



Tivoli Storage Management



Dynamic Backup Using IBM Tivoli Storage Manager 6 and Data De-Duplication

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e-TECHSERVICES

Your Open
Systems Integrator



Leading the Way in Data Protection and Recovery

IBM Tivoli Storage Manager has been a leader in helping organizations protect, retain and assure availability of their most important asset, their data, **for more than 15 years.**

Comprehensive Solution

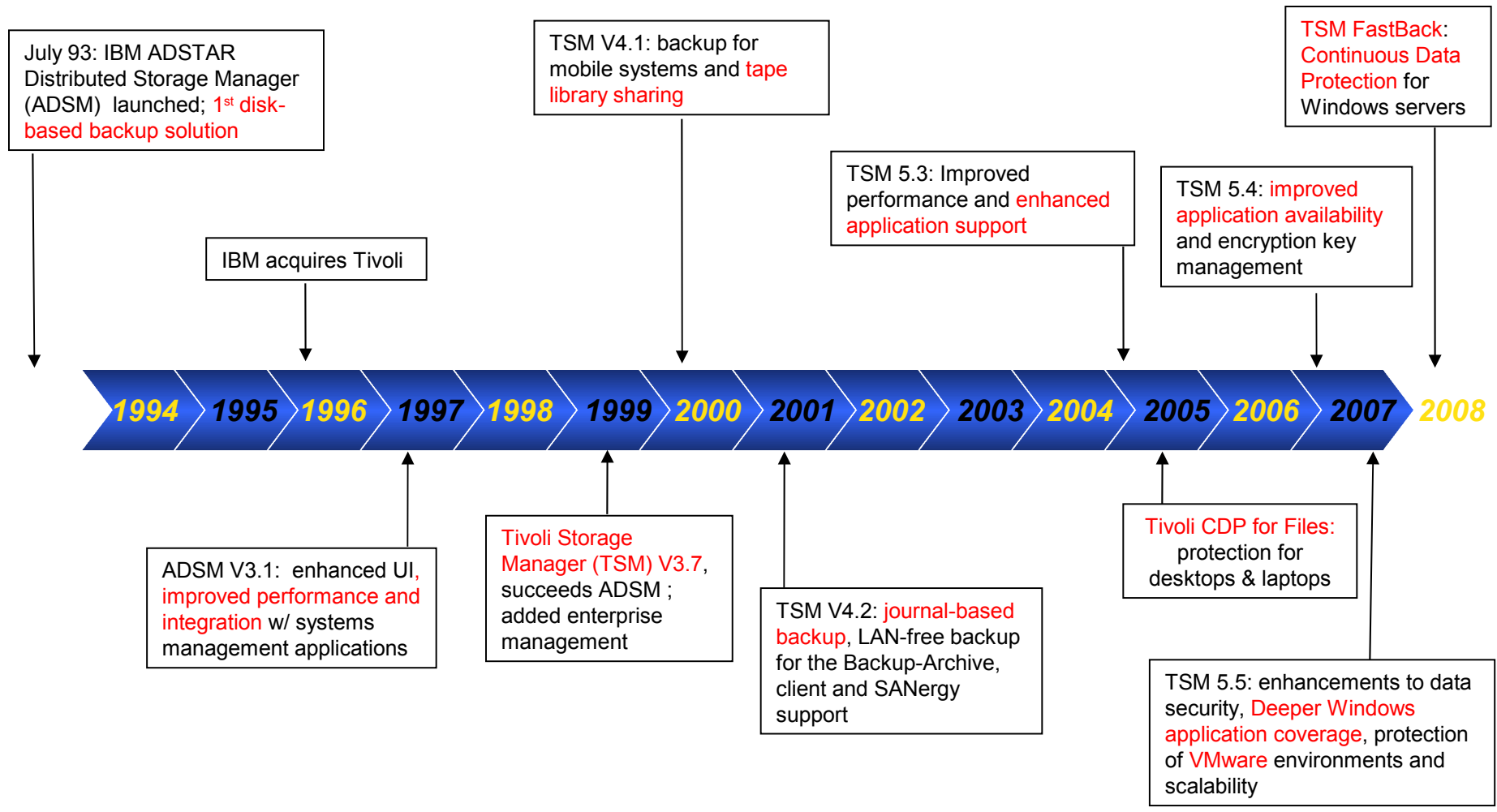
- Data Protection: Backup / Restore
- Data Retention: Archive
- Disaster Recovery
- HSM / ILM
- Application Protection
- Database Protection
- Continuous Data Protection (CDP)
- Bare Machine Recovery
- Robust Remote Office Recovery

