Tivoli software

IBM

Redbooks Paper

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Using the Tivoli Storage Manager HSM Client for Windows

Introduction

This IBM® Redpaper provides an introduction to installing, configuring, and running the IBM Tivoli® Storage Manager HSM Client (HSM Client) for Windows®. It is not our intention to explore every option, but rather to provide you with enough to get you started. See the manual *IBM Tivoli Storage Manager for HSM for Windows Administrator's Guide*, SC32-1773 for detailed information.

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Product overview

IBM Tivoli Storage Manager for HSM for Windows (referred to subsequently as “HSM client”) provides Hierarchical Storage Management (HSM) for Windows NTFS file systems. Using the HSM client, individual files, parts of NTFS file systems, or complete NTFS file systems can be migrated to remote storage in an IBM Tivoli Storage Manage server (any platform, V5.2 or higher). A migrated file leaves a small piece of the file (stub file) on the Windows system, with sufficient metadata so that the name, directory path, owner, creation date, last access date, and last modification date are all visible. The migration of files is transparent to Windows users and application; this means that Windows users see and access migrated files like any file physically stored on the file system. The only difference is that when a migrated file is opened, it will be transparently retrieved and copied back to the local Windows system.

The HSM client supports NTFS file systems under Windows 2000 with Service Pack 3 and later, and Windows 2003. Windows NT® and FAT partitions are not supported.

The HSM client acts as a Tivoli Storage Manager client exploiting the Tivoli Storage Manager client’s archiving API. Migrated files from the HSM client are stored in *archive* pools on the Tivoli Storage Manager server, not HSM pools.

Installing the HSM client

Prerequisite: The Tivoli Storage Manager backup/archive client V5.3.2 or higher must be installed on the Windows system before installing the HSM client. If this is not installed, you will see the error shown in Figure 1 when you reach step 4 on page 4. You must cancel the installation at this point, install the backup/archive client at the required level, and then re-start.

Figure 1 Error received if prerequisite Tivoli Storage Manager backup/archive client is not installed

To install the HSM client, run the setup.exe file.

1. Select the language, as shown in Figure 2. The default is English. Click **OK**.

Figure 2 Select installation language

2. The product installation welcome window displays, as shown in Figure 3 on page 3. Click **Next**.

Figure 3 Installation welcome window

3. Read and accept the license agreement (see Figure 4). Click **Next**.

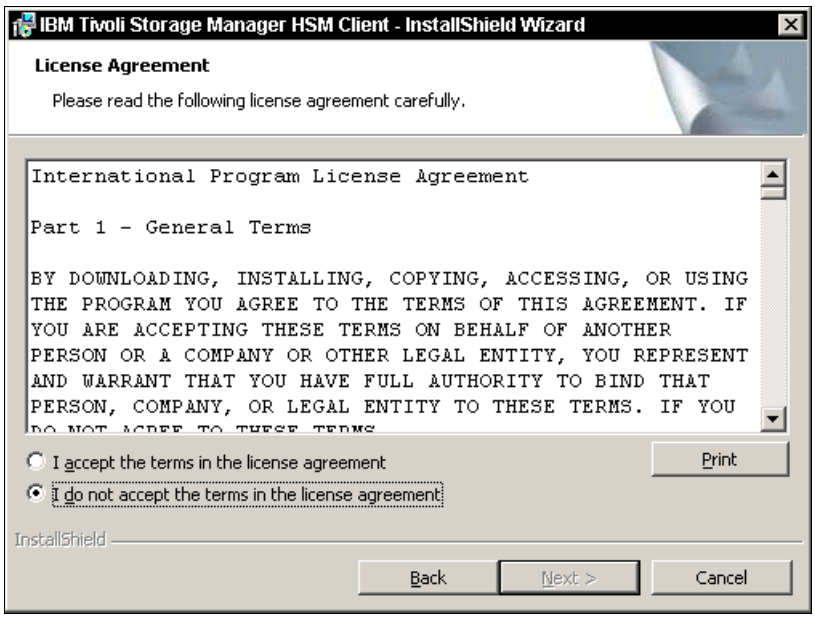

Figure 4 License agreement

4. On the next window (Figure 5), enter in the user name and organization that will use the HSM client.

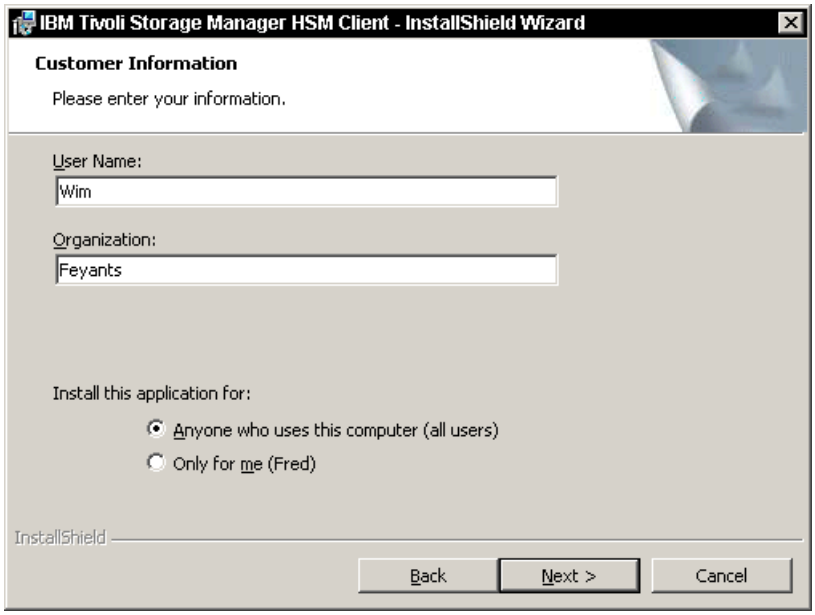

Figure 5 Enter customer information

5. In Figure 6, you can specify an alternate installation directory to the default, which is C:\Program Files\Tivoli\TSM. If your backup/archive client was installed in another location, you could choose to also install the HSM client there by clicking **Change**. A new directory, HSMCLIENT, is created in whatever base directory is specified here.

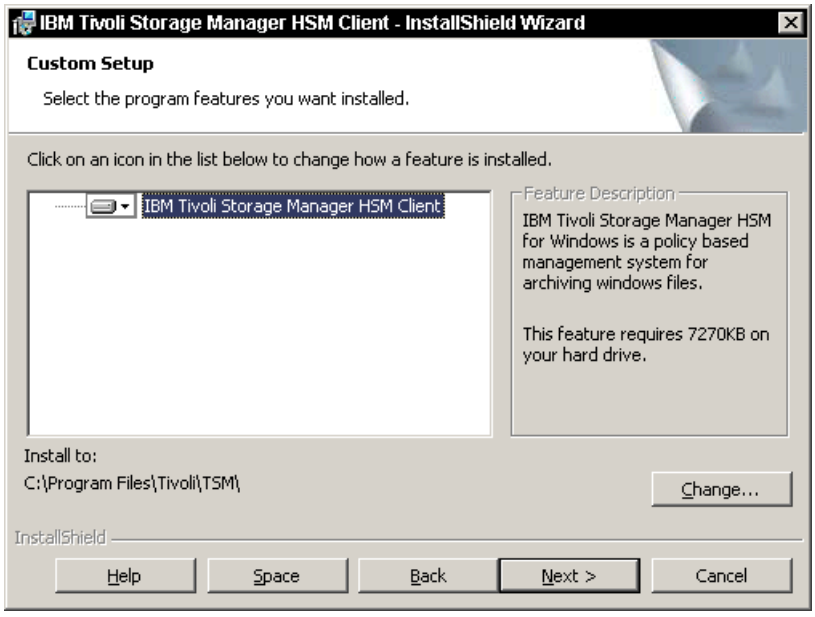

Figure 6 Choose installation location

6. You will be prompted to begin the installation. Click **Install** to proceed.
7. When the installation is complete, click **Finish** on the InstallShield Wizard Completed window.

