



IBM Software Group

Il nuovo nato nella famiglia Tivoli Storage Manager

Tivoli Storage Manager FastBack



General overview TSM FastBack / FilesX

- Company was established in 2001
- R&D center is in Israel
- First software release was IIN 2004
- Approximately 150 customers WW with 60 customers in Israel
- FilesX acquisition closed April 21, 2008
- TSM FastBack Announced on July 29, 2008



The Vision

Instant Application and Data Recovery – Anytime, Anywhere



FastBack Addresses these Challenges

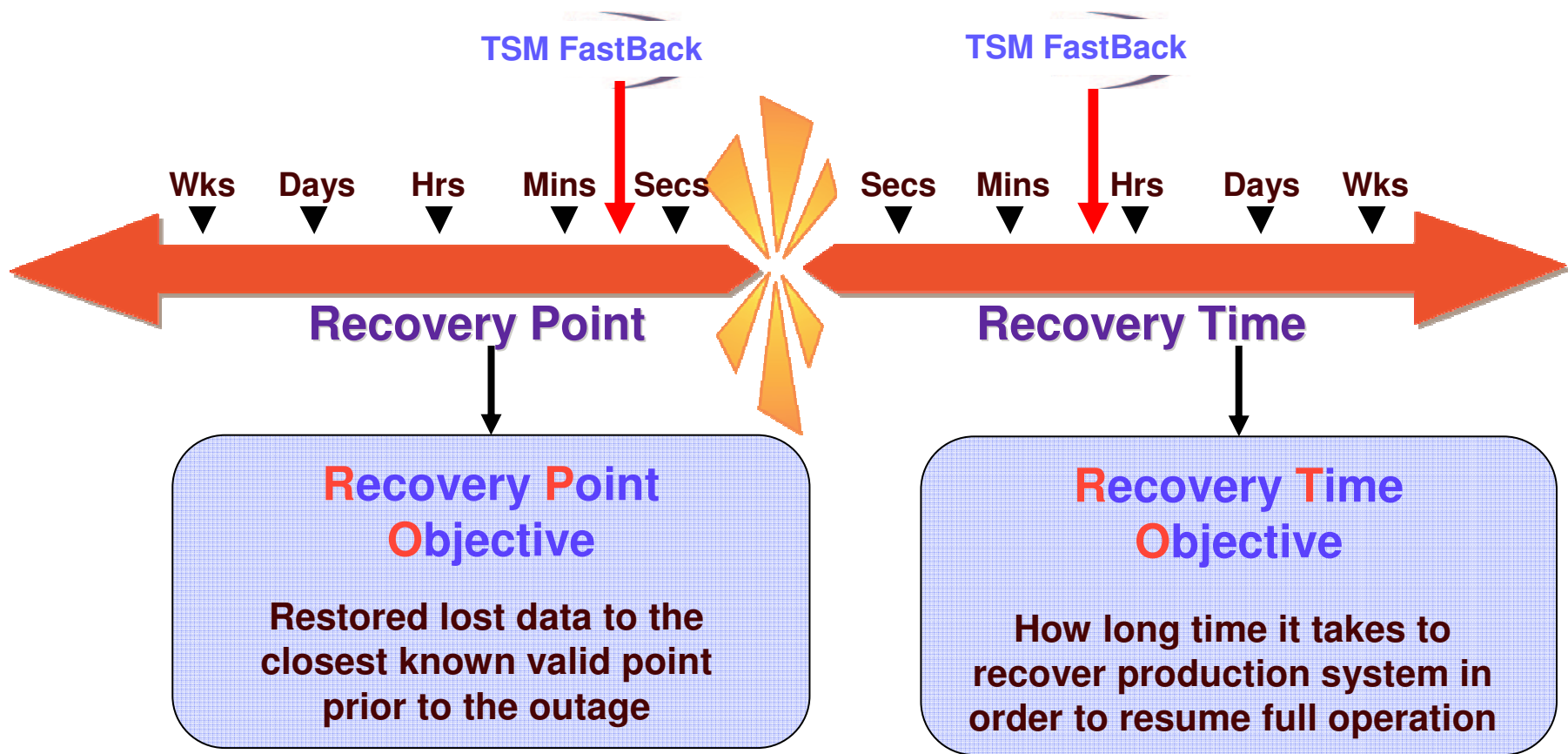
- Shrinking backup windows
- Various applications
Service Level Requirements
- Shrinking Recovery Time (RTO)
- More granular
Recovery Point (RPO)
- Lack of IT skills in small
business and Remote
Offices or Branch Offices
(ROBO)



- Elimination of backup windows
- Near zero recovery time
- Reduce back-up data with
block level incremental forever
- CDP on-demand™
- Customizable RPO by
Application
- Centralized management of
de-centralized data, with secure
data transfer
- Easy to install and use;
one-click restore

TSM FastBack: solution Highlights

- Software based solution that **minimizes Recovery Time** of MS Servers
 - Fully operational **within Hours** and regardless the size of protected data
 - Full access to **ANY data** right after **1% of recovered data**



TSM FastBack: solution highlights

Protection

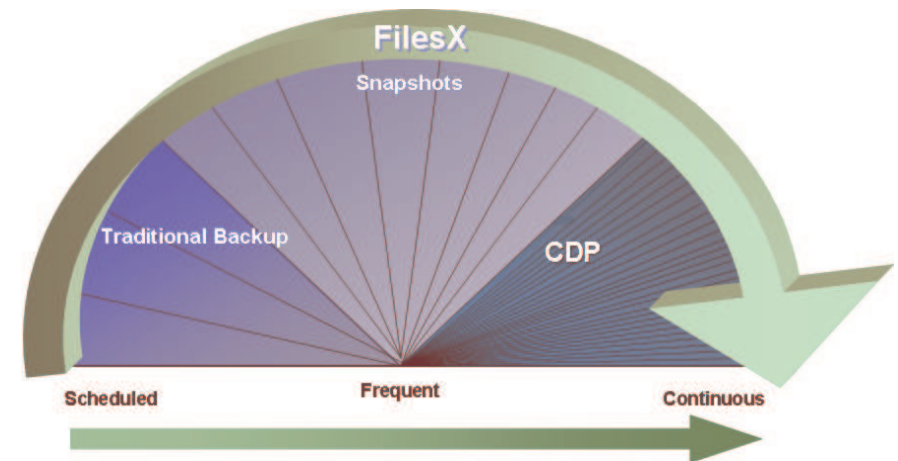
- Disk-based, Block-level, Incremental-forever
- Windows Applications and Filesystems
 - SQL, Exchange, Oracle, SAP and more
- VMWare support
- Lightweight client
- No backup window required
- Policy-based capture schedule
 - CDP on Demand™

Recovery

- Granular – any data object
 - File, folder, volume, system
- Point-in-Time rollback
- Instant Restore
 - Instant access, background restore
- Recover Anywhere - At the branch, DR site, Data Center

Cost Effective

- Eliminates the need for tape backup in the remote office



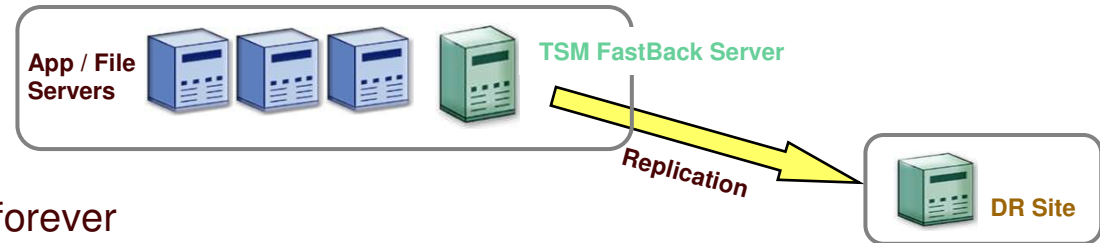
Adaptive protection:

Dial up the level of protection your application or fileserver requires

Disaster Recovery Protection

- Disk-based protection and recovery
- Encryption in flight
- Bandwidth & storage efficient
 - Incremental replication
 - Scheduling
 - Compression

Current TSM FastBack Offerings



TSM FastBack

- **Disk-based**, block-level, incremental-forever technology
- Frequent or Continuous Protection
- Near-instant data restore from virtually **any point-in-time, anywhere in the environment**
- Policy-based “Selective Replication” for off-site recovery
- Highly-efficient use of WAN and storage resources

TSM FastBack for Microsoft Exchange

- Recover **any e-mail object**: message, attachment, calendar entry, contact, tasks, notes

TSM FastBack Bare Machine Recovery

- Restore the OS volume on dissimilar hardware
- Great tool for cost-effective Business Continuance and server migrations

