

# Testing the TMF-Option for BackHome/TSM

Quick Start Guide

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ETI-NET

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## Introduction

This document describes how to install and run the TMF-Option for ETI-Net's BackHome/TSM in order to test its data-storage and recovering capabilities with minimal risk to your production environment. **It is intended for system managers who typically configure and manage Tandem's Transaction Monitoring Facility (TMF), and assumes they have basic familiarity with TMF configuration and operating procedures.** For detailed information about using the TMF-Option in an actual production environment, refer to the document *TMF-Option for BackHome*.

This Quick-Start Guide does not cover the whole evaluation period, but is rather a sample of operations where:

- the TMF-Option is installed
- the TMF-Option is configured
- the TMF-Option is enabled
- a single, simplistic test is run with minimal data volume
- the TMF-Option is disabled.

**Performing all procedures, from start to finish without interruption, normally requires from 45 minutes to an hour.**

Data to be collected for the installation is shown in the table below:

Data item	File name	Keyword
Working sub-volume	Not applicable	User defined
Type of logging (EMS or private)	STRTBLOG	EVENT-LOGGING parameter
Logger process name	STRTBLOG	NAME parameter in RUN BFSLOG command
Monitor process name	STRTBMON	NAME parameter on RUN BFSMON command
Remote location	BCOMCONF	The value for the RLOC keyword
Routing class	BCOMCONF	One of the numeric values associated with the "ROUTING %rloc" keyword
Location of BFSINT	STRTBINT	Fully qualified file name of BFSINT program

The system manager will need to complement the steps in this guide with plans for more realistic environments, particularly in terms of capacity planning and configuring the TSM server and BackHome/TSM to meet volume requirements.

## Overview of the TMF-Option

The TMF-Option is an extension of BackHome/TSM, designed specifically to solve the issues of tape handling and catalog management associated with TMF such as audit-trail dumps, online dumps and file-recovery operations. It runs as a standard application on a Tandem system, storing TMF online and audit dumps on a Tivoli Storage Manager (TSM) server when used with BackHome/TSM. This is in addition to the TMF system of storing data on Guardian tapes or cartridges, which are prone to such problems as mount delays, parity errors and breakage. The result is a TMF backup system providing enhanced security without the space or cost considerations of tape.

Data stored with the TMF-Option is synchronized with the TMF's tape catalog, which tracks the names of the volumes used to write audit-trails and online dumps. Whenever the TMF-OPTION sends a TMF dump or audit trail, it correlates the Tandem TMF volume name to a remote object on the TSM server. In a process known as RECOVER-FILES, the TMF-Option can then retrieve those files from the TSM storage facility and assemble them in the proper order for recovering the database.

The TMF-Option also provides an error-recovery function that enables it to retry repeatable errors up to a set number of times. If the limit is reached, the TMF-Option will redirect the dump to tape. A tape mount prompt will be triggered on the Viewpoint console. The TMF-Option will update its database to indicate that the TMF volume resides on Tandem tape.

## ***Getting started***

The following installation procedure will prepare your Tandem BackHome/TSM environment to use the TMF-Option application. **BackHome/TSM must be installed on Tandem before installing the TMF-Option.**

Before you can install the TMF-Option software, ensure that your system meets the following requirements:

- BackHome/TSM is up and running
- The BackHome/TSM license key allows transfers for the TMF-Option (the DEMO license keys allow the TMF-Option by default)
- The distribution PAK file containing the TMF-Option software is uploaded in an NSK Guardian file. It is distributed with Guardian Version G06.16 and later. To obtain PAK/UNPAK as freeware for previous versions of Guardian, refer to the TMF-Option CD.

You must also create an environment that isolates the TMF-Option from regular operations. While there are a number of ways to do so, the approach in this guide is to configure TMF to produce two copies of the dumps: one copy (Copy 1) on Guardian tape/cartridge for the regular production, the second copy (Copy 2) for the TSM server and used in the tests.

When isolating the TMF-Option from regular operations, the after-evaluation period must be analyzed to ensure that all dumps will be available to TMF on traditional media tape or disk, especially audit dumps. Ensuring that no TMF dump tape media corresponds to a TSM object means TMF can immediately re-use the tape media used for tests.