Proof Points

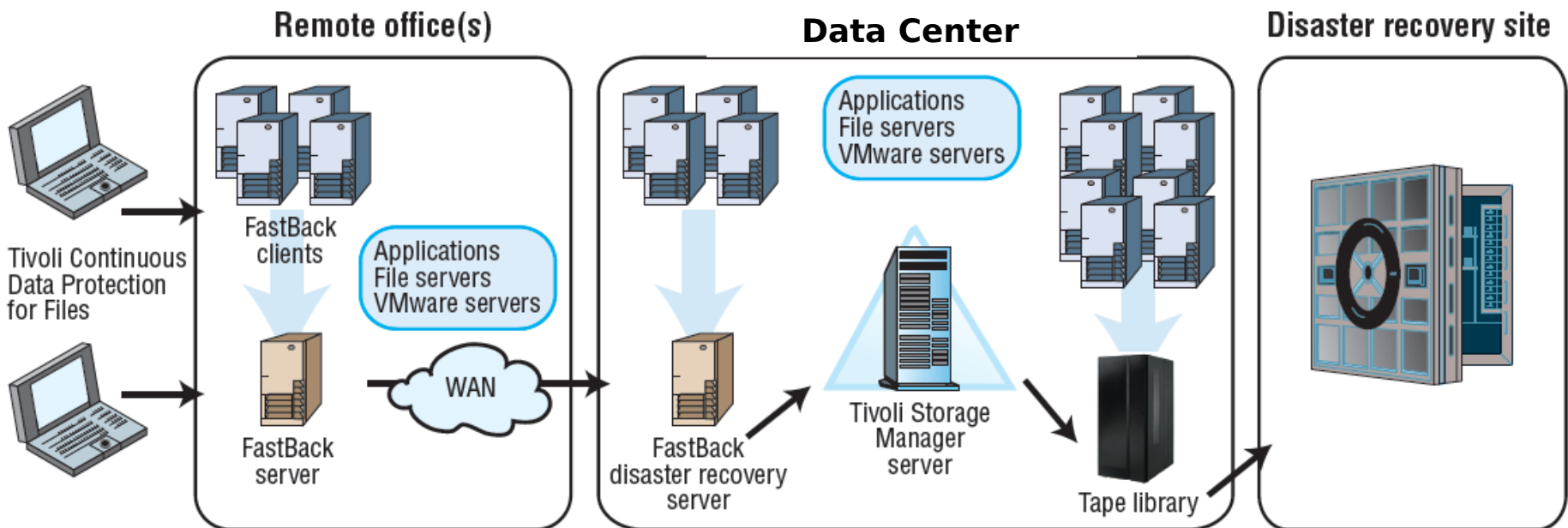
- More than 20,000 loyal customers, including 60% of the Fortune 500
- 1st disk-based backup solution
- Unified recovery across:
 - The broadest range of OS and HW platforms: *from laptop to mainframe*
 - All storage tiers
- Four consecutive years of growing faster than the market*

* Source: IDC

15 Years of Leading the Way in Data Protection



Tivoli Storage Manager 6 is the core component of an integrated, end-to-end data protection and unified recovery management solution



- **Tivoli CDP for Files:** Continuous data protection for desktops & mobile users
- **TSM FastBack:** Block Level CDP protection for critical Windows servers
 - Robust remote office data protection & replication
 - Near-instant recovery of any data, anywhere

IBM Tivoli Storage Manager - Product Family

TSM Server Products

- ✓ Tivoli Storage Manager 6
 - Backup/Recovery
 - Archive/Retrieve
- ✓ TSM 6 Extended Edition (Basic plus..)
 - Tivoli Disaster Recovery Manager (DRM)
 - Backup via NDMP for NAS
 - Large Libraries (additional tape support)
 - Built-in Data Deduplication

