



Tivoli Storage FlashCopy Manager

Including what's new in version 2.2



Executive summary

- More than ever, application availability translates into competitive advantage
- Loss of access to a critical application or its data can cause devastating harm to any business
- Businesses need cost-effective solutions that reduce the risk of data loss while improving application availability service levels
- IBM Tivoli Storage FlashCopy Manager is designed to perform and manage frequent application aware snapshot backups, leveraging advanced technologies in IBM storage systems
 - Application-consistent backups performed in minutes without taking the application off-line
 - Restores can be performed in just a few minutes, instead of hours

Executive summary

- Support is provided for IBM DB2, Oracle, SAP, Microsoft Exchange, Microsoft SQL Server, and other application data on IBM Storwize V7000, System Storage DS-Series, XIV and SAN Volume Controller (SVC)
- IBM Tivoli Storage FlashCopy Manager is part of the Tivoli Storage Manager family of data protection and recovery management solutions
 - This is proven technology, with more than 15 years in the market, supporting more than 20,000 customers including more than 60% of the Fortune 500
 - Integrates easily and seamlessly with Tivoli Storage Manager to provide the full range of data lifecycle management

Agenda

Current situation

How IBM Tivoli Storage FlashCopy Manager can help

Offering description

Key functionality, features and benefits

Associated offering

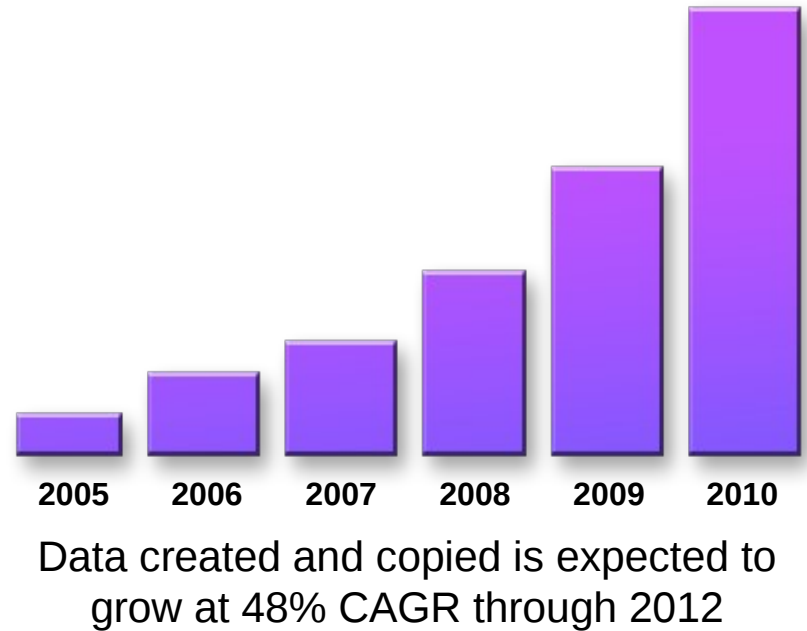
Pricing and summary

Why IBM?

More information

Current Situation: The Tidal Wave of Data Continues ...

- The amount of digital information continues to grow exponentially
- And we need to keep more of it, longer
- And the costs of losing data are increasingly unacceptable ...
 - Lost revenues
 - Lost customer confidence
 - Embarrassment in the market
 - Fines from contracts, government agencies
 - CEO and CFO could go to jail