8. You have to reboot to complete the installation, as shown in Figure 7. You should not proceed with configuring the HSM client until after the reboot.

Figure 7 Restart to complete the installation

After the reboot, the installation is complete. You can now proceed with the configuration.

Configuration

There is required configuration for both the Tivoli Storage Manager server and the HSM client. We will first describe configuration on the Tivoli Storage Manager server. The server is running on an AIX® system called AZOV.

Tivoli Storage Manager server configuration

You need to define a node for the HSM client. This should be distinct from any backup/archive client nodes. Use the REGISTER NODE command, as shown in Example 1. Our node will be called WIM_HSM with password WIM. We are using the STANDARD policy domain, but you could also have a separate policy domain just for clients using HSM.

Example 1 Register a node for the HSM client

```
tsm: AZOV_1>reg node WIM_HSM wim
ANR2060I Node WIM_HSM registered in policy domain STANDARD.
ANR2099I Administrative userid WIM_HSM defined for OWNER access to node
WIM_HSM.

tsm: AZOV_1>q node

Node Name                Platform Policy Domain  Days Since Days Since Locked?
                                  Name           Last Acce-   Password
                                                        ss        Set
------------------------ -------- -------------- ---------- ---------- -------

WIM_HSM                  (?)      STANDARD              <1         <1   No
```

You also require space in an archive storage pool. Our copy group is using an archive destination storage pool called ARCHIVEPOOL and we have defined one volume to receive the migrated files from the HSM clients, as shown in Example 2.

Example 2 Setup of archive storage pool and volume

```
tsm: AZOV_1>q co standard t=a f=d

            Policy Domain Name: STANDARD
               Policy Set Name: ACTIVE
               Mgmt Class Name: STANDARD
               Copy Group Name: STANDARD
               Copy Group Type: Archive
                Retain Version: 100
          Retention Initiation: Creation
           Retain Minimum Days:
            Copy Serialization: Shared Static
                Copy Frequency: CMD
                     Copy Mode: Absolute
              Copy Destination: ARCHIVEPOOL
Last Update by (administrator): ADMIN
         Last Update Date/Time: 11/10/05   16:56:43
              Managing profile:

tsm: AZOV_1>q vol stgp=archivepool

Volume Name               Storage      Device      Estimated    Pct   Volume
                          Pool Name    Class Name   Capacity   Util   Status
------------------------  -----------  ----------  ---------  -----  --------
/opt/tsmvols/arpool.vol   ARCHIVEPOOL  DISK            100.0   27.0  On-Line
```

This is all that is required for a basic configuration on the server.

Important: Files migrated to the Tivoli Storage Manager server using the HSM client for Windows are retained on the server for the length of time defined in the Retain Version field of the archive copy group. Our example shows 100 days. You should set this field according to your needs and the space available. This field can be set to NOLIMIT, which means the migrated files will be kept on the server indefinitely, regardless of whether the original is deleted from the client. If you set this field to a lesser value, be careful of the possibility that the stub file still exists on the client, when the migrated file on the server has expired.

HSM client configuration

Now you need to configure the HSM client.

1. From the Windows start menu, select **Start** → **Program Files** → **Tivoli Storage Manager** → **HSM GUI**. The first time this is run, you will be prompted to create a new options file, as shown in Figure 8 on page 7. Click **Next**.

   Important: The HSM client creates its own options file, dsm.opt, in the installation directory. It will not overwrite or conflict with any existing backup/archive client options file.

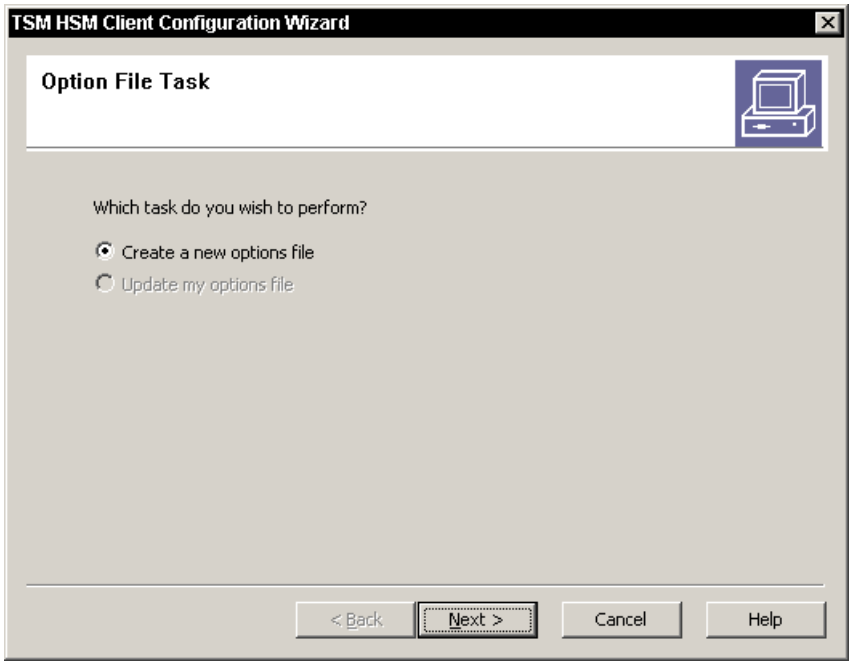

Figure 8 Create a new options file

2. On the next window (Figure 9), enter the address and port for the Tivoli Storage Manager server. We used the fully qualified domain name azov.almaden.ibm.com.