Branch Office/Remote Office

- ✓ TSM FastBack
- ✓ TSM FastBack for MS Exchange
- ✓ TSM FastBack for Bare Machine Recovery
- ✓ CDP for Files

z/OS

- ✓ TSM -z/OS
- ✓ TSM EE - z/OS
- ✓ TSM for z/OS for Data Retention
- ✓ TSM for z/OS for Mail

Application Protection

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

Bare Machine Recovery

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

Advanced Replication

- ✓ TSM for Advanced Copy Services
- ✓ TSM for Copy Services

Space Management, Archiving

- ✓ TSM for Space Management
- ✓ TSM HSM for Windows
- ✓ TSM for Storage Area Networks (SAN)
- ✓ System Storage Archive Manager

Continuing to Lead the Way

Tivoli Storage Manager 6 leapfrogs the competition to address our customers' most challenging issue: the continuing tidal wave of data growth.

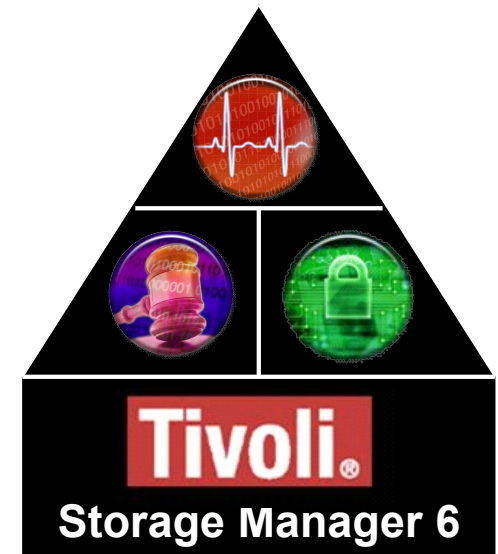
 ***Simplified deployment and management***

 ***Increased scalability, availability and performance***

 ***Built-in Data De-Duplication***

 ***Improved integration with VMware and NetApp / N series NAS Filers***

**Net Result = Unified Recovery Management
Improved Quality of Service**



Customer Benefits: Simplified Deployment

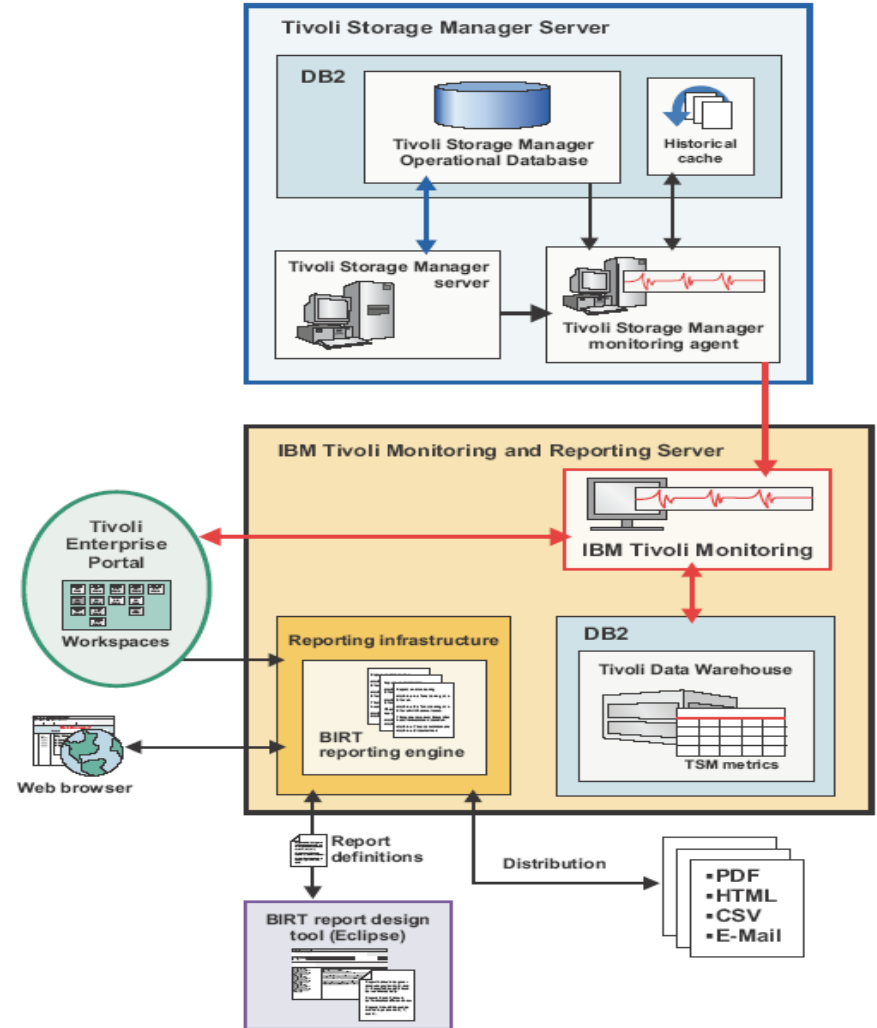
- Manage more data with fewer **Tivoli Storage Manager 6** servers
 - At least a 2-to-1 reduction* in the # of backup servers needed
 - **Much less complicated** than competitive solutions (no media servers)
- Re-designed reporting and monitoring
 - Wide range of pre-configured 'out-of-the-box' reports; reports are fully-customizable
 - Near real-time monitoring via a customizable graphical user interface
 - Included with **no additional licensing**
- Installation of **Tivoli Storage Manager 6 Admin Center** takes half the time and requires 30% less disk
 - Enhances the administration experience of multiple TSM servers in large environments with less impact to the managed servers