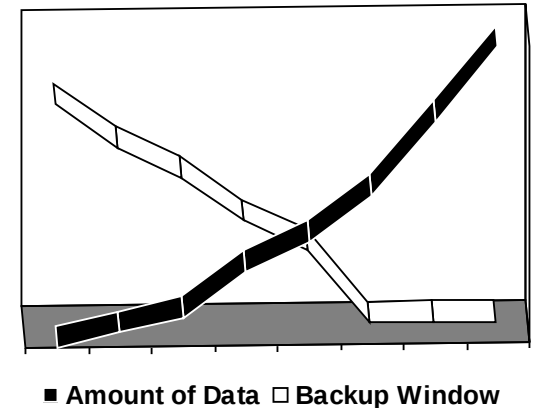


**We Need to do More with Less,
and we need to do it smarter**

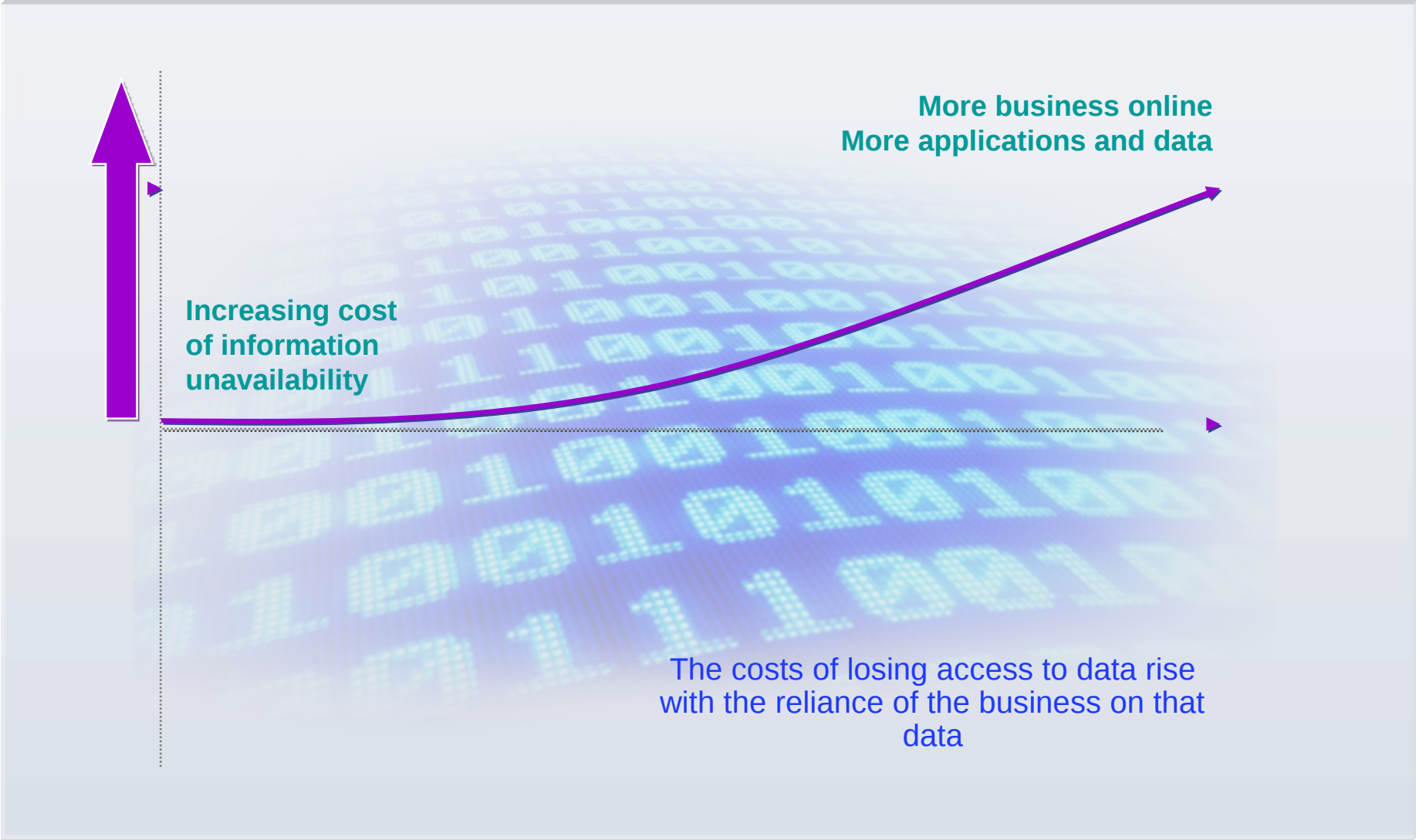
Source: Various external consultant reports

Challenges for protecting vital data

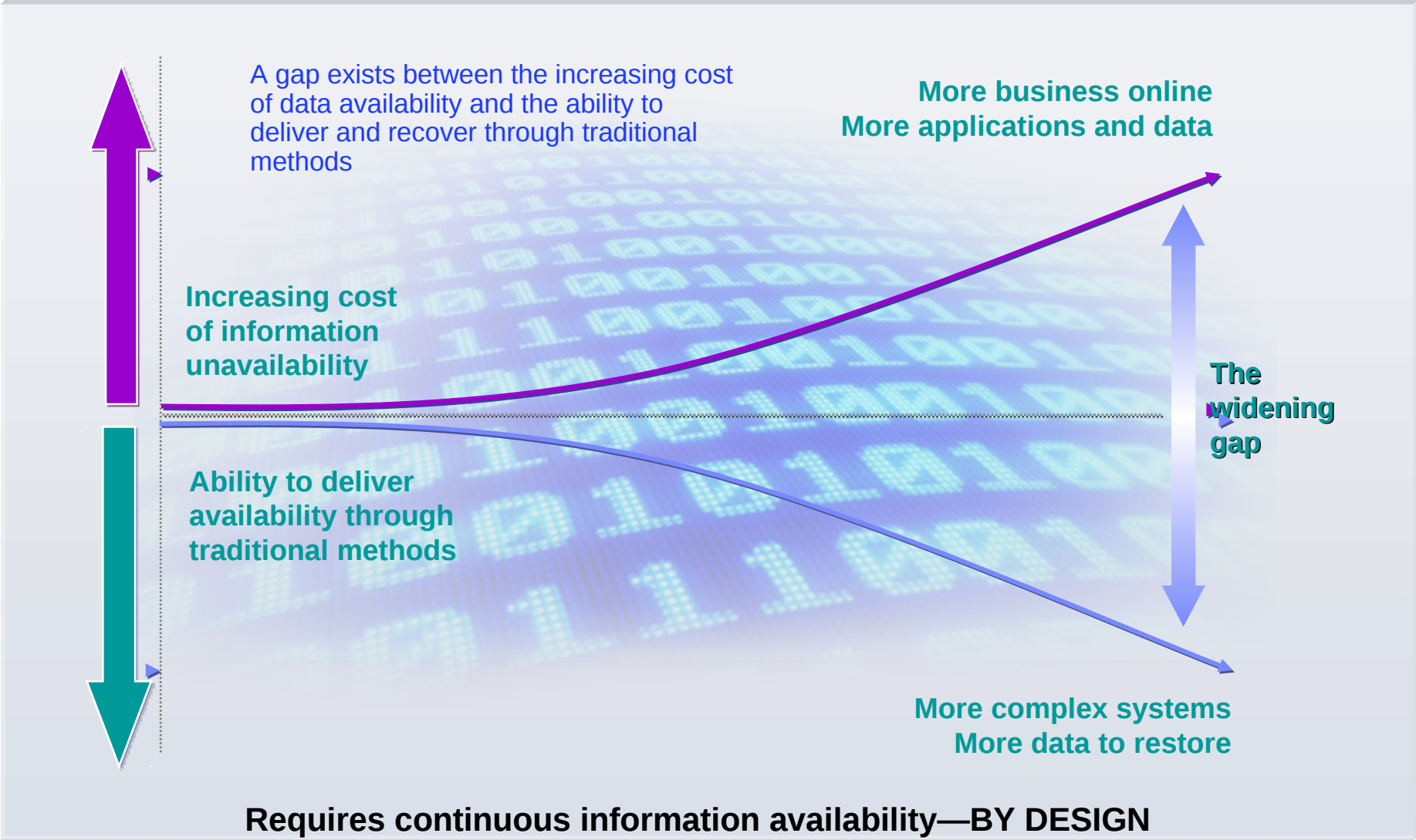
- Application availability
 - 24x7 availability of revenue generating applications
 - Zero application downtime is expected
 - Shrinking backup window
- Increasing volume of database content
 - Complex database management
 - Backup window no longer adequate
- Loss of vital business data because of ...
 - Hardware errors (computer and disk)
 - Logical errors (software bugs, operator/administrator errors, user errors)
 - Disaster (fire, water, earthquake)