Benefits

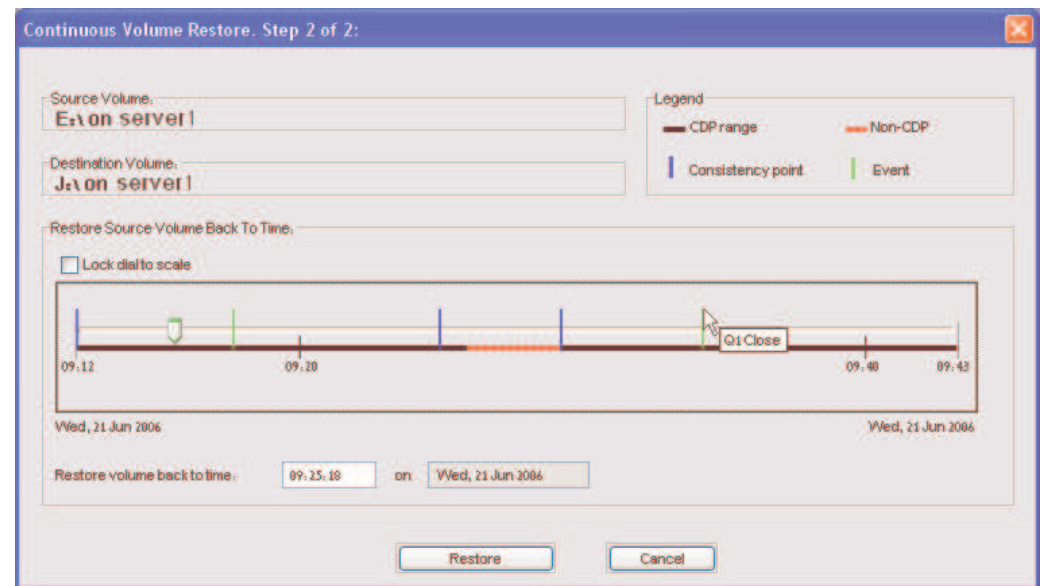
- Eliminate the need for “backup windows”
- **Improve RPO & RTO** of critical applications while reducing storage, bandwidth and labor costs
- Reduce the risks of losing critical information
- **Provide fast recovery** and immediate access to data
- Recover only the data assets you need

Attributes

- **Easy to install** and manage (set it and forget it)
- Network and storage efficient
- **Application-aware**: Exchange & SQL
- Scalable to any size environment
- **Integrates easily with tape solutions** (e.g. TSM)

Continuous Data Protection (CDP)

- ✓ True Block level CDP (I/O Based)
- ✓ Can achieve zero RPO
- ✓ Set RPO per application
- ✓ Delta from (incremental) snapshots
- ✓ Configurable protection periods
- ✓ Enabled per volume
- ✓ Intuitive GUI
- ✓ Protects Windows FileSystems and Windows Applications



Single backup solution offers:

- ✓ CDP
- ✓ Frequent Snapshot
- ✓ Scheduled Protection

TSM FastBack - CDP On Demand™

Enables Tiered Recovery Services from one Repository

Continuous: Intercepting every I/O request, enabling recovery to any point in time since the last Snapshot

Good fit for critical applications

Frequent: Frequent Incremental Snapshots, enabling recovery to selected points in time

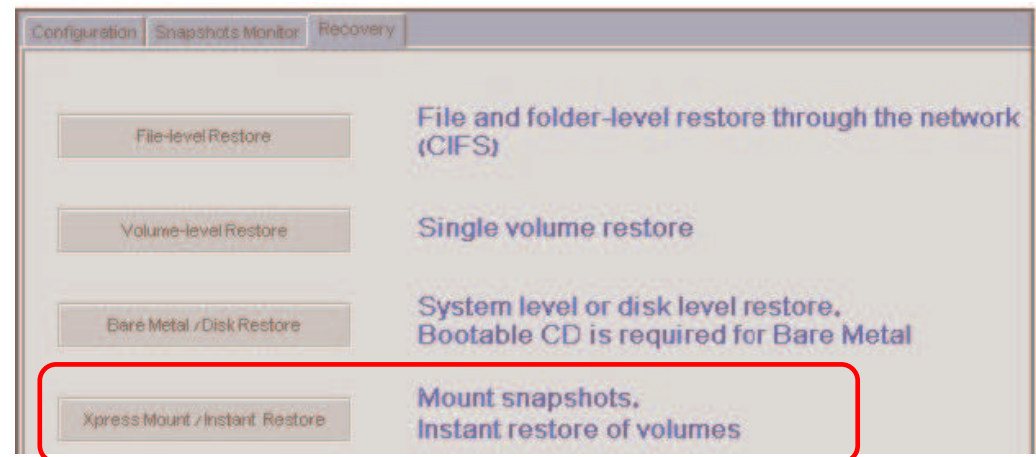
Best fit for most applications

Scheduled: Periodic Incremental or Full Snapshots, enabling recovery to daily, weekly or monthly versions

Good fit for non-critical applications

Mount Snapshots as a Virtual Volume

- Quickly mount any snapshot volume from the local or remote (replicated) repository, as a **virtual volume on the server (read-only)**
- Mount snapshots **into virtual volumes**, without actually restoring the files.



Example use:

- MS SQL table restore
- You can mount virtual volume with a backed up database and recover anything you need without restoring the volume to disk.
 - When a database is backed up it resides on the TSM FastBack repository, so a virtual volume containing the database can be mounted on any SQL server.
 - Mount a backup volume and attach the database to SQL without the need to restore.
 - User can manipulate data using native database tool

- ✓ Access from anywhere
- ✓ Select any saved snapshot
- ✓ Any point in time
- ✓ Mount as a Virtual Drive

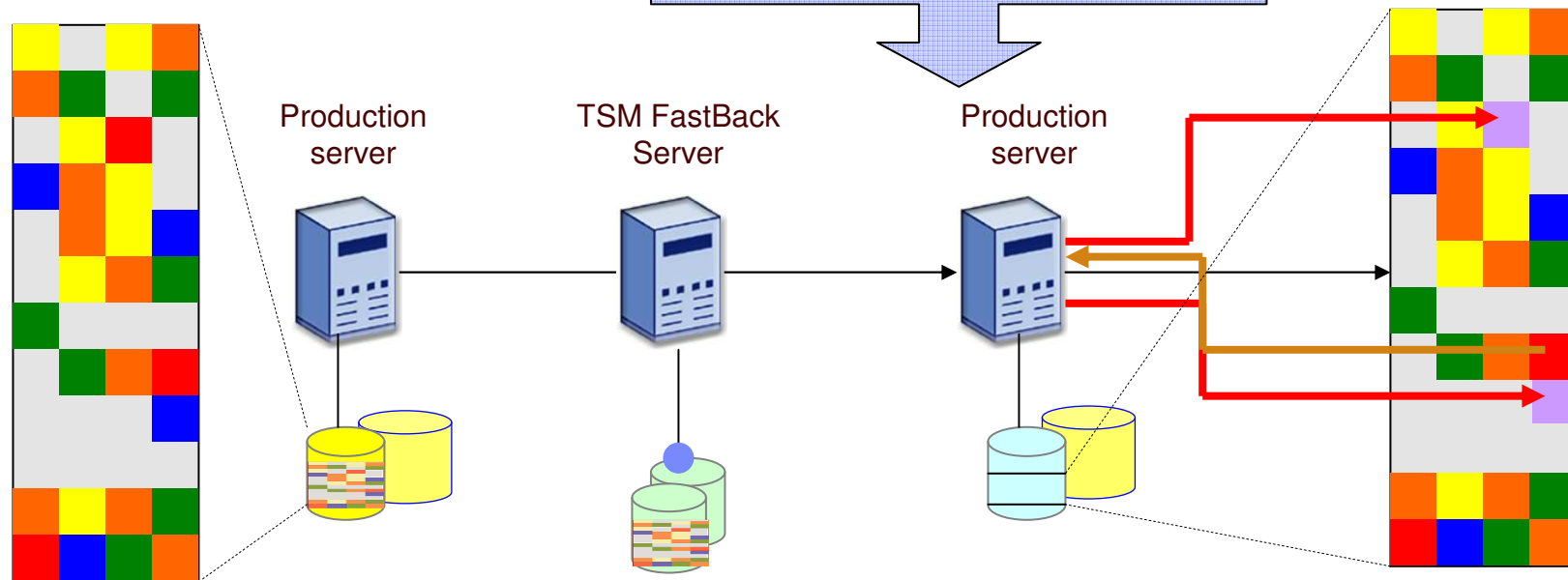
Instant Recovery

Instant Restore allows users to start using applications on the same disk to which the volume is being restored, while the restore operation is still in process.

1. Activate Instant Restore
2. Background Process restores blocks gradually
3. Write IOs are performed as usual
4. Read IOs from un-recovered areas create **restore on demand**
5. All other reads are performed as usual

Typical Production Disk

New Disk After Disaster



TSM FastBack Repository

- TSM FastBack is a Disk to Disk solution
- Block level data is copied to the repository from the production servers
- Storage management UI lets you create and manage repositories and monitor the storage layout
- Server can be up and running during repository maintenance and management
- If the Repository fills to its capacity, the next snapshot attempt will fail and the system will notify the user that new snapshots cannot be taken.

Server supports several types of repositories

Location	Advantages	Disadvantages
Local Hard Drive	<ul style="list-style-type: none"> • Stand alone dedicated storage for images • Can detect FS Corruptions & recovery • Inexpensive • Fast compared to network disks • Accurate capacity management • Central management 	<ul style="list-style-type: none"> • Vulnerable, no fault tolerance • A dedicated disk is required • Only MS Basic disk
SAN Storage	<ul style="list-style-type: none"> • Fast • Fault tolerant • Managed • Can detect FS Corruptions & recovery • Instant recovery over the SAN by any machine connected to the SAN • Accurate capacity management • Central management 	<ul style="list-style-type: none"> • Expensive
Network Storage	<ul style="list-style-type: none"> • Storage agnostic - NAS or any network location 	<ul style="list-style-type: none"> • Appropriate accesses rights must be assigned • Capacity management is not accurate • No detection of detect FS corruption or failures • No central management
Volume / Folder	<ul style="list-style-type: none"> • Flexibility, no need for special dedicated disk • Can be on MS Dynamic disk with MS fault tolerant e.g. Mirror or RAID5 	<ul style="list-style-type: none"> • No accurate capacity management • No central management • Must be large enough to hold snapshot (full or incremental) • A large number of volumes/folders may harm the restore and recovery performance