*Results will vary depending on user's environment, systems/processors, type of data, expiration policies, data change rates, etc *

Leveraging Proven IBM Components

- Tivoli Storage Manager reporting and monitoring infrastructure and data flow
- Supported platforms (Reporting Server)
 - Microsoft Windows 2003
 - Red Hat Enterprise Linux V5
 - SUSE Linux Enterprise 10
 - AIX



Administration Center

New, lighter-weight version of Integrated Solutions Console (ISC) infrastructure

Faster Installation < 30 Min

Reduced Footprint

- Improved Performance
 - Reduced time for initial page load and page switches
 - Enhanced processing of large queries
 - Progress indicators
 - Overall response time improvements
- Easier UI navigation of backup sets, client nodes, and client node groups
- Easier configuration of server actions with a consolidated, central local location for managing server actions
- ISC is a key technology component for IBM's strategic management portal

Name	Server	Platform	Version	Policy Domain	Contact
A	540		CLIENT	STANDARD	
AA	540		CLIENT	STANDARD	
AA	AIX08261		CLIENT	STANDARD	
ANTIETAM	540	Linux86	5.3.2.0	STANDARD	
AZ	540		CLIENT	STANDARD	
B	540		CLIENT	STANDARD	
BB	540		CLIENT	STANDARD	

Client Node... X

Client Nodes and Backupsets

Client Nodes

All Client Nodes By Server Search

Use these fields to search for client nodes on all of your servers and click Update Table.

Server name:
All

Client node name:
is

Policy domain name:
is

Contact:
is

Platform name:
is

Platform version:
starts with

Last contact:

Customer Benefits: Simplified Management

- Simplified database administration through the Tivoli Storage Manager user interface (UI) and through the exploitation of autonomic computing concepts:
 - No specialized database administration skills required
 - A self-tuning database buffer pool
- **More reliable backup and recovery**
 - Run-time data validity checks
 - Errors are immediately detected and corrected
- **Improved Availability**
 - Online database reorganization enables changes and tuning of the database while the system remains operational
 - The **Tivoli Storage Manager 6** server does not need to be taken "offline" for database repair actions
 - Competitive offerings require the servers to be off-line to preserve the integrity of their distributed catalogs and index files.