More information is being created in digital-only formats



More data = longer recovery times




The challenges for storage administrators are increasing

- Data growth
 - It takes longer to back up and restore
- Higher service level requirements
 - You can't afford down time
 - You can't afford to lose any data
- Recovery is complicated by:
 - Different failure causes
 - Different application-specific requirements



How Tivoli Storage FlashCopy Manager can help

- Perform and manage frequent, near-instant, non-disruptive, application-aware backups and restores
- Leverage advanced snapshot technologies in IBM storage systems
- Improve availability of IBM DB2, SAP, Oracle, Microsoft Exchange and Microsoft SQL application data
- Support application development, data mining, etc. through database cloning
- Integrate seamlessly with Tivoli Storage Manager  to enable a full range of data lifecycle and recovery management



Why are snapshots useful for backup?

- Faster backups without taking applications off-line
 - Minimize downtime
- Faster recovery time (RTO)
- Easier to realize more recovery points (RPO)
- Minimal down-time of applications
- What types of snapshots are there?
 - Split-Mirror
 - Copy on Write
 - Redirect on Write
 - Others



For more info on snapshot technologies: <http://www.ibm.com/developerworks/tivoli/library/t-snaptsm1/index.html>

IBM Tivoli Storage FlashCopy Manager description

- IBM Tivoli Storage FlashCopy Manager is intended for customers that want to improve the protection and recoverability of business critical application data that is stored on IBM Storage Systems:
 - IBM Storwize V7000
 - IBM System Storage DS8000, DS5000, DS4000 and DS3000
 - IBM System Storage SAN Volume Controller
 - IBM XIV Storage System
- IBM System Storage DS5000, DS4000 and DS3000 are supported for applications running on Windows via Microsoft Volume Shadow Copy Services (VSS)
 - Non-IBM storage systems that are VSS-capable are also supported
- IBM **Storwize V7000**, System Storage DS8000, SAN Volume Controller and XIV are supported for applications running on AIX, **Linux-x64**, **Solaris SPARC** or Windows

