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TSM 4.2 Hints, Tips and Customer Experiences

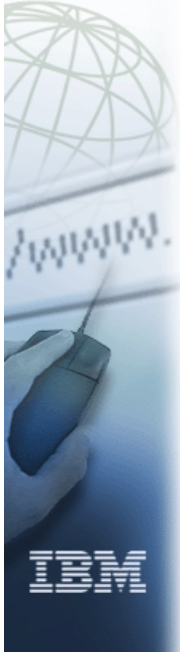
Barry Kadleck

ITSO San Jose



Redbooks

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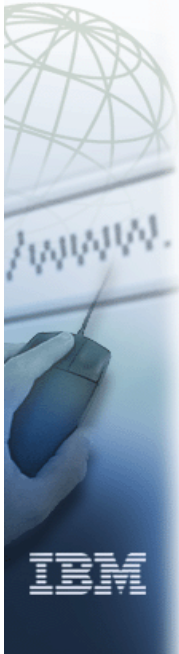
Agenda

- Overview
- Objectives
- Session Summary
- Sources and Additional Information

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TSM 4.2 Technical Guide SG24-6277



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Journal-based backup - Overview

Implemented on Windows NT and 2000 using existing APIs

Objective: To increase performance of incremental backups.

Method: Eliminate queries to either the TSM server or the local

- TSM monitors file changes within filesystems
- Only changed files are backed up
- - Query the TSM server for file space and (sometimes) directory information
 - Query the file system for file or directory attributes, when the object has been

No change to other client capabilities



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Journal-based backup - Benefits

Removes query of active files on server

- Reduces data transfer from server to client

Removes scan of local filesystem

- Reduces client "idle time"

Eliminates list processing

- Reduces memory requirement
- Reduces processing requirement

Filesystems are monitored selectively

- Based on Journal Daemon configuration



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Journal-based backup vs. Incremental vs. Incremental-by-date

	Journal-based backup	Incremental	Incremental-by-date
No file list from server			
Monitors changes			
Average Backup Time	Lowest	Higher	Lower
Network Impact	Lowest	Higher	Lower
Manages Expiry			
Complies with Frequency			
Point-in-time Restore			
Rebinding			



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TSM Journal Service Overview

Three basic components

- Journal Database Access
- Named Pipe communications
- File System Monitor

Installed via TSM Setup Wizard or dsmscutil

- Should run under local system account

Basic logging to the Application Eventlog

- Startup info (version, ptf level, etc.)
- Standard error message format

Stopping the service for any reason 'invalidates' the journal

- Protection against missed file changes e.g.. during reboot



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Identifying a Journal-based backup

Tivoli Storage Manager
Command Line Backup Client Interface - Version 4, Release 2, Level 0.0
(C) Copyright IBM Corporation, 1990, 2001, All Rights Reserved.

Session established with server WINBETA_SERVER1: Windows NT
Server Version 4, Release 2, Level 0.65527
Server date/time: 05/09/2001 10:48:37 Last access: 05/09/2001 10:45:00

```
Incremental backup of volume 'F:'  
Using journal for '\\chinook\f$\'  
Expiring--> 0 \\chinook\f$\hij\file2 [Sent]  
Normal File--> 47 \\chinook\f$\hij\file1 [Sent]  
Successful incremental backup of '\\chinook\f$'
```

```
Total number of objects inspected: 1  
Total number of objects backed up: 1  
Total number of objects updated: 0  
Total number of objects rebound: 0  
Total number of objects deleted: 0  
Total number of objects expired: 1  
Total number of objects failed: 0  
Total number of bytes transferred: 248 Bytes  
Data transfer time: 0.00 sec  
Network data transfer rate: 0.00 KB/sec  
Aggregate data transfer rate: 0.05 KB/sec  
Objects compressed by: 0%
```



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Journal-based backup is the default for

Once started, journal incremental is the default

How to return incremental command to "traditional"

- Use -NOJournal command line option:
 - `dsmc inc f: -nojournal`
- Select "Incremental (without journal)" backup type from the native GUI
- Alter TSM server file space image using an admin command or stop a full file space incremental before successful completion.
-



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Backup-archive client - debugging

Why wasn't my backup journaled?