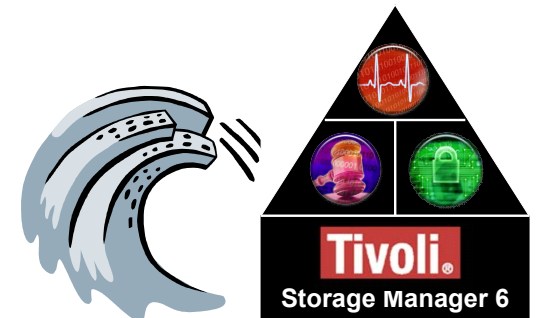
Customer Benefits: Scalability Improvements

- Manage twice* as many objects as the industry-leading TSM 5.5
 - At least double the internal database size (from 512GB to 1TB, minimum)
 - Support for at least **1 billion objects*** with a single TSM server
 - TSM is ready for the wave of remote office data (from TSM FastBack)
- Run an increased number of concurrent operations*
 - 9x increase in the size of the internal Recovery Log enables running more backup jobs from a greater number of clients, and/or an increase in the size of existing backup jobs
 - Faster backups = *shorter backup windows*

Powered by



TSM 6 can effectively meet the challenges of the 'tidal wave of data'



.Results will vary depending on user's environment, systems/processors, type of data, expiration policies, data change rates, etc *

Customer Benefits: Performance Improvements

- 50% or greater* improvement in backup and restore throughput
 - Reduces backup windows and/or increases the workload being managed
 - Reduces recovery times
 - 400% improvement in backup performance demonstrated in the lab (under optimal conditions)

- Improve Recovery Point Objectives for DR planning
 - Addition of Active Data Pools to Disaster Recovery Manager (DRM) in **Tivoli Storage Manager 6** Extended Edition
 - Track, manage and recycle active-data pools as required by policies

- 50% improvement* in expiration processing
 - New granular expiration process and parallel process execution
 - Fine-tune expiration policies by specific client nodes, node groups, or nodes belonging to a specified domain

Powered by



*Results will vary depending on user's environment, systems/processors, type of data, expiration policies, data change rates, etc *

Customer Benefits: Enhanced Data Reduction

Built-in Data De-Duplication

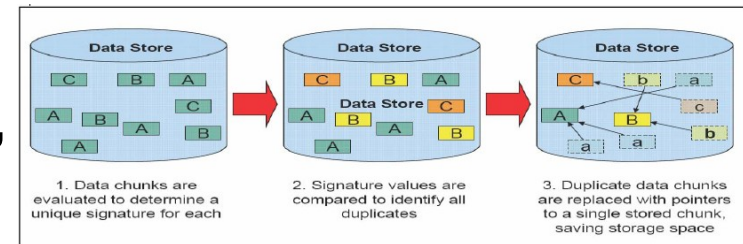
- **Tivoli Storage Manager 6** Extended Edition includes data de-duplication for disk storage pools, *at no extra charge*
- Improves recovery times as many more recovery points can be stored on disk; or reduces the amount of capacity needed
- Operates as a post-process / no impact on backup performance / automatic space reclamation
- Complementary with TS7650G ProtecTIER Gateway for long-term data retention

Tivoli Storage Manager 6, combining progressive incremental data capture with data de-duplication, does a better job of reducing storage capacity requirements than pure data de-duplication solutions