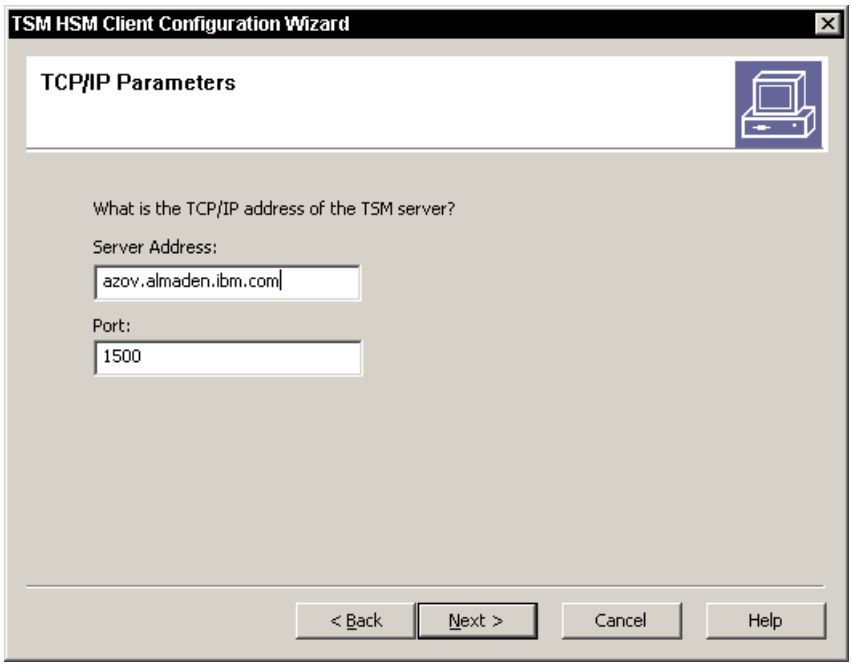

Figure 9 Enter Tivoli Storage Manager server address and port

3. Next, enter the password access method (see Figure 10).

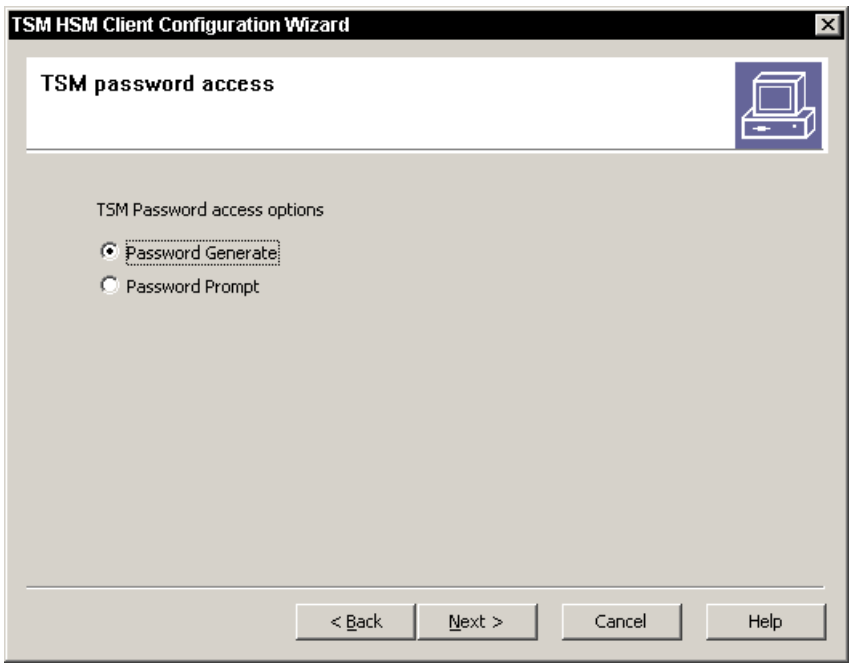

Figure 10 Enter password access method

We recommend Password Generate; with this option, the password will be encrypted locally after it is entered the first time, and you will not have to enter it subsequently.

4. Enter the nodename, which should match the HSM client nodename defined on the Tivoli Storage Manager in Example 1 on page 5. Our nodename is WIM_HSM, as shown in Figure 11.

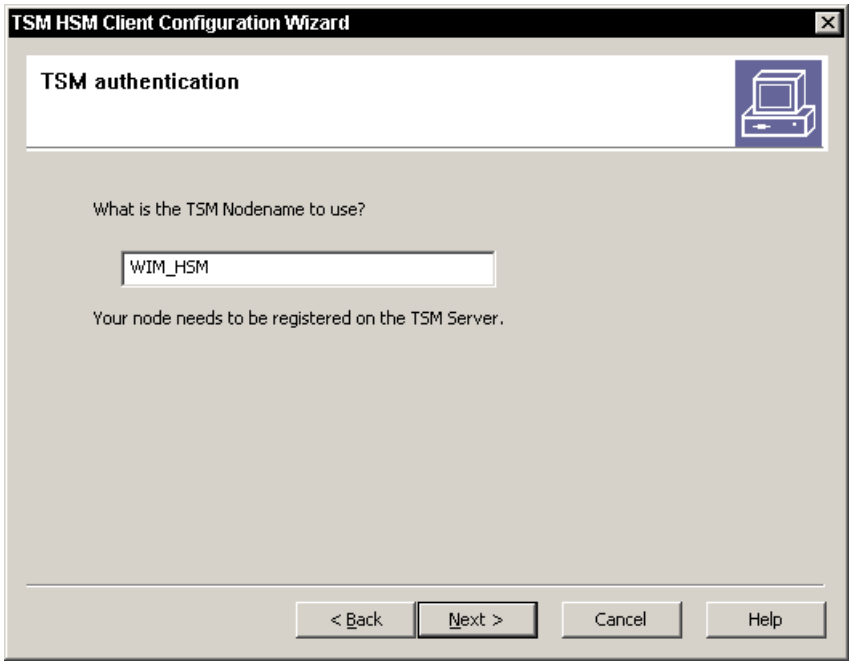

Figure 11 Enter the nodename of the HSM client

5. Next, enter the password corresponding to this node; again, match it to the password defined on the Tivoli Storage Manager server (see Figure 12).

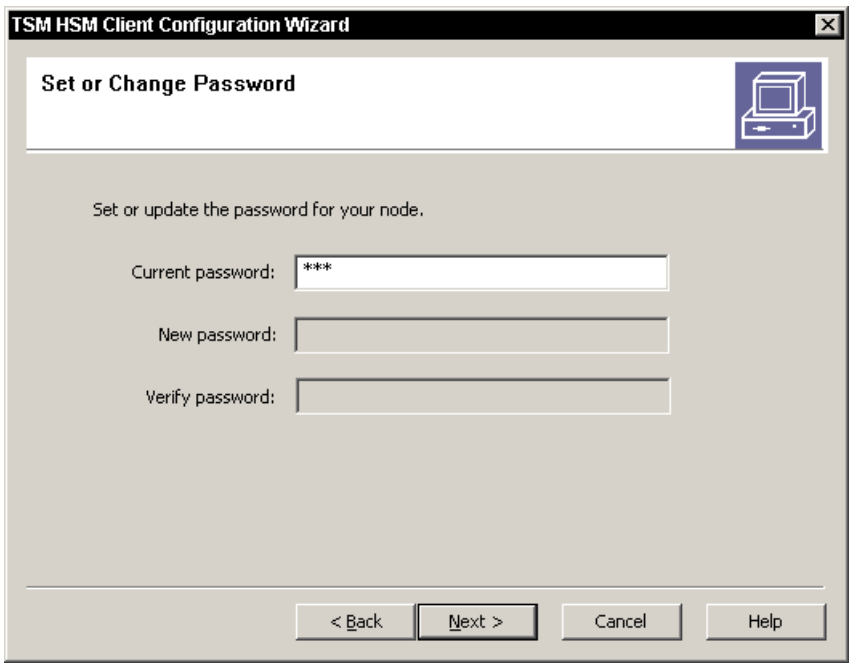

Figure 12 Enter the password for the client node

6. Now you can enter a default file space to be used to store the migrated files from the HSM client. You do not need to specify a default file space; you can manually enter a file space each time you migrate files. The HSM client will create a file space entry for the name entered. We entered a file space, wim-hsm-fs1, as shown in Figure 13.