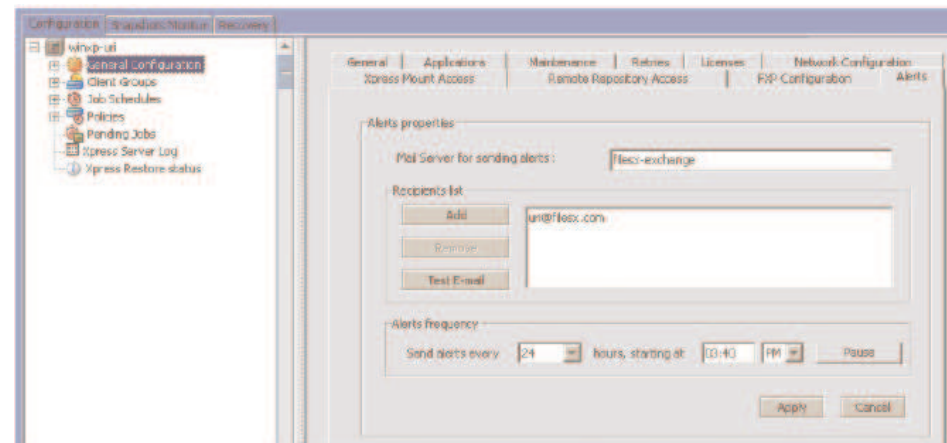
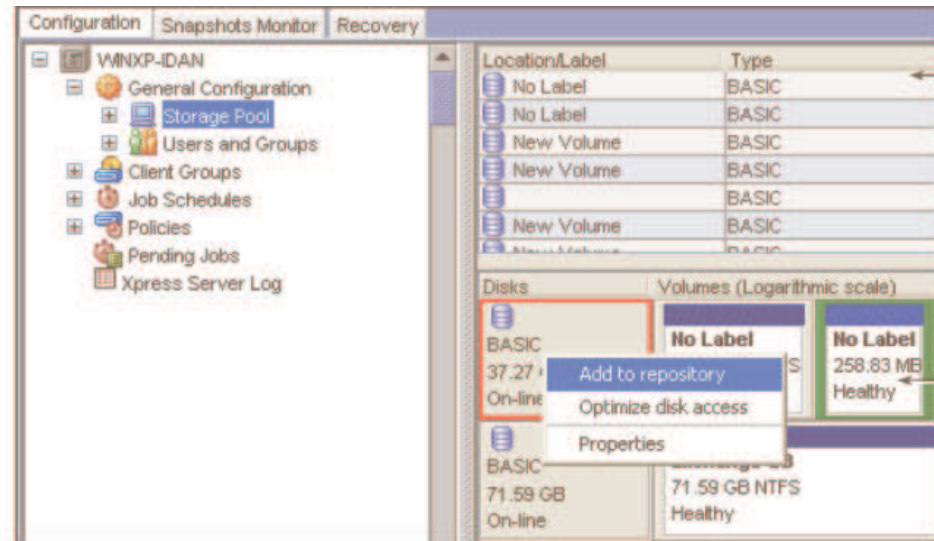
Repository Management

Manage Disk Space

- Easily add and remove disks to the repository

Control Disk Utilization

- Can define the critical repository usage threshold
- Can configure **threshold notification** on repository usage to alert the user
- When this threshold is reached
 - ✓ Repository Status field in the status bar turns red
 - ✓ A warning is logged into the Server Log
 - ✓ Email notification sent
- Each time level increases by 5% notifications sent again



Repository Management

▪ Backup retention policy

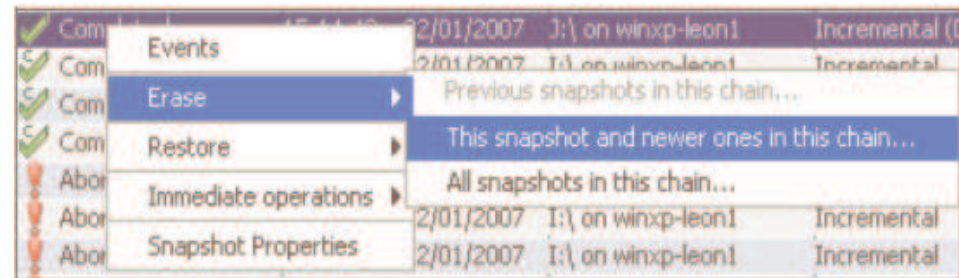
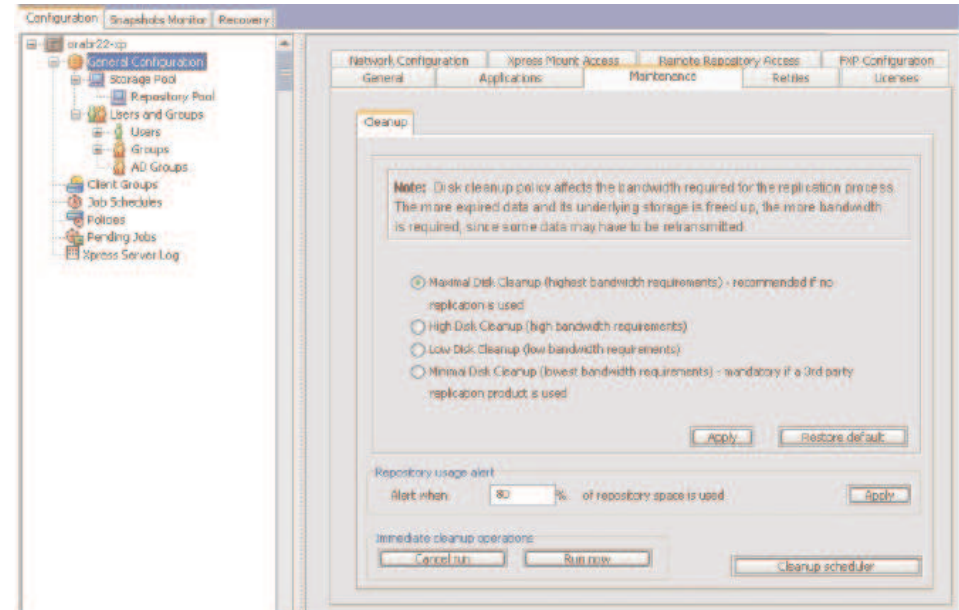
- You can set up the **number of snapshot generations the system retains**
- This number of snapshots will always be available for restoration
- Older snapshots beyond this number may be cleaned up

▪ Cleanup Configuration

- Scheduled repository cleanup

▪ Chain Erase

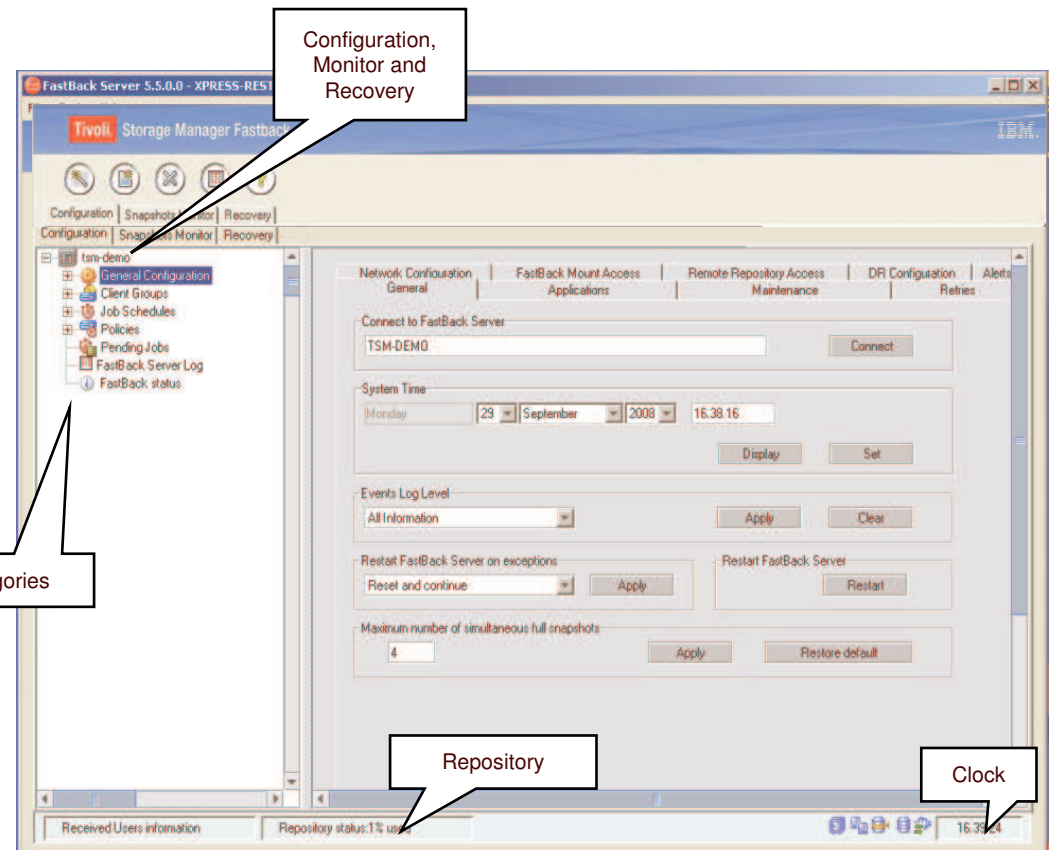
- Snapshot chains are series of snapshots of the same volume in the same policy. They can be **manually removed** by right-clicking on a snapshot in the Monitor tab, and selecting
- Gives you **manual control** over the snapshots that are kept and also gives a manual way of **controlling the repository size if needed**



TSM FastBack - User Interface

Centralized Management for :

- Managing the snapshot repository
- Scheduling snapshots
- Performing volume level restores
- Determining the result of backup jobs
- Monitoring which snapshots are completed, in-process and pending
- Monitoring system events
- Configuring and managing user group privileges and security authentications for specific users
- This is the interface used for all activities except for Exchange IMR and monitoring remote DR replication activity



