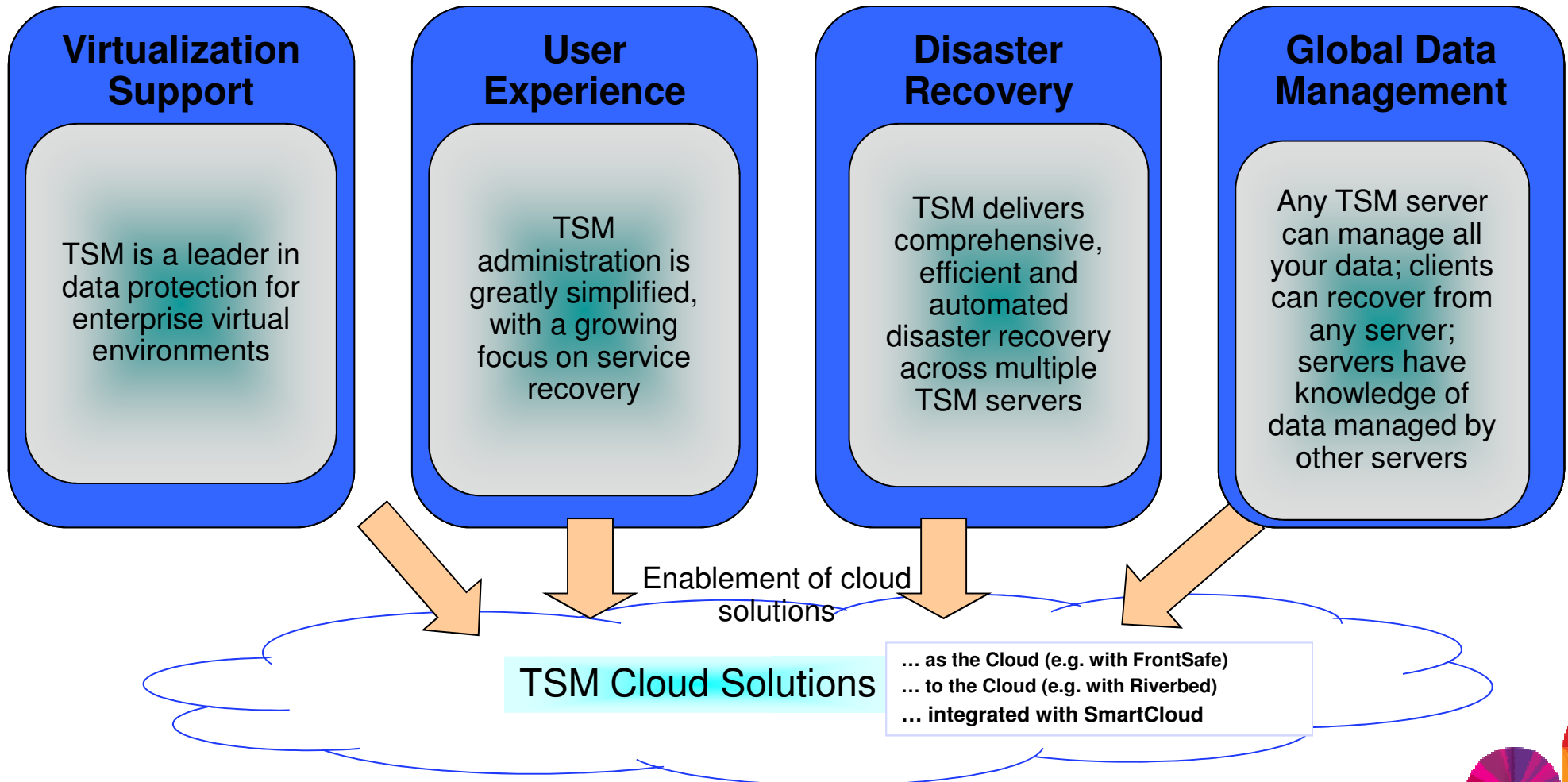
IBM Smarter Storage software Vision



Tivoli Storage Manager Key Themes

Primary focus of future releases

Key enhancements delivered 2012-13



IBM Tivoli Storage Manager. Versión 7.1



TSM 7.1 Resumen de Nuevas funcionalidades I

TSM 7.1 Server

- Increased scalability with up to 10x improvement for daily ingest
- Automated fail-over in node replication
- Upgrade to DB2 10.5
- IBM Install Manager packages for TSM server
- Multi-threaded Storage Pool Migration
- Collocation by Filespace Group
- TSM server DB backup over Shared Memory instead of TCP/IP
- Windows Server 2012 in Core Server mode & Centera on Linux x86_64
- Improve Server Scalability for Large Objects
- SAN Mapping & audit libvol

TSM 7.1 Operations Center

- Functions and views based on Admin authority
- Immediate backup of at risk clients, TSM db , logs and storage pools
- Editable Client and Server properties
- Activity log viewer
- Create TSM client wizard
- Server processes and session viewer and cancel button

TSM 7.1 B/A client

- Resiliency enhancements & HTTPS protocol support for NetApp snapshot-assisted progressive incremental backup (SnapDiff)
- Automated System Recovery for UEFI or EFI hardware
- Macintosh BA client – add SSL support
- Linux BA client support for Btrfs (B-tree file system)

DP for VMware

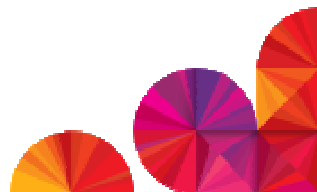
- Full VM instant restore
- Stand-alone DP for VMware user interface
- Filespace level collocation groups to support VE vCloud Director Tenant vApp support
- DP for Exchange/FCM for Windows IMR support for DP for VMware mounted snapshots
- Backup/Recovery of vms w/ Microsoft AD
- DB-level recovery from vms hosting Microsoft SQL
- Report on “What Failed Last Night”

HSM for Windows:

- Backup Performance Enhancements
- ReFS support
- ACL independent migrate/recall
- Administrative stubfile recall

Space Management – Unix

- Seamless Failover/Failback
- Improve handling of streaming recall arguments
- Improve removal function for multiserver managed file systems
- Provide command to verify the state of an HSM node
- Recall files to state resident - LTFS only



TSM 7.1 Resumen de Nuevas funcionalidades II

FCM for Windows

- Distributed GUI – single pane of glass access all FCM Windows instances
- Support for Exchange Server 2013
- Exchange mailbox and item level restores from TSM for VE backups
- Enhanced support for SQL Server 2012 Availability Groups
- Availability of PowerShell cmdlets to drive FCM operations
- Multi-language support for Exchange IMR browser
- Exchange mailbox restore to PST files greater than 2GB
- Automatically stop Exchange services for Instant restore

FCM for UNIX

- Support for application data stored on NetApp/N series NAS file systems
- Support for GPFS snapshots to support DB2 pureScale for AIX and Linux
- Support operation in a VMware Virtual Machine

FCM for VMware

- Support for VMware vSphere 5.5
- Instant restore for Virtual Machine File System (VMFS) datastores
- Enable operations in VMware environments where Site Recovery Manager (SRM) is deployed

DP for Domino

- Domino 9
- Windows 2012
- 64-bit Linux x86_64 support

DP for Oracle

- Oracle on Windows 2012
- Oracle 12c support

DP for Exchange

- Support for Exchange 2013
- Exchange on Windows 2012 servers
- Remote GUI
- Multi-language support in mailbox restore browser GUI
- Mailbox restore to PST files greater than 2GB
- Mailbox restore to Unicode PST files
- Exchange mailbox and item level restores from Disk Files
- Collecting mailbox history for improved backup performance
- Calendar widget for entering dates in MMC GUI
- instant restore - automatically stop Exchange services that must be stopped
- IIMR browser GUI - more efficient queries of data in Recovery Database
- New Powershell cmdlet interface

DP for SQL

- Remote GUI
- Extend SQL backup commands to improve usability of SQL AlwaysOn Availability Group (AAG) backups through more wildcard filtering options

FB4WKS

- Add reporting to Central Admin Console
- Central admin console scalability
- Rebrand CDP starter edition & OEM to FB4wk Starter Edition & OEM



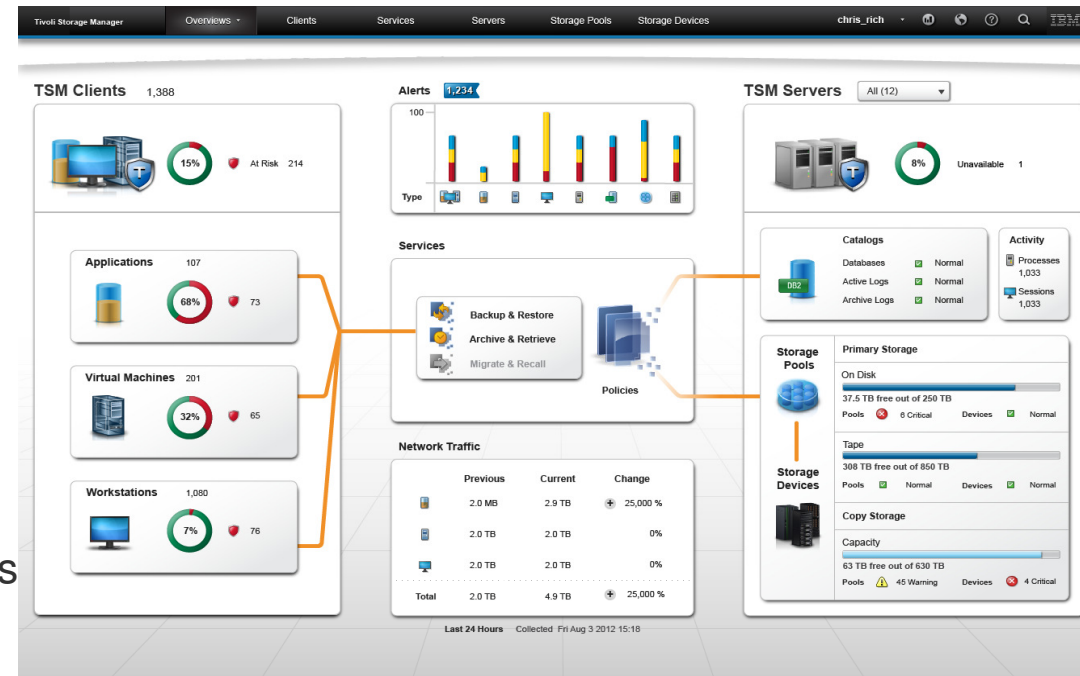
IBM Tivoli Storage Manager Operational Center



IBM Tivoli Storage Manager Operations Center


TSM 6.3.4 introduced:

- Collecting status and monitoring data for the UI
- Monitoring and lifecycle management of alerts that:
 - Notifies the Operations Center as alerts occur & optionally emails alerts directly to designated administrator
- A data collection engine consolidates “singular” view of multiple TSM server for a given operations center



TSM 7.1 brings ability to:

- Register new clients to TSM including selecting a policy and associating to a schedule
- Re-drive backup for selected client
- Kick of TSM server db backup
- Cancel specific sessions and processes
- Edit properties for clients, servers and global settings
- View details of TSM server, including view to sessions and processes
- Utilize different classes of TSM administrators to accomplish various tasks

 Small install package and foot print

- Installs in just a few minutes

TSM Clients 1,388



Applications 107



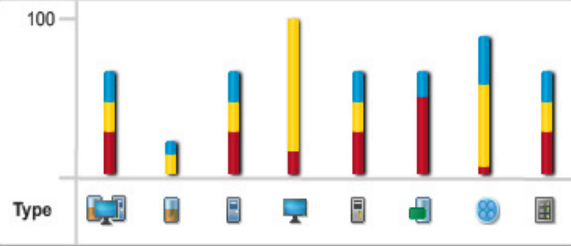
Virtual Machines 201



Workstations 1,080



Alerts 1,234



Services

- Backup & Restore
- Archive & Retrieve
- Migrate & Recall



Policies

Network Traffic

	Previous	Current	Change
Client	2.0 MB	2.9 TB	+ 25,000 %
Server	2.0 TB	2.0 TB	0%
Storage Pool	2.0 TB	2.0 TB	0%
Total	2.0 TB	4.9 TB	+ 25,000 %

TSM Servers All (12)



Catalogs



Databases	✓	Normal
Active Logs	✓	Normal
Archive Logs	✓	Normal

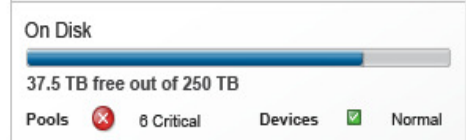
Activity

Processes	1,033
Sessions	1,033

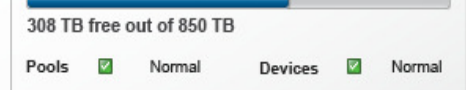
Storage Pools



Primary Storage



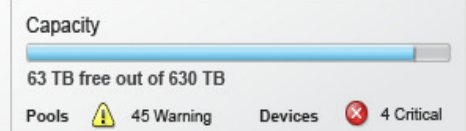
Tape



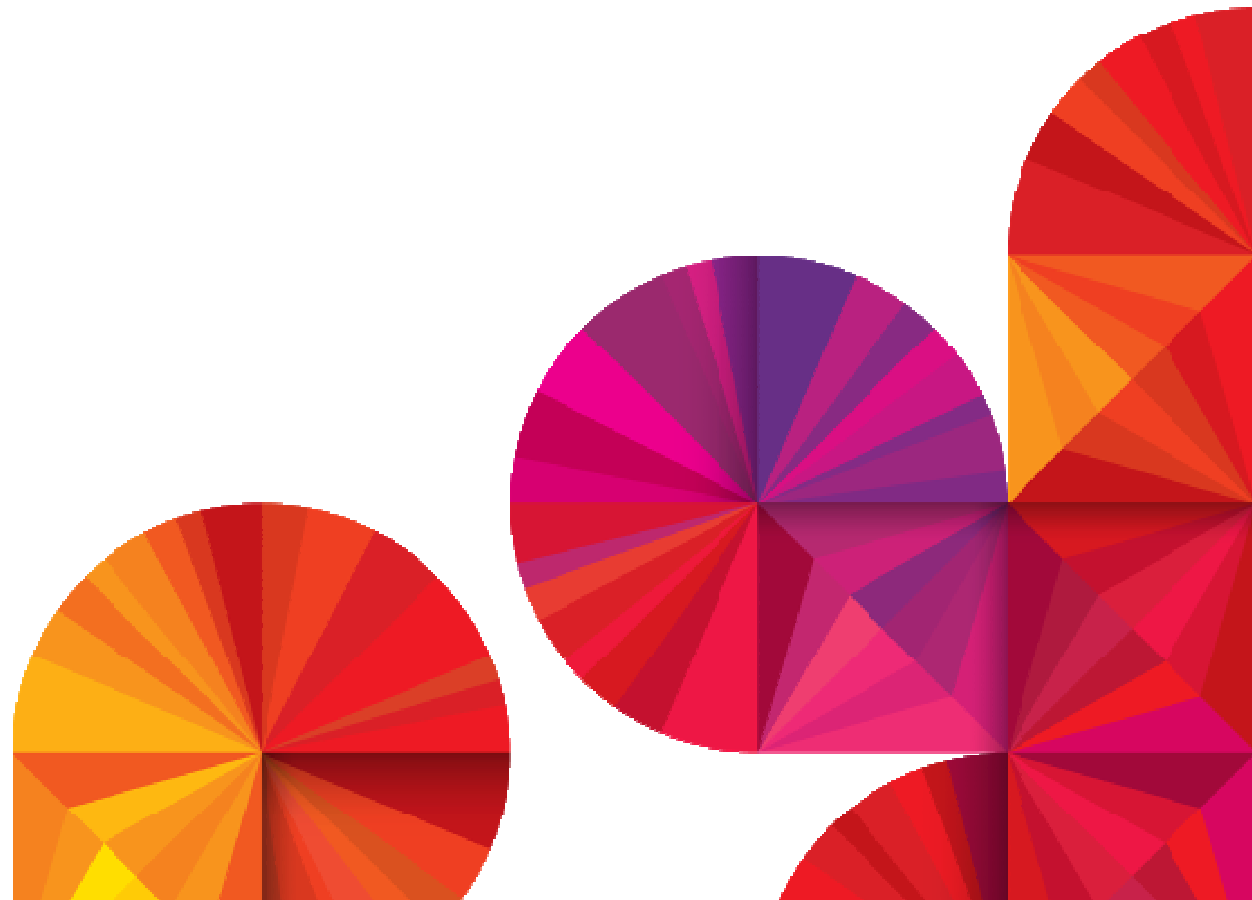
Storage Devices



Copy Storage



IBM Tivoli Storage Manager for Virtual Environments.