- Journal service not active
- Changed node name or server
 - Only **one** journal per file space / node name / server name
- Server version is prior to 4.2
- Journal not valid
 - Not monitoring file space
 - No full successful incremental
 - Ctrl-c or other abort during a full incremental
 - Policy updated since last incremental
 - File space altered by TSM admin command



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Unicode-enabled client file space

Universal character encoding standard

Supported client platforms

- TSM V4.2 NT/Windows 2000

Requires:

- Both server and client at 4.2
- Necessary fonts installed

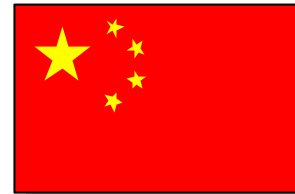
Default for new Unicode-enabled client data

The 'challenge'

be in Canada



and manage Chinese



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Include-Exclude Enhancements

Ability to include-exclude files for compression

Ability to include-exclude files for adaptive sub-file backup

Platform specific include-exclude of files



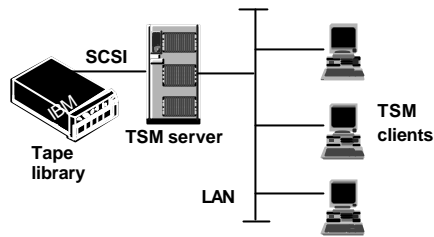
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Why LAN-free backup?

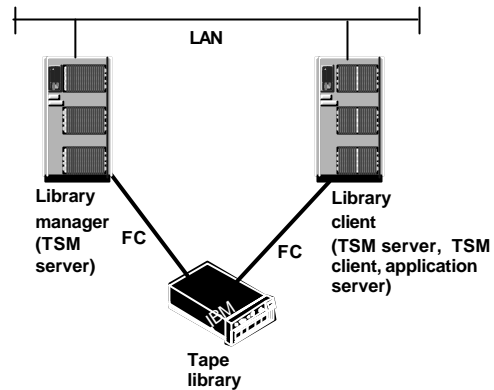
Traditional LAN backup

- LAN bandwidth constraint
- CPU overhead of TSM server
- Scalability limitation



LAN-free backup using SCSI tape library sharing on SAN

- TSM server, client running on application server
- CPU overhead of TSM server
- Management overhead of multiple TSM server
- Additional costs of TSM server



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Tape library sharing implementation

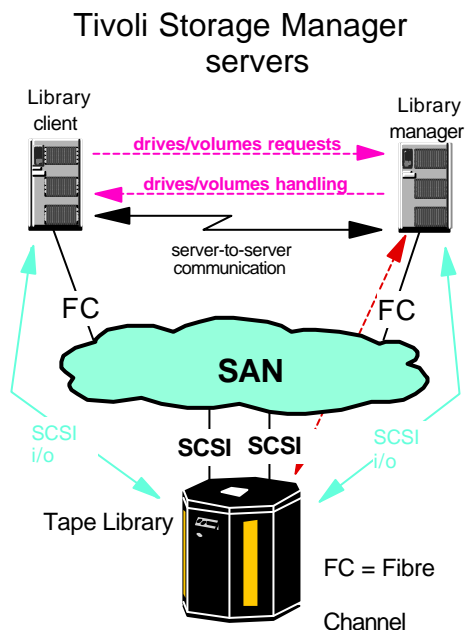
Library Manager

- performs operations on library
- handles requests from library

Library Client

- sends requests for library resources
- performs I/O operations on the

Server-to-server communications over LAN for library requests



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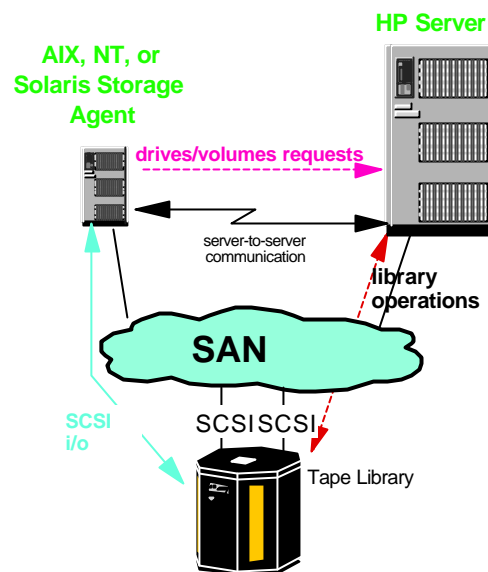
New support for HP-UX