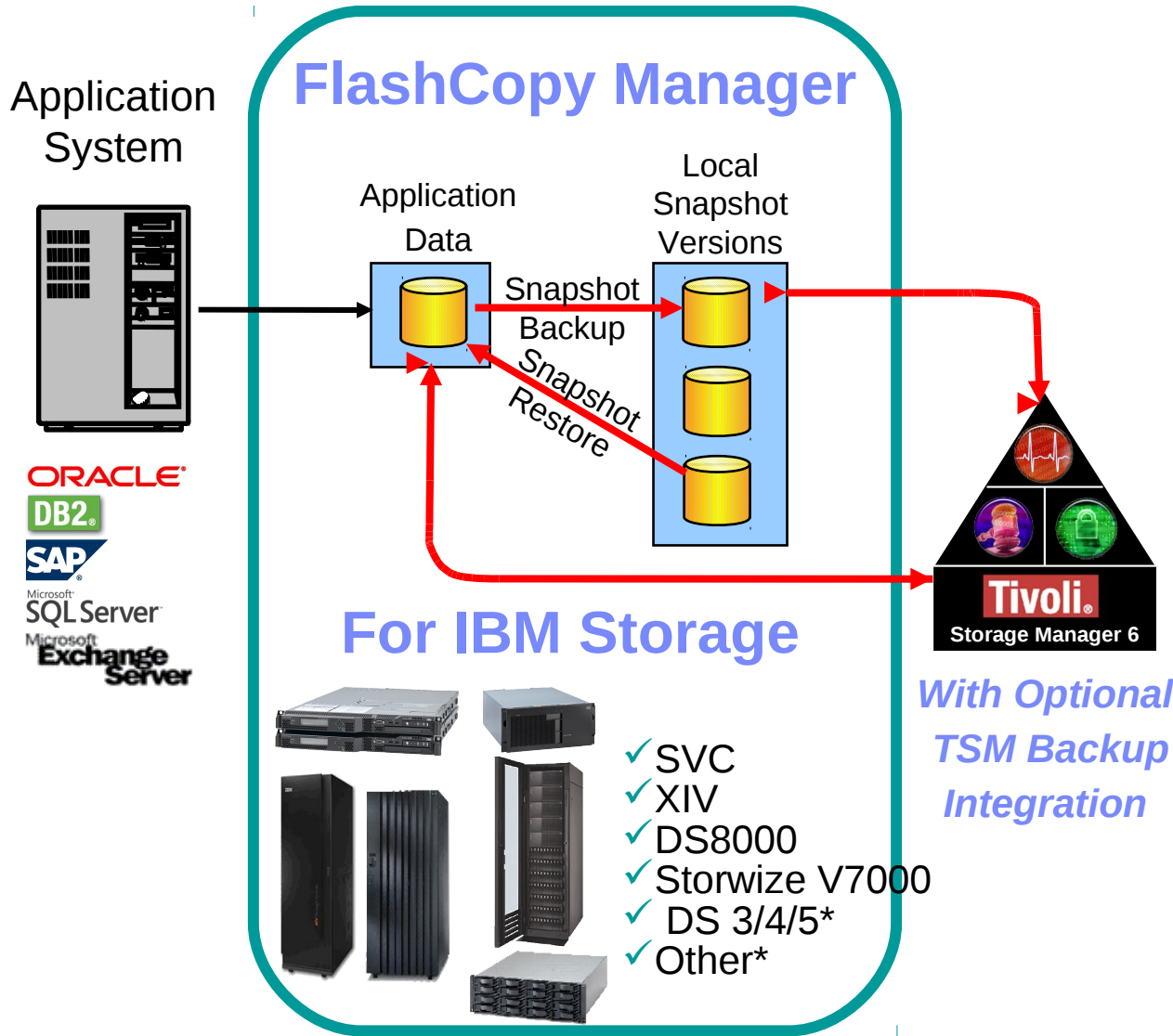


Customer Benefits

IBM Tivoli Storage FlashCopy Manager:

- Simplifies deployment and management of advanced, application-aware data protection for IBM storage systems
- Improves backup and recovery times from hours to a few minutes
- Improves productivity by simplifying management and automating routine administrative tasks
- Facilitates database application development and testing
- Leverages existing investments in IBM storage systems and can provide tight integration with Tivoli Storage Manager

Solution Overview



ORACLE®
DB2®
SAP
Microsoft SQL Server
Microsoft Exchange Server

- ✓ 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 – Snapshot (FlashCopy) Backup

- Volume level Full Database or Storage Group backups
- Exploit Storage Copy Services features
 - Block level Incremental FlashCopy
 - Space Efficient FlashCopy
 - Auto provisioning of targets
- Enables Frequent Snapshot backups for near CDP operation
 - Reduce the amount of data at risk from 24-hours to a few minutes
- Policy Managed
 - Maintain a number of backup versions
 - Adaptive to changing requirements

Key Functionality - Restore

Microsoft Exchange

- **New: support for Exchange 2010**
- 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, or relocated storage group
- Individual mailbox or mail item restore from a snapshot backup

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

Microsoft SQL Server

- **New: support for SQL Server 2008 R2**
- Snapshot Restore* of a full database backup
- File copy restore of a full database from a mounted snapshot image
 - To an alternate database name
 - To an alternate location

Oracle

- Snapshot restore of a Full database



Key Functionality – Database Cloning

Supported on AIX, 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



Enhanced integration with SAN Volume Controller (SVC)



- Detection of snapshot deletions done outside of Tivoli Storage FlashCopy Manager
- Enablement of near-instant restore when there are multiple backup generations on space efficient target volumes (for Microsoft Windows)



Key Functionality – Individual Mail Restore for MS-Exchange

- Operate on single or multiple user mailboxes
- Select which backup to restore based on:
 - User name and date/time specification
- Perform recovery of the following mailbox items:
 - Inbox, deleted items, drafts, junk e-mail, outbox, sent items, journal, calendar, contacts, notes, tasks, user folders
- Limit the scope of items to be restored based on the following filters:
 - Sender name, subject text, attachment name, folder name, message delivery date and time range, message body, all content (searches subject text, message body, and attachment names)
- 3 recovery delivery options
 - Into original mailbox on original Exchange Server
 - Into an alternate mailbox and folder
 - Into a .PST file for transfer anywhere



**MS-Exchange
2010 support**

Individual Mail Restore (IMR)

- Item level restore granularity
- Search and Filtering functions
- Restore to Exchange Server or PST

Mailbox Restore

User Mailbox

Mailbox Name

Selected Mailboxes

Administrator (Administrator)
Barry Bonds (barry)
Bjorn Borg (borg)
Bob (Robert) Nelson (bobnelson)
brovar DO NOT DELETE (brovar)
Bun Test (buntest)

Add =>
<= Remove
Remove All

Backup Date

Wednesday, October 22, 2008 7:11:19 AM

Item-Level Mailbox Filters

Sender Name Start Date/Time

Subject Text End Date/Time

Attachment Name Message Body Text

Folder Name All Content

Clear filters...