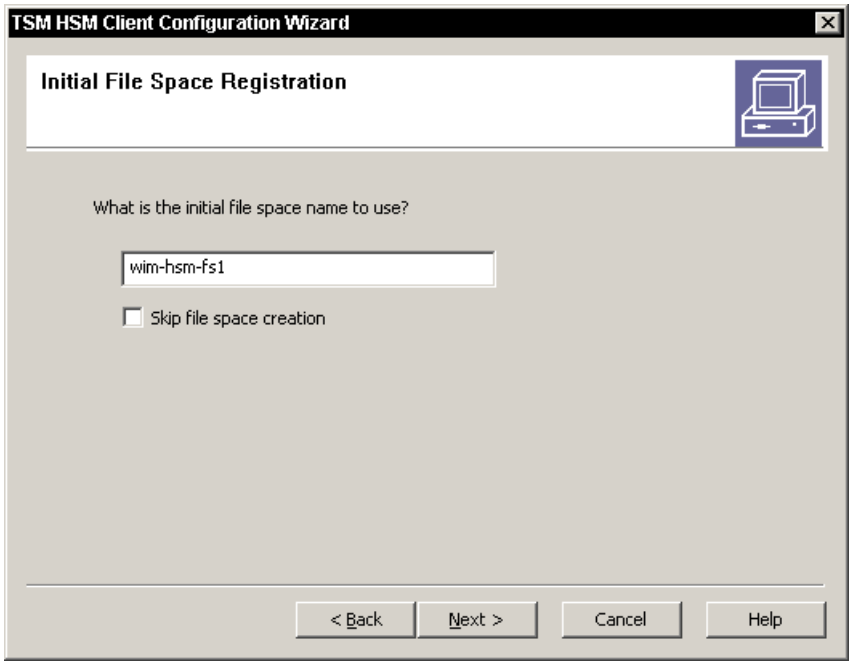

Figure 13 Specify initial file space

7. You will see a summary of the settings you have entered, as shown in Figure 14. If you are satisfied, click **Finish**.

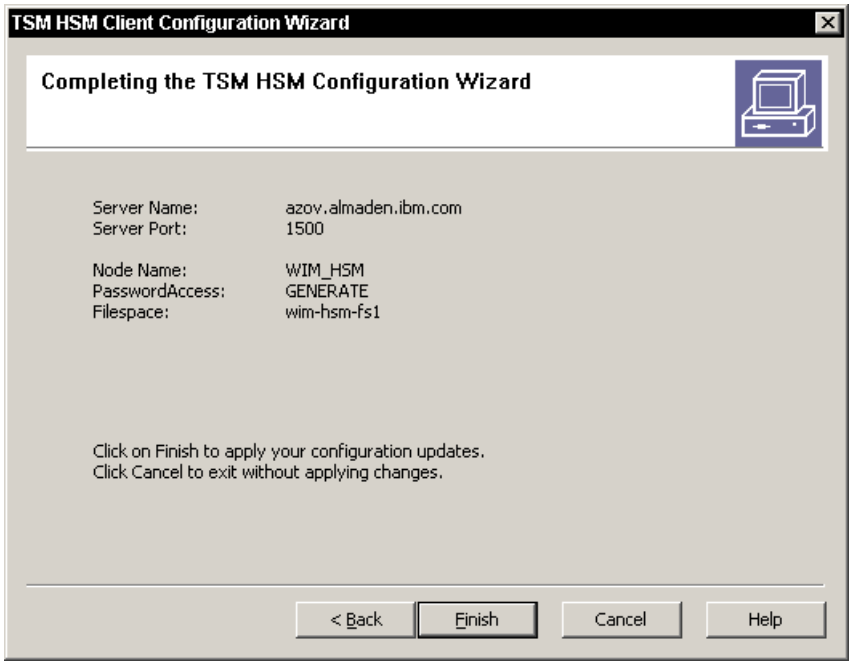

Figure 14 Confirm HSM client configuration settings

8. You will see the options file written message (see Figure 15). Click **OK**.

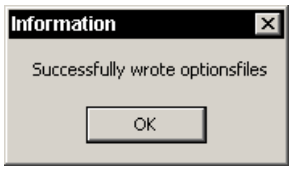

Figure 15 HSM client configuration complete

9. You will see the main execution window for the HSM client, as shown in Figure 16.

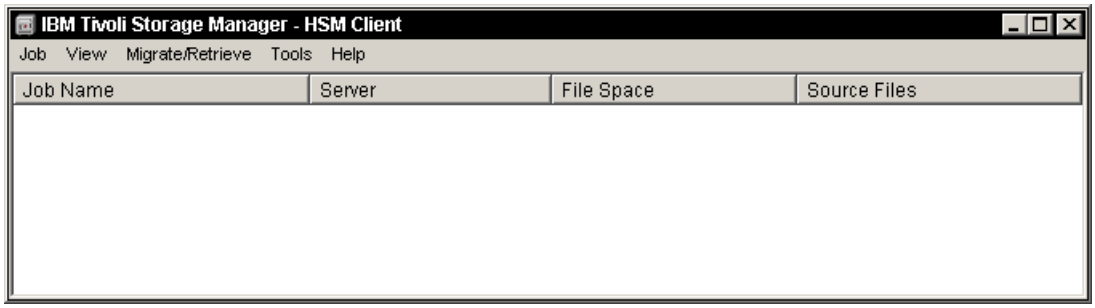

Figure 16 HSM client initial screen

Before performing some actual migration, let's check the options file which was created. This is in c:\Program Files\Tivoli\TSM\hsmclient\dsm.opt, and looks like Example 3 on page 11.

Example 3 HSM client options file

```
************************************************************************
*                                                                      *
*                           -=* WARNING *=-                            *
*                                                                      *
* MODIFICATION OF TSM SERVER ACCESS DATA MAY MAKE MIGRATED FILES UNACCESSIBLE *
*                                                                      *
************************************************************************

TCPSERVERADDRESS azov.almaden.ibm.com
TCPPORT 1500
PASSWORDACCESS GENERATE
NODENAME WIM_HSM
```

We can see the file space created on the Tivoli Storage Manager server using the QUERY FILESPACE command, as in Example 4.

Example 4 File space wim-hsm-fs1 is created on Tivoli Storage Manager server

```
tsm: AZOV_1>q fi

Node Name       Filespace   FSID Platform Filespace Is Files- Capacity   Pct
                Name                      Type        pace        (MB)  Util
                                                    Unicode?
--------------- ----------- ---- -------- --------- --------- -------- -----
WIM_HSM         wim-hsm-fs1    1 Windows  API:TSM      Yes         0.0   0.3
                                           HSM Cli-
                                           ent for
                                           Windows
```

Now we are ready to put the HSM client to work.

Operation

We will show how to set up a job to migrate some files to the server, and then how the transparent recall of files is done.

Define a migration job

1. From the main HSM client window shown in Figure 16 on page 10, select **Job** → **New Job**. Enter a name for the job; we chose ITSOJob1, as shown in Figure 17.

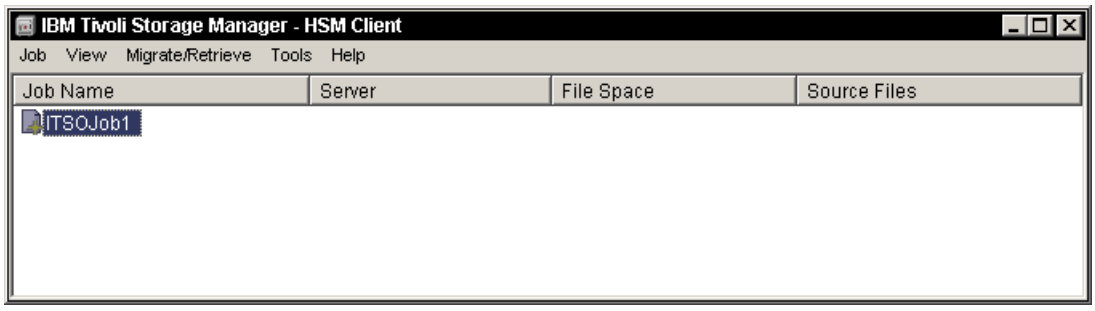

Figure 17 Create a migration job

2. To set the job properties, double-click the job name. The window shown in Figure 18 appears. On the General tab, enter a file space where the migrated files will be stored on the Tivoli Storage Manager server. You could use the file space defined in step 6 on page 9 or specify new one. We used the file space we already specified, wim-hsm-fs1.