Data Protection for VMware

TSM for VE 6.4

Tivoli Storage Manager for VE V6.4

- Incremental forever
- vSphere client UI configuration wizard
- Granular control of backup and recovery of individual disks
- Single-pass backup for vms hosting stand-alone Microsoft Exchange and SQL
- vSphere client UI operational reports
- Additional enhancements

FlashCopy Manager V3.2

- Support for NetApp SAN-attached and NAS-attached storage
- Enable concurrent attach of multiple vms from single backup
- Backups of vms with RDMS
- vSphere client UI operational reports

TSM for VE 7.1

Tivoli Storage Manager for VE 7.1

- Instant Restore of full virtual machine
- Broader integration for VMs hosting applications and databases
- Support for vCloud Director tenant vApps
- Replication and collocation enhancements for VMware data
- Enhancing Reporting

FlashCopy Manager 4.1

- Instant restore of datastore
- Co-existence with SRM



TSM for VE / FCM for VE “New Look” User Interface



Firefox

ibm.com

Flash Copy Manager for VMware | Getting Started | Backup | Restore | Reports | Configuration | Administrator

Getting Started

What is IBM Tivoli Storage Manager for Virtual Environments?

IBM Tivoli Storage Manager for Virtual Environments is a data protection solution designed specially for VMware. The Tivoli Storage Manager Agent (data mover) performs block-level backups and restores of virtual machines to a Tivoli Storage Manager server. These backups can also be used for file restore or instant restore of a volume.

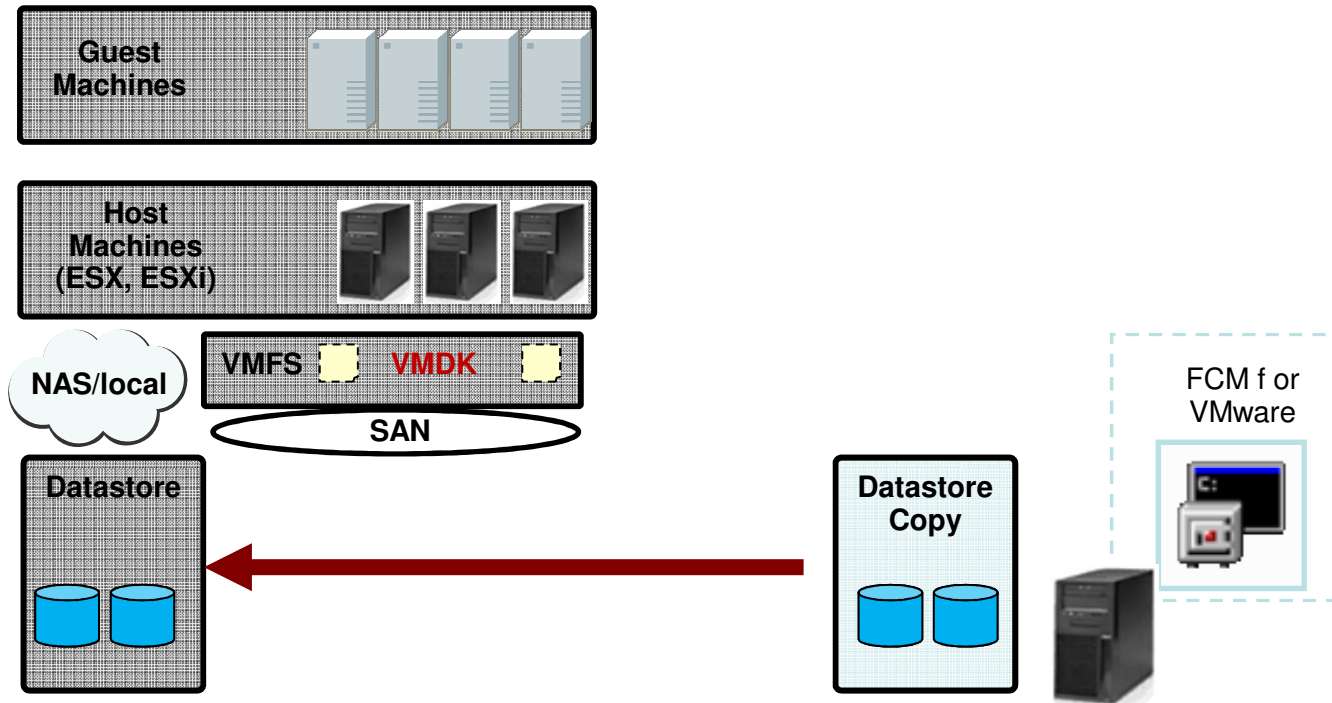
What do you want to do?

- Define a backup task
- [Initiate a restore](#)
- View active task status

Explore further

- [Understanding Backups](#)
- [Understanding Restores](#)

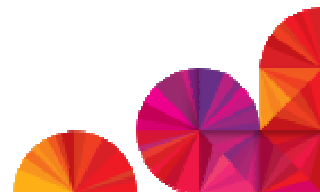
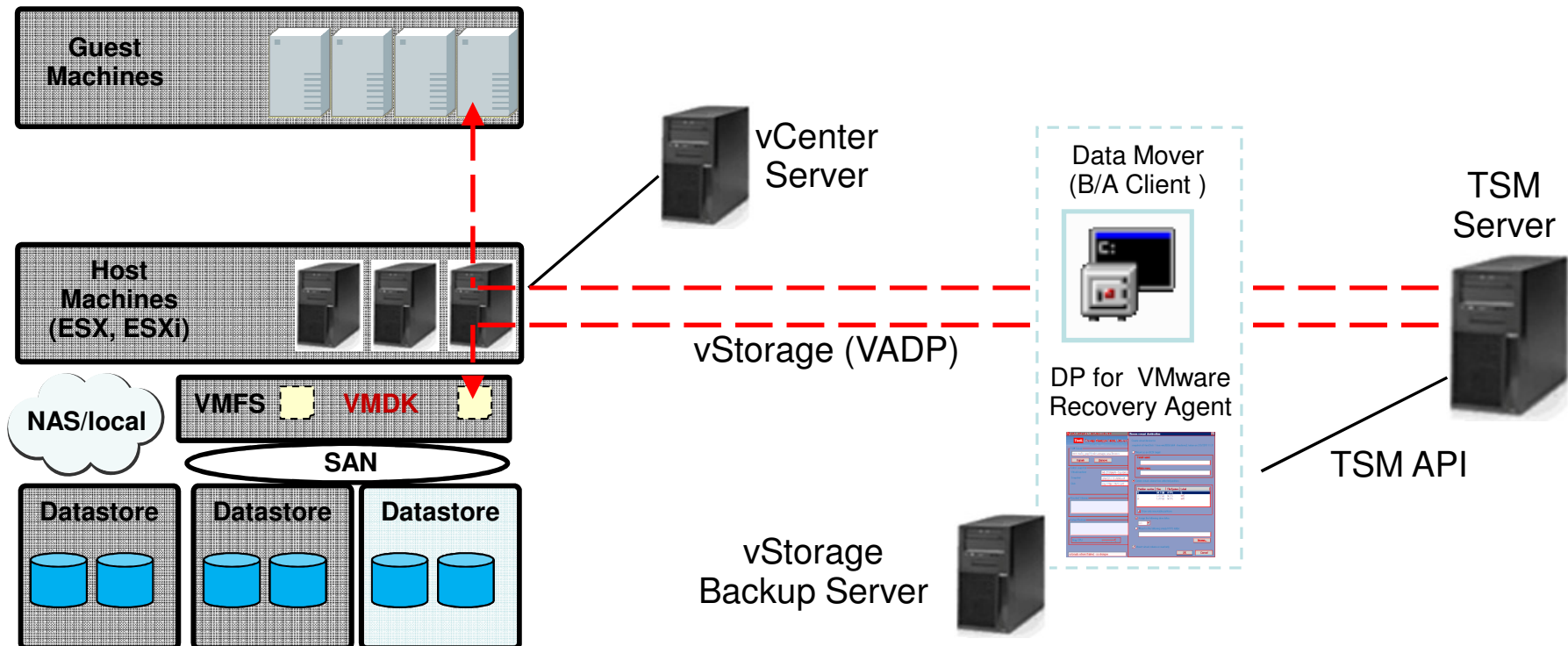
FCM for VMware 4.1 – Instant Recovery of complete Datastore



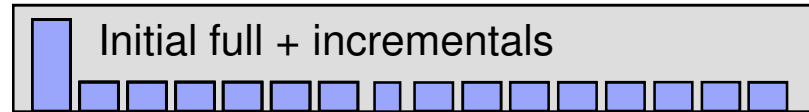
- FlashCopy Manager can revert an entire datastore(s) via a snapshot restore “FlashBack” operation
- No file level copy of VMs is being performed
- VMs will be registered to vCenter after restore operation is complete to be made available for use
- User can view and optionally select dependent datastores to be included in the restore operation

Improved RTO for full-VM restore

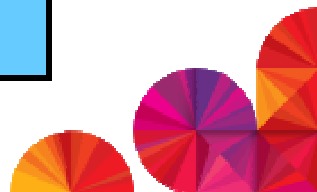
VMware Full Virtual Machine Instant Access and Recovery



TSM for Virtual Environments



	Data Protection for VMware
Backup methodology	Initial full + incremental forever
Scheduling of backups	One schedule for incremental forever backup
Restore methodology	Restore required blocks only once
Restore operations	<ul style="list-style-type: none"> ▪ Full VM restore ▪ Volume instant restore ▪ File-level restore ▪ Full VM Instant restore
Retention of file versions	Applied to each backup version
Recovery of space from stored blocks	Incremental backup allows consolidation of used blocks and removal of unused blocks
Backup & Restore of VMware Templates	Yes
Backup & Restore of VMs within a vApp	Yes
Restore VMs to the original resource pool location	Yes. Assuming the resource pool still exists
vCloud Director protection	Yes



Backup optimizado y simplificado

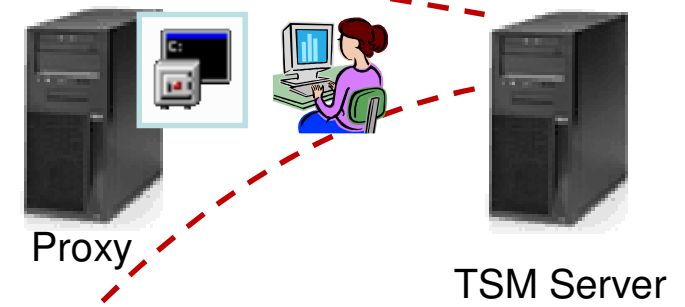
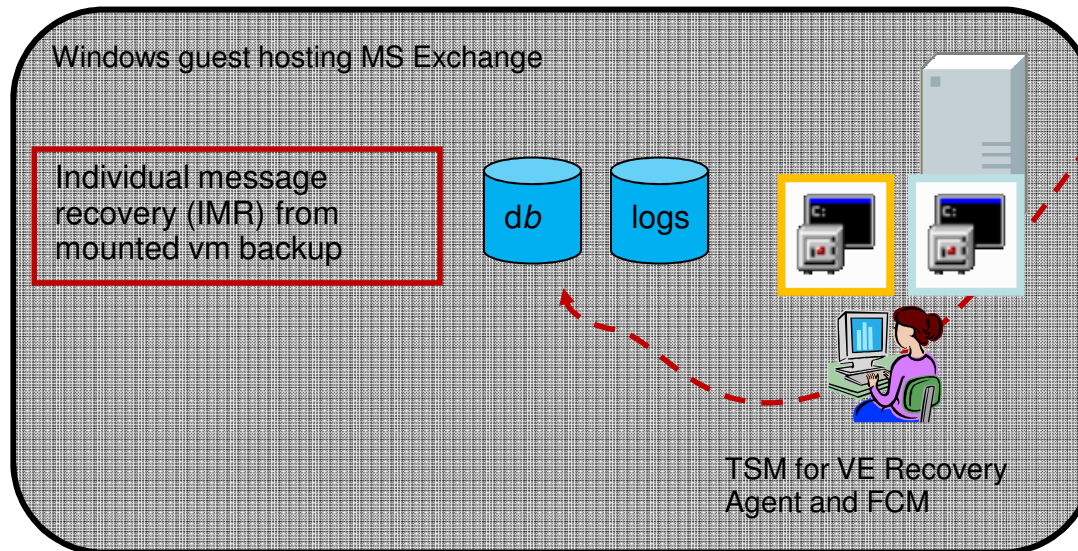
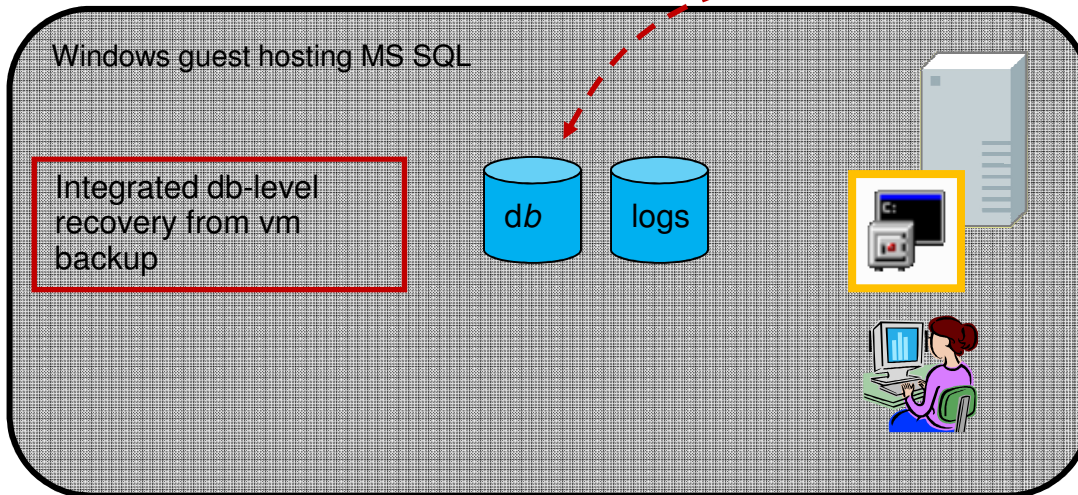