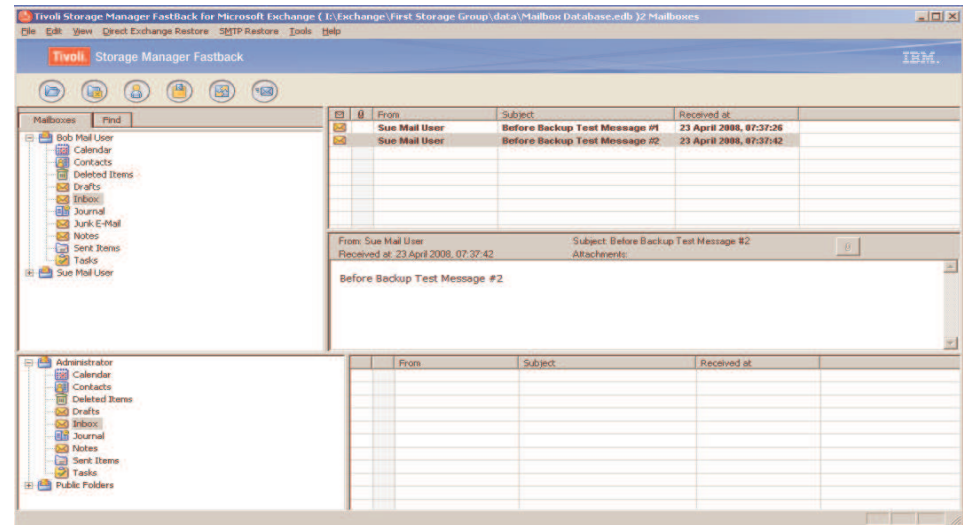
TSM FastBack - Shell CLI

- Can be thought of as a **command line API (application interface)** to TSM FastBack Server and TSM FastBack Mount
- Can access most TSM FastBack function from the command line called TSM FastBack Shell
- Can be **used to automate some tasks**, and to perform complex integration with third party tools
- TSM FastBack Shell provides **three modes of operation**:
 - **Interactive mode**: A menu-guided mode recommended for the less experienced users
 - **Command line mode**: In this mode, individual commands, command types, tags and parameters are entered
 - **Script file**: Used to execute multiple commands written in an ASCII text editor
- *Example: to add an incremental job named Accounting_Daily, that will run every working day (from Monday to Thursday), every 2 hours, between 07:30 to 20:30*
 - TSM FastBackShell -c job add -jname Accounting_Daily [-start "01-19-2004 07:30"] [- interval 2:00] [-exclude from 21:00 to 07:00] [-type inc] [-schedule 32]

TSM FastBack for Microsoft Exchange

Item Level Recovery of MS-Exchange

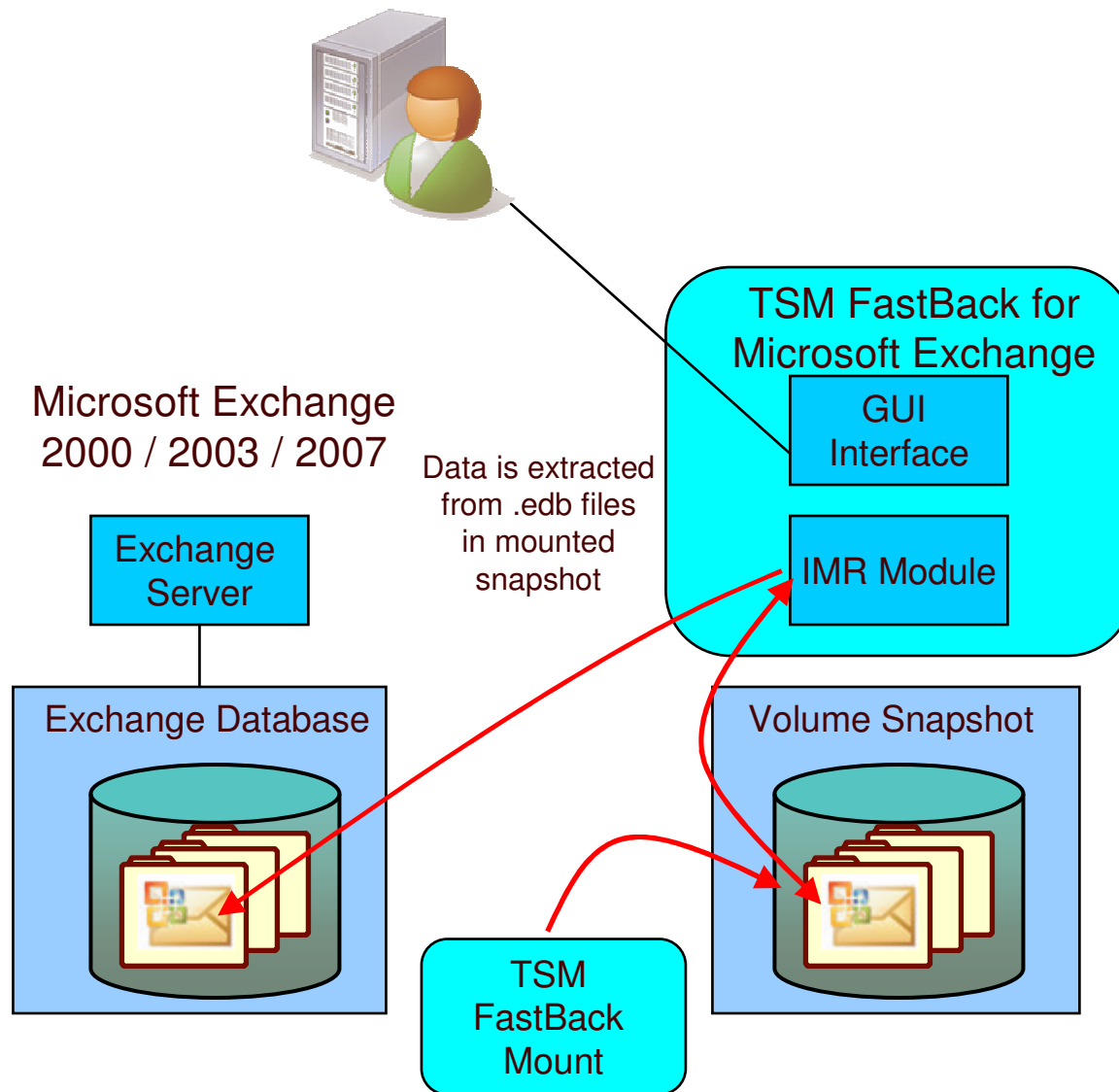
- Explorer-like GUI
- E-mail messages & attachments
- Contacts and calendars
- Tasks and notes
- Mailboxes
- Recover objects from corrupt EDBs
- Supports Microsoft Exchange:
 - ✓ 2000
 - ✓ 2003
 - ✓ 2007



- Greatly improves the efficiency of Exchange administrators
- Provide object restores in minutes rather than hours, days
- Helps administrator raise SLA's by eliminating downtime

Note: TSM FastBack provides automatic discovery of volumes associated with Exchange and SQL

Item Level Recovery for Exchange



- Restore of individual mailboxes or mail items (messages, contacts, calendar) via Virtual Volume
- GUI facilitates easy selection of items for restore
- Mailboxes or mail items can be viewed or copied without Exchange or TSM FastBack servers
- Intact items can be restored from corrupted database backup

Item Level Recovery for Exchange

The screenshot shows the Tivoli Storage Manager FastBack for Microsoft Exchange interface. The title bar indicates the path of the currently loaded database: I:\Exchange\First Storage Group\data\Mailbox Database.edb. The interface is divided into several panes:

- Mailboxes and subfolders in current database:** A tree view on the left shows the hierarchy of mailboxes and subfolders for 'Bob Mail User' and 'Sue Mail User'. 'Sue Mail User' is selected.
- Contents of selected folder:** A table in the center displays the contents of the selected folder, showing two messages from 'Sue Mail User' with subjects 'Before Backup Test Message #1' and '#2', both received on 23 April 2008.
- Preview Pane of selected stored e-mail:** A pane below the table shows the details of the selected message, including the sender 'Sue Mail User', the subject 'Before Backup Test Message #2', and the received time '23 April 2008, 07:37:42'. It also lists attachments.
- Mailboxes to which access is provided (by MS Exchange):** A tree view at the bottom left shows the list of mailboxes accessible via MS Exchange, including 'Administrator', 'Public Folders', and various user mailboxes.
- View of actual e-mails in the selected mailbox folder (i.e. Inbox):** A table at the bottom right shows a view of the actual e-mails in the selected mailbox folder, with columns for 'From', 'Subject', and 'Received at'.