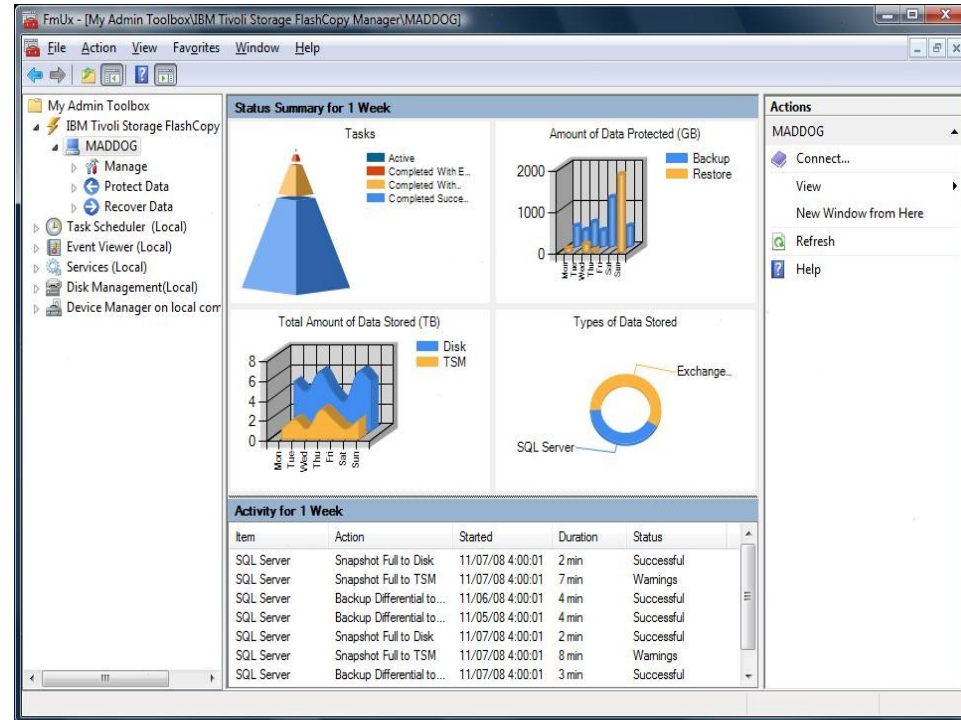
Restore To

Restore items to the Exchange Server
 Restore items to the Exchange Server into an alternate mailbox
 Mailbox Administrator (Administrator)
 Folder
 Restore items to .PST file
 Browse...