Managed VMware inventory

	Data Protection for VMware
Managed entities (domain.vmfll)	Host cluster, host, vm folder, datastore, virtual machine (wildcard vm name)
Number of backup processes per instance of data mover	Multiple processes executed in parallel; can be tuned to control processes per host or datastore operation
Skip backup of individual vmdks	Yes
Number of scheduled data mover instances to backup a VMware inventory entity	Approaching single instance

- Reducimos la ventana de Backup.
- Simplificamos las planificaciones y las operaciones de los backups
- Reducimos los recursos de Servidores host/vStorage, redes y pools de almacenamiento.
- Administración Simplificada

DP for Exchange/DP for MS SQL Server:



Full-VM level backups

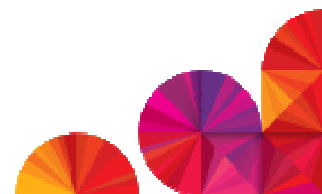
MS SQL Server:

One step process, all integrated

MS Exchange:

Two step process

1. Recovery Agent mounts volumes
2. DP for Exchange reads data



IBM Tivoli Storage FashCopy Manager



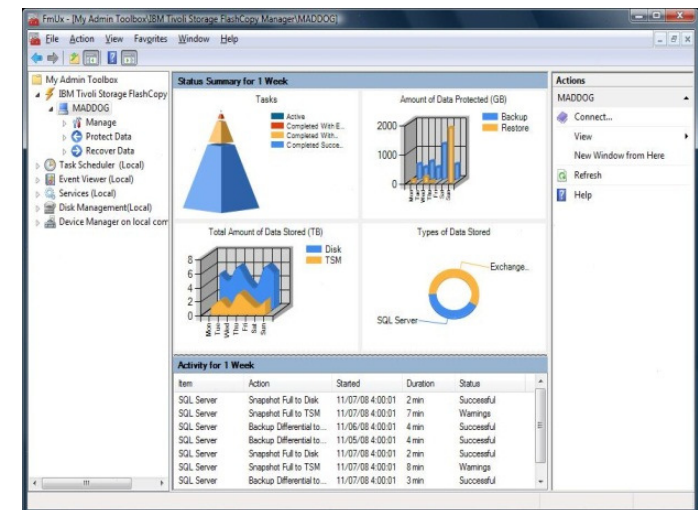
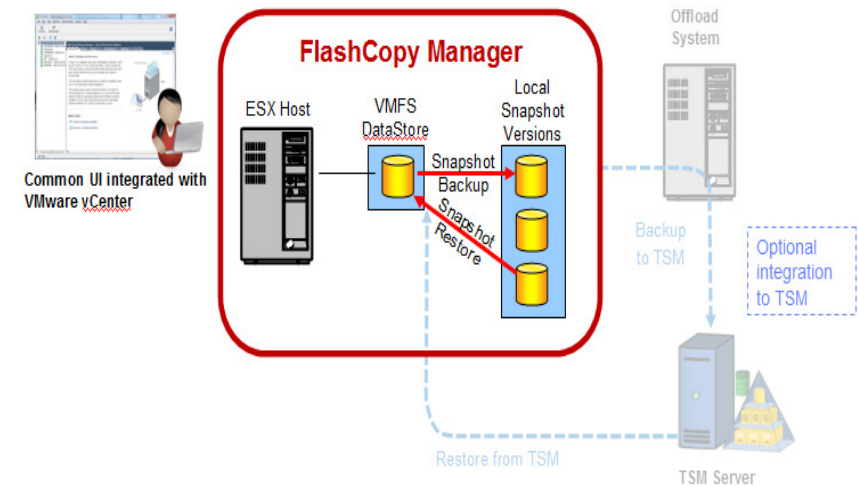
IBM FlashCopy Manager V4.1

What's New?:

- Instant recovery of Virtual Machine File System (VMFS) datastore via flashback vs. file level recovery.
- Co-exist with VMware Site Recovery Manager
- Simplified central management of windows FCM agents
- IBM support for DB2® pureScale®
- **Device Agent API for 3rd party storage systems**

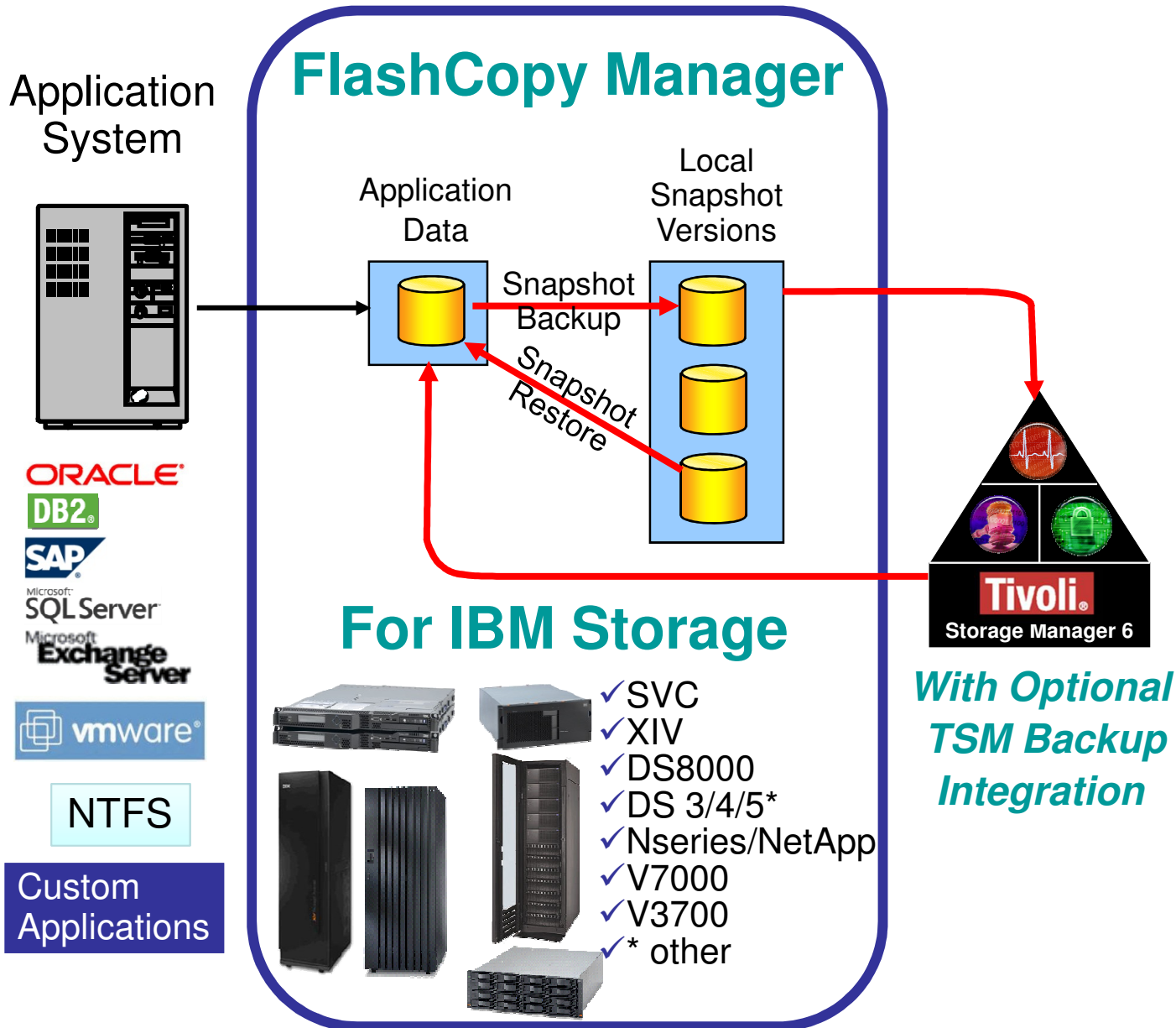
Client Value:

- Better RTO/RPO
- Fits into the ecosystem of how customers want to manage backup and disaster recovery
- Enables off-site copying for enhanced data protection, using either TSM or Metro Global Mirror

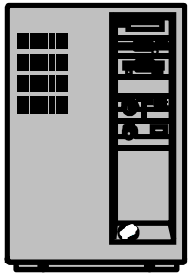


FlashCopy Manager Console

Solution Overview



Application System



ORACLE®

DB2®

SAP

Microsoft SQL Server™

Microsoft Exchange Server

vmware®

NTFS

Custom Applications



- ✓ Online, near instant snapshot backups with minimal performance impact
- ✓ High performance, near instant restore capability
- ✓ Integrated with IBM Storage Hardware
- ✓ Simplified deployment

*VSS Integration



Key Functionality - Restore

Microsoft

Windows filesystem snapshots and granular file level restore*

Snapshot Restore* of Exchange storage groups

File copy restore of a storage group or database from a mounted snapshot image

Restore into a Recovery Storage Group, alternate storage group, relocated storage group or flat file

Individual mailbox or mail item restore from a snapshot backup

Snapshot Restore* of a full database

Exploits SQL Server compression

File copy restore of a full database from a mounted snapshot image

To an alternate database name

To an alternate location or flat file

IBM DB2 UDB

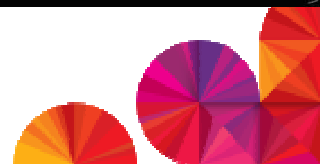
- Snapshot Restore of a Full database
- Snapshot restore of one or more database partitions in the case of a multi-partition database

SAP

- Snapshot Restore of a Full database

Oracle

- Snapshot restore of a Full database



Key Functionality – Database Cloning

Supported on AIX, HP-UX, Linux and Solaris

Application development and testing

Use a copy of actual data to test new applications before deployment

Quality Assurance for database environments

Migration or upgrade systems

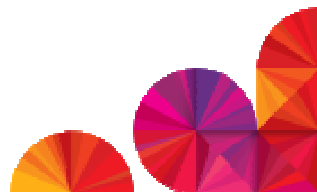
Clones are useful for testing migration and upgrade scenarios on your databases

Training/Education/Demo Systems

Clones make it easier to recreate training and education systems from a master training system to reset before starting a new course

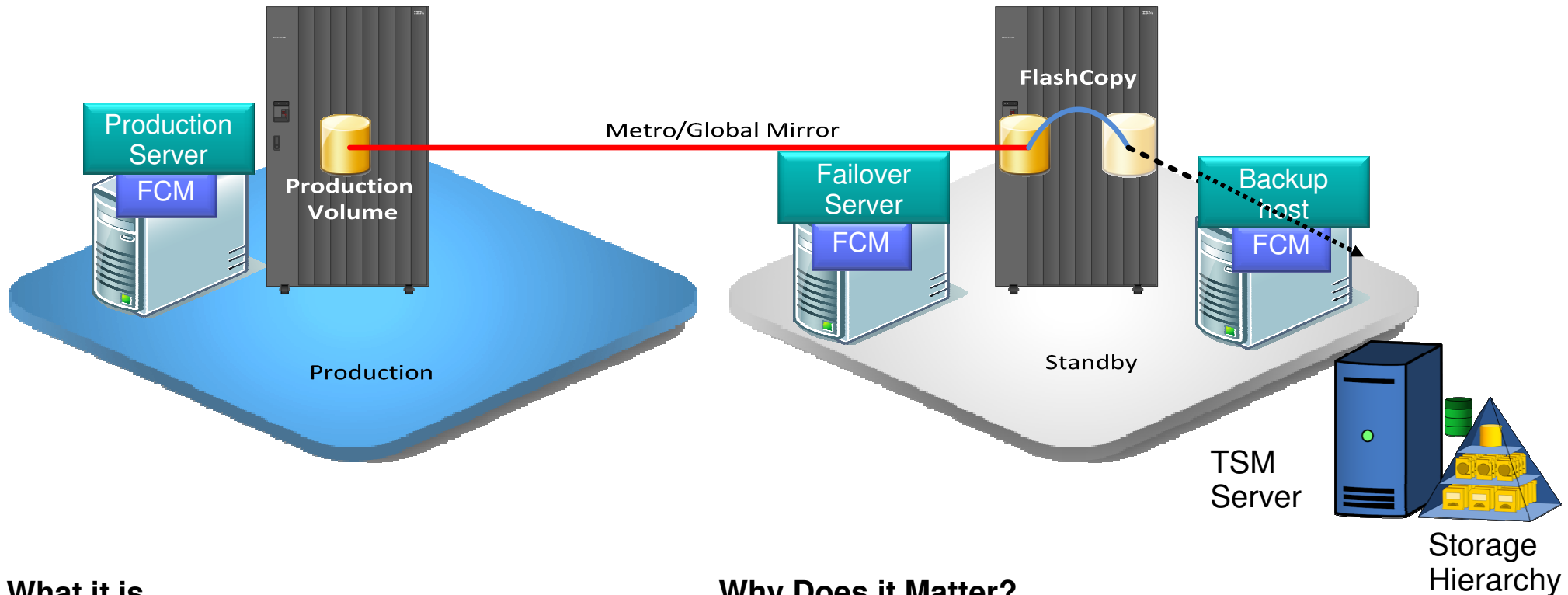
Increase the efficiency of operations:

Offload reporting from production to a dedicated reporting system by daily database cloning



Global Mirror / Metro Mirror integration

Introduce Support for application consistent copies from target of a remote mirror relationship on SVC, Storwize V7000 and XIV

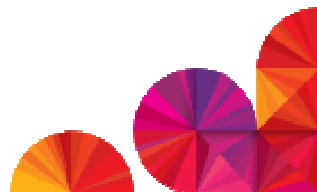


What it is

- FCM will provide at the DR site similar capabilities to what it has today at the primary site
- Extends FCM to allow FlashCopy / Snapshot management in the remote site leveraging remote mirror copy

Why Does it Matter?