TSM FastBack for Bare Machine Recovery

- **Wide MS servers support**

- TSM FastBack supports Bare Machine Recovery on both 32 and 64 bit operating systems and processors

- **Full access within minutes**

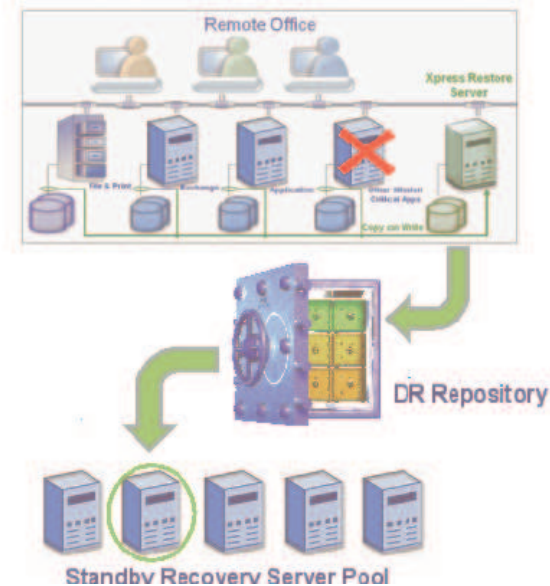
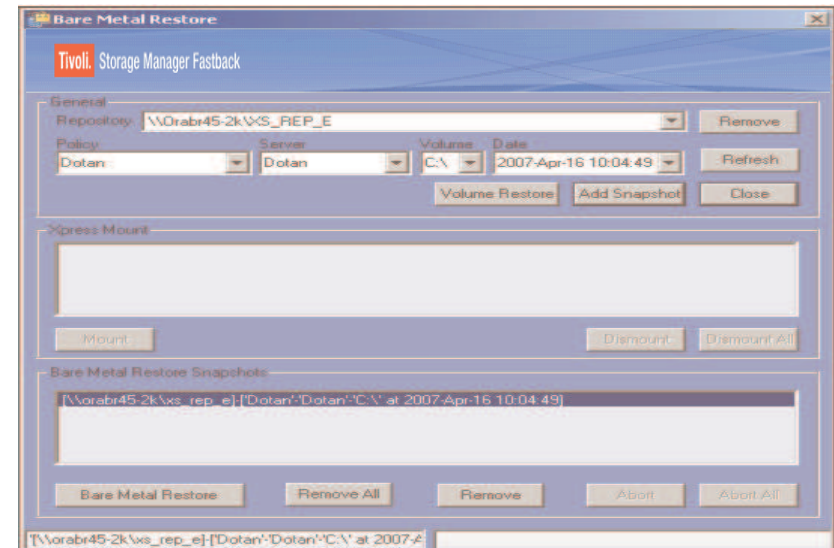
- With Instant Restore technology, data volumes are made available as soon as the recovery process starts

- **Support for dissimilar hardware**

- Recover on a similar server, to a completely different server, or to a Virtual Machine

- **“N-to-1” standby server ratio:**

- One standby server can provide cover for many production servers
- Cost-effective ‘high availability’ alternative



TSM FastBack – Disaster Recovery

Central Vaulting of Backup Copies

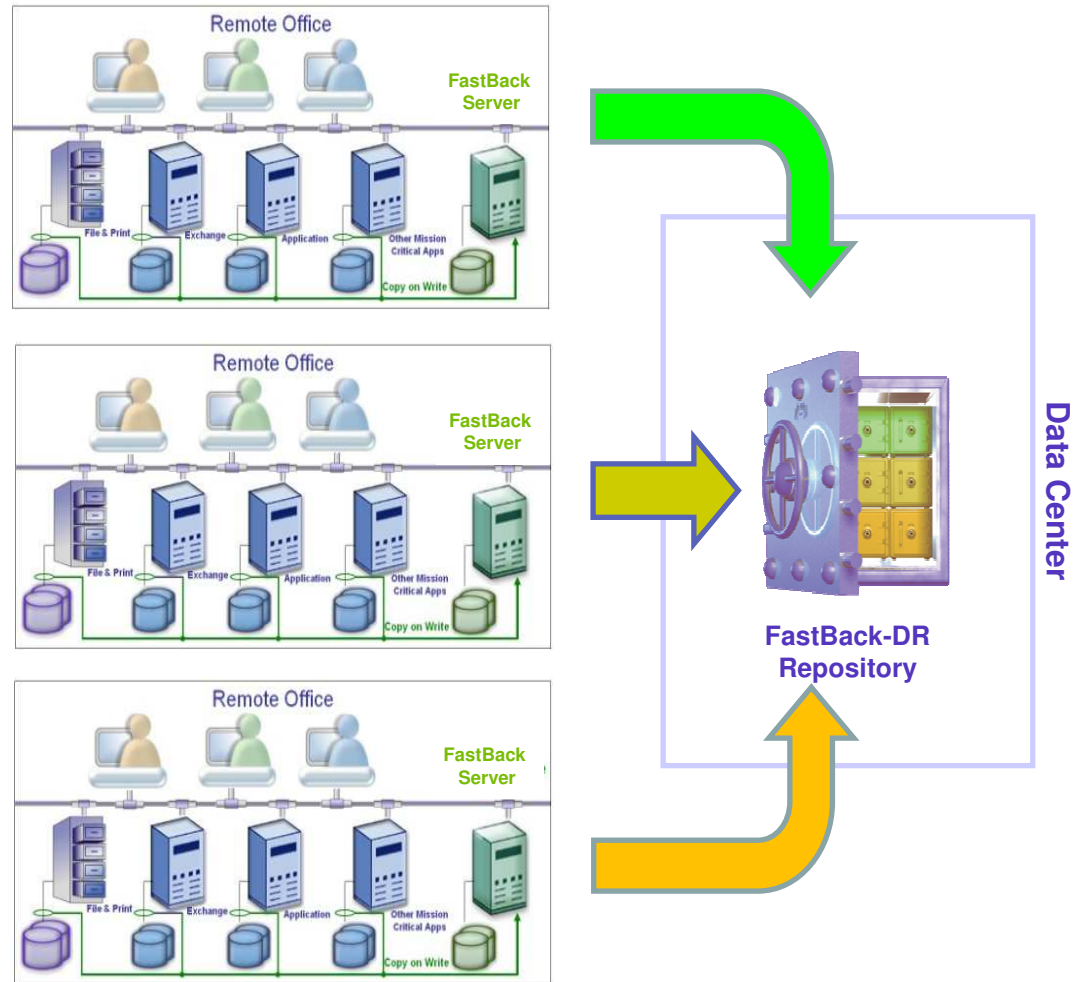
- Replication and consolidation of snapshots to a central location as part of a disaster recovery system
- Block-level, incremental forever

End-to-end security

- Encryption in transit
- Can encrypt and compress
- Individual Virtual Vault for each office

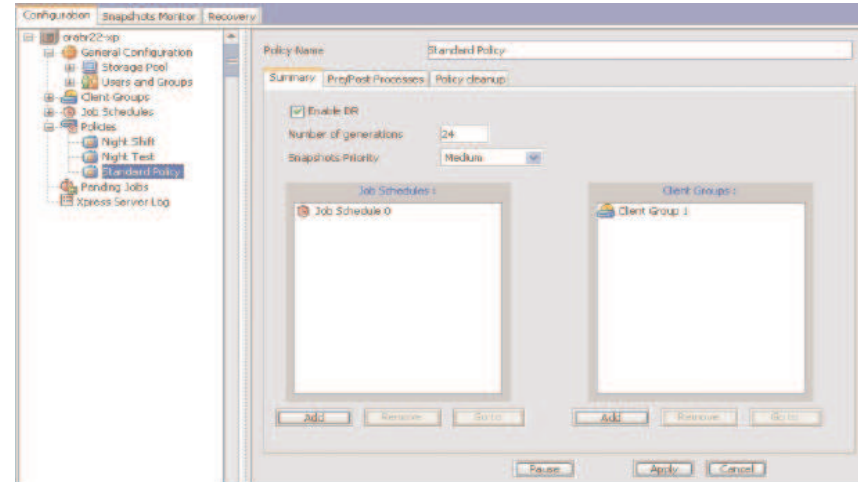
Replication Method

- FTP based replication
- Replication does not interfere with backup operations

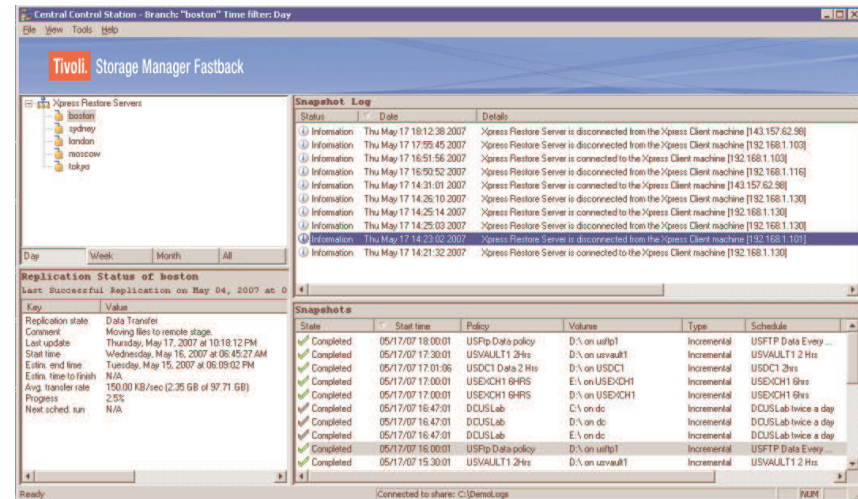


TSM FastBack – Disaster Recovery

- **Scheduled, policy-based transfers**
 - Allows **selective** and **scheduled replication** of the backup repository to a DR site
 - **Selective Replication** - Not all backups must be replicated
 - Bandwidth can be utilized better by **scheduling DR to low activity hours**
 - Optimize WAN resources
- **Fully Automated**
 - No manual intervention required
- **Monitoring**
 - **Central Control Station** enables monitoring of replicated snapshots at a central location
- **Recover Anywhere**
 - At the branch, DR site, Data Center
 - File or Volume restore, Instant Restore
 - Disaster or Operational Recovery