Restore Cancel

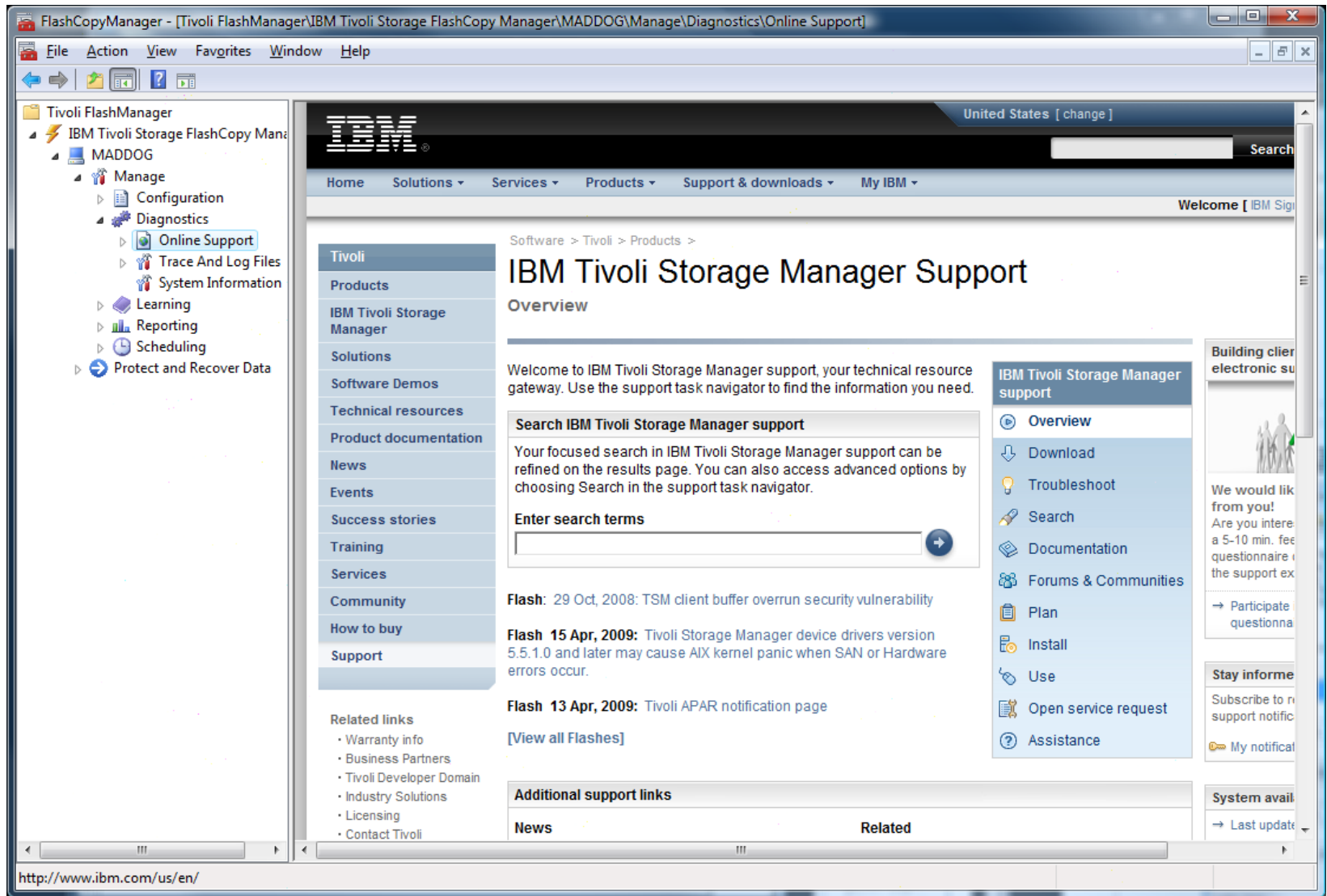
Key Functionality – Ease of Use

- Minimize Admin time
- Designed to install, configure and perform first backup in <= 4 hours
- Familiar, intuitive interface for database administrators
 - Reduce learning time, increase speed of operation (productivity), decrease error rates
- Integrated with native administration tools
 - Windows: Microsoft Management Console (MMC)
 - Backup & restore utilities in DB2 and SAP; CLI or RMAN on Oracle



- Integrated dashboard and reporting tools

Integrated Web content – quick support access



Key Functionality - Technical

- **Cluster Support**
 - Windows MSCS and VCS
 - Exchange 2007 LCR, CCR and SCR
 - Exchange 2010 Database Availability Groups
 - AIX HACMP

- **User Interface**
 - Windows native look & feel via GUI and CLI
 - AIX, Linux and Solaris SPARC: integrated with application backup & restore utilities

- **Certified compatible with Java™ 2 Enterprise Edition (J2EE)**



Seamless Integration with Tivoli Storage Manager

Additional Granularity

More Backup Options

Multiple Backup Destinations

More Backup Types

Backup Databases | Backup Groups/Files | Restore Databases | Restore Groups/Files

Backup Options:

- Legacy Backup
- VSS Backup

Stripes: 1 | Diff Est % Chg: 20 | Truncate Log: | Log Est % Chg: 0

Backup Destination: TSM Server

Backup Type: Full

| Name | Space used | Log space used | Compatibility | Attributes |
|--|------------|----------------|---------------|---|
| <input checked="" type="checkbox"/> AdventureWorks2008 | 179.94MB | 384.00KB | 100 | Truncate log on checkpoint |
| <input checked="" type="checkbox"/> FileManagement | 1,280.00KB | 512.00KB | 100 | |
| <input checked="" type="checkbox"/> master | 3,008.00KB | 672.00KB | 100 | System database, Truncate log on checkpoint |
| <input checked="" type="checkbox"/> model | 1,280.00KB | 464.00KB | 100 | System database |
| <input checked="" type="checkbox"/> msdb | 10.19MB | 464.00KB | 100 | System database, Truncate log on checkpoint |
| <input checked="" type="checkbox"/> ReportServer | 2,880.00KB | 1,016.00KB | 100 | |
| <input checked="" type="checkbox"/> ReportServerTempDB | 1,472.00KB | 416.00KB | 100 | Truncate log on checkpoint |

Backup

For Help, press F1

Supported Environments (as of 2Q-2010)

See http://www-01.ibm.com/support/docview.wss?uid=swg21427692&S_CMP=rnav for latest

Storage Devices

- IBM System Storage DS8000
- IBM System Storage SAN Volume Controller
- IBM XIV Storage System
- IBM Storwize V7000
- IBM System Storage DS 3000/4000/5000 through VSS only

Applications & Platforms

- Microsoft Exchange 2003, 2007 and 2010 on Win 2003 and 2008
- Microsoft SQL Server 2005 & 2008 (R2) on Win 2003 and 2008
- Oracle 10g & 11g on AIX, Linux and Solaris
- DB2 UDB V9.5 or later on AIX, Linux and Solaris
- SAP Releases supported by SAP BRTools 7.10 or later on AIX, Linux and Solaris


Virtual Machines

- VMware and Hyper-V: Dependent on VSS provider support
- AIX LPAR with VIO: NPIV for P6 and later

Comprehensive solution for protecting critical application data

IBM Tivoli Storage FlashCopy Manager

Overview

 IBM Tivoli Storage FlashCopy Manager provides the tools and information needed to create and manage volume-level snapshots.

Volume-level snapshots can be performed while the applications that contain data on those volumes remain online. FlashCopy Manager can be used to protect your applications by creating point-in-time snapshots of your data.

Management

| | |
|--|--|
| → Summary Information | ? Understanding summary information |
| → Protect and Recover Data | ? Understanding snapshot data protection |
| → Configuration | ? Performing configuration tasks |
| → Learning | ? Learning about FlashCopy Manager |
| → Diagnostics | ? Performing diagnostic tasks |
| → Reporting | ? Performing reporting tasks |
| → Scheduling | ? Performing scheduling tasks |

More Information

- [FlashCopy Manager publications on the Web](#)
- [Tivoli support page on the Web](#)

IBM Tivoli Storage FlashCopy Manager offers a wide range of functionality available from the main menu

Features and Benefits (1)