Customer Benefits: Data DeDuplication

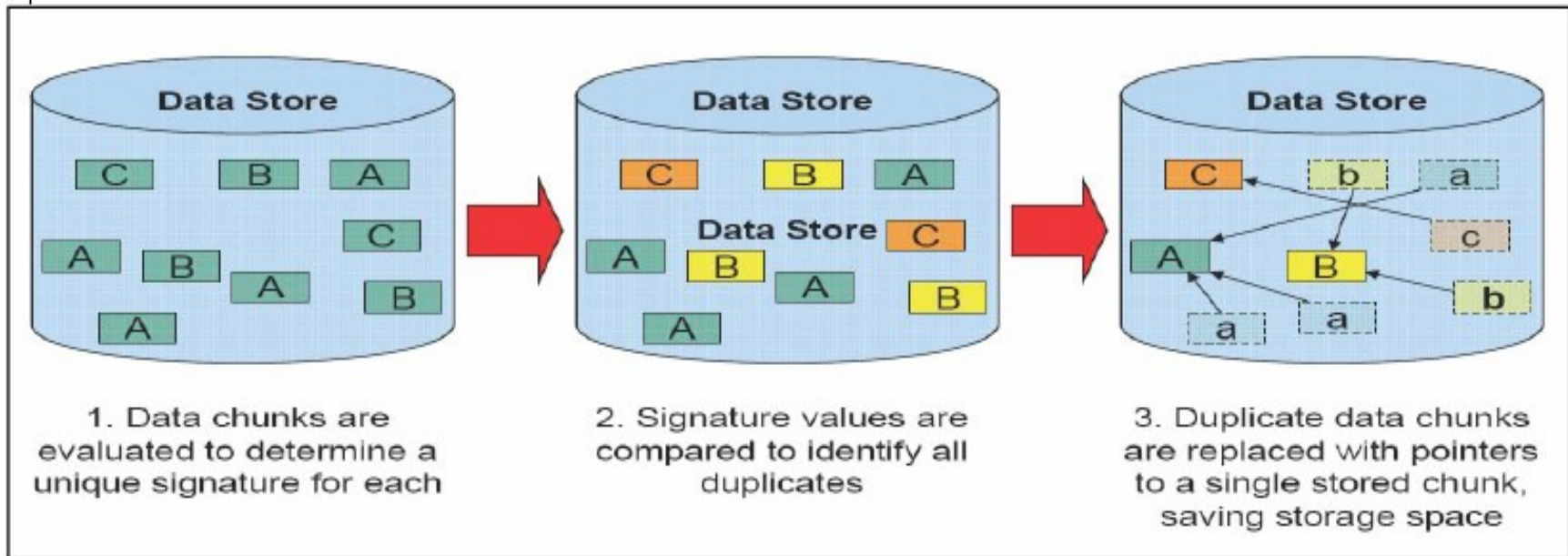
- 40% increase* in the amount of data available for recovery from disk (compared to TSM 5.5)
 - Adds to the benefits of progressive incremental data capture and data compression technologies
- Effective with data from any source,
 - including: API, backup, HSM, archive
- Built into **Tivoli Storage Manager 6** – *not an add-on solution*
- Post-process does not impact backup operations



*Results will vary depending on user's environment, systems/processors, type of data, expiration policies, data change rates, etc *

Data Deduplication in Tivoli Storage Manager 6

- A data reduction technology
 - Complements existing progressive-incremental data capture
- Eliminates redundant subfiles (known as chunks, blocks, or extents)
- Only one instance is stored for each common chunk
- Duplicate instances of the chunk point to the stored chunk



IBM is delivering deduplication across its entire storage portfolio

Addressing the full spectrum of customer requirements for data reduction

IBM TS7650G ProtecTIER Gateway

10+TB/night, >100MB/s performance

Easy management (via an appliance model)

Minimal overall operational impact (via no post processing)



Dedup data from multiple backup vendors including TSM

Deduplication is typically only done once per location per data object

- For customers who need to***
- ✓ Lower operational costs and energy usage***
 - ✓ Simplify and accelerate information protection***
 - ✓ Reduce amount of disk and improve manageability***

Deduplication can be done at different enterprise locations

No impact during backups/ingest

Fully integrated into TSM

No specific hardware dependencies



Dedup TSM legacy data

Tivoli Storage Manager

When Do I Use ProtecTIER vs. TSM 6 Built-in Deduplication?

Both Solutions Offer the Benefits of Target side

Deduplication:

- Greatly reduced storage capacity requirements
- Lower operational costs, energy usage and TCO
- Faster recoveries with more data on disk

Use ProtecTIER When:

- Highest performance and capacity scaling are required!
- Up to 500 MB/sec (1GB/s with 2 node) deduplication rates are needed
- Deduplicated capacities up to 25 PB are required
- You wish to avoid operational impact of post processing deduplication
- A VTL appliance model is desired
- Deduplicating across multiple TSM (or other backup) servers

Use TSM 6 Built-in Deduplication When:

- You desire deduplication operations be completely integrated within TSM
- The benefits of deduplication are desired without separate hardware or software dependencies or licenses (ships with TSM Extended Edition)
- You desire end to end data lifecycle management with minimized data store