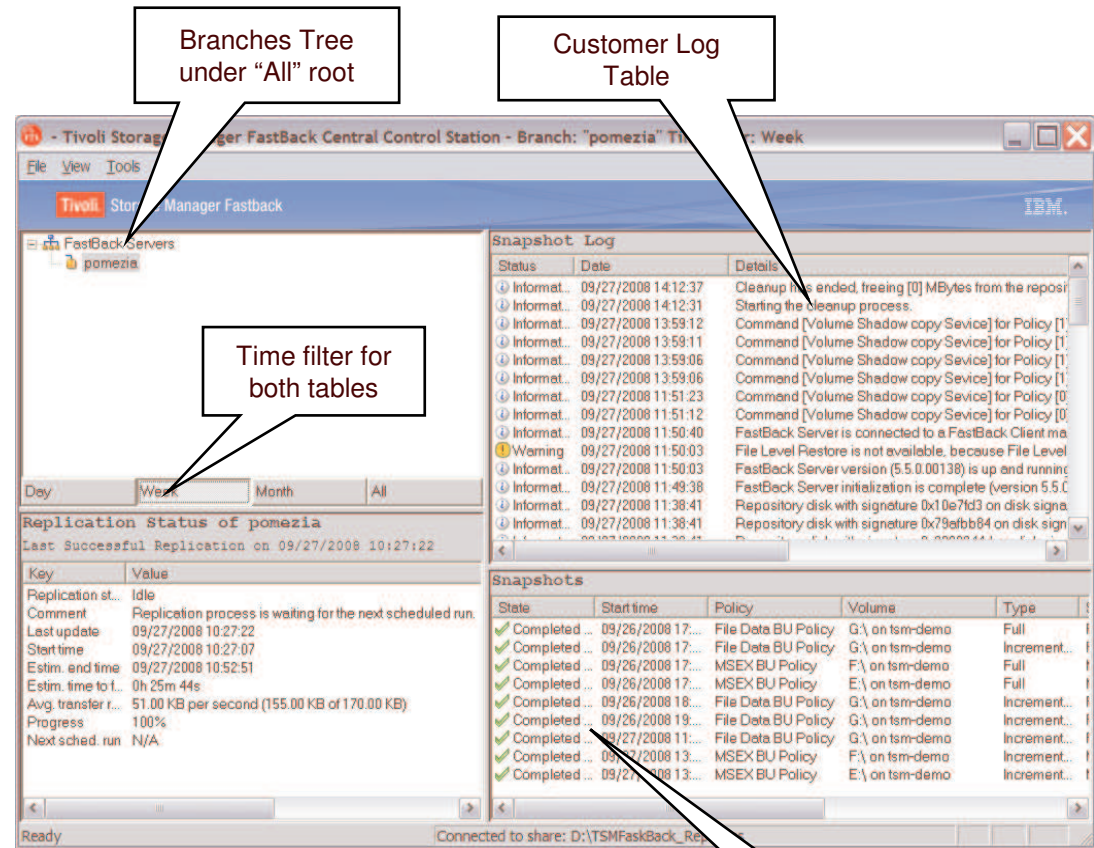
Policy based DR protection



Centralized monitoring of all DR activity

TSM FastBack - Central Control Station

- Used to Centrally manage DR
- Installed at a central backup office
- It allows browsing for snapshots and events that arrive from branches
- It provides information filtering, based on branch and time criteria
- Show the DR status and launch Management UI for a specific branch.



TSM FastBack Target Markets

Mission Critical Application Protection

- ✓ Continuous Data Protection for Mission Critical Applications
- ✓ Ensuring continuous application availability

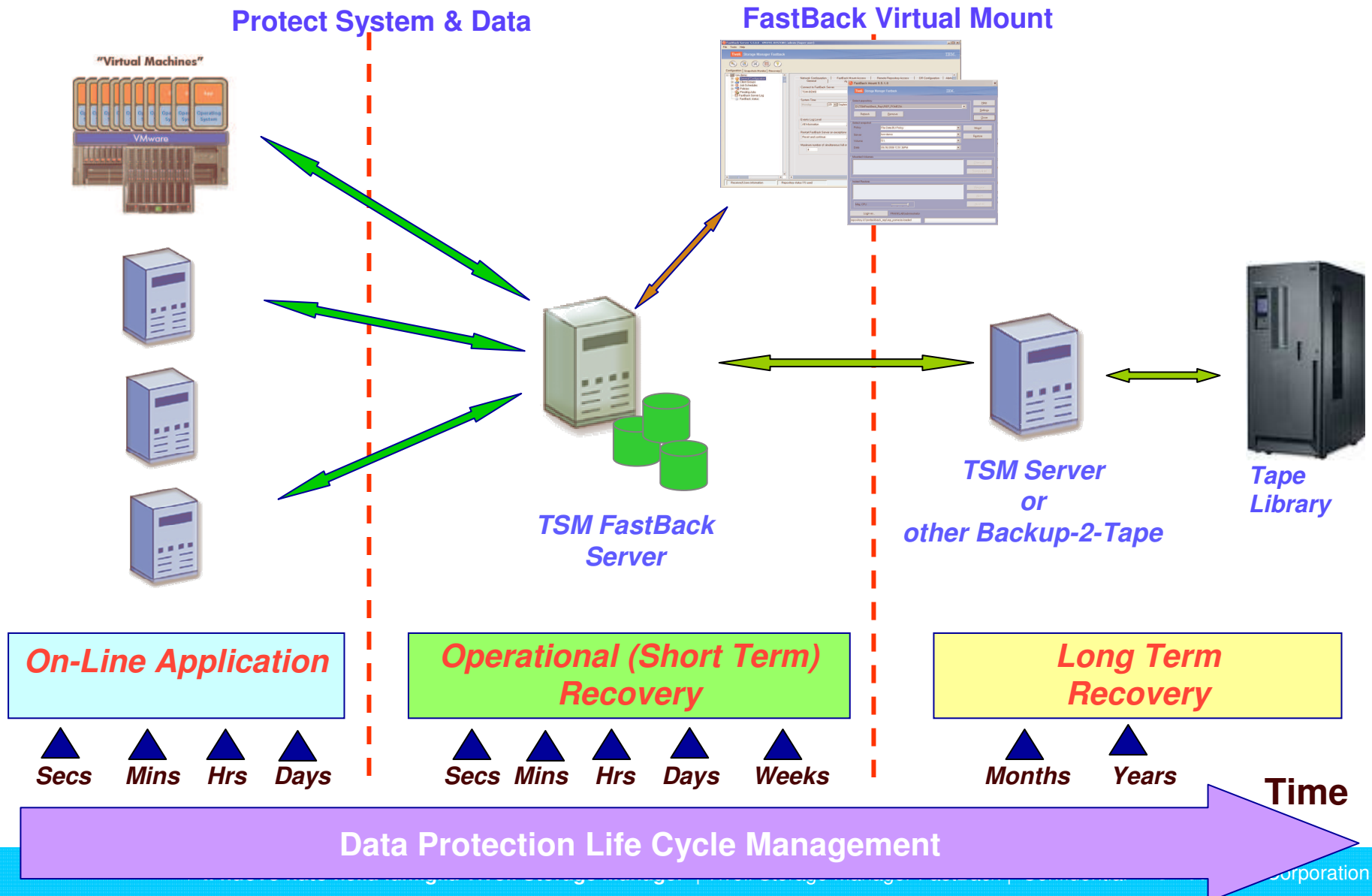
SMB Market Data Protection

- ✓ Strong Windows and Microsoft Exchange capabilities
- ✓ Cost Effective replace for tape backup
- ✓ Simple to set up and use

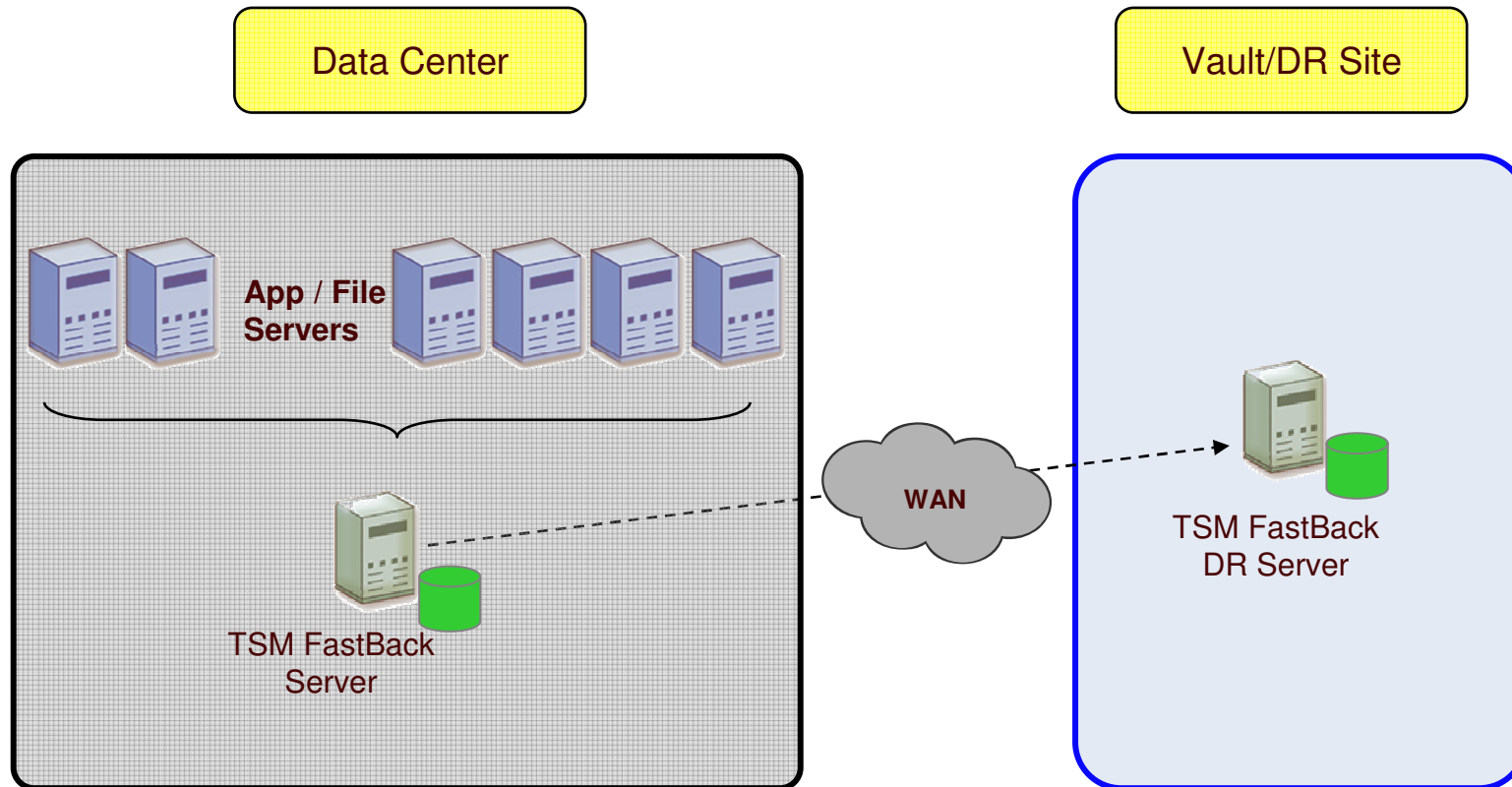
Remote Office Protection

- ✓ No need for trained IT staff
- ✓ N to 1 Bare Machine Recovery (Physical to Virtual)
- ✓ Consolidating backup & recovery into the main Data Center