## **Starting the requesters**

At least one BackHome/TSM requester is available when you run the test. Using the STATUS ALL command, check that all requesters configured in the BCOMCONF file of BackHome/TSM are started and connected and that at least one of them is idle:

```

RUN $DATA05.MBV520E.BFSINT /NAME/ $Q1T
Etinet Bcom(BFSint) Version V5.20 (2003-05-12) Copyright ETI-NET 2002.
~status all
*** CURRENT STATUS AT 2003-08-19 15:18:52

```

PROCESS TYPE	ID	SELECT	JOB STATUS	CONNECTED	MAX RQSTS	ENABLE COMPRESS	DATA SORTED
ENCRYPT							
STNDRD	\$Q1D1	0	ACTIVE	YES	1	NO	YES
STNDRD	\$Q1D2	0	ACTIVE	YES	1	NO	YES
STNDRD	\$Q1D3	0	ACTIVE	YES	1	NO	YES
STNDRD	\$Q1D4	0	ACTIVE	YES	1	NO	YES

**Note:** If a manual cleanup of tape media is planned for the end of the evaluation process, it is recommended that you manually log the tape media written on tape and on the TSM server during the evaluation period. Although TMF and the TMF-Option provide a list of tape media and their status, the manual log enables you to securely set to SCRATCH the tape media corresponding to dumps on the TSM server.

### Installing the TMF-Option software

The TMF-Option is bundled into the same CD as the BackHome/TSM software. On the CD, the file \\NSK\TMF-OPTION\OINSTTMF.TXT provides an example of how to unpack the TMF-Option package.

Setup for the evaluation version assumes the use of two sub-volumes:

- the TLV510 sub-volume where the TMF-Option is installed and the obey files will be customized
- the working sub-volume consisting of at least three files:
  - the customized library ETMFLIB
  - the operational configuration file BCOMTBE
  - the notification obey file LSxxx (one is required for each ETMF process).

#### To install the TMF-Option:

1. Transfer in binary the TLV510.BIN file to a temporary sub-volume.
2. Transfer in text mode the file OINSTTMF.TXT to the same temporary sub-volume.
3. Edit the OINSTTMF file to conform to your environment and obey it at the TACL prompt.
4. Ensure that the following files have been restored from the CD (or tape), onto the selected sub-volume:

Name	Type	Contents/Purpose
BCOMTBE	Database	A sample, empty BCOMTBE database
ECUSTOM	Object	ETMFLIB customization program
ETMF	Object	The TMF interface process ETMF
ETMFFUP	Edit	FUP commands to create a BCOMTBE
ETMFIN	Edit	Input to ETMFINT, sample configuration file
ETMFIN2	Edit	Input to ETMFINT, sample configuration file to use with this guide
ETMFINT	Object	The user interface program ETMFINT
ETMFLIB	Object	The run-time library for TMFDR

ETMFMIG	Object	A program to convert BCOMTBE from the TMF -Option A02 to the current version
INDEX3	Edit	Lists the content of this sub-volume
LSXXX	Macro	Sample TACL macro for each ETMF process in the notify sub-volume
README3	Edit	List of enhancements and bug information
STRTCUST	Obey	OBEY to start the ECUSTOM program
STRTETMF	Obey	OBEY to start ETMF—the BackHome interface process
STRTINT	Obey	OBEY to start up the user interface—ETMFINT
STRTMIGR	Obey	OBEY to start ETMFMIGR—the conversion program
TACLNOTF	Macro	TACL macro to generate a notify message to the ETMF process
LOGTIME	Object	To create and update an audited file.

## ***Configuring the TMF-Option***

After installation, the TMF-Option must be configured before you can use it. To do so, log on as `super .super` and copy the database file BCOMTBE to your working sub-volume.

Configuring the TMF-Option involves the following procedures:

- customizing the user interface
- loading the sample configuration
- creating a notification obey file
- customizing the interface to TMF
- enabling the TMF-Option
- verifying the TMF-Option is enabled.

## **Customizing the user interface**

The BackHome/TSM TMF-Option has its own user interface (ETMFINT). The obey file STRTINT is used to run ETMFINT, and can be edited to conform to your environment. ETMFINT is not required for the regular, unattended operations of the TMF-Option.

Please copy the file BCOMTBE to your working sub-volume:

```
FUP DUP BCOMTBE, myworkingsubvol.BCOMTBE
```

To customize the user interface, update the sub-volume name <MYSUBVOL> in STRTINT to point to your working sub-volume's BCOMTBE:

```
RUN $DATA.TLV510.ETMFINT $DATA.myworkingsubvol.BCOMTBE
```

ETMFINT is used to define entries in the BCOMTBE database for configuring the product, display existing tape media and database entries, and to modify or delete configuration entries. It is also used to display information about a specific TMF tape media, including the outcome of its latest transfer.