**IBM
ProtecTIER**



TSM

Enhanced support for IBM N series and NetApp Filers

- Faster full image backup with new Network Data Management Protocol (NDMP) integration
- SnapMirror to Tape integration enables backup of large NetApp filesystems to secondary media for disaster recovery
- Coming soon: fast incremental backup
 - IBM's 'First-to-Market' integration with NetApp eliminates the need to scan the file system looking for changed files
 - Less impactful; enables more frequent backups



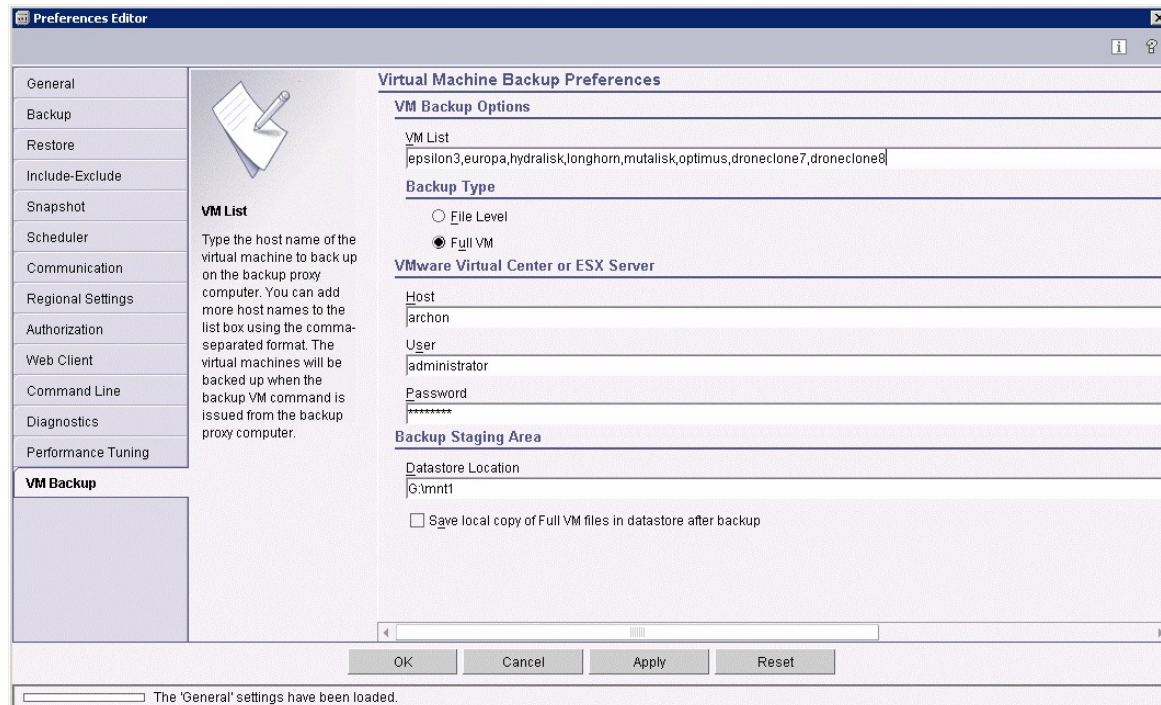
**IBM System
Storage N6000**

IBM enjoys a strong
relationship with NetApp

Enhanced support for VMware

Full image backup of Virtual Machines

- Provides enhanced business continuity and disaster recovery
- New VM-friendly, sub-capacity pricing model
- Builds on TSM 5.5 support
 - VCB support
 - Single agent on proxy server vs. agent on every VM
 - Reduced load on ESX server
 - Faster recovery
 - Eliminates LAN traffic