SCSI library sharing using

- IBM3570
- IBM3590
- LTO

Support for LAN-free clients

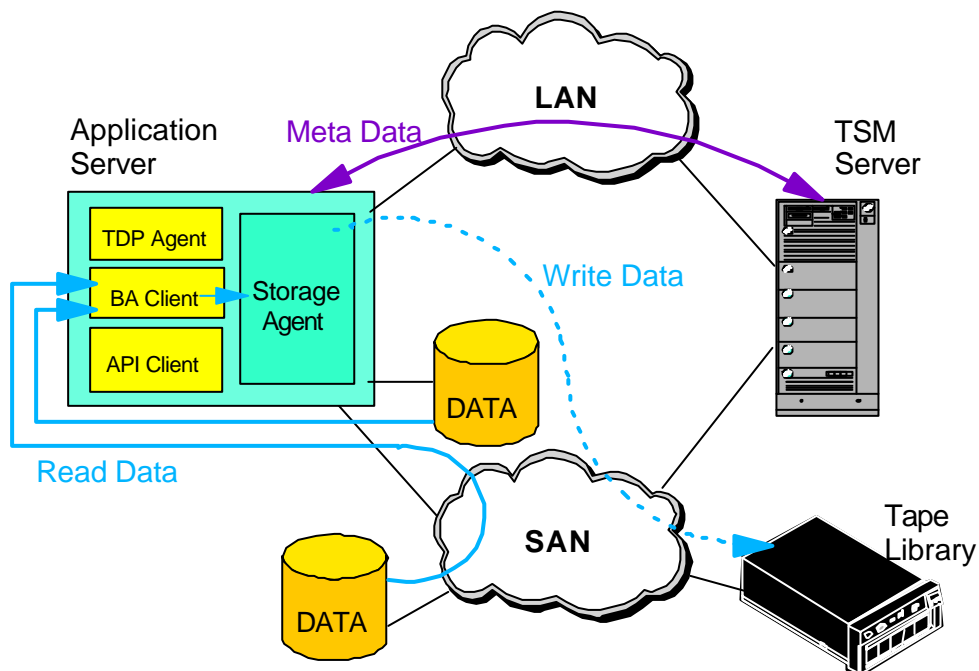
- AIX
- Windows
- Solaris



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LAN-free client data transfer architecture



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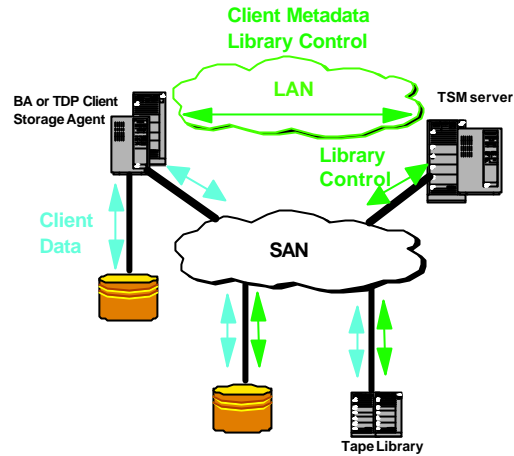
Benefits of LAN-free client data transfer

Offload LAN traffic

- Improve performance and scalability of certain applications
- Communication intensive applications may improve due to less bandwidth contention on