Feature

Simplified deployment

Provide advanced, granular restoration of Microsoft Exchange data

Benefit

- Perform installation, configuration and execution of initial application snapshot in less than 4 hours
- Snapshot restore of Microsoft 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, or relocated storage group
- File copy restore of transaction logs from incremental or differential backups
- Single or multiple user mailbox support
- Restore selectable based on user name and date/time specifications
- Recover any mailbox items, including Inbox, Deleted Items, Drafts, Outbox, Sent Items, Journal, Calendar, Contacts, Notes, Tasks or User Folders
- Limit scope of restore based on a range of variables, such as Sender Name, Subject Texts, Attachment Name, Folder Name, Message Delivery Date and Time Range, Message Body and all content (searches Subject Text, Message Body, and Attachment names)
- Recover data into the original mailbox or alternate mailbox and folder on the production Exchange server, or into a .PST file

Features and Benefits (2)

Feature

Provide advanced protection and restoration of Microsoft SQL databases

Provide advanced protection and restoration of DB2 databases on Unix platforms

Provide advanced protection and restoration of Oracle databases on Unix platforms

Provide snapshot backup and restore of a full SAP database running on DB2 or Oracle on Unix platforms

Benefit

- Snapshot restore of a full database backup
- File copy restore of a full database to an alternate database or location
- Snapshot backup and restore of a full database including and excluding log files
- Backup and restore of individual partitions for multi-partition DB2 databases
- Support of databases that are mirrored (between sites) using Logical Volume Manager (LVM) mirroring technology
- Snapshot backup and restore of a full database
- Support for databases that are mirrored (between sites) using LVM mirroring technology
- Support for Oracle ASM configurations and failure groups
- Support of databases that are mirrored (between sites) using LVM mirroring technology

Features and Benefits (3)

Feature

Make copies of active databases (cloning) on Unix platforms



Provide customization capabilities on UNIX platforms



Optional integration with Tivoli Storage Manager

Benefit

- Facilitate database application development and testing
- Provide database copies for other purposes, such as data mining, migrations, quality assurance and education

- Enable snapshot backup and restore of custom applications that are not natively supported by FlashCopy Manager
 - Ex. MySQL













- Extend data protection and retention off the source storage system for long-term data management and off-site disaster recovery capabilities
- Take advantage of automated data reduction and data management policies that can reduce overall costs

Associated offering – Tivoli Storage Manager 6

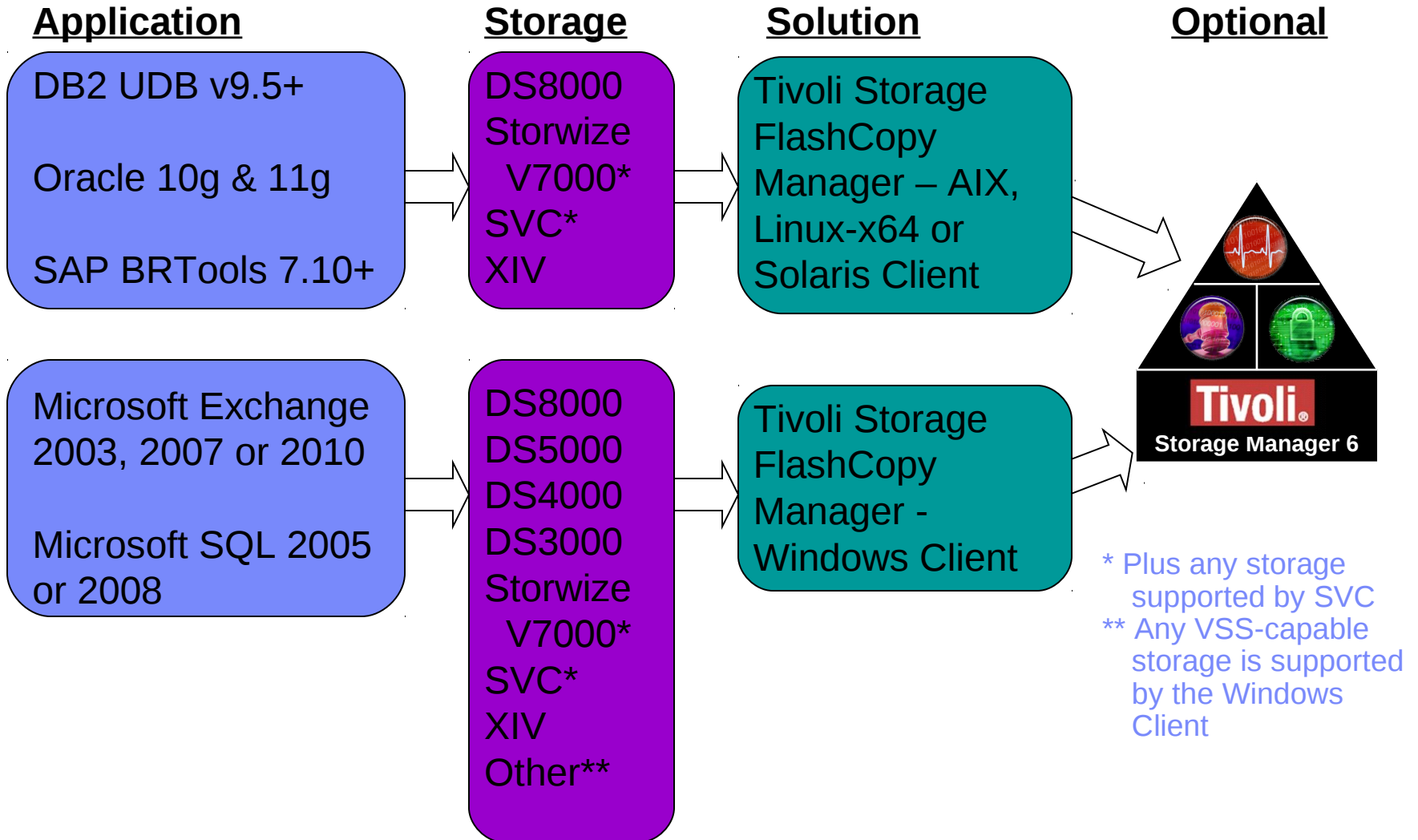
- Tivoli Storage Manager (TSM) integrates seamlessly to provide a wide range of data lifecycle and recovery management capabilities, including:
 - Backup/restore
 - Hierarchical storage management
 - Disaster recovery planning
 - Long-term archival
- Scales easily to manage up to 1 billion data objects (including snapshot or FlashCopy images) on a single TSM server
- TSM is installed in more than 20,000 organizations, including 60% of the Fortune 500
- Tivoli Storage Manager version 6.2 adds greatly enhanced performance, management and data reduction functionality