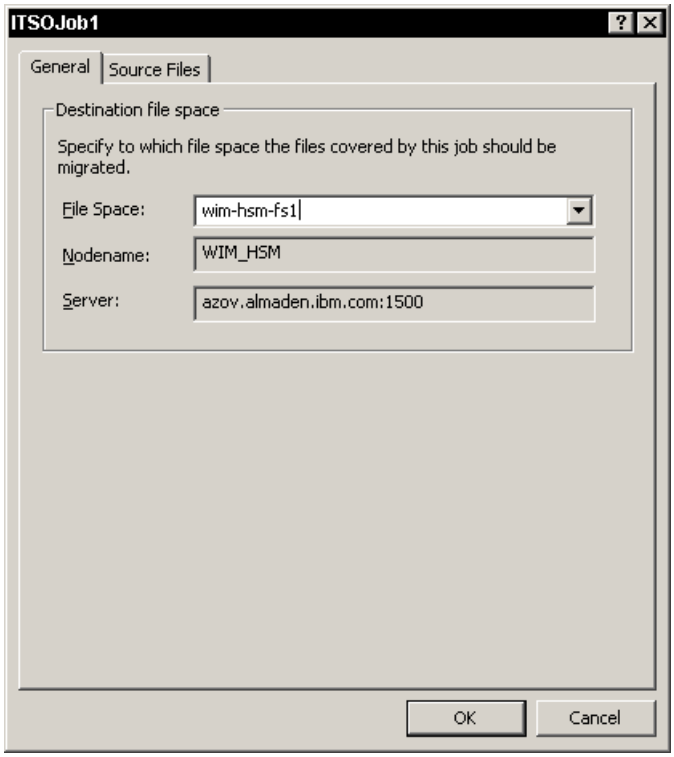

Figure 18 Enter file space

3. Click the **Source files** tab. In this window (Figure 19 on page 13), you will specify the files and directories to be migrated. There can be multiple specifications here. To enter a directory, click **New Directory** to enter an individual file, enter **New File**. We wanted to enter a directory.

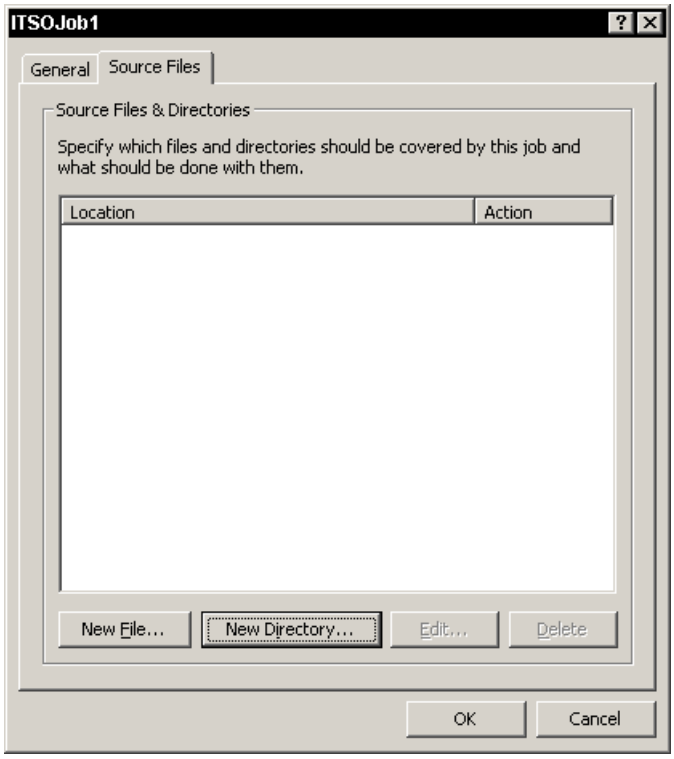

Figure 19 Specify source files and directories to be migrated

4. In the next window, you can enter the directory you want to migrate; click **Browse** to navigate the directories to find the one you want. If you want the contents of any subdirectories to be also migrated, check the **Include subdirectories** box. You also need to specify what action to perform on the HSM client after the files are migrated. The default, as selected in Figure 20, is to replace the original file with a stub file; freeing up space on the client. Alternatively you can keep the files as is on the client or delete the files. If you select the option to delete, you are essentially performing an archive, since the files will no longer exist on the client.

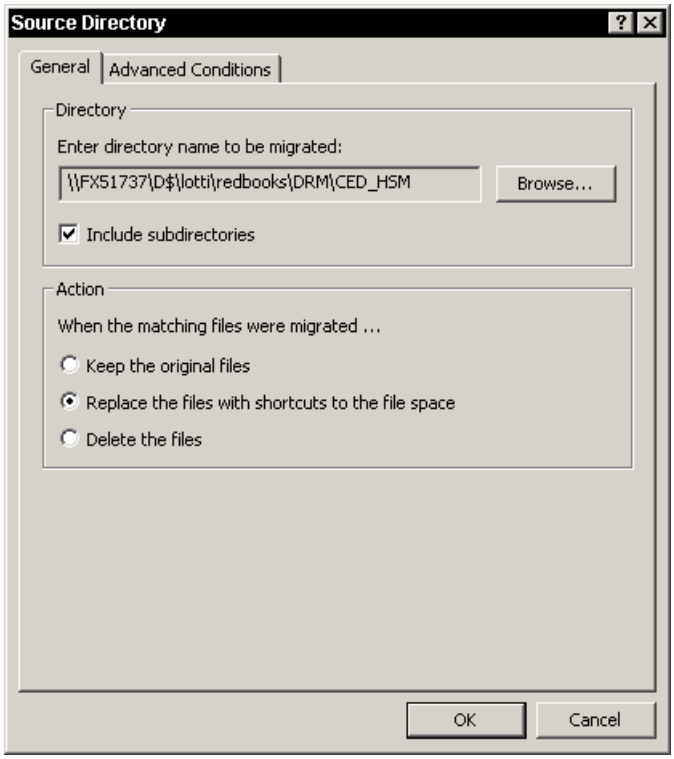

Figure 20 Specify the source directories to include

5. If you finish the job here, all files in this directory will be migrated; however, you can add further conditions on the files to be migrated. These conditions can be related to the file size, creation time, modification time, last access time, or a combination of these. You can also specify groups of files, either explicitly entered, or based on file extension (for example, .ppt or .doc). You can choose to include or exclude files matching the condition. To add a condition, click the **Advanced Conditions** tab and select **New Include** or **New Exclude**. Conditions represent an extremely powerful feature of the HSM client. Refer to the manual *IBM Tivoli Storage Manager for HSM for Windows Administrator's Guide*, SC32-1773 for full details of defining and using conditions.