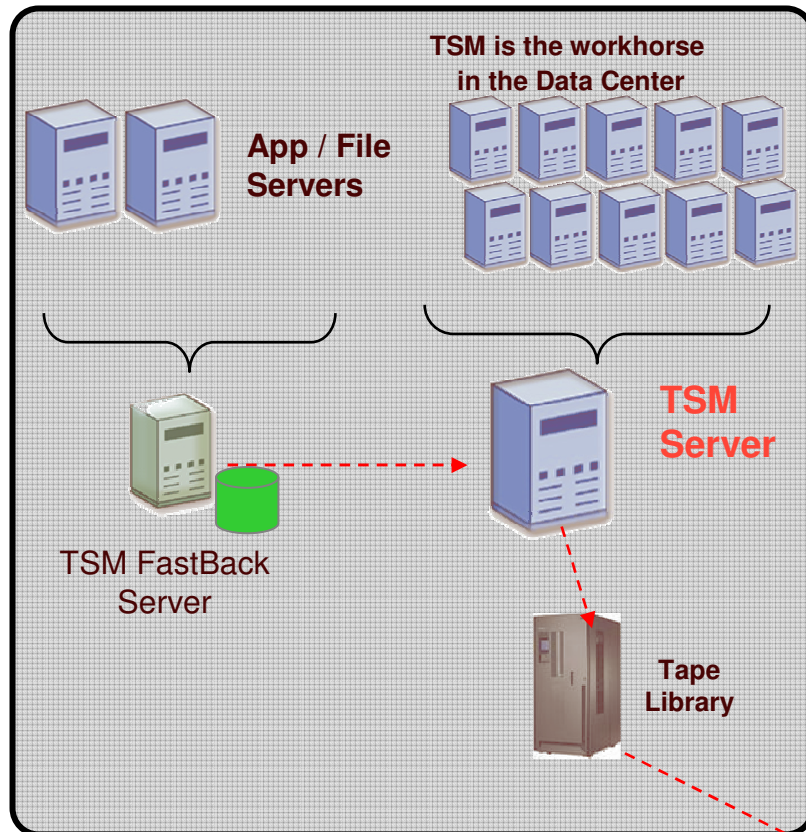
Mission Critical Application Protection



Mid Market Deployment without TSM



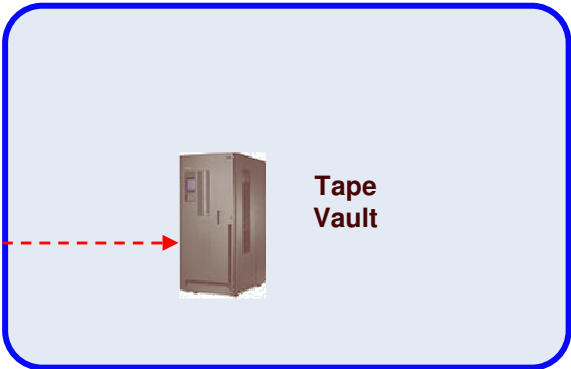
Mid Market Deployment with TSM



Data Center

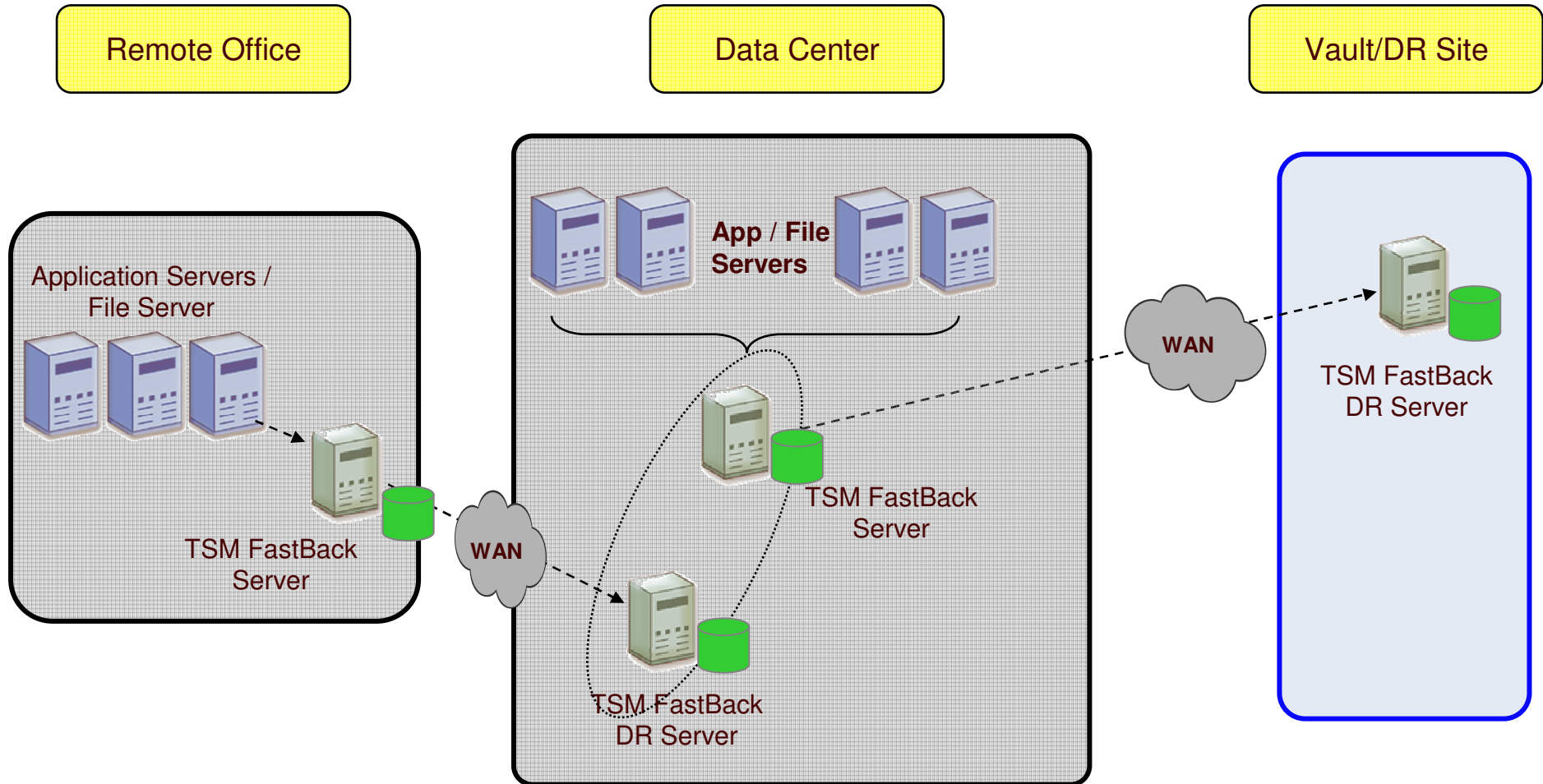


Vault/DR Site



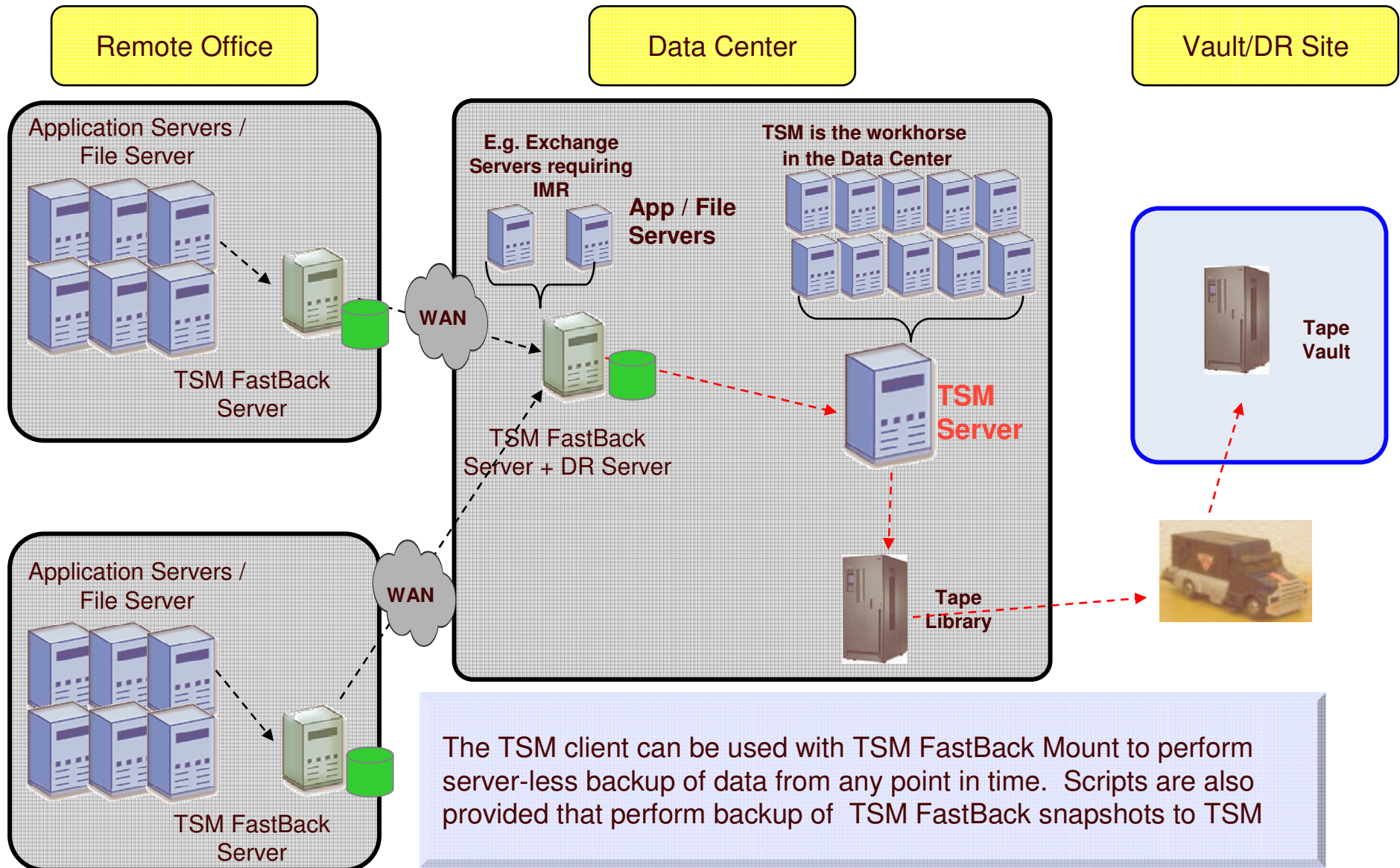
- TSM FastBack protecting Windows applications that require CDP, frequent snapshots or Exchange IMR
- TSM Protecting Unix/Linux servers and applications and Windows applications that do not require CDP or frequent snapshots

ROBO Deployment without TSM



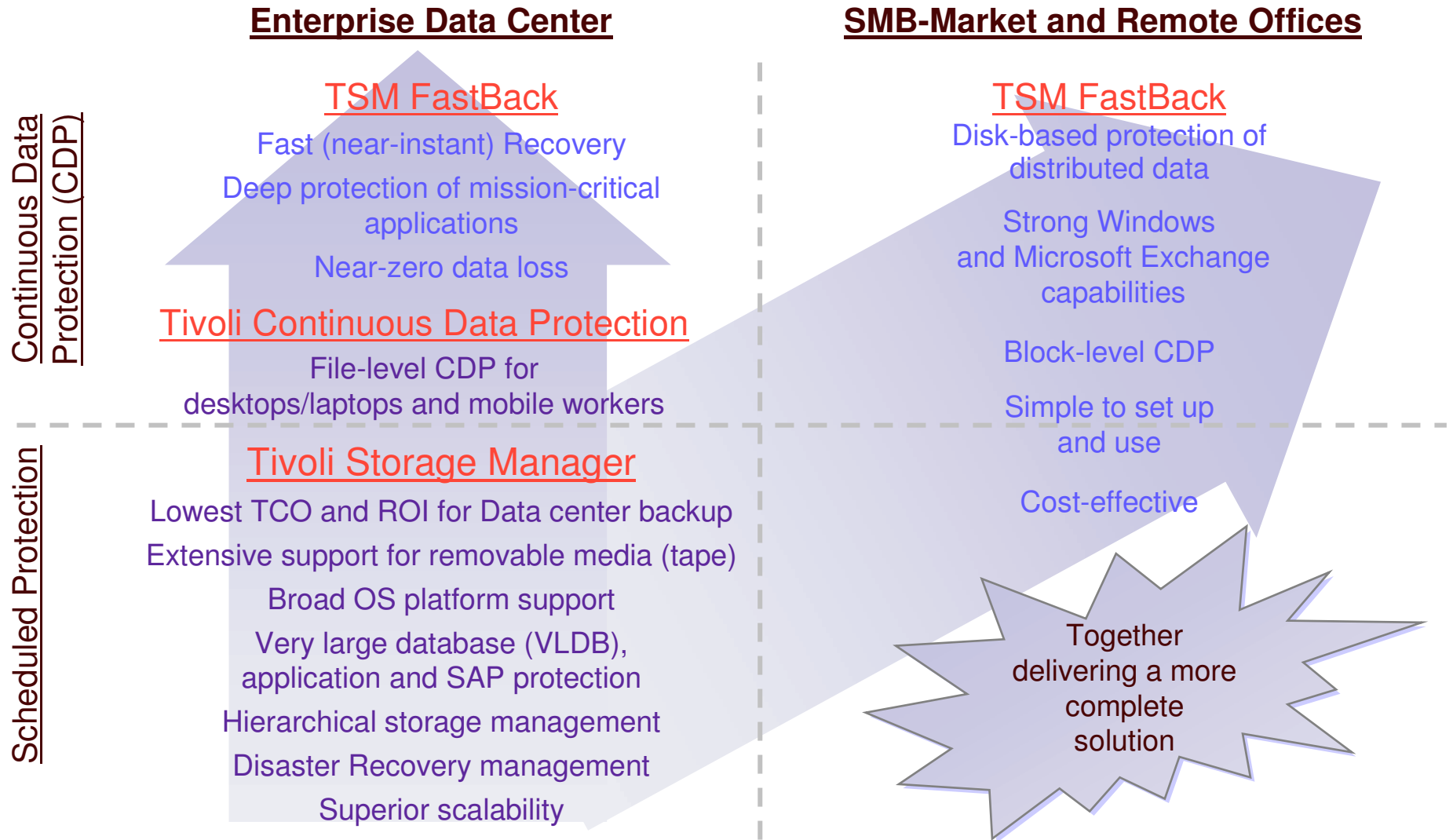
ROBO = Remote Office, Branch Office

ROBO with TSM



The TSM client can be used with TSM FastBack Mount to perform server-less backup of data from any point in time. Scripts are also provided that perform backup of TSM FastBack snapshots to TSM

Complementing IBM's flagship Tivoli Storage Manager



Caratteristiche e Benefici

	Caratteristiche	Benefici
TSM FastBack	Backup incrementale a livello di blocchi	<ul style="list-style-type: none"> ▪ Eliminata la necessità di finestre di backup ▪ Bassissimo impatto sui server applicativi - ideale per le macchine virtuali
	Backup basato su politiche	<ul style="list-style-type: none"> ▪ Consente di conciliare le esigenze di recupero dei dati con i costi di storage e la larghezza di banda per ogni applicazione protetta ▪ Possibilità di scegliere tra "Continuous Data Protection" (CDP) o snapshot periodiche/schedulate
	Backup su Storage Area Network (SAN)	<ul style="list-style-type: none"> ▪ Processi di backup basati su SAN che non influiscono sulla rete locale (LAN)
	Application aware	<ul style="list-style-type: none"> ▪ Supporto integrato per tutte le applicazioni Windows, compresi: MS Exchange, MS SQL, Oracle, DB2, SAP, ...
	Ripristino "Point-in-time"	<ul style="list-style-type: none"> ▪ Possibilità di torna a qualsiasi "point-in-time" per rimediare a cancellazioni involontarie, ad attacchi di virus, corruzioni, ecc.