FlashCopy Manager with and without Tivoli Storage Manager

| Functions | <u>WITH</u> TSM Server | <u>WITHOUT</u> TSM Server |
|-------------------------------|---|---|
| Fast Backups |  |  |
| Off-loaded Backups |  | |
| Fast Recovery |  |  |
| Management of Snapshots |  |  |
| Integrated User Interface |  |  |
| Store backups on a TSM Server |  | |
| MMC Snap-in for Configuration |  |  |

Considerations and dependencies



What customers are saying about FlashCopy Manager v2.2

From selected beta customer responses:

- “FlashCopy Manager works very well; it’s simple and easy to use.”
- “The backup of mailbox info is much faster. Great job.”
- “The setup and installation is very easy.”
- “Great for being able to test backups when you can’t get to a TSM server.”
- “The cloning functionality is a great improvement in v2.2”
- “FlashCopy Manager rocks!”

IBM Tivoli Storage FlashCopy Manager - Summary

Online, near-instant snapshot backup and restore of critical business applications

Overview

Enables organizations to perform and manage frequent, near-instant, non-disruptive, application-aware backups and restores, leveraging advanced snapshot technologies in IBM storage systems; supports DB2®, SAP, Oracle, Exchange and SQL



Highlights

- Perform near-instant application-aware snapshot backups, with minimal performance impact for IBM DB2, Oracle, SAP, Microsoft SQL Server and Exchange
- Improve application availability and service levels through high-performance, near-instant restore capabilities that reduce downtime
- Integrate with IBM System Storage DS8000, IBM System Storage SAN Volume Controller, IBM Storwize V7000 and IBM XIV Storage System on AIX, Linux, Solaris and Microsoft Windows.
- Protect applications on IBM System Storage DS3000, DS4000 and DS5000 on Windows using VSS
- Satisfy advanced data protection and data reduction needs with optional integration with IBM Tivoli Storage Manager.

Why IBM?

- IBM has long been a leader and innovator in the data protection and recovery management market
- 1st to market with disk-to-disk and disk-to-disk-tape offerings
- 1st to offer hierarchical storage management with off-line storage
- 1st to offer a fully incremental approach to backup window management
- Emphasizing data reduction technologies since 1993
- IBM Tivoli storage management software solutions provide a unified recovery platform that helps you optimize your current storage environment to help you reduce operational and capital costs, improve service and mitigate risks
- IBM offers the broadest range of integrated hardware, software, services and financing solutions to meet your needs today and well into the future

IBM service and support

IBM and its Business Partners provide best-in-class, end-to-end support and services to ensure your successful implementation and use of our products

Pre-sales and implementation support:

- Assessment services to properly size and configure the solution
- Installation, configuration and validation testing services

Post-sales support:

- Upgrades: A full year of free upgrades for all users
- On-call support: 24/7 on-call support by highly trained customer service experts
- Escalation: High-level expertise available, 24/7, when needed

Competition

- Primary competitor: NetApp SnapManager for ...
 - SnapManager for Exchange
 - SnapManager for SQL Server
 - SnapManager for SharePoint
 - SnapManager for SAP
 - SnapManager for Oracle AIX, HP-UX, Solaris RedHat ,SUSE, Oracle Linux
 - SnapManager for Virtual Infrastructures
- IBM Tivoli FlashCopy Manager offers comparable functionality in a much simpler package – **one part number and one price** for any supported application
- Other Competitors:
 - Commvault - QuickRecover
 - EMC - Networker Powersnap
 - Symantec - NetBackup Snapshot Management Option

Thank you for your time today.

For more information:

- For more information on IBM Tivoli Storage FlashCopy Manager: <http://www.ibm.com/software/tivoli/products/storage-flashcopy-mgr/>
- FlashCopy Manager Hardware and Software requirements: <http://www.ibm.com/support/docview.wss?uid=swg21420525>
- For more information on IBM Tivoli Storage Manager: <http://www.ibm.com/software/tivoli/products/storage-mgr/>
- For more information on IBM System Storage Disk: <http://www.ibm.com/systems/storage/disk/>
- For more information on IBM System Storage SAN Volume Controller: <http://www.ibm.com/systems/storage/software/virtualization/svc/index.html>

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