- Offload workload from production storage control unit
- Consolidate multiple backups (single or multiple source sites) to the DR site
- Backup can be used
 - For restores in DR scenarios
 - To offload backup to TSM to DR site



FCM 4.1 - Remote Management of FCM Windows Agents

FCM MMC GUI support for remote FCM Windows agents

- Separate view for each remote computer
- Arrange computers in groups

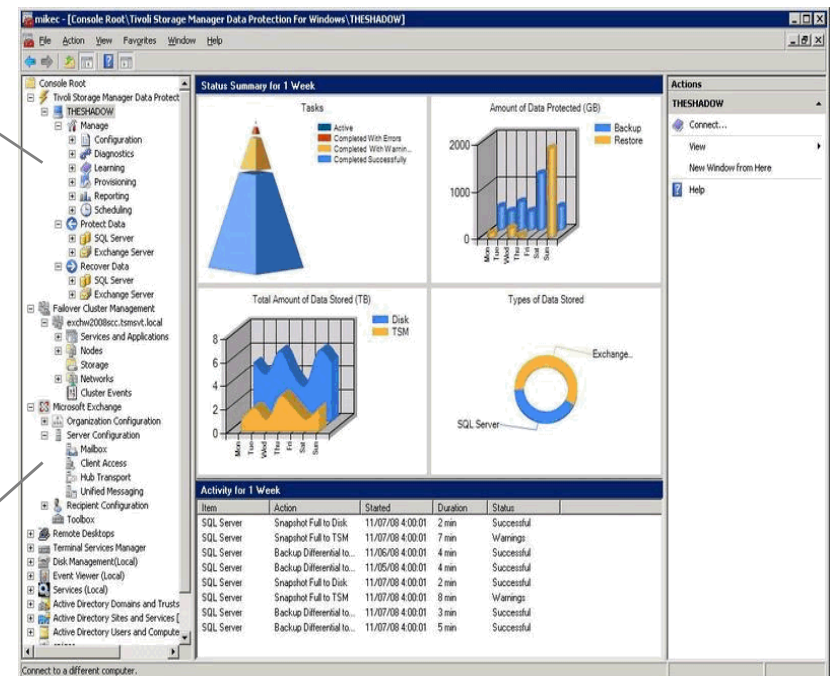
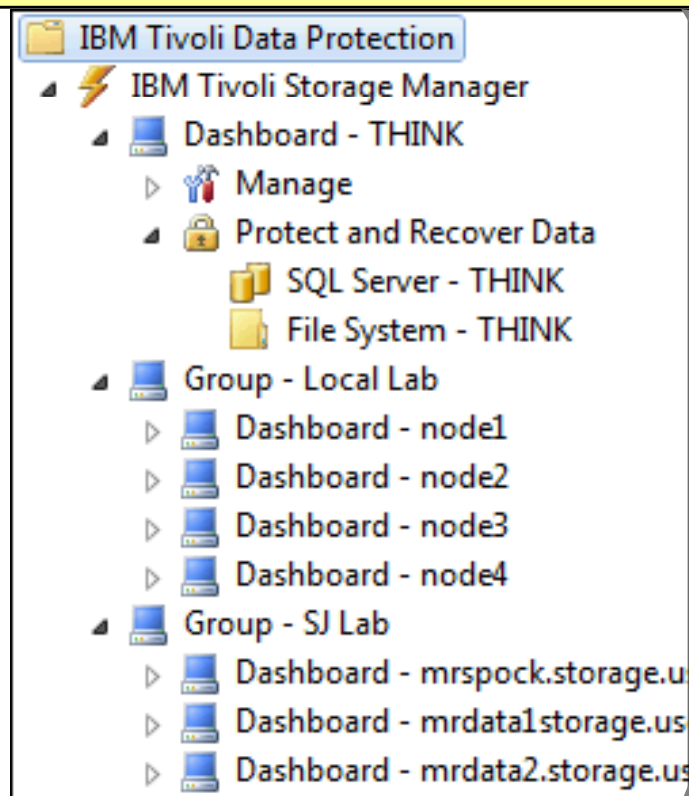
Group views support interaction with multiple computers at a time

- Aggregated data in Dashboard and Reports views
- Group Commands

Manage FCM agents for SQL, Exchange & Windows File servers from Windows 7 laptop

Remote GUI for Server CORE environments

Configure FCM agents on remote servers



IBM Tivoli Storage Manager. Escalabilidad



IBM Tivoli Storage Manager V7.1.....cont'd

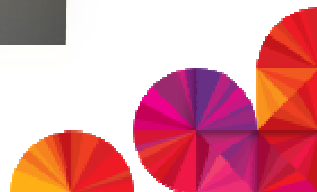
What's New?

10X Scalability Improvement on TSM server deduplication performance

- Increased scalability with up to 10x improvement for daily ingest of deduplicated and replicated data over previous published rates and reference architectures optimized for data deduplication

Client Value:

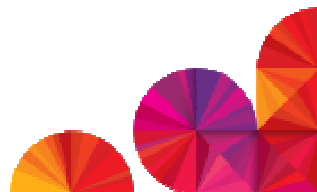
- More data can take advantage of TSM server deduplication during a given backup window; which can reduce costs by reducing disk space requirements for backups, without impacting users
- Backup windows can be reduced
- More data can be protected, using less infrastructure



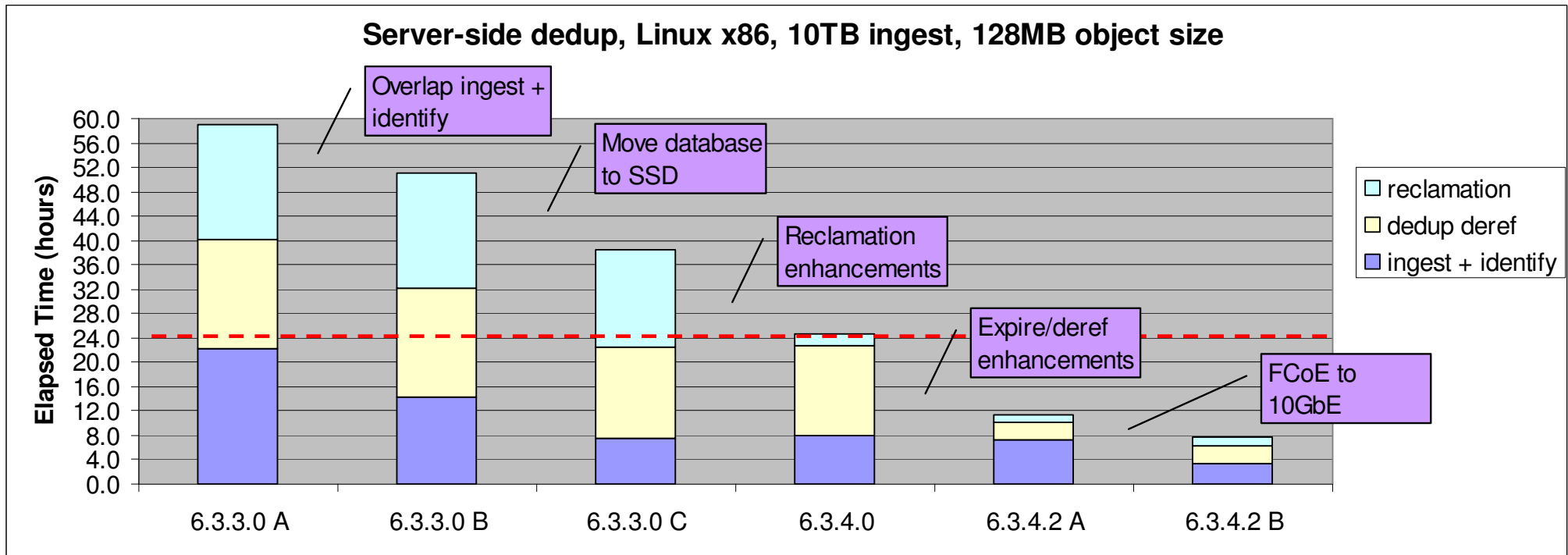
Escalabilidad

- Review your client workload to understand:
 - How much total data will need to be managed?
 - How much new data will need to be stored for a typical day?
- Use the understanding of the workload to plan TSM server sizing
 - Scale out with more than one TSM server if needed.
- Some workloads may not be suitable for TSM deduplication due to the type or volume of data
 - For example, long-term archive data
 - Consider an alternate architecture such as LAN-free to tape or VTL
 - In some cases, combining a TSM deduplication with a tape or VTL architecture is appropriate.
- Plan the TSM database disk footprint according to **total managed data**
- Design your hardware according to the required **maximum daily ingest**:

Maximum daily ingest	Hardware requirements
Up to 4 TB per day Small	12 CPU cores, 64 GB RAM <ul style="list-style-type: none"> ▪ Database & active log on SAS/FC 15k rpm ▪ Storage pool on SAS or NL-SAS/SATA
4 – 8 TB per day Medium	<ul style="list-style-type: none"> ▪ 24 CPU cores, 128 GB RAM ▪ Database & active log on SAS/FC 15k rpm ▪ Storage pool on SAS or NL-SAS/SATA
8 – 20 TB per day Large	<ul style="list-style-type: none"> ▪ 32 CPU cores, 192 GB RAM ▪ Database & active log on SSD ▪ Storage pool on SAS



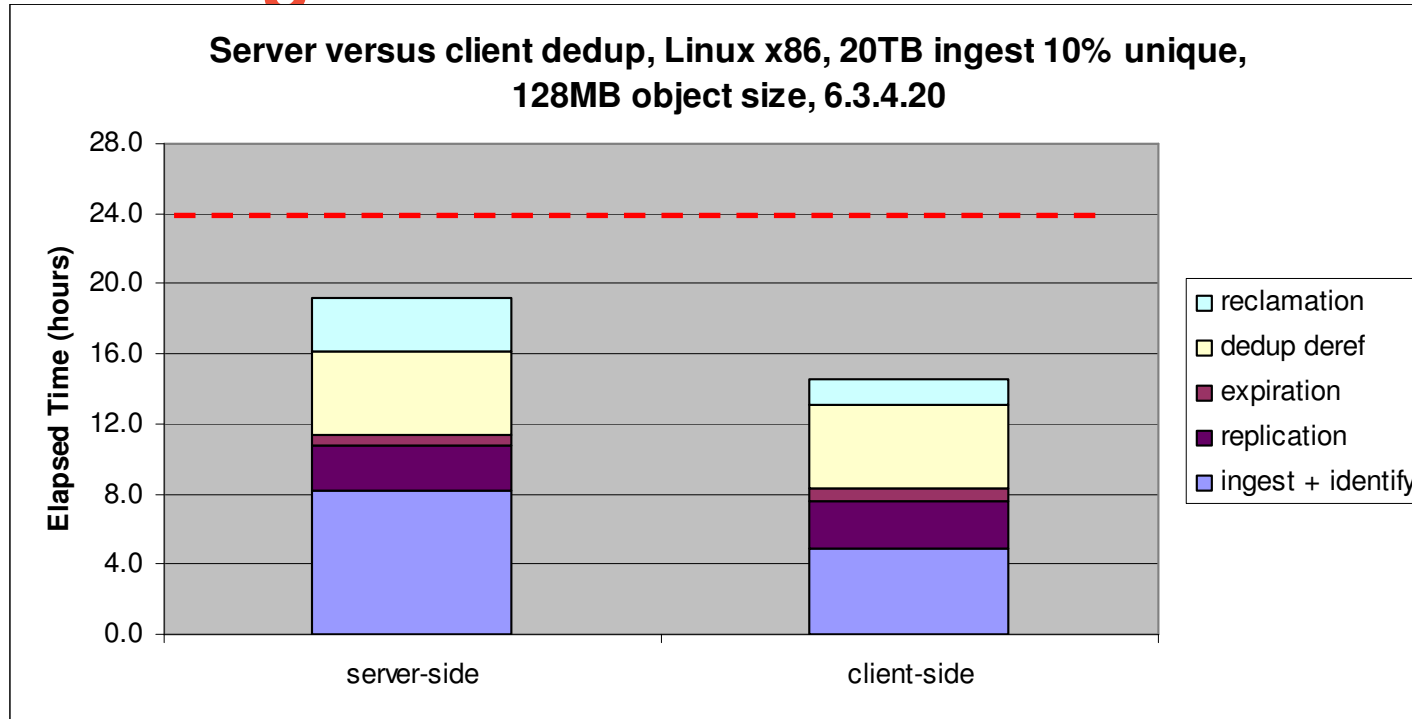
Impact of the three scalability focus areas



Points to note:

1. Overlapping backup ingest and identify duplicates allows for more daily ingest
2. Use of solid-state storage for the DB and active log provides a significant benefit
3. SAS or FC disks for the storage pool are needed to get full benefit from using SSD for the database
4. APAR IC91196 provides significant reduction to reclamation duration
5. APAR IC94934 provides significant reduction to expiration / deref processing times

Comparing server and client deduplication with 20TB ingest



The following performance results were measured on the reference architecture including Storwize V7000, solid-state disks for the TSM data base and active log, and 15k rpm SAS drives for the archive log and storage pool.

- Client-side deduplication has the ability to scale to higher levels of daily ingest
 - Duplicate identification is in-line with backup ingest
 - Reduced reclamation processing with client-side deduplication
- Requires sufficient client CPU resource and parallel sessions
- Remaining processing of maintenance tasks are comparable
- **Disclaimer** different workloads may not sustain these levels of daily ingest
 - Smaller average file sizes tend to perform slower
 - Lower percentages of duplicate data will require additional time to process more data during node replication

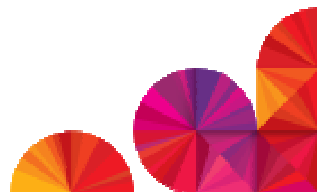


Observed performance with a Storwize V7000 based architecture (SSD)

Metric	Server-side deduplication	Client-side deduplication
Ingest rate	2.8 TB/hr 1.8 TB/hr (incl. reclamation)	4.4 TB/hr
Maximum daily ingest with replication	20 TB	30 TB
Total managed data	300 – 400 TB	
Restore rate	0.9 TB/hr (1 session) 1.1 TB/hr (2 sessions)	

Note: Results based on 128MB object size. Workloads with smaller average object sizes may perform slower

Test parameter	Value
Object size	128 MB (163,840 objects totaling 20TB)
Change rate	10% unique to previous backup
Client nodes	80 (2 file spaces each)
Client deduplication cache	Off
Average sessions	30
Identify processes	20
Reclamation processes	32
Reclamation threshold	25
Expiration resource	10
Replication sessions	40
On-line DB reorg (table and index)	Disabled



IBM Tivoli Storage Manager. Deduplicación



Deduplicación en Tivoli Storage Manager



... all at no additional charge!!