   We show adding a simple condition so that only files that have not been modified in 120 days will be migrated, as shown in Figure 21 on page 15. If you specify additional conditions, only files that match all the conditions will be migrated.

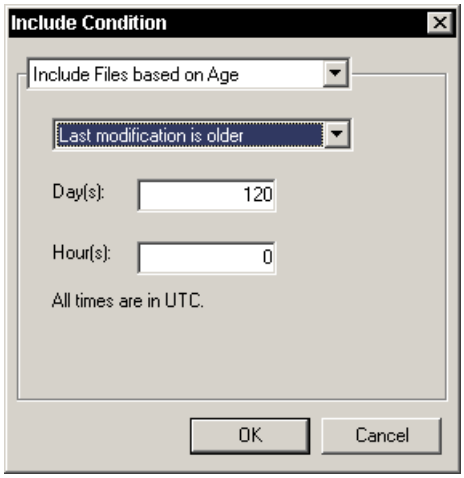

Figure 21 Access time condition

6. Figure 22 shows the condition has been entered in the job properties.

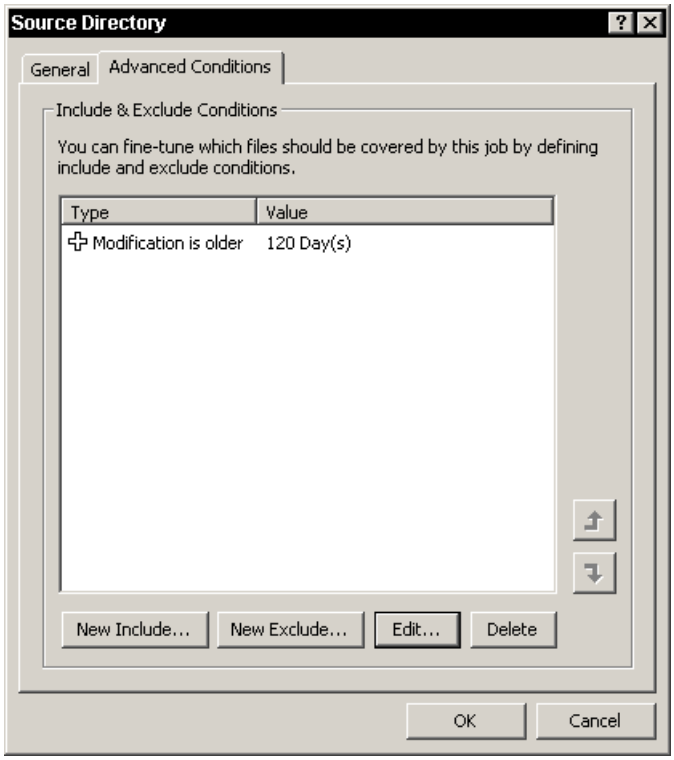

Figure 22 Condition is defined

7. Click **OK** twice to complete the job definition. The job now appears in the main window, as shown in Figure 23.

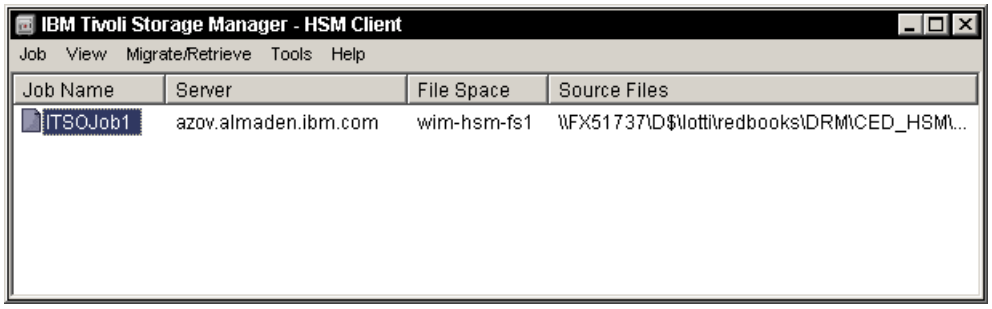

Figure 23 Migrate job definition is complete

Execute a migration job

Now we want to execute a migrate job. You can do this from the GUI or from the command-line interface (run c:\Program Files\Tivoli\TSM\hsmclient\dsmclc.exe). Since there is a command line interface, you can also schedule migrate jobs for regular execution using the Windows scheduler or other scheduling package. You can also feed a list of files to migrate, which could be generated from an application such as TPC for Data report. Again, see the manual *IBM Tivoli Storage Manager for HSM for Windows Administrator's Guide*, SC32-1773 for full details of these options.

Before running the job, we will see how many files are currently on disk in this directory using Windows Explorer, as shown in Figure 24.

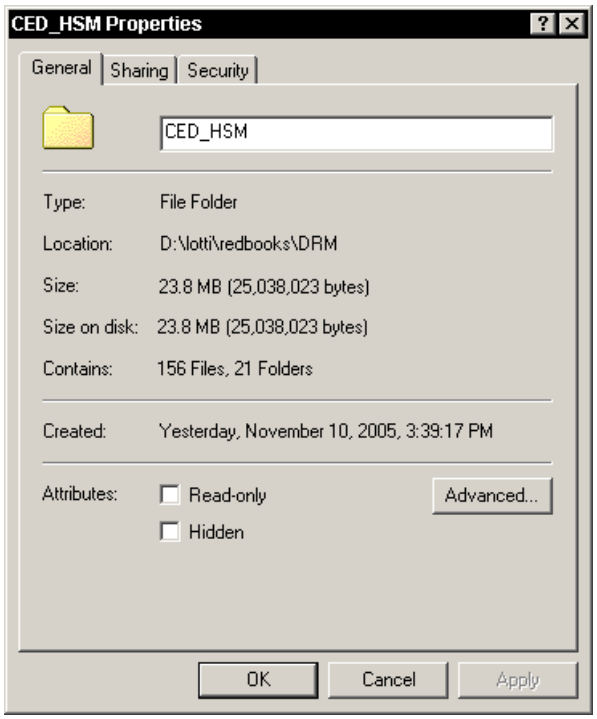

Figure 24 Original directory size

We can estimate the likely benefit of running the job by right-clicking and selecting **Calculate Space Saving**, as in Figure 25.

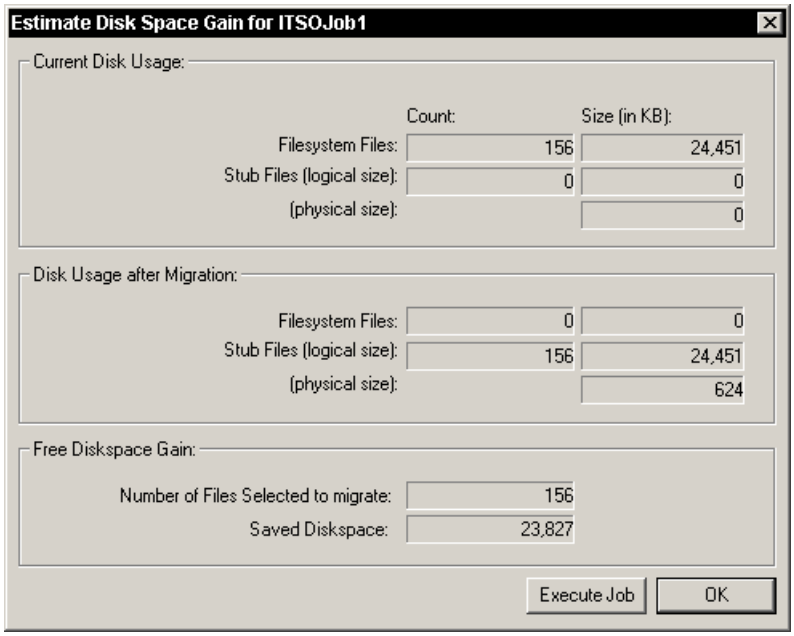

Figure 25 Calculate space savings

Now we are ready to migrate.

