



Tivoli Data Protection for Oracle for Windows Installation and User's Guide

Version 2 Release 2.1



Tivoli Data Protection for Oracle for Windows Installation and User's Guide

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Note

Before using this information and the product it supports, read the general information under "Notices" on page 43.

Third Edition (March 2002)

This edition applies to version 2, release 2, modification 1 of Tivoli Data Protection for Oracle for Windows Installation and User's Guide (5698-APD) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Preface

Tivoli Data Protection for Oracle performs online or offline backups of Oracle8i (Version 8.1.7) and Oracle9i (Version 9.0.1) databases to Tivoli Storage Manager storage. This integration with the RMAN Media Management API maximizes the protection of data, thus providing a comprehensive storage management solution.

Who Should Read This Book

The target audience for this book are system administrators, Tivoli Storage Manager administrators, and Oracle database administrators.

What This Book Contains

The *Tivoli Data Protection for Oracle for Windows Installation and User's Guide* contains the following sections:

- Chapter 1: Introducing TDP for Oracle
An overview of Tivoli Data Protection for Oracle and Tivoli Storage Manager, including new features and migration considerations.
- Chapter 2: Installing TDP for Oracle
The environment requirements and installation of Tivoli Data Protection for Oracle.
- Chapter 3: Configuring TDP for Oracle
Configuring the TDP for Oracle options file and setting Tivoli Storage Manager registration, configuration, policy domain, and password.
- Chapter 4: Using RMAN and TDP for Oracle
Using the Oracle Recovery Manager interface for backup and restore operations, including duplex copying and problem management.
- Chapter 5: Using the Utilities
Description, syntax, and samples for using the **tdpoconf** and **tdposync** utilities.
- Chapter 6: Using the Tivoli Storage Manager Scheduler
How to use the Tivoli Storage Manager scheduler with Tivoli Data Protection for Oracle to automate backups of Oracle server data.
- Appendix A: Client Messages
The messages that can appear in Tivoli Data Protection for Oracle.

Note: This book is included on the Tivoli Data Protection for Oracle installation CD in PDF format. The PDF file requires Adobe Reader. In addition, PDF and HTML versions are available for downloading from the Tivoli publications Web site at the following URL:

http://www.tivoli.com/support/public/Prodman/public_manuals/td/TD_PROD_LIST.html

Prerequisite and Related Information

In this book, it is assumed you know how to use a Windows NT or Windows 2000 workstation and you understand the general concepts of the operating system. It is also assumed you know how to use Oracle8 or Oracle8i Server.

Tivoli Data Protection for Oracle must be installed on the same machine as Oracle8i (Version 8.1.7) and Oracle9i (Version 9.0.1) Server, and runs on Windows NT or Windows 2000 Server operating systems only.

Throughout this document, the term Windows refers to both Windows NT Server and Windows 2000 Server.

Tivoli Storage Manager is a separate client-server licensed product that provides storage management services in a multi-platform computer environment.

Table 1. Product Related Web Sites

Description	URL
Tivoli Storage Management Solutions	http://www.tivoli.com/products/solutions/storage/news.html
Tivoli Storage Manager	http://www.tivoli.com/products/index/storage_mgr/
Tivoli Data Protection for Oracle	http://www.tivoli.com/products/index/data_protect_oracle/
Tivoli Data Protection for Oracle requirements	http://www.tivoli.com/support/storage_mgr/tdp_oracle.html
Tivoli Storage Manager product requirements and supported devices	http://www.tivoli.com/support/storage_mgr/requirements.html
Tivoli Storage Manager Downloads	ftp://ftp.software.ibm.com
Tivoli Storage Manager Discussion List	http://vm.marist.edu:80/htbin/wlvindex?ADSM-L
IBM Redbooks	http://www.redbooks.ibm.com
Oracle Corporation Home Page	http://www.oracle.com

Table 2. Related Tivoli Publications

Title	Order Number
Tivoli Storage Manager Messages	GC32-0767
IBM Tivoli Storage Manager Using the Application Program Interface	GC32-0793
IBM Tivoli Storage Manager for Windows Backup-Archive Installation and User's Guide	GC32-0788

For related Oracle publications listed below, access the following URL:

<http://technet.oracle.com/products/content.html>

Tivoli Storage Manager publications are available in softcopy at the following Web page:

http://www.tivoli.com/support/public/Prodman/public_manuals/td/TD_PROD_LIST.html

You can order hardcopies of all our publications from the IBM Direct Publications Catalog Web site at the following Web page:

<http://www.elink.ibmink.ibm.com/public/applications/pbl/cgi-bin/pbl.cgi>

Conventions Used in This Book

This book uses the following typographical conventions:

Table 3. *Typographical Conventions*

Example	Description
<code>autoexec.ncf</code>	A series of lowercase letters with an extension indicates program file names.
archive	Boldface type indicates a command that you type on a command line.
<i>dateformat</i>	Boldface italic type indicates an option.
<i>filespec</i>	Italicized type indicates either the name of a parameter, a new term, or a placeholder for information that you provide. Italics are also used for emphasis in the text.
<code>maxcmdretries</code>	Monospaced type represents fragments of a program or information as it would display on a screen.
plus sign (+)	A plus sign between two keys indicates you should press both keys at the same time.