Tivoli Storage Manager includes **target-side** data deduplication

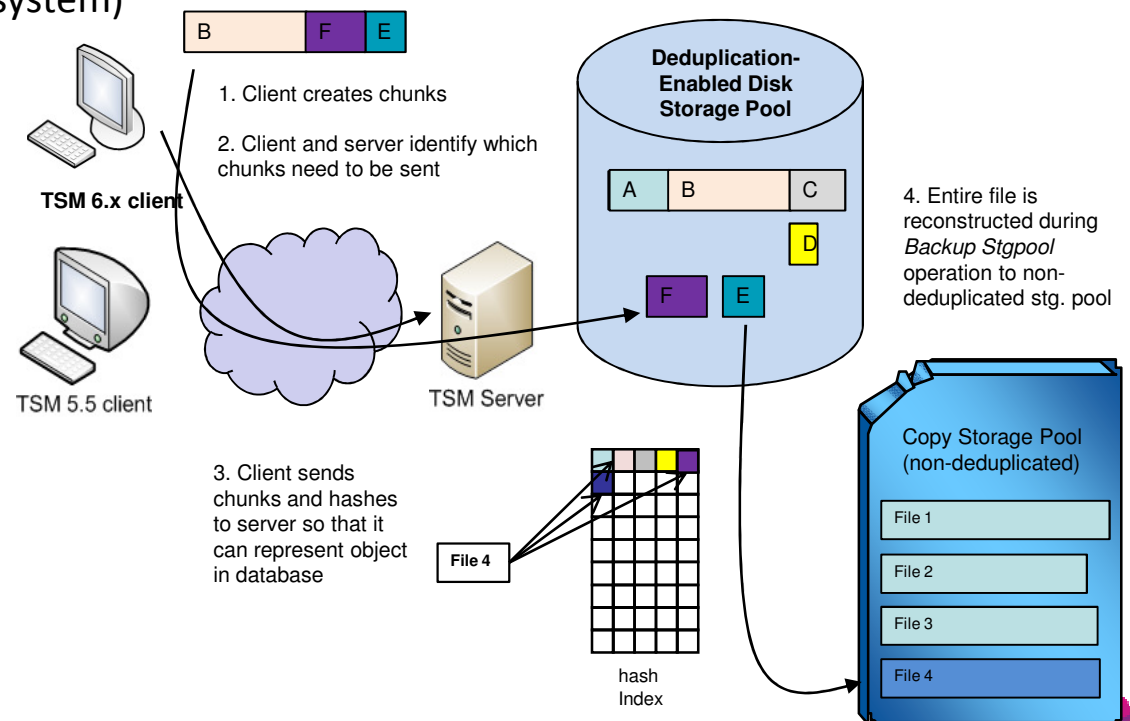
- Improves recovery times and/or reduces capacity requirements
- Uses data from any source including: API, backup, HSM, archive
- Operates as a post-process; automatic space reclamation
- Builds on automatic data compression & progressive-incremental
- Applied to data replicated to an off-site TSM server for disaster recovery

Tivoli Storage Manager includes **client-side** data deduplication

- Reduces network traffic by determining if a chunk has already been backed up (maybe from a different client system)

TSM includes data deduplication **across the WAN**

- Reduces storage and bandwidth requirements by consolidating backups from multiple offices to a central TSM server



ProtecTIER: Ventajas de la deduplicación

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

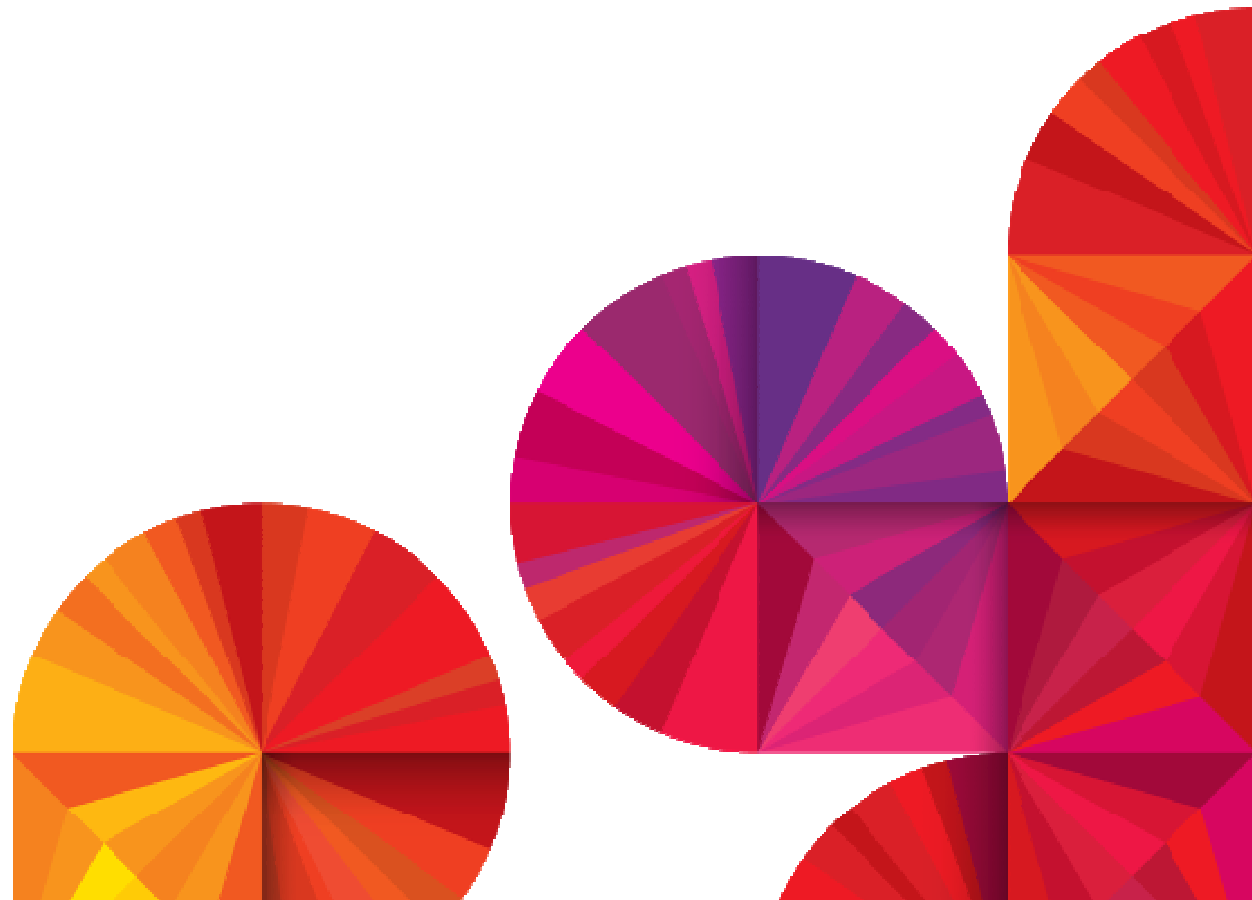
Continuous Availability

Dual node design for high availability
The only HA solution available

Global Deduplication


Deduplicates ALL data
Provides superior deduplication ratios

IBM Tivoli Storage Manager. Casos de clientes

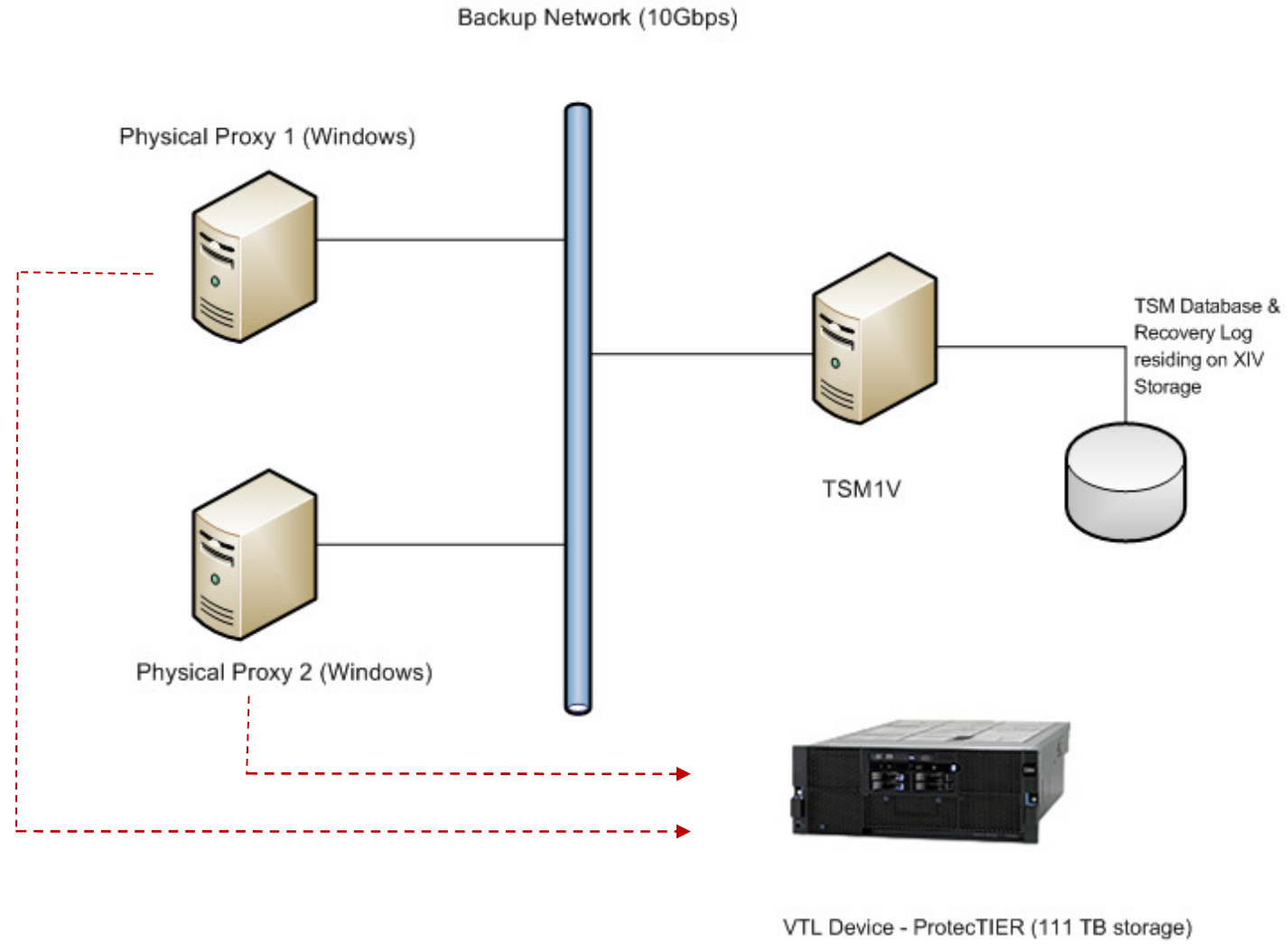



Arquitectura de Alto Nivel de la solución implantada en el piloto

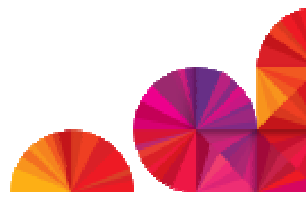
Cluster1
35 TB
NETOS



Cluster1
10 TB
NETOS



-----> = LAN-Free path

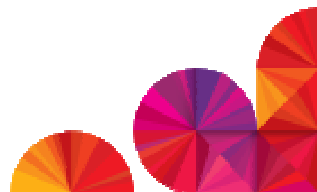


Resultados obtenidos para Backup de Virtuales

- ✓ 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.

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

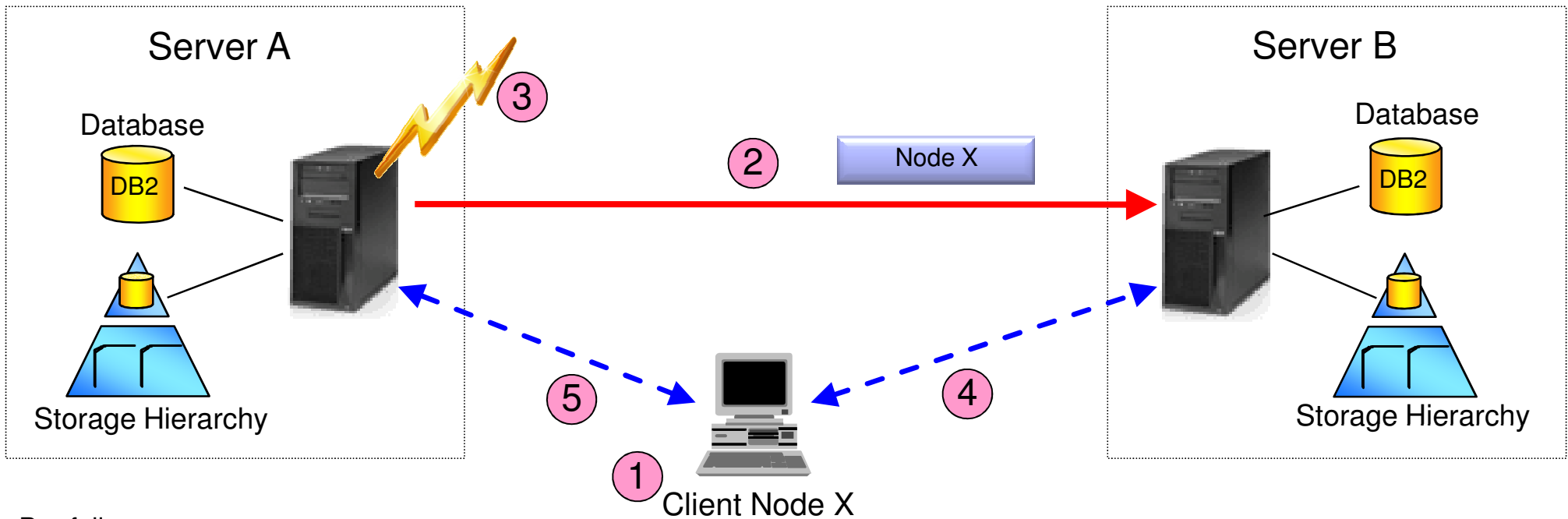
- ✓ Infraestructura estable durante los dos meses del piloto: 100% de disponibilidad del servidor durante toda la duración del piloto.
- ✓ Reducida tasa de errores individuales, alcanzando el 0% durante la última semana.
- ✓ Determinación y resolución del 100% de errores de los backups.