1. To run the job, click **Execute Job** from the previous window (Figure 25) or from the main window (Figure 23 on page 16), right-click the job and select **Execute Job Immediately**. Answer **Yes** to the question Do you really want to migrate?. The window will show each file as it is being migrated, as shown in Figure 26.

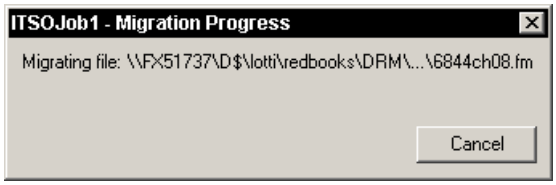

Figure 26 Migration in progress

2. After the migration is complete, the summary window shows the results (see Figure 27).

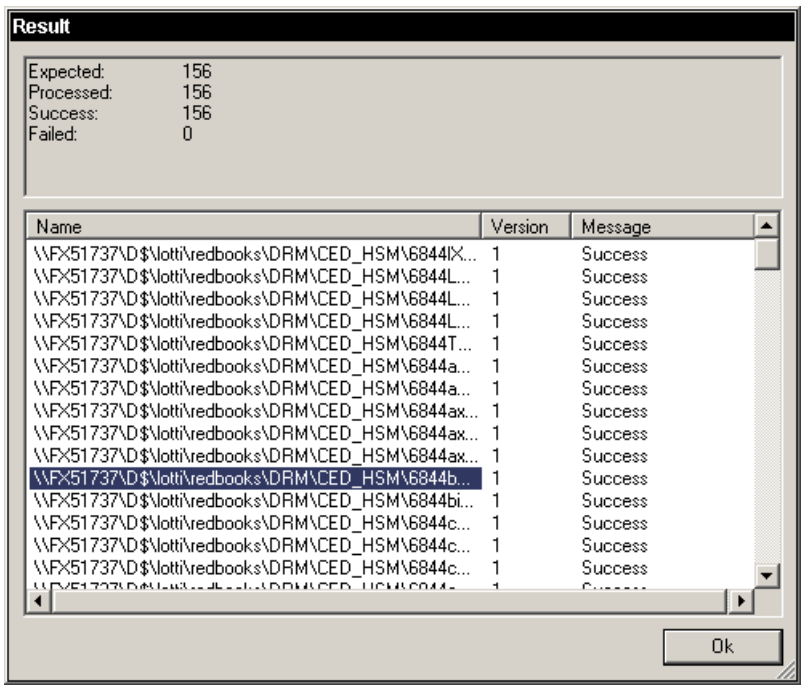

Figure 27 Migration complete

3. If we re-display the directory details, compared with before the migration, as in Figure 24 on page 16, we can see, as in Figure 28, that we have freed up the space on the disk.

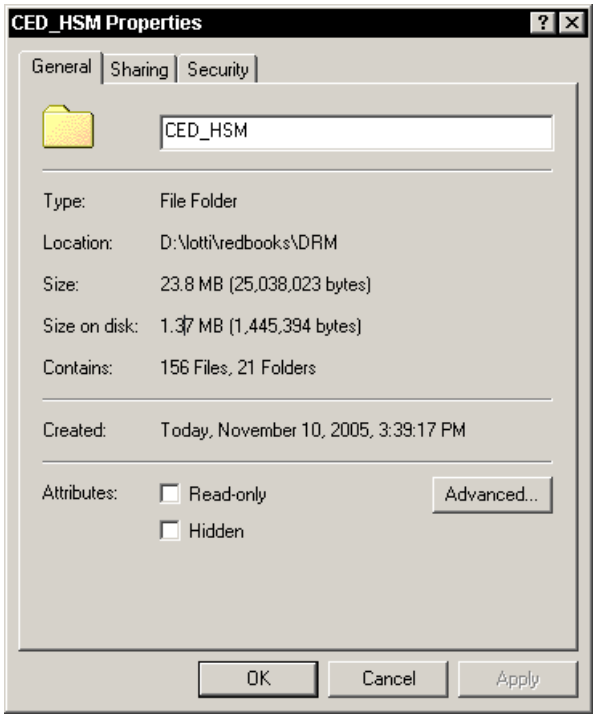

Figure 28 Directory size after migration

Note the Size on disk field; this now represents only the space taken up by the stub files.

4. On the Tivoli Storage Manager server, we use the QUERY OCCUPANCY QUERY VOLUME command, as in Example 5, to show that there is space occupied by the HSM client in the file space designated and in the volume in the archive pool.

Example 5 Migrated files stored on the Tivoli Storage Manager server

```
tsm: AZOV_1>q occ

Node Name  Type Filespace   FSID Storage    Number of  Physical   Logical
               Name             Pool Name      Files     Space     Space
                                                       Occupied  Occupied
                                                          (MB)      (MB)
---------- ---- ---------- ----- ---------- --------- --------- ---------
WIM_HSM    Arch wim-hsm-f-     2 ARCHIVEPO-       156     24.30     24.30
                 s1              OL
tsm: AZOV_1>q vol

Volume Name              Storage      Device      Estimated    Pct   Volume
                         Pool Name    Class Name   Capacity   Util   Status
-----------------------  -----------  ----------  ---------  -----  --------
/opt/tsmvols/arpool.vol  ARCHIVEPOOL  DISK            100.0   24.3  On-Line
```

5. Finally, we can show the properties of an actual file that was migrated, as in Figure 29. Compare the Size field with the Size on disk field; this is the only indication from the client perspective that the file has been migrated.

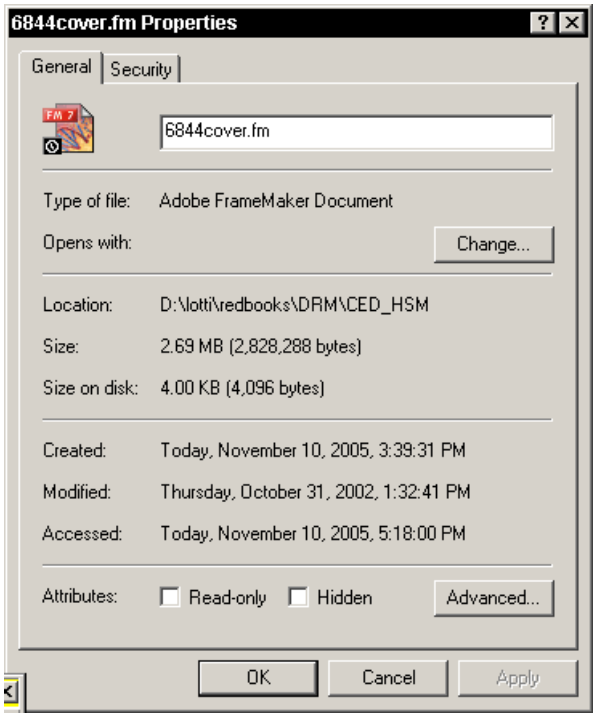

Figure 29 A migrated file

Retrieve files

There are two ways to retrieve files. First, you can open the file as normal from the appropriate application. For the file shown in Figure 29 on page 19, we would open it in FrameMaker. This causes a transparent retrieve from the Tivoli Storage Manager server; the only indication to the client that this had occurred is a slight delay in the normal file access time. After the file has been opened and saved, the properties (Figure 30) show that the Size and Size on disk fields are identical; the whole file has been written back to local disk.