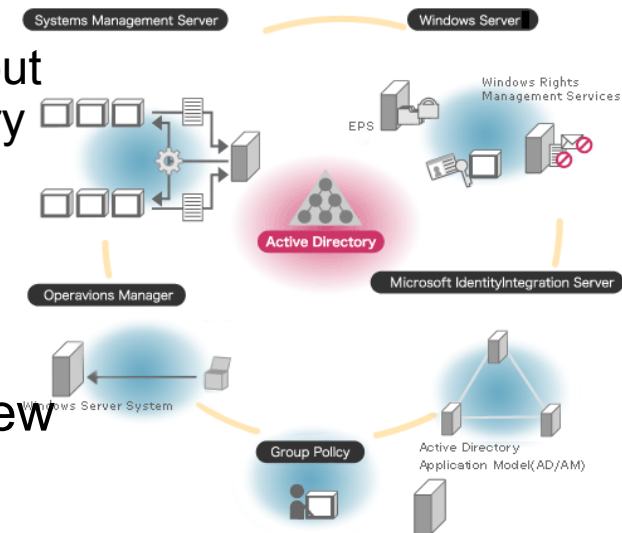


Additional Enhancements

Tivoli Storage Manager 6

Granular Support for Windows Active Directory

- Individual object recovery from System State backups of user and group objects
 - For Windows Server 2008 Active Directory environments.
 - An example is the restoration of an individual or group that may have been deleted from the Active Directory
- Support for un-deletion (reanimation) of objects from the Active Directory's tombstone
 - Assists in manual recovery of individual objects
 - Recovery and reanimation is accomplished without having to shut down or restart the Active Directory server
- Leverages Microsoft-approved programming interfaces
- Fully integrated into the Client Restore Tree View



Additional Enhancements

- Mac OS X support for the Tivoli Storage Manager API
- New device support:
 - HP and Quantum DAT160 drives
 - Sun StorageTek T10000 & T10000B drives with T10000 VolSafe® Media



Broad Enhancements across the TSM Family

See backup slides for details

- **Tivoli Storage Manager 6 for Mail**
 - Granular item-level recovery and enhanced search
- **Tivoli Storage Manager 6 for Advanced Copy Services**
 - Enhanced Oracle snapshot support with IBM storage systems
- **Tivoli Storage Manager 6 for Copy Services**
 - Improved support for SAP and IBM SAN Volume Controller
- **Tivoli Storage Manager 6 for Space Management**
 - Integration with IBM General Parallel File System (GPFS)
- **Tivoli Storage Manager FastBack v5.2.2**
 - Windows Server 2008 and Cluster Services support
- **System Storage Archive Manager 6**
 - Inherits all of the enhancements in Tivoli Storage Manager 6



Item Level Recovery for Microsoft Exchange

Faster, easier way to recover individual mail items:

Entire inbox, deleted items, email drafts, journal, calendar, notes, tasks, and user folders

Leverages the Microsoft Exchange Recovery Storage Group and standard Microsoft interfaces

Microsoft Exchange 2003 and 2007 support

- TSM 6 supports restore of a user's mailbox that may have been accidentally deleted as well as restoration of the mailbox as it existed at a previous point in time

The screenshot shows the 'Mailbox Restore' window. It has a title bar with a question mark and a close button. The main area is divided into two sections: 'User Mailbox' and 'Item-Level Mailbox Filters'.
In the 'User Mailbox' section, there is a 'Mailbox Name' field with a list of mailboxes below it: Administrator (Administrator), Barry Bonds (barry), Bjorn Borg (borg), Bob (Robert) Nelson (bobnelson), Brian Griffin (brian), and Bruce McElderry (bruce). To the right of this list are three buttons: 'Add =>', '<= Remove', and 'Remove All'. To the right of these buttons is a 'Selected Mailboxes' list box, which is currently empty.
Below the mailbox list is a 'Backup Date' section with a date dropdown set to 'Friday, July 25, 2008' and a time dropdown set to '8:14:51 AM'.
The 'Item-Level Mailbox Filters' section contains several input fields and dropdown menus arranged in two columns:
- Left column: 'Sender Name', 'Subject Text', 'Attachment Name', and 'Folder Name'.
- Right column: 'Start Date/Time', 'End Date/Time', 'Message Body Text', and 'All Content'.

Tivoli Storage Manager 6 keeps IBM on the leading edge of enterprise-class data protection and recovery management, staying ahead of the ever-increasing growth in digital information, no matter where it resides.

You need Tivoli Storage Manager 6 if you want to:

- Reduce data protection infrastructure and operational costs
- Improve service levels by reducing backup and recovery times; and through improved integration with Microsoft Windows, VMware and NetApp/N series
- Simplify administration and gain better visibility into your data management environment

Availability

- Announce: 02/10/2009
- Electronic: 03/27/2009
- Media: 04/24/2009



Thank You

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