IBM Tivoli Storage Manager. Disaster Recovery



Replication with Automated Failover



Pre-failure

- 1.-Server A reServer A sends failover server connection information to client, which stores information locally
- 2.-Duplicates node data and metadata to secondary server B

Failover

- 3.- Server A becomes unavailable
- 4.- Based on failover server connection information and policy, client is automatically redirected to Server B for retrieve operations

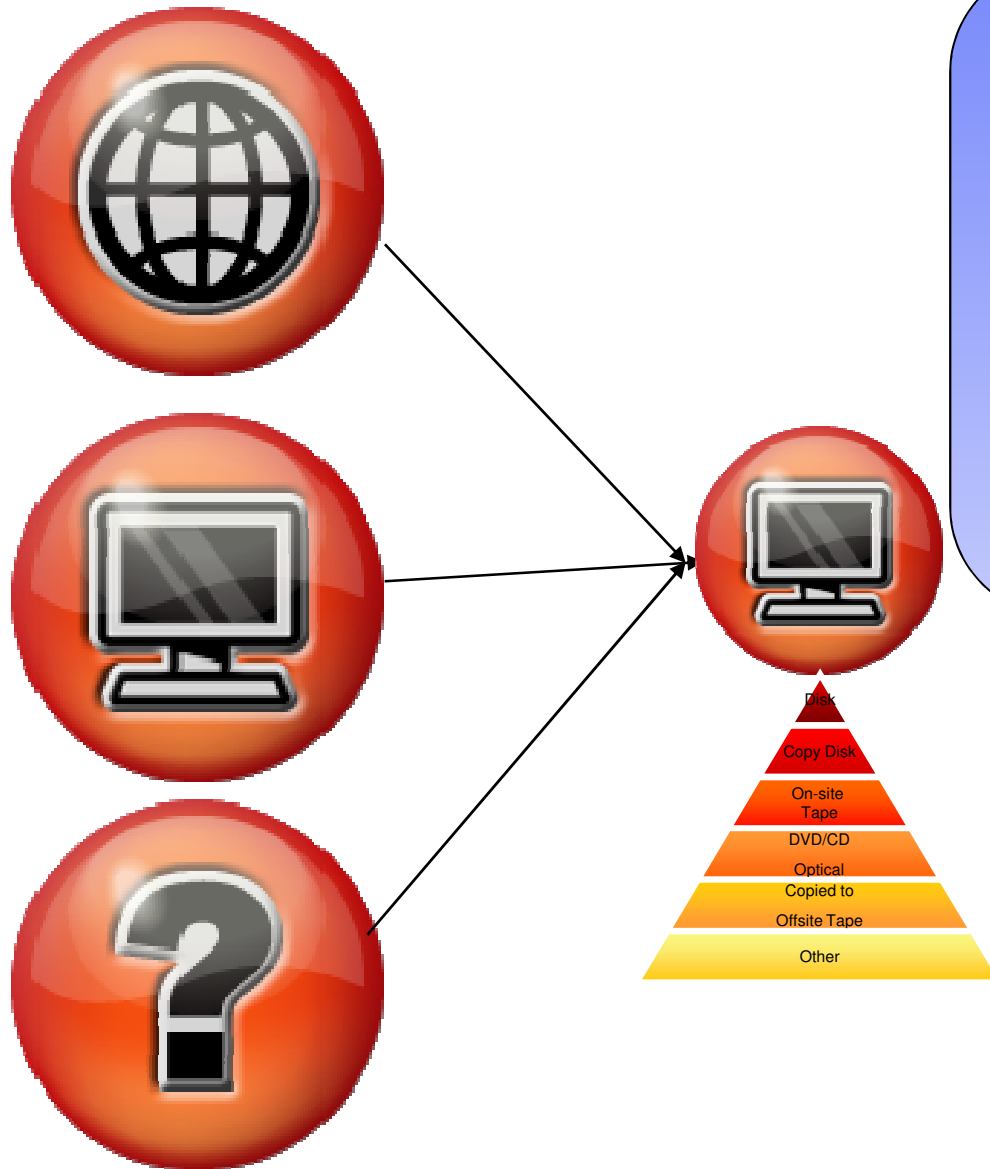
Failback

- 5.- When server A becomes available, client operations are directed back to server A

- Customer requiring “hot” stand-by environments for their production servers (including DR) can use this capability to provide hot stand-by servers and satisfy these requirements

Tivoli Disaster Recovery Manager

A Component of TSM Extended Edition

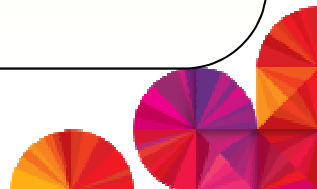


Disaster Recovery Planning
Automatically generated disaster recovery plan

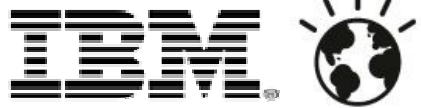
- Information, scripts & procedures needed to automate recovery of the TSM server
- Detailed tracking of off-site volumes
- Complements TSM's off-site capabilities
 - *Eject and send tapes off site*
 - *Call tapes back when necessary*
 - *Move data between hot/warm sites electronically*

Benefits

- ✓ Current, accurate disaster recovery details automatically compiled into a standardized, well documented plan
- ✓ Can be customized to encapsulate customer specific details



IBM Tivoli Storage Manager. Reporting



Cognos Reporting Made Monitoring Easy

Work with reports

Viewer - Client Storage Usage Trends

[Refresh](#)

Total Storage Space Used (MB)

Summary Date	Total Storage
Jan 9, 2013	
Jan 7, 2013	
Jan 6, 2013	
Jan 5, 2013	
Jan 4, 2013	
Jan 3, 2013	
Jan 1, 2013	
Dec 31, 2012	
Dec 30, 2012	

Top Page up Page down Bottom

Work with reports

Viewer - VE Activity Status

tipadmin [About](#)

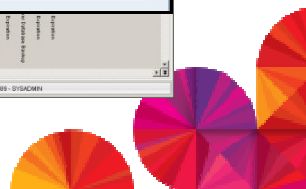
[Keep this version](#) [Add this report](#)

Data Center Node	VM Name	Data Mover	Activity Type	VE Activity	Start Time Stamp	Successful?	Schedule Name	Failed Objects	Total K-Bytes
DC_CLIENTDEDUP	2k8r2small	DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Jan 10, 2013 1:36:05 AM	YES	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Jan 9, 2013 1:36:17 AM	YES	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Jan 8, 2013 1:21:50 AM	YES	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Jan 7, 2013 2:13:12 AM	YES	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Jan 6, 2013 1:43:40 AM	YES	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Jan 5, 2013 1:47:13 AM	YES	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Jan 4, 2013 2:08:38 AM	YES	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Dec 31, 2012 2:15:44 AM	NO	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Dec 30, 2012 2:05:36 AM	YES	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Dec 29, 2012 3:07:26 AM	NO	VM_640_IFINCR_IMMORTAL	0	0.00
		DM_IMMORTAL_640	Backup	Incremental Forever - Incremental	Dec 28, 2012 2:01:29 AM	YES	VM_640_IFINCR_IMMORTAL	0	0.00

Top Page up Page down Bottom

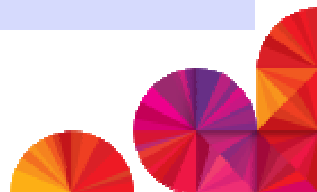


Hub Time: Not Available | Server: Available | Node: Active - ATHOME 02081609 - 0160CM



Monitor/Report Availability

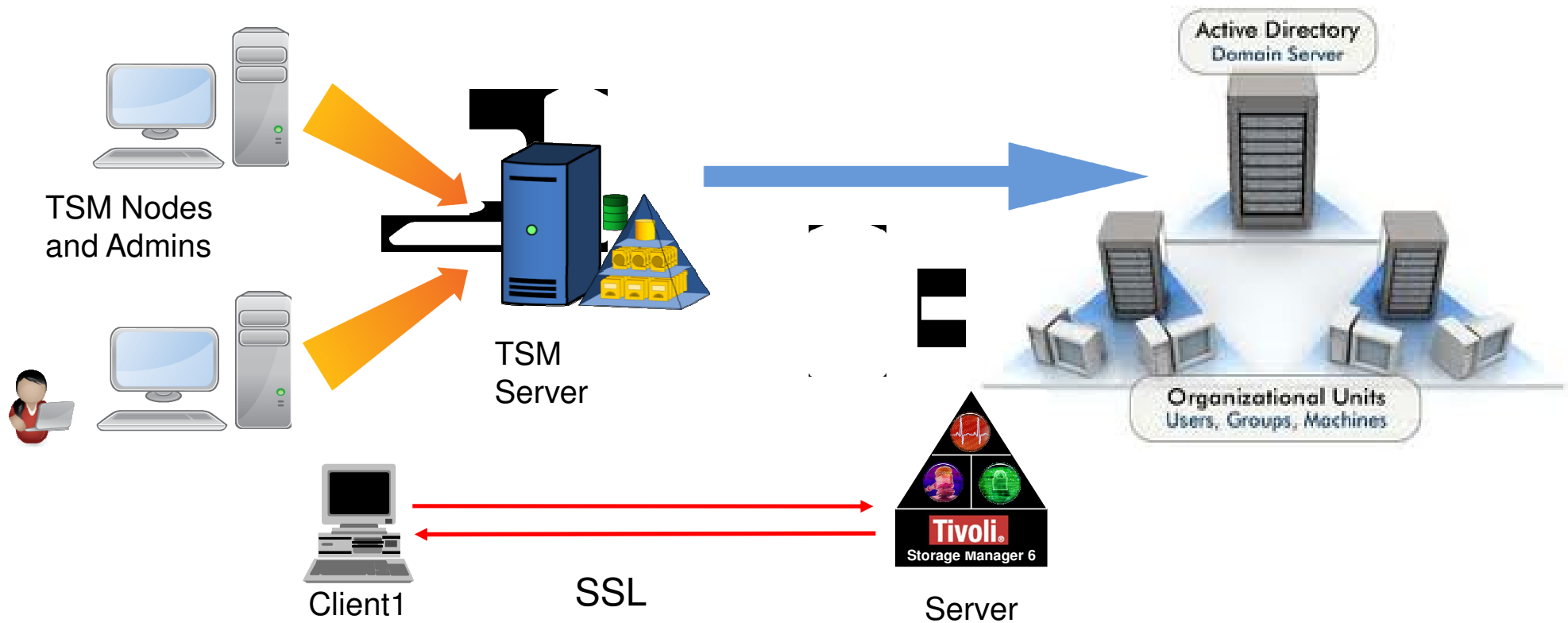
Report	6.4 White Paper	TSM for VE FCM for VMware	Cognos	TSM Operations Center
Scheduled Events	-	Available	Available	Available
Coverage / Protection Status	-	Available	Available	Available
Occupancy	-	Available	Available	Available
“What Failed Last Night”	Yes	Available	Available	Available
Application Coverage	-	Available	-	-
Application/Disk Coverage	-	-	-	-
Full vs. Incremental Backups	Yes	-	Available	-



IBM Tivoli Storage Manager. Seguridad



External Directory Support Overview & In-flight data encryption using SSL



What this is:

- Complex password support and integration with external directory
- SSL Communication among TSM clients and TSM Servers

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
- Secure data transmission between client and server
- 256-bit AES encryption for in-flight data



IBM Tivoli Storage Manager. System Storage Archive Manager



IBM System Storage Archive Manager

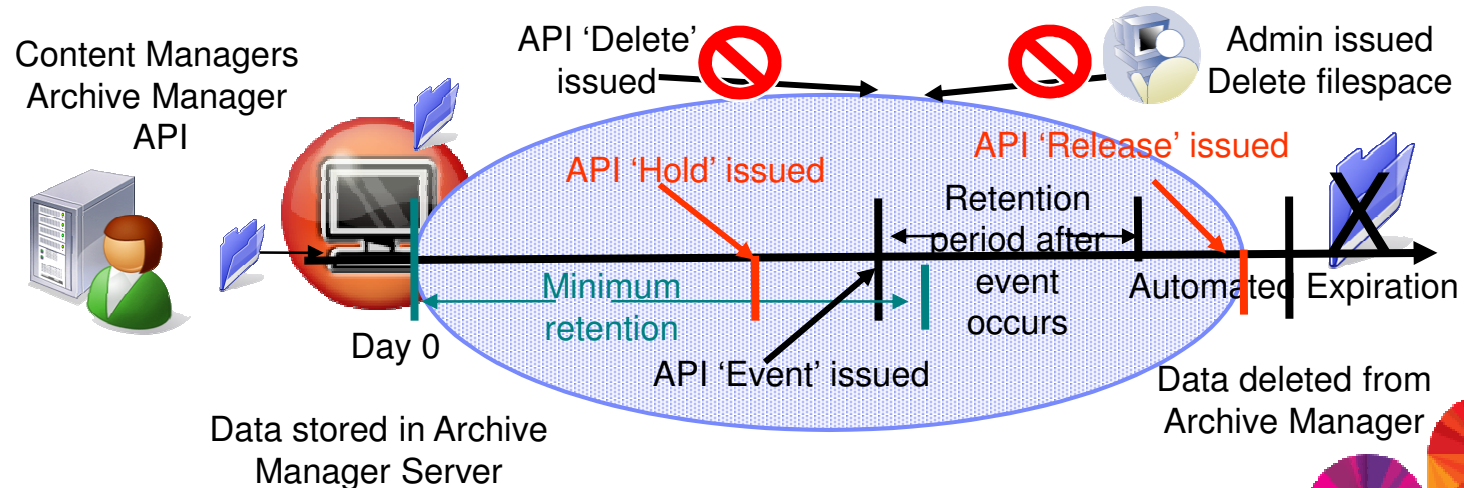
Regulatory Retention

- Protects data by disallowing explicit data deletion, prior to the retention criteria
- Manages data by leveraging retention policies and expiration processes
- Offers choices on where to store data by capitalizing on extensive device support
- Works with Archive Manager Client & Server capabilities to easily retrieve data
- Rich Archiving
- Chronological
- Event-base retention protection
- **Deletion hold / release**

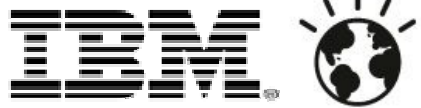
SSAM 6.3 Certificate according to international laws

Benefits

- ✓ Helps meet data retention/disposition regulations and policies
- ✓ Can utilize 100's of different types of storage for onsite and offsite copies



IBM Tivoli Storage Manager. Agentes



IBM Tivoli Storage Manager Product Family



✓ TSM Basic Edition

- Backup/Recovery
- Archive/Retrieve

✓ TSM Extended Edition (Basic plus..)