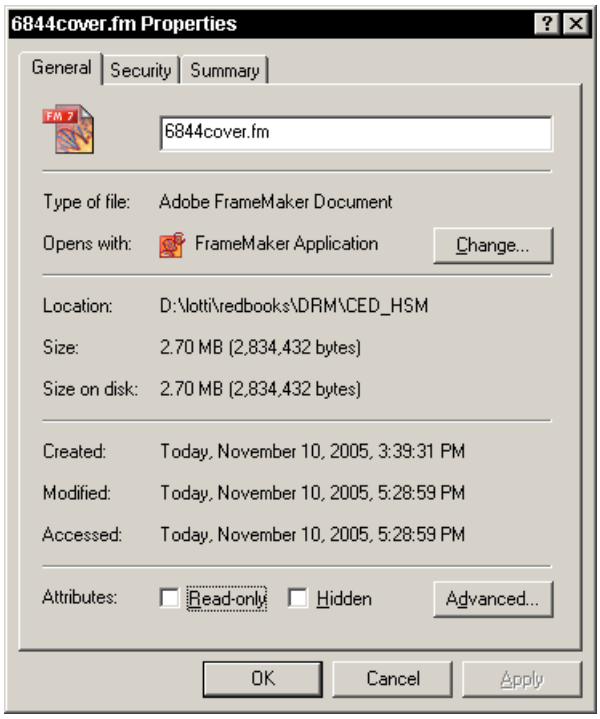

Figure 30 File after retrieval

The other way to retrieve files is explicitly through the GUI. To do this, select **Migrate/ Retrieve** → **Search & Retrieve** from the main window shown in Figure 23 on page 16. Specify the file space; you can also use limiting search criteria. In our example (Figure 31 on page 21), we use wild cards so that all migrated files will be displayed. Click **Search**.

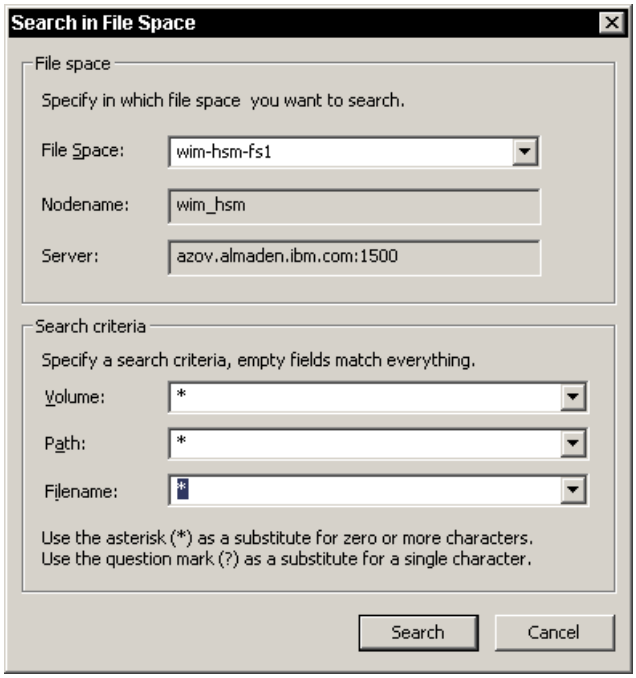

Figure 31 Search for files to retrieve

We receive a warning that all migrated files will be returned (since we used all wild cards).

From the displayed list of migrated files (Figure 32), select those that you want to retrieve, and click **Retrieve**.

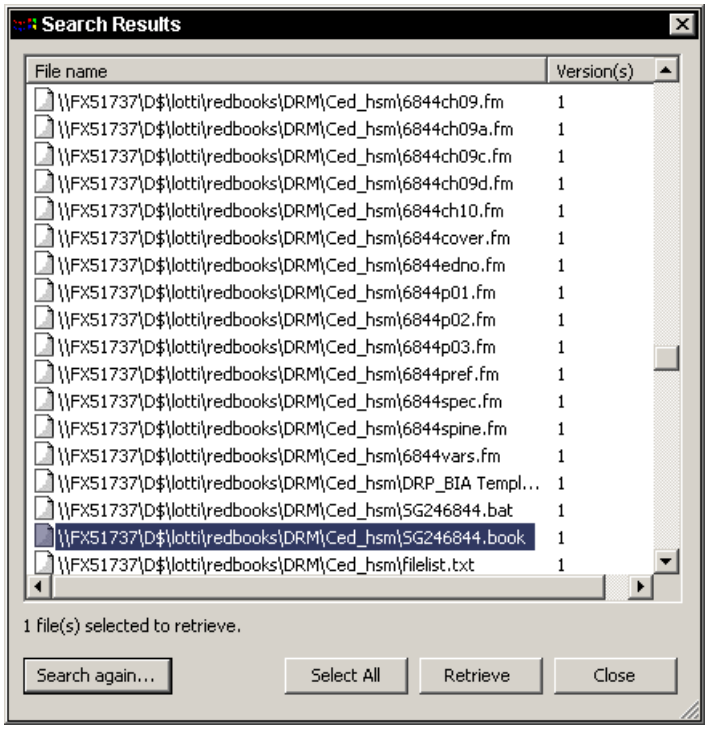

Figure 32 Select files to retrieve

As shown in Figure 33, there are different options for single and multiple file retrieves. Click **Retrieve** again to actually retrieve the file.

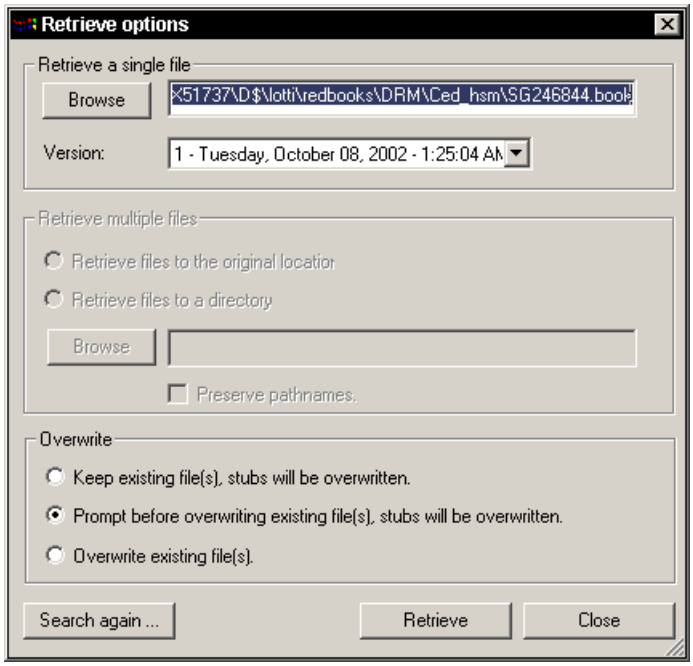

Figure 33 Specify options for retrieval

The team that wrote this Redpaper

This Redpaper was produced by a team of specialists from around the world working at the International Technical Support Organization, San Jose Center.

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