Free up TSM server cycles

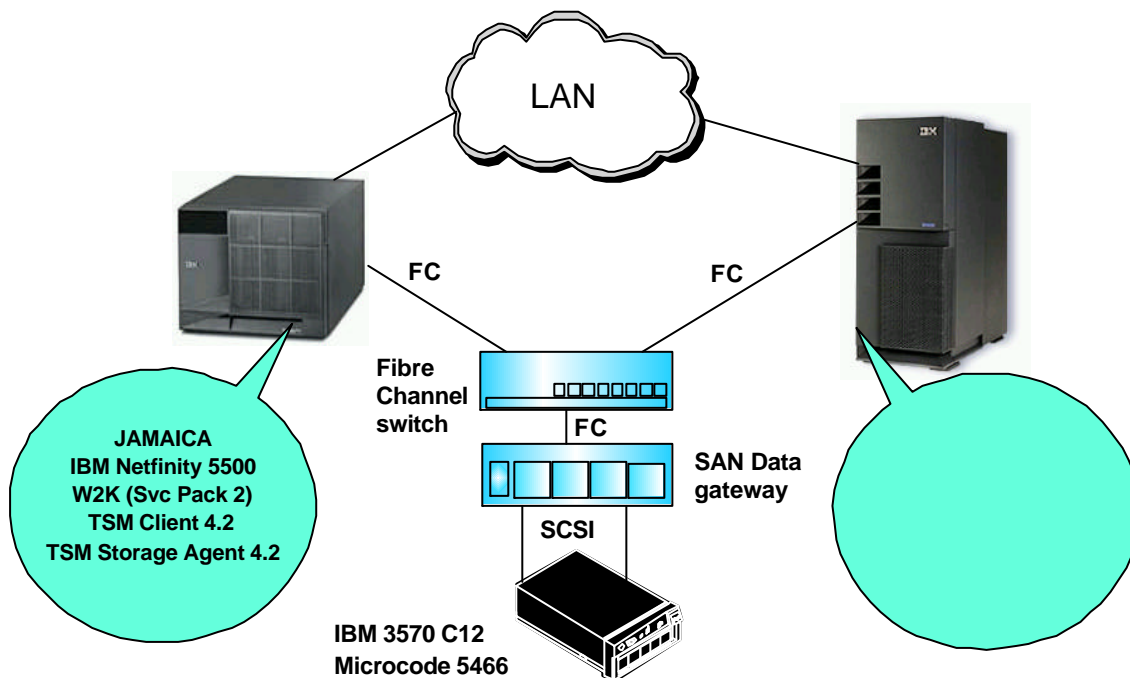
- CPU utilization down
- Can handle more client sessions



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OTG DiskXtender 2000

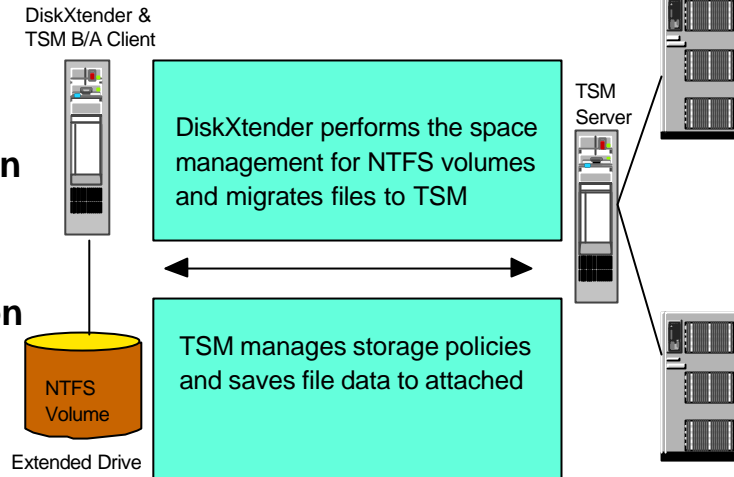
Hierarchical storage management for NT and Windows 2000