## Loading the sample configuration

An ETMFINT obey file (ETMFIN2) is provided to configure the TMF-Option for your test. Edit ETMFIN2, the sample configuration input file, to update the following parameters:

- The logger process name (LOGGER \$Q1LG)  
This must correspond to the logger process launched by the STRTBLOG obey file in the BackHome/TSM working sub-volume.
- The logging type (EMS-LOGGING NO), found in the BCOMCONF file in the BackHome/TSM sub-volume and having the attribute EVENT-LOGGING
- The monitor process name (BCOM-MONITOR \$Q1T), found in the STRTBMON file in the string:  
RUN BSFMON/IN CONFIG, NOWAIT, NAME \$name, CPU 1/0  
The local location (LOCAL-LOC %Q1T)
- The remote location (REMOTE-LOC %Q1D)
- The routing class (ROUTING-CLASS 1)  
Refer to the available ROUTING-CLASS in BCOMCONF. If you want to reserve two or more BackHome/TSM requesters for TMF, define them for only one ROUTING-CLASS to be used only by the TMF-Option.
- The sub-volume (SF-TACL-SUBVOL <MYSUBVOL>) that will contain the notification obey file used to update BCOMTBE on the status of each file dumped

### Distributed ETMFIN2

```
COMMENT
COMMENT      Sample configuration for dumps on 2 copies:
COMMENT      - the 1st copy on tape (unmodified TMF functionality)
COMMENT      - the 2nd copy, if any, on a TSM server
COMMENT

SET CONFIG,  LOGGER           $Q1LG
SET CONFIG,  COLLECTOR        $0
SET CONFIG,  EMS-LOGGING      NO
add config

SET COPY,    MODE              TAPE
ADD COPY 1

SET COPY,    MODE              REMOTE
SET COPY,    BCOM-MONITOR      $Q1T
SET COPY,    LOCAL-LOC         %Q1T
SET COPY,    REMOTE-LOC        %Q1D
SET COPY,    ROUTING-CLASS     1
SET COPY,    SF-TACL-SUBVOL    <MYSUBVOL>
SET COPY,    REMOTE-SERVER     ADSM
SET COPY,    REMOTE-FILE       $TMF.&.*
SET COPY,    SF-RATTR01        AD-OBJECTSIZE=500
SET COPY,    SF-RATTR01        OD-OBJECTSIZE=5000
SET COPY,    DELAY-INTERVAL    2
SET COPY,    MAX-RETRY         10
ADD COPY 2

SET PROCESS, TIMEOUT 5
ADD PROCESS $EE1
```

Start the user interface and execute the prepared configuration ETMFIN2 as shown below:

```
> VOLUME <MYSUBVOL>
> OBEY STRTINT
Etinet ETMF (Etmfint) Version V5.1 (2001-10-29) Copyright ETI-NET 2001.
~ OBEY ETMFIN2
$DATA05 MBTMF52 29> o strtint
COMMENT
COMMENT --- Sample OBEY file to start ETMFINT User interface.
COMMENT

RUN ETMFINT /NAME / mbttcl.bcomtbe
Etinet ETMF (Etmfint) Version V5.1 (2001-10-29) Copyright ETI-NET 2001.
~obey etmfin2
COMMENT
COMMENT Sample configuration for dumps on 2 copies:
COMMENT - the 1st copy on tape (unmodified TMF functionality)
COMMENT - the 2nd copy, if any, on a TSM server
COMMENT

SET CONFIG, LOGGER $M1LG
SET CONFIG, COLLECTOR $0
SET CONFIG, EMS-LOGGING NO
add config
CONFIG RECORD IS ALREADY SET. USE DELETE OR ALTER TO CHANGE THE VALUES.

SET COPY, MODE TAPE
ADD COPY 1
COPY 1 IS ADDED.

SET COPY, MODE REMOTE
SET COPY, BCOM-MONITOR $M1T
SET COPY, LOCAL-LOC %M1T
SET COPY, REMOTE-LOC %Q1D
SET COPY, ROUTING-CLASS 1
SET COPY, SF-TACL-SUBVOL $DATA05.MBTTCL
SET COPY, REMOTE-SERVER ADSM
SET COPY, REMOTE-FILE $TMF.&.*
SET COPY, SF-RATTR01 AD-OBJECTSIZE=500
SET COPY, SF-RATTR01 OD-OBJECTSIZE=5000
SET COPY, DELAY-INTERVAL 2
SET COPY, MAX-RETRY 10
ADD COPY 2
COPY 2 IS ADDED.

SET PROCESS, TIMEOUT 5
ADD PROCESS $EE1
PROCESS $EE1 IS ADDED.
~
```