- Tivoli Disaster Recovery Manager (DRM)
- Backup via NDMP for NAS
- Large Libraries (additional tape support)

☐ System Storage Archive Manager

- Data Retention to meet regulatory requirements

Server Products

WAN
LAN
SAN



Application Protection

- ✓ TSM for Mail
- ✓ TSM for Databases
- ✓ TSM for Enterprise Resource Planning (ERP)
- ✓ Docave for Microsoft SharePoint
- ✓ TSM for Virtual Environments

Bare Machine Recovery

- ✓ TSM for System Backup and Recovery (AIX)
- ✓ Cristie Bare Machine Recovery

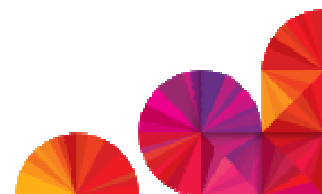
Space Management, Archiving, CDP

- ✓ TSM for Space Management
- ✓ TSM HSM for Windows
- ✓ TSM for Storage Area Networks (SAN)
- ✓ TSM FastBack for Workstations
- ✓ TSM FastBack

Client Products



Storage Hierarchy



NDMP: Disaster Recovery / Backend Movement

Features

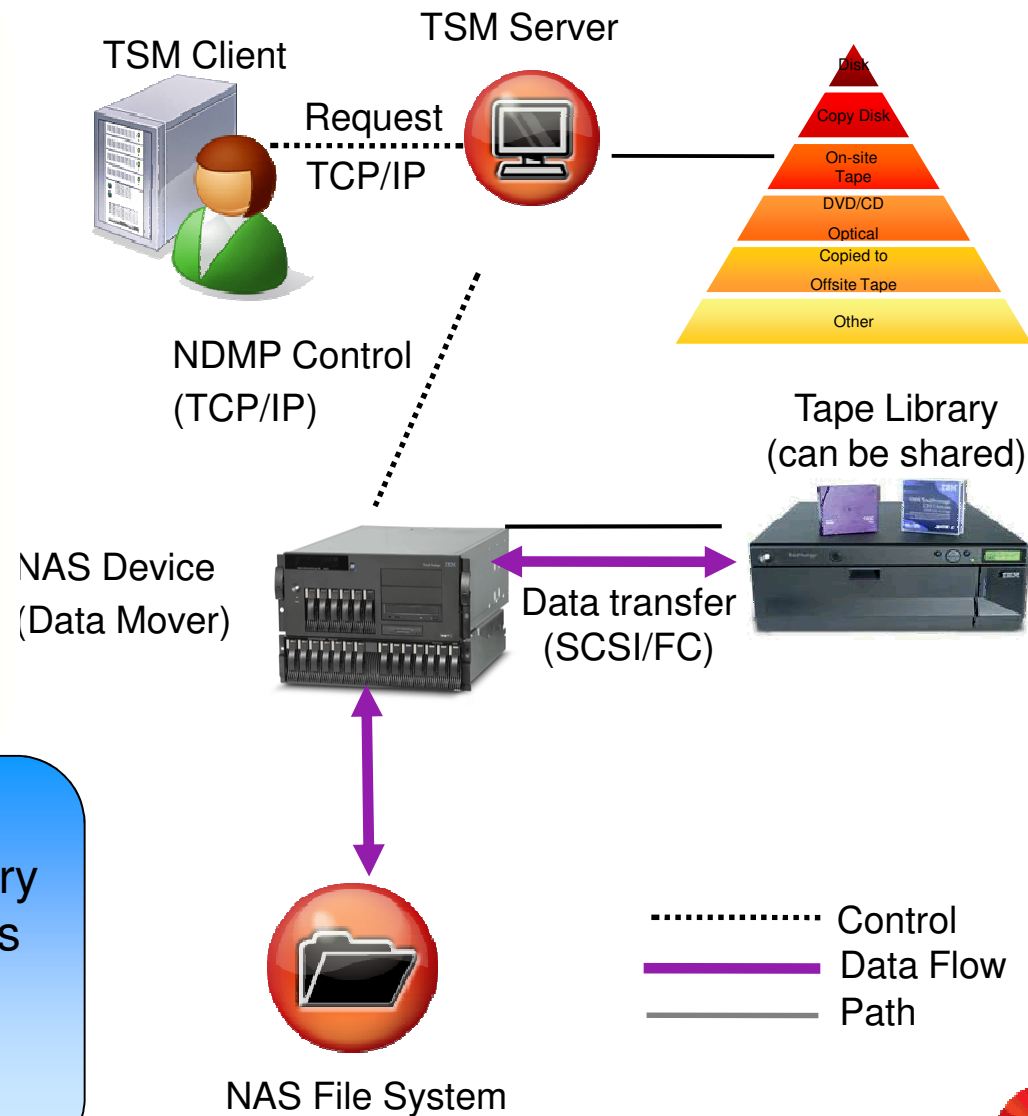
- Use NDMP tape-to-tape copy for backend movement of data stored on TSM server via NDMP

- Storage pool backup
- Storage pool or volume restore
- Move Data
- Intra-pool for space recovery
- Inter-pool for migration to new device type

- DRM support for NDMP data
- Restore Node will use copy pool, if primary data not accessible

Benefits

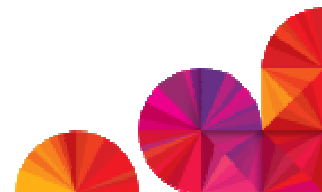
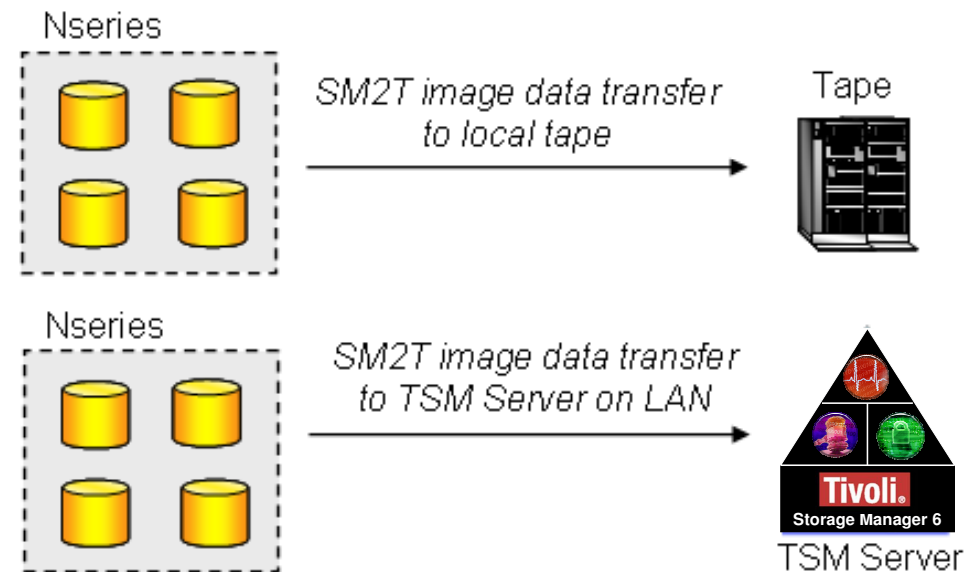
- ✓ Creation of off-site copies for disaster recovery
- ✓ Ability to automatically move existing backups onto new storage technology
- ✓ Better utilize tapes



SnapMirror to Tape Support

*Fast storage system image creation for IBM N series / NetApp
Disaster Recovery*

- TSM integrates to issue the NDMP commands to move the SnapMirror image from the NetApp filer to a TSM server managed storage target for fast creation of a DR image



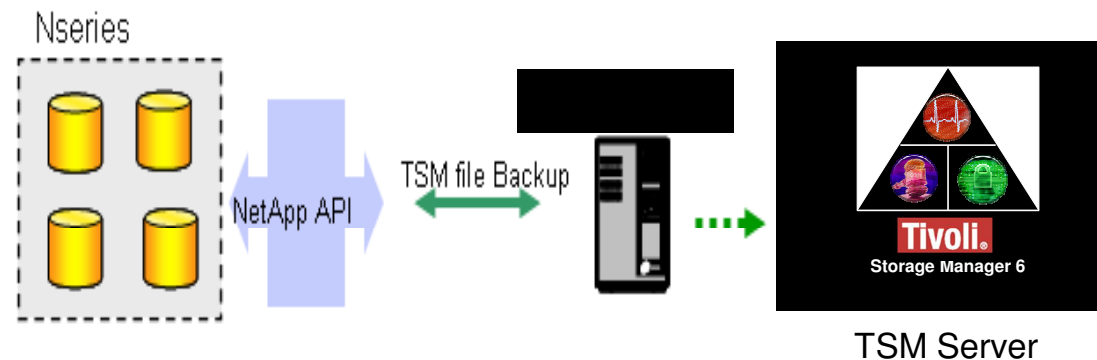
NetApp SnapDiff – Enhanced resiliency

Faster incremental Backup of IBM N series / NetApp filers

File level recoverability

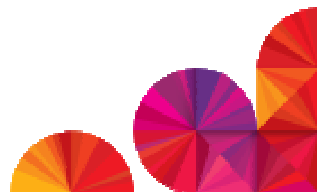
Avoid time consuming scan of filer to determine backup candidates

- TSM BA client to use NetApp API to identify new, changed, deleted files
- Eliminates the traditional TSM incremental backup file scan for NFS/CIFS attached filers
- Provides progressive incremental backup with file level recovery

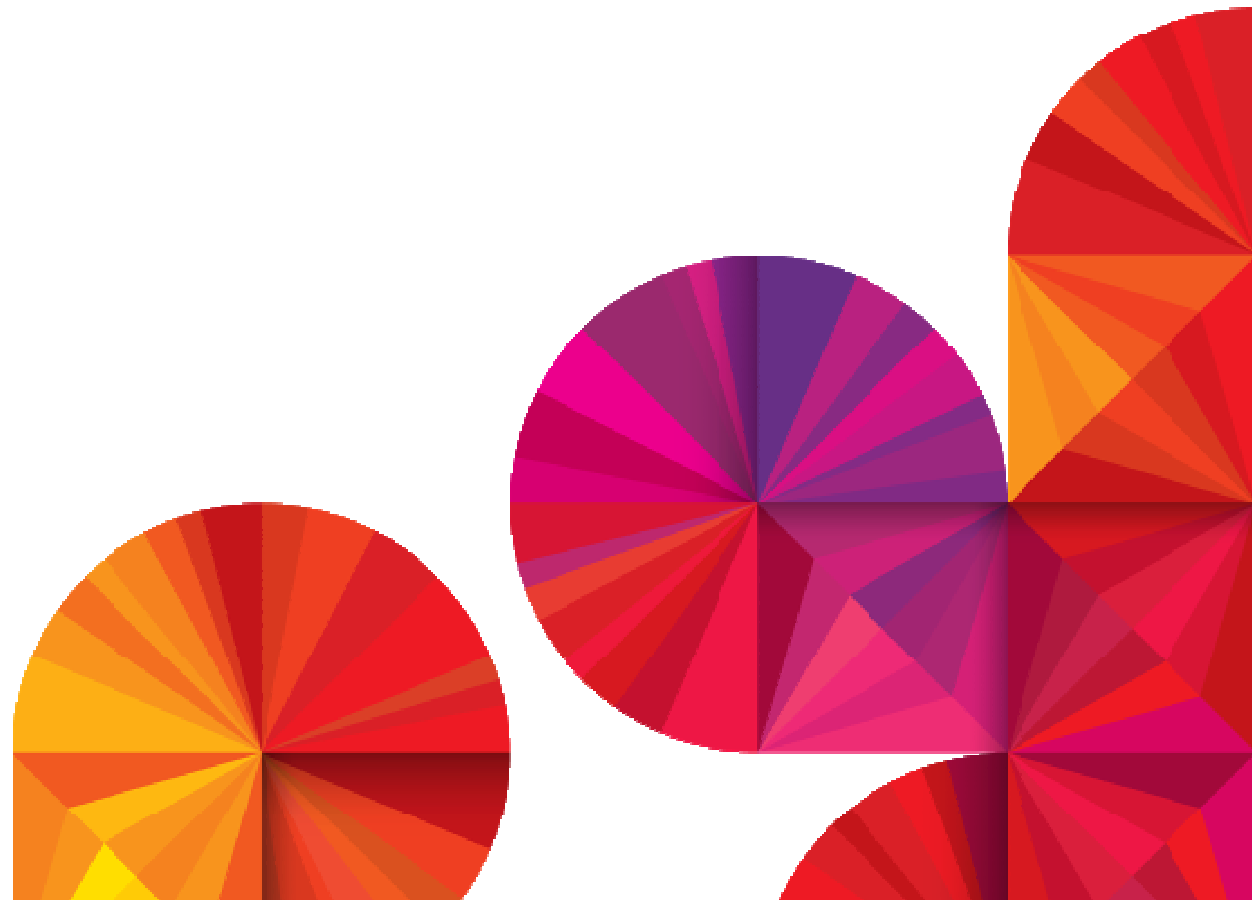


TSM 7.1 Snapshot differential backup enhanced to be more robust and reliable

- Minimize the need to run full progressive incremental backups
- Address issue where failed files were not backed up or were backed up redundantly
- Implements persistent change log



IBM Tivoli Storage Manager. Cloud





User interface

The user interface of the portal is designed for non technical users. It is very easy and straight forward to operate no matter what task to perform. For example setting up a new partner.



Bak admin, Administrator | English Account settings Log out

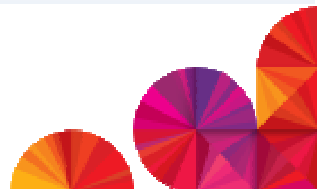
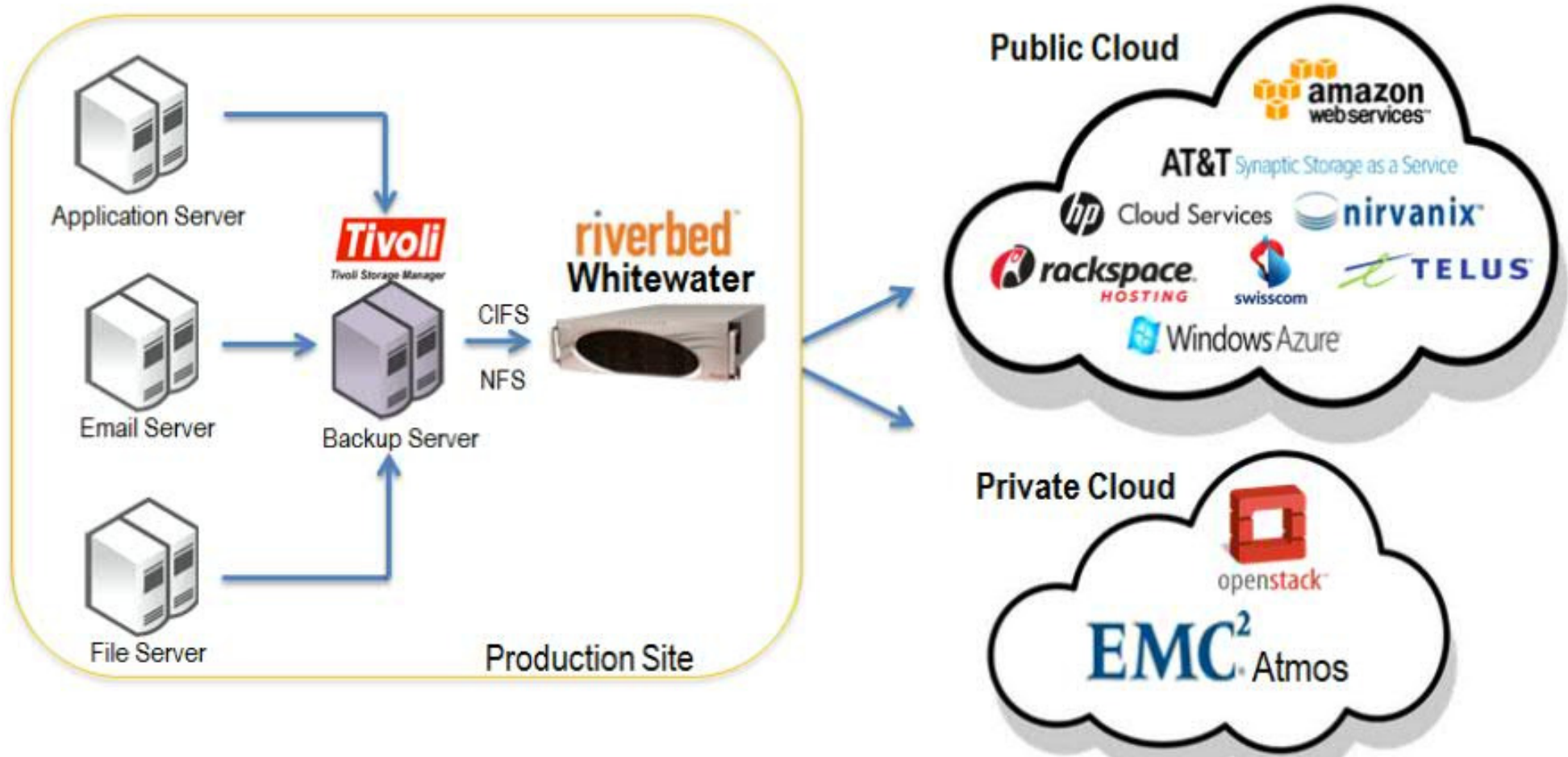
Bak admin - Front-safe A/S