TSM integration

Policy-based migration

Pre-fetch capability

Client fetch notification



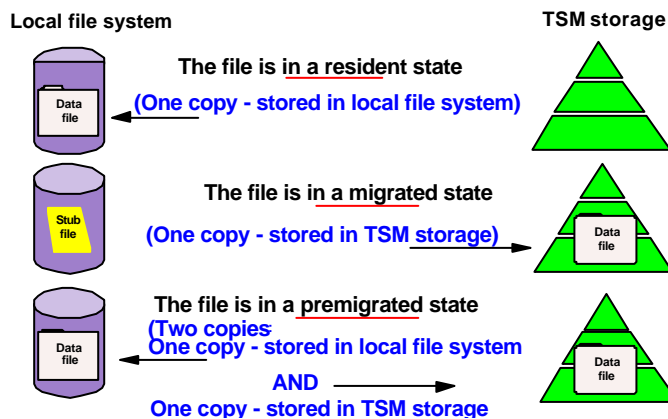
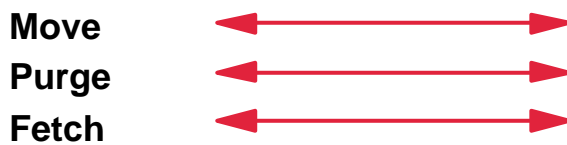
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OTG versus Tivoli terms

When OTG says:

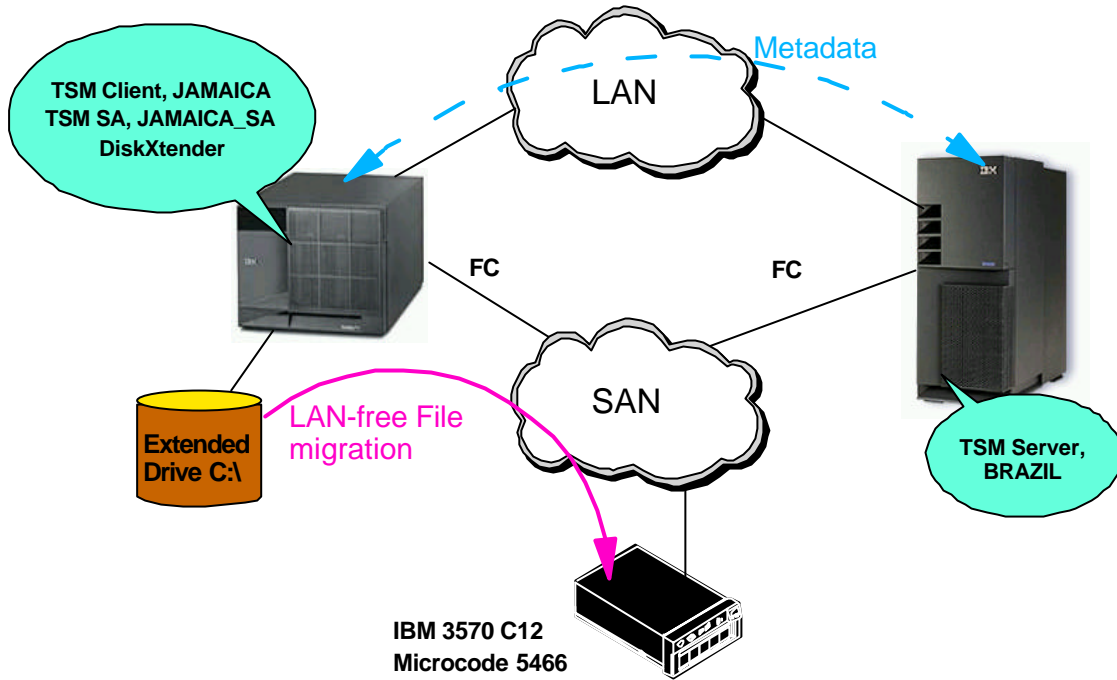
It means Tivoli Terms:



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Who took part?

3 Customers in EMEA

- 2 Financial, one ISP
- Multi-platform
 - AIX
 - OS/390
 - Solaris



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Feedback

Software

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Documentation

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Process

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"Too short, but worth the experience"

"Without TSM, we would not be where we are today!"

All three customers will act as TSM references



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