



Tivoli® Space Manager

Highlights

Tivoli Space Manager facilitates enterprise-wide storage management deployment, helping improve administrator productivity and providing virtually unlimited disk storage. Tivoli Space Manager uses hierarchical storage management (HSM) to automatically and transparently migrate infrequently accessed files to Tivoli Storage Manager server while more frequently used files remain in local file systems for fast access. By migrating rarely accessed files to server storage, Tivoli Space Manager frees administrators and users from manual file-system pruning tasks. It also helps ensure sufficient storage space is available at your workstation or file server—deferring the purchase of additional disk storage. Tivoli Space Manager:

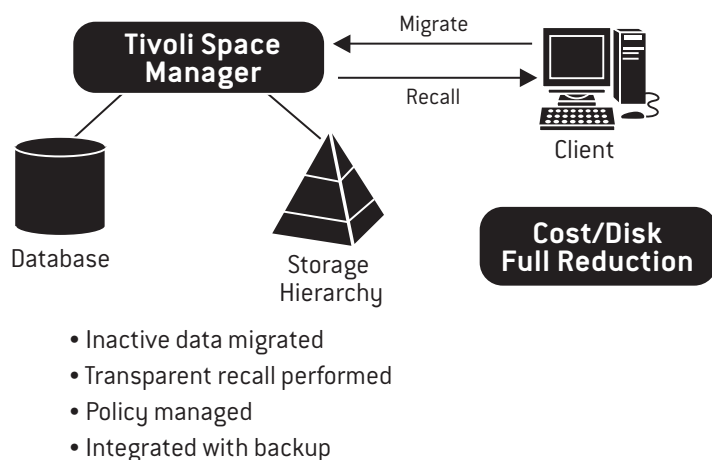
- Provides enterprise-wide, scalable storage management
- Migrates rarely accessed files without administrator help
- Integrates and coordinates with Tivoli Storage Manager automatically
- Provides quick retrieval of current and archived data

Virtually Unlimited Disk Storage

Receiving an out-of-space error means you must manually free disk space by deleting old or large files or moving them to floppy disks. Tivoli helps—Tivoli Space Manager automatically sends files, meeting the migration criteria you have set, to the Tivoli Storage Manager server where they are managed by a Tivoli Storage Manager server policy set. A stub file (you set the size) replaces the original file on the client. The stub file retains the original file attribute information, making it appear that the original file still resides on the machine. This is the key for the file to be automatically recalled from

the Tivoli Storage Manager server when an application attempts to open the file.

You configure Tivoli Space Manager client to specify which files are eligible for migration, similar to the concept of the Tivoli Storage Manager client include/exclude list. You decide the importance you want to give to migrating files based on size and age. You specify which file systems should be space managed, and what the high and low usage thresholds are for these file systems. When a file system crosses the maximum space utilization threshold, Tivoli Space Manager client chooses the files to migrate to the server,



based on the include/exclude list and the weights you assigned to size and age.

The Tivoli Space Manager client can rapidly free space when needed because the client can pre-migrate files to the Tivoli Storage Manager server. A pre-migrated file exists on each: Tivoli Space Manager client and Tivoli Storage Manager server. When space is needed, the client copy is rapidly turned into a stub file.

The space-managed files are an integral part of Tivoli Storage Manager server. The scheduling of tasks and logging of errors works the same as client backups. Backups and migrations coordinate in two ways. First, you can set an option to allow a migration to occur only if a backup has been performed. Second, if a file was backed up previously, Tivoli Storage Manager server clones the backup copy to the space management pool, eliminating the need to have files re-sent from the client to the server through the network. If a client disk crashes, or a migrated file is accidentally deleted, you can choose which file system to have enabled with HSM. Tivoli Storage Manager can restore just stub files or entire files to the client.

Coordination with Tivoli Storage Manager Backups

Tivoli Storage Manager server automatically copies a file from the backup storage pool to the HSM storage pool. This also eliminates the need to re-send migrated files that are already backed up through the network. The user can also set a flag to prevent files from being migrated until they are backed up.

Setting Maximum and Minimum File System Size Triggers

You can choose which file systems to enable with HSM. You decide the level of file system usage at which you want to have HSM start and stop migration.