Create new partner

[Change owner](#)

ID	<input type="text"/>
Company name	<input type="text"/>
Street + number	<input type="text"/>
Zipcode / city	<input type="text"/>
Country	Denmark
Currency	DKK
Public business	<input type="checkbox"/>
RegNo	<input type="text"/>
Phone / Fax	<input type="text"/>
E-mail	<input type="text"/>
Password	<input type="text"/>
Language	English
Status e-mail	<input type="text"/>
Contact person	<input type="text"/>
Contact/support phone	<input type="text"/>
Contact/support e-mail	<input type="text"/>

IBM Tivoli Storage Manager, Riverbed Whitewater Gateway, and Cloud Storage Configuration Example



IBM Tivoli Storage Manager. Licencias



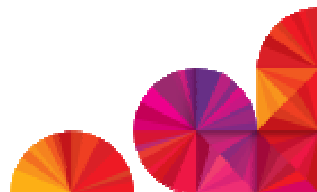
Two Pricing models for TSM -

Processor Value Units - PVU's

- Processor core type and quantity is base for pricing
- Licensing by functionality working on processor count
- TSM licenced by PVU count for protected servers (including TSM)
- TSM 6.3 includes a PVU counter tool for the TSM Clients

Capacity Based Licence – TSM Suite for Unified Recovery (SUR) and TSM SUR Protectier

- Licence is a “back-end” model for the TSM Server
- Based on the size of the Primary Storage Pool in TSM repository
- Includes all backup, HSM and archive data in the Primary Pool
- Does not include Copy Pools
- TSM Server dedupe (disk only) reduces licence costs *
- Calculated using predefined TSM Server scripts



Tivoli Storage Manager Suite for Unified Recovery includes ...

Tivoli Storage Manager (TSM) Extended Edition

Highly-scalable enterprise-class backup/restore, archive and disaster recovery

TSM for Databases
Oracle and Microsoft SQL

TSM for Virtual Environments
Advanced VMware Support

TSM for Mail
Domino and Exchange

TSM for SAN
LAN-Free Backup and Restore

TSM for ERP
SAP R/3 Integration

TSM for Space Management
Data Lifecycle Management for UNIX

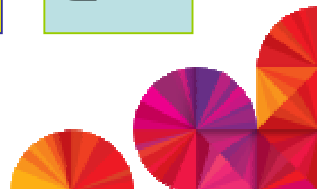
Tivoli Storage Manager FastBack

Advanced snapshot and near-instant recovery for Windows / Linux servers

FastBack for Exchange
Granular E-mail Recovery

FastBack for BMR
Restore O/S volume in an hour

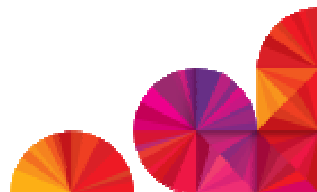
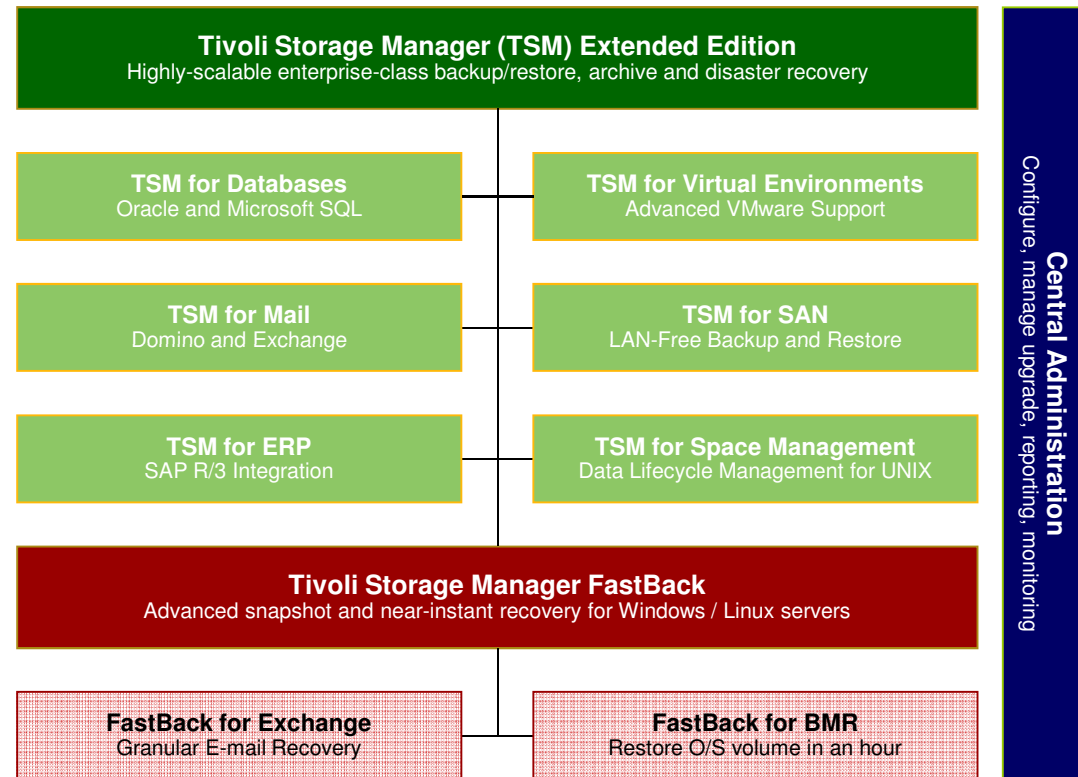
Central Administration
Configure, manage upgrade, reporting, monitoring



TSM Suite of Unified Recovery Entry

Enterprise class protection at a mid-market price

- Same broad functionality and benefits as the standard Suite, at a much lower per TB price point
- Limited to 100 TB of back-end backup data and 2 TSM Servers
 - 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)
- Suitable for small and mid-sized organizations with 25 TB or less of production data
 - The ratio between production data and backup data depends on several factors, such as
 - # of backups to retain
 - how long deleted data is retained
 - the use of data deduplication
- A “trade-up” license is available to grow beyond the Entry capacity limits

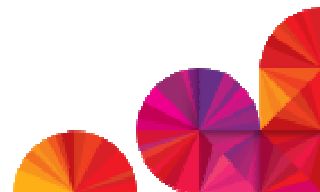


TSM Suite for Unified Recovery – Archive Option

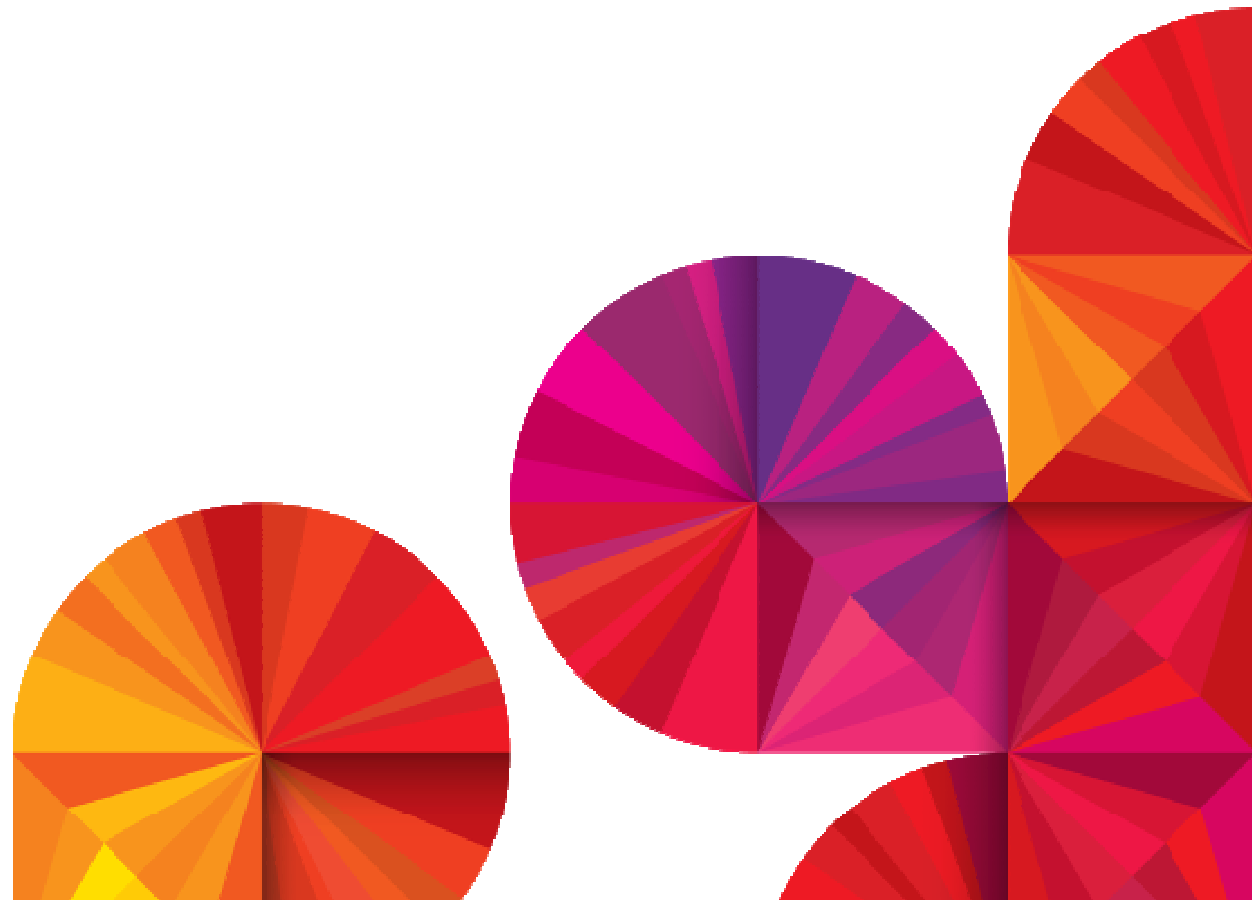
- Leverage built-in archiving, at a lower price per archived TB
 - Archive via the TSM backup/archive client or via the TSM API
- Encourages proper and effective data lifecycle management when there is a desire to retain data long term in the TSM environment
- To take advantage of this pricing option, simply archive and delete data that is no longer needed for operational use
- As you archive data, you ...
 - Reduce TSMSUR license costs by redeploing licenses to accommodate growth of remaining backup
 - Reduce production server and storage costs
 - Reduce backup windows and improve application performance
- Additional savings can result from reducing the expiration period on backup data

Tier (TB)	Price Reduction
1-100	
101-250	10%
251-500	20%
501-750	40%
751-1250	50%
1251-2000	60%
2001+	70%
Archive Option	80%

TSM SUR is licensed on a tiered Terabyte model; as your backup environment grows, the cost per TB of additional licenses decreases. The Archive Option has a flat price per TB.



IBM Tivoli Storage Manager. Butterfly



IBM Tivoli Storage Manager. IEM & Tivoli Workload Scheduler

IBM



Gestion de Agentes

IBM Endpoint Manager



Lifecycle Management



Software Use Analysis



Power Management



Mobile Devices




Patch Management



Security and Compliance

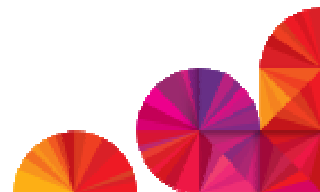


Core Protection

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

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

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



Planificador

IBM Workload Scheduler
Leader en el Cuadrante Mágico de Gartner de Febrero 2012

Monitor Critical Jobs: High Risk (Owner: Angelo D'Ambrosio; Engine: twsdemoZOS=z/OS)

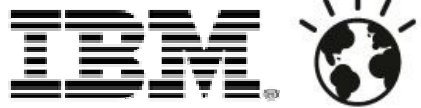
Plan Name: Current Plan

Risk level	Status	Internal Status	Job number	Job	Workstation	Job stream	Scheduled Time	Planned start
High Risk	Waiting	Waiting	1	ZOSCRIT	CPU1	CRITICALZOSAPPL	1/19/12 6:30 AM	1/19/1

The workload service assurance is also available for the z/OS engine. The Web Console provides similar information for both distributed and z/OS systems.

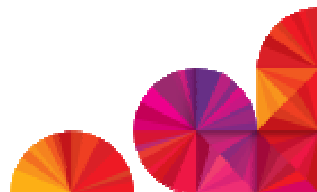


IBM Tivoli Storage Manager. Analistas



Analistas

- -- IBM has done an **exemplary job** of providing a truly end-to-end data protection and management solution
- -- ...puts TSM on a **much stronger footing relative to its competitors**
- -- TSM7 will resonate with **new customers** looking for **highly scalable data protection**
- -- TSM7 much easier to deploy, manage, scale **particularly in virtualised environments**
- -- **Improve service levels, reduce costs and mitigate risk**



IBM Tivoli Storage Manager. Futuro

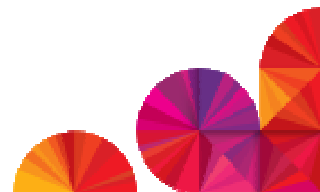


Futuro Próximo

- Virtual Environments
- Replication and Disaster Recovery
- Easy of Use
- Security

PLEASE OPEN/VOTE RFEs:

<http://www.ibm.com/developerworks/rfe/>



धन्यवाद
Hindi

谢谢

תודה רבה
Hebrew

Спасибо
Russian

Simplified
Chinese

Gracias

Spanish

Thank You

شكراً
Arabic

English

Obrigado
Brazilian Portuguese

ありがとう

Japanese

Grazie
Italian

감사합니다

Korean

Danke

German

Merci

French

நன்றி
Tamil

謝謝

Traditional Chinese

ขอบคุณ
Thai