The BackHome/TSM environment log should show the following activity:

```
> VOLUME <BackHome/TSM subvol>
> OBEY STRTBINT
RUN $DATA05.MBV520E.BFSINT /NAME/ $M1T
Etnet Bcom(BFSint) Version V5.20 (2003-05-12) Copyright ETI-NET 2002.
~listlog last 10
2003-08-19 16:38:45 $Z13A USER 255,255 ADDED CONFIG RECORD TO
\LEOMIRA.$DATA05.mbtctl.bcomtbe.
2003-08-19 16:38:45 $Z13A USER 255,255 ADDED COPY RECORD 1 TO
\LEOMIRA.$DATA05.mbtctl.bcomtbe.
2003-08-19 16:38:45 $Z13A USER 255,255 ADDED COPY RECORD 2 TO
\LEOMIRA.$DATA05.mbtctl.bcomtbe.
2003-08-19 16:38:45 $Z13A USER 255,255 ADDED PROCESS RECORD $EE1 TO
\LEOMIRA.$ DATA05.mbtctl.bcomtbe.
END OF LIST
```

~

## Creating a notification obey file

The TMF-Option uses the notify-completion facility of BackHome/TSM to keep track of the completion status of backup (dump) requests in the database (BCOMTBE), and to update its database or take appropriate corrective action. Status information is used to update the TAPEMEDIA record of the appropriate tape volume.

To use the notify-completion facility with the TMF-Option, you must first build a sub-volume of special TACL macros called LSxxx files. A separate TACL macro must be defined for each process in the database.

1. Set the SF-TACL-SUBVOL to your working sub-volume (or notify sub-volume).
  2. FUP DUP the TACLNOTF macro found on your TMF-Option distribution sub-volume into the indicated notify sub-volume(s).
  3. FUP DUP the LSxxx macro found on your TMF-Option distribution sub-volume into the same notify sub-volume and process as follows:
    - o Rename the LSxxx macro to "LS<process-name>", where <process-name> is the Tandem process name specified on an ADD PROCESS statement (minus the "\$").
    - o Edit the "LS<process-name>" macro and change the notify statement contained in it. It should reference the full <process-name> of the corresponding ADD PROCESS record.
- In the same macro, change the filename parameter of the LOAD statement to reference the TACLNOTF macro moved to this notify sub-volume in Step 2.

**EXAMPLE:** Using the above procedure ETMFIN2, a process called \$EE1 was added, and the working sub-volume was called \$DATA01.BTN. The notify sub-volume should now contain the macro files TACLNOTF and LSEE1. The macro file LSEE1 should now read:

```
LOAD $DATA01.BTN.TACLNOTF
NOTIFY $EE1.#NOTIFY
```

The TMF-Option uses the BackHome/TSM transport engine to exchange data with the remote platform. To generate transfer request procedures into BackHome/TSM, it invokes the BackHome/TSM user interface called BFSINT. Once defined, the request procedures are also scheduled via the BFSINT interface.

To customize STRTETMF, the TMF-Option file used to start the BackHome/TSM interface process (ETMF), use the procedure below:

1. Make sure BackHome/TSM is started and the requesters connected.
2. Start the ETMF processes. For each PROCESS record ADDED to the database, create a start-up obey file to start the BackHome/TSM interface process.

A sample of the STRTETMF file content is shown below where =ETMF-BCOMTBE refers to the database catalog and =ETMF-BFSINT refers to the name of the object file containing the BackHome/TSM user interface program (BFSINT):

```
COMMENT
COMMENT -- OBEY FILE TO START AN ETMF PROCESS
COMMENT

SET DEFMODE ON
DELETE DEFINE =ETMF-*
SET DEFINE CLASS MAP
ADD DEFINE =ETMF-BCOMTBE , FILE <MYSUBVOL>.BCOMTBE
ADD DEFINE =ETMF-BFSINT , FILE <BKV5200E>.BFSINT

RUN <TLV510>.ETMF /NAME $EE1, OUT ETMFLOG, NOWAIT/
```

## Customizing the interface to TMF

The last step of the installation is to bind the TMF-Option's library ETMFLIB to TMF. For technical reasons, the name of the location (\$SYSTEM.BCOM) of the database BCOMTBE is hard-coded in ETMFLIB.