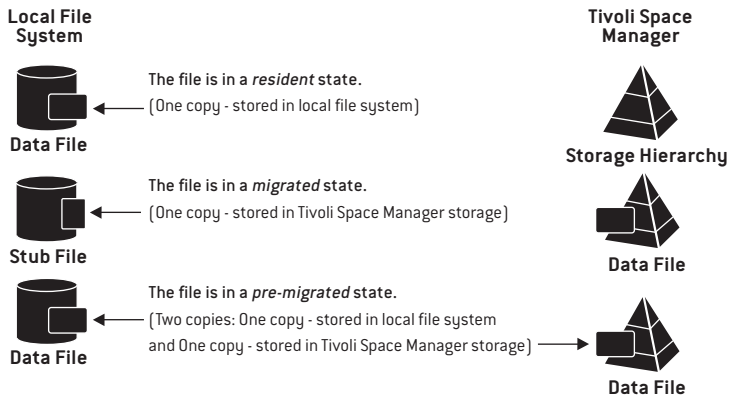
Setting Size and Age Migration Factors

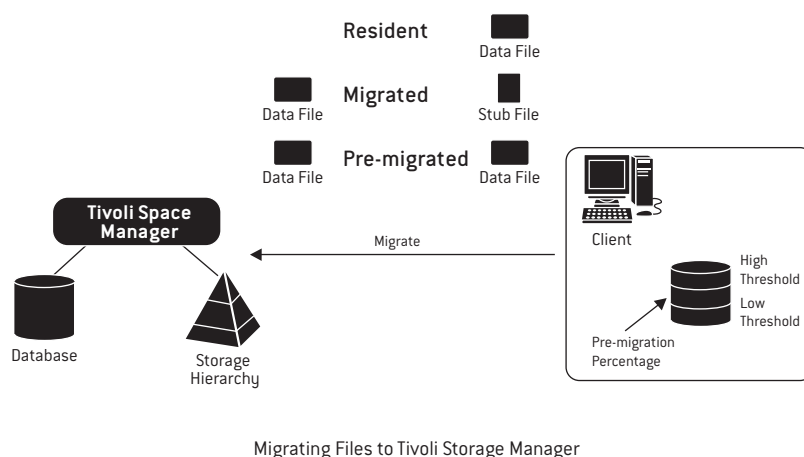
In addition to deciding which files should be included and excluded from migration, you can set weights on the size of each file and the age of each file. These weights (ranging from 1 to 99999) are used to decide the priority of a file candidate for migration. This is done using the following equation: The file with the highest score will be first considered for migration, that is, $\text{score} = (\text{file size} * \text{size factor}) + (\text{file age} * \text{age factor})$.

Adjustable Stub File Size

You can choose various stub file sizes. A larger stub file size means more data is kept on the client,

Hierarchical Storage Management File States





allowing applications, which often browse the first part of a file, to look for frequently accessed data. Because the data is still in the stub file, there is no need to recall the entire file from the Tivoli Storage Manager server.

Pre-migration of Files

In pre-migration of files, a copy of the file moves to the Tivoli Storage Manager server, but the entire file is also kept on the client. This frees file space rapidly when needed, because the space manager client turns the client copy of the file into a stub file—no waiting for the file to be sent across the network. This also allows the administrator to schedule

pre-migration at a time when the network or client is not busy, to better utilize the network.

Technical Requirements

Tivoli Space Manager is a separate product that requires Tivoli Storage Manager server and client as a pre-requisite (formerly a feature of ADSM). Tivoli Space Manager is integrated with Tivoli Storage Manager server-client backups and is managed by Tivoli Storage Manager server policies and storage classes.

Supported Server Platforms

IBM® AIX®

Sun Solaris™ operating system

Tivoli Storage Manager Server

Tivoli Storage Manager, Version 3.7 and 4.1 servers

Tivoli Storage Manager Client

Tivoli Storage Manager Client, Versions 3.1, 3.7, and 4.1 backup-archive clients, included on the Tivoli Space Manager product CD-ROM. With the Tivoli Space Manager product on a workstation, the backup-archive client must also be installed on that workstation.

IBM AIX Client

64MB of RAM, minimum
IBM AIX, Version 4.3.2 or 4.3.3
operating system
X Windows System, X11R6
Motif 1.2 or Motif 2.0
Common Desktop Environment (CDE)
JFS or GPFS V1.3

Communication Protocol (one of the following)

TCP/IP which comes standard with IBM AIX and IBM RS/6000®
Shared Memory (Tivoli Storage Manager for AIX server only)

Sun Solaris Client

A SPARCstation or compatible workstation
64MB of RAM, minimum
Sun Solaris 2.6 operating system
Veritas File System (VXSF) 3.3.2
X Windows System, X11R6
Motif 2.0
Common Desktop Environment (CDE)
Communication Protocol
TCP/IP, which comes standard with Sun Solaris
Shared Memory (Tivoli Storage Manager for Sun Solaris server only)

Interfaces

IBM AIX client and Sun Solaris client
GUI or client command line interface

Supported Languages

German
Spanish
French
Italian
Japanese
Korean
Chinese Simplified
Chinese Traditional

Licensing

Tivoli Space Manager license requirement has changed from licensing the function once at the server to licensing based on the systems using HSM. A system that uses HSM requires one managed system for LAN feature and one Tivoli Space Manager product. If this system has a backup-archive client also on this system, only one managed system for LAN feature is required.

Management Service	What It Does	What It Means To You
Hierarchical storage management (HSM)	Migrates infrequently accessed files to storage, automatically.	Frees administrator time to perform other critical tasks.
Pre-migration tools	Enables you to specify how and when certain files are to be managed.	Makes storage space available faster.
Coordination with backups	Turns frequently accessed files into stub files that can be browsed quickly.	Helps utilize your network more efficiently.
Adjustable stub file size	Enables you to decide the stub file size.	Eliminates recall of entire files, saving time to access frequently used files.

Some features may be available only in a future release, and features may vary with each platform. Further, some platforms are not supported by all applications and Tivoli may make improvements and changes to the described products.

©IBM Corp. 2000. All Rights Reserved. IBM, Tivoli, AIX, Manage. Anything. Anywhere., and RS6000 are trademarks or registered trademarks of International Business Machines Corporation or Tivoli Systems Inc. in the United States, other countries, or both. Solaris is a trademark of Sun Microsystems, Inc. in the United States, other countries, or both. Other company, product, and service names may be the trademarks or service marks of others.