Contacting Tivoli Customer Support

Note: Be prepared to provide the customer number for your company when contacting Tivoli Customer Support so that support personnel can assist you more readily.

The Tivoli Customer Support Web site offers extensive information, including:

- The Customer Support Handbook (a guide to support services)
- Frequently asked questions (FAQs)
- Technical information including release notes, redbooks, and white papers

The Tivoli Customer Support Web site is located at this Web address:

<http://www.tivoli.com/support/>

Contact Tivoli Customer Support in one of these ways:

- Submit a problem management record (PMR) electronically at this Web address:
<http://www.tivoli.com/support/reporting/>
- Submit a PMR electronically through the IBMLink system. For information about IBMLink registration and access, refer to this Web address:
<http://www.ibmink.ibm.com>
- Send electronic mail (e-mail) to:
support@tivoli.com
- Customers inside the U.S. can call:
1-800-TIVOLI8 (1-800-848-6548)
- Customers outside the U.S. can locate Tivoli Customer Support telephone numbers at this Web address:
<http://www.tivoli.com/support/locations.html>

Ensure that you have installed the most recent maintenance level for Tivoli Data Protection for Oracle before contacting customer support.

Accessing Publications Online

The documentation for some products is available in Portable Document Format (PDF) and Hypertext Markup Language (HTML) formats. Translated documents are also available for some products.

Tivoli publications are available online at this Web address:

<http://www.tivoli.com/support/documents/>

Tivoli Storage Manager publications are available in softcopy at the following Tivoli Storage Manager Web page:

http://www.tivoli.com/support/public/Prodman/public_manuals/td/TD_PROD_LIST.html

An ID and password is required to access certain documentation. Request an ID and password at this Web address:

<http://www.tivoli.com/support/getting/>

Resellers can obtain information about obtaining Tivoli technical documentation and support at this Web address:

<http://www.tivoli.com/support/smb/index.html>

Related Oracle publications are available at this Web address:

<http://technet.oracle.com/products/content.html>

Ordering Publications

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Online:

- <http://www.elink.ibm.link.ibm.com/public/applications/pbl/cgibin/pbl.cgi>

Telephone:

- U.S. customers: **(800) 879-2755**
- Canadian customers: **(800) 426-4968**

Summary of Changes

Changes for this publication are summarized below.

March 2002, Version 2 Release 2.1

The following changes have been made for this release:

- This publication has been revised to meet IBM globalization requirements.
- Three new options are available for the `tdpo.opt` file:

- *`tdpo_date_fmt`*
- *`tdpo_num_fmt`*
- *`tdpo_time_fmt`*
- *`tdpo_language`*

These options affect how Tivoli Data Protection for Oracle displays date, number, time, and language information.

- See “Defining Options” on page 7 for descriptions of these options.
- Tivoli Data Protection for Oracle and the Tivoli Storage Manager API share the common error log file **`tdpoerror.log`**. Tivoli Data Protection for Oracle no longer uses the Tivoli Storage Manager API error log file, `dsierror.log`.
 - See “Chapter 3. Configuring TDP for Oracle” on page 7 for more information.

Text revisions are identified by vertical revision bars (|) along the left margin.

Chapter 1. Introducing TDP for Oracle

This chapter provides a brief overview of Tivoli Data Protection for Oracle (TDP for Oracle) and Tivoli Storage Manager.

Understanding TDP for Oracle

TDP for Oracle Version 2.2.1 currently supports Oracle8i (Version 8.1.7) and Oracle9i (Version 9.0.1) databases with the Oracle Recovery Manager (RMAN).

RMAN and TDP for Oracle

The Oracle Recovery Manager provides consistent and secure backup, restore, and recovery performance for Oracle databases. While the Oracle RMAN initiates a backup or restore, TDP for Oracle acts as the interface to the Tivoli Storage Manager server (Version 4.1.0 or later). The Tivoli Storage Manager server then applies administrator-defined storage management policies to the data. TDP for Oracle Version 2.2.1 implements Oracle defined Media Management API 2.0, which interfaces with RMAN for backup and restore operations and translates Oracle commands into Tivoli Storage Manager API calls to the Tivoli Storage Manager server.