The BCOMTBE file does not need to reside on the system disk, but the ETMFLIB must be customized to use the correct database.

### To change the location and name of the database in the ETMFLIB:

1. Update the sub-volume names in STRTCUST .
2. OBEY STRTCUST to produce <MYSUBVOL>.ETMFLIB.

The obey file STRTCUST provides an example of how to execute ECUSTOM:

```
COMMENT
*****
COMMENT
COMMENT -- OBEY FILE TO CUSTOMIZE BCOMTBE FILE NAME.
COMMENT
COMMENT -----
-----
COMMENT
COMMENT      IN THIS EXAMPLE, THE NEW ETMFLIB LIBRARY (TO BE BOUND TO
COMMENT      TMFDR )
COMMENT      IS MYSUBVOL.ETMFLIB.
COMMENT
COMMENT
*****
```

```

FUP DUP TLV510.ETMFLIB, <MYSUBVOL>.ETMFLIB, PURGE
DELETE DEFINE =OLD_BCOMTBE
DELETE DEFINE =NEW_BCOMTBE

SET DEFINE CLASS MAP
ADD DEFINE =OLD_BCOMTBE, FILE $SYSTEM.BCOM.BCOMTBE
ADD DEFINE =NEW_BCOMTBE, FILE $DATA.TLV510.BCOMTBE

RUN <TLV510>.ECUSTOM /IN ETMFLIB/

```

Following is a sample output:

```
*** BCOMTBE NAME MODIFIED ***
```

**Note:** The ETMFLIB to use in the next step Enabling the TMF-Option is «MYSUBVOL.ETMFLIB», not the original «TLV510.ETMFLIB». If ECUSTOM displays "\*\*\* BCOMTBE NAME NOT FOUND \*\*\*", do the following:

1. FUP DUP the ETMFLIB from your installation CD or tape.
2. Set the value of =OLD\_BCOMTBE DEFINE to "\$SYSTEM.BCOM.BCOMTBE". This is the default setting inside ETMFLIB. If the problem persists, please contact ETI-NET.

## Enabling the TMF-Option

The TMF-Option is enabled when you attach the library (ETMFLIB) to the Tandem TMFDR program of the current system (SYSnn). Neither TMFDR nor any online or audit dump should be running or the bind will fail.

When enabled with the present configuration, only the second copy of the dump, called COPY2, will be processed by the TMF-Option.

To enable the TMF-Option, run the following TACL command where <ETMFLIB> refers to the object file ETMFLIB customized in the previous section:

```

> VOLUME $SYSTEM.SYSnn
> RUN TMFDR /LIB <ETMFLIB>/

```

When enabling the TMF-Option, the process often appears to end abnormally with the message below. It is still complete, however, although you might wish to verify that the library has been successfully attached.

```

$SYSTEM SYS00 60..
: Internal error. Assertion violated
TMFPROCESS^INITIALIZE+%74
TMFDRMAIN^PROC+%63
ABENDED: 1,204

```

## Verifying the TMF-Option is enabled

To verify that the TMF-Option is enabled (i.e., ETMFLIB is associated with the TMFDR option), issue the following command at a TACL prompt:

```
BIND; SHOW SET LIBRARY FROM $SYSTEM.SYSnn.TMFDR
```

The binder should display the following output: LIBRARY \$DATA.TLV510.ETMFLIB

## Testing the TMF-Option

The TMF-Option features a test program called LOGTIME to easily create and update an audited file. Each step should be performed in order, although you can choose whether or not to begin by defining a second copy of audit dumps to send to the TSM server. After the test is complete, you can disable the TMF-Option.

The script for each procedure shows the syntax for the related commands.