	FastBack Mount / Istant Restore	<ul style="list-style-type: none"> ▪ Ripristino di singoli file dal repository di backup tramite funzioni drag-and-drop ▪ Dà il pieno accesso a qualsiasi volume nel giro di pochi secondi, mentre il processo di ripristino viene eseguito in background

Caratteristiche e Benefici

	Caratteristiche	Benefici
TSM FastBack	Supporto per le sedi remote	<ul style="list-style-type: none"> ▪ Aiuta a ridurre i costi dei sistemi di gestione dei backup ▪ Aiuta a migliorare i livelli di servizio relativi al backup e al ripristino
	Integrazione con i nastri	<ul style="list-style-type: none"> ▪ Sfrutta gli investimenti effettuati ▪ Solleva i server applicativi dall'impatto dei backup su nastro ▪ Integrazione con il resto della suite Tivoli Storage Manager
	Gestione centralizzata	<ul style="list-style-type: none"> ▪ Gestisce centralmente tutte le operazioni di backup e ripristino ▪ Gestisce sia la sede centrale che le sedi remote
	Automazione completa	<ul style="list-style-type: none"> ▪ "Policy Engine" di tipo "Set it and forget it" ▪ Gestione automatica del repository dati ▪ Definizione del numero di snapshot che si vogliono mantenere
	Disaster Recovery	<ul style="list-style-type: none"> ▪ 'Selective Replication' & bandwidth optimization minimize WAN impact ▪ Secure transfer of data to the DR site eliminates the risk of losing tapes
TSM FastBack for BMR	Bare Metal Recovery	<ul style="list-style-type: none"> ▪ Ripristino di un intero sistema anche su server con hardware diverso incluse le macchine virtuali ▪ Ripristino in poche ore.
TSM FastBack for Exchange	Item Level Recovery for Exchange	<ul style="list-style-type: none"> ▪ Ripristina velocemente ed in modo granulare i singoli oggetti dell'ambiente Exchange.



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Grazie per l'attenzione!