**Note:** To reduce the size of data sent to the TSM server, you can force the next copy onto one tape copy before configuring the audit dump on two copies. This step is optional, and best performed when TMF activity is slow and no audit dump is running:

```
> TMFCOM  
TMF 1> NEXT AUDITRAIL MAT
```

## Defining a second copy of audit dumps

```
TMF 2> ALTER AUDITDUMP MAT, COPIES 2 PARALLEL, VERIFYTAPE OFF
```

## Creating an audited file

In the sub-volume where you installed the TMF-Option you will find a small utility to create and update an audited file.

```
VOLUME <MYSUBVOL>  
RUN LOGTIME FILE1 AUDIT LOG "Initial record"
```

## Producing an online dump

```
TMFCOM  
TMF 1> DUMP FILES FILE1, COPIES 2 PARALLEL
```

## Checking the result in BackHome/TSM

The BackHome/TSM log will list messages showing that one copy was sent to Tandem tape and the other to the TSM server.

```
> VOLUME <BackHome/TSM subvol>  
> OBEY STRTBINT  
Etnet Bcom(BFSint) Version V5.20 (2002-12-20) Copyright ETI-NET 2002.  
~ LISTLOG LAST 5
```

## Generating TMF activity

```
VOLUME <MYSUBVOL>  
RUN LOGTIME FILE1 AUDIT LOG "Appended record"
```

## Producing an audit dump

```
TMFCOM  
TMF 1> NEXT AUDITTRAIL MAT
```

## Disabling the tape copy of the online dump

This step declares Copy 1 (the tape copy) of the online dump to be expired, so that Copy 2 on the TSM server will be used. Before proceeding, display the detail of both copies of the online dump so Copy 1 can be re-cataloged.

```
TMFCOM  
TMF 1> INFO DUMPS FILE1, DETAIL
```

***IMPORTANT!*** Keep the information from the “INFO DUMPS” so that you can re-catalog the tape later.

```
TMF 2> ALTER TAPEMEDIA <tape-volume-as-reported-above-for-copy-#1>,  
STATUS SCRATCH
```

## Recovering a file

Choose a recover time between the two timestamps present in the test file:

```
VOLUME <MYSUBVOL>  
FUP COPY FILE1
```

Recover the file:

```
TMFCOM  
TMF 1> RECOVER FILES FILE1, FROMARCHIVE, TIME time-stamp
```

## Disabling the TMF-Option

Disabling the TMF-Option simply involves detaching the library (ETMFLIB) from the TMFDR program, using the following command:

```
RUN $SYSTEM.SYSnn.TMFDR /LIB/
```

## Verifying the TMF-Option is disabled

When disabling the TMF-Option, the process often appears to end abnormally. It is still complete, although you can verify that the library has been successfully detached from the TMFDR option using the following command at a TACL prompt:

```
BIND; SHOW SET LIBRARY FROM $SYSTEM.SYSnn.TMFDR
```

The binder should display the following output: LIBRARY NOT USED

## Finishing up

Finishing up is a post-test cleanup in which you restore a single copy for audit dumps, free any non-tape tape media, and re-catalog any tape media corresponding to dumps on tape. The script for each procedure shows the syntax for the related commands.

### Restoring the TMF audit dump configuration for a single copy.

```
> TMFCOM
```

```
TMF 1> ALTER AUDIDUMP MAT, COPIES 1
```

### Freeing non-tape tape media

It is recommended that TMF's tape-media expiration process set the status SCRATCH on tape media corresponding to TSM objects. If the physical media corresponding to these tape media IDs is quickly needed for new dumps, do the following:

1. Use the manual log of tape media produced during the evaluation process as main input.
2. Verify the manual log by querying the TMF-Option:

```
VOLUME <TLV510>  
OBEY STRTINT  
~ INFO TAPEMEDIA *
```

Only tape volumes having the status REMOTE are dumps stored in the TSM server.

3. Set the SCRATCH status:

```
TMFCOM  
TMF 1> ALTER TAPEMEDIA id , STATUS SCRATCH
```

### Re-cataloging tape media corresponding to dumps on tapes

You can re-catalog tape dumps from a TSM server that were disabled to test the recovery from BackHome/TSM. The parameters to re-catalog (ADD DUMPS) the tape were displayed by the INFO DUMPS command.

```
TMFCOM  
TMF 1> ADD DUMPS FILE1, SERIAL nn, TYPE ONLINEDUMP (master, data),  
TAPEMEDIA id, TIME timestamp
```

**Note:** Deletion of the copy corresponding to a TSM object might be required to re-catalog the tape copy of a dump.

## Summary

This test of BackHome/TSM's TMF-Option enhanced data-storage and retrieval system is now complete. While essentially designed to enable you to install and configure the software, and then perform basic online and audit dump operations using minimal data, it will hopefully leave you prepared to learn about BackHome/TSM's more comprehensive TMF data-security applications. You will find more information in the *TMF-Option for BackHome* manual, or feel free to contact ETI-Net support with any questions or comments.