With the use of RMAN, TDP for Oracle allows you to perform the following functions:

- Full backup function for the following while online or offline:
 - databases
 - tablespaces
 - datafiles
 - archive log files
 - control files
- Full database restore while offline
- Tablespace and datafile restore while online or offline

TDP for Oracle Features

TDP for Oracle Version 2.2.1 supports the following features:

- Reliance upon the `tdpo.opt` file for all options
- The duplex backup copy feature
- LAN-free data transfer
- TDP for Oracle utilities, **tdpoconf** and **tdposync** (command-line utilities)

TDPO.OPT File

This feature provides a centralized place to define all the options needed by RMAN for TDP for Oracle backup and restore operations. This eliminates the need to specify environment variables for each session, thereby reducing the potential for human error. This also simplifies the establishment of multiple sessions. For more information, see “1. TDP for Oracle Options File (`tdpo.opt`)” on page 7.

Duplex Copy

This feature allows you to back up multiple copies of the same file to different media by assigning different management classes in the TDP for Oracle options file for each backup copy. For more information, see “Using the Duplex Copy Function” on page 14

LAN-free data transfer

TDP for Oracle supports backup and restore operations on Windows NT and 2000 in a LAN-free environment. This environment shifts data movement from the communications network to a storage area network (SAN). Data moves over the SAN to a SAN-attached storage device via the Tivoli Storage Manager Storage Agent. Running TDP for Oracle in a LAN-free environment avoids network constraints and decreases processing demands on the Tivoli Storage Manager server. This allows the server to support a greater number of simultaneous connections. To specify LAN-free, see "Enable LAN-free" on page 11.

Before enabling LAN-free support, you must install the following applications on the same system as TDP for Oracle:

- Tivoli Storage Manager Storage Agent
- Tivoli Storage Manager Managed System for SAN Storage Agent

For more information, see *Tivoli Storage Manager Managed System for SAN Storage Agent User's Guide*.

Configuration Utility (tdpoconf)

This external executable assists in setup and troubleshooting scenarios. The **tdpoconf** utility uses the `tdpo.opt` file for its options. For more information, see "TDPOCONF" on page 19.

Synchronization Utility (tdposync)

This external executable allows the database administrator (DBA) to resolve discrepancies between a RMAN catalog and the Tivoli Storage Manager server due to errors that can occur during RMAN file deletion. Identifying and removing backups from the Tivoli Storage Manager server that no longer exist in the Oracle catalog frees up space on the server. The **tdposync** utility uses the `tdpo.opt` file for its options. For more information, see "TDPOSYNC" on page 21.

Migration and Coexistence

- TDP for Oracle Version 2.2.1 does not support Oracle7 EBU-based databases.
- Existing backups created using older versions of TDP for Oracle are restorable using TDP for Oracle 2.2.1.
- TDP for Oracle relies heavily on the `tdpo.opt` file for accuracy in setup and maintenance. The contents of the `tdpo.opt` file are different than the environment variables for TDP for Oracle Version 2.1; Version 2.1 RMAN scripts for environment variables are ignored. For more information, see "Chapter 3. Configuring TDP for Oracle" on page 7 or "Scripts" on page 14.
- TDP for Oracle Version 2.2.1 supports Tivoli Storage Manager Server Version 4.1.0 (or later) and the Tivoli Storage Manager API Version 4.2.1 (or later).

Understanding Tivoli Storage Manager

Tivoli Storage Manager is a client/server program that provides storage management services in a multi-vendor, multi-platform computer environment.

Tivoli Storage Manager provides these functions:

- **Reduces Network Complexity**

It reduces network complexity with interfaces and functions that span network environments. This provides consistency across different operating systems and hardware.

- **Increases Administrator Productivity**

It can reduce the cost of network administration by allowing administrators to perform these actions:

- Automate repetitive processes
- Schedule unattended processes
- Administer Tivoli Storage Manager from anywhere in the network

- **Reduces the Risk of Data Loss**

Many users do not back up their data. Other users apply stand-alone backup techniques with diskettes and tapes as the only protection for business data. These backup systems often produce disappointing results during recovery operations. Tivoli Storage Manager schedules routine backups that enable users to recover from accidental data deletion without administrator involvement.

- **Optimizes Existing Storage Resources**

Tivoli Storage Manager allows users to move files from client file systems to Tivoli Storage Manager storage. This saves space on client file systems and can eliminate the expense of upgrading client storage hardware.

Tivoli Storage Manager monitors client storage space and moves files from client file systems to Tivoli Storage Manager storage if an out-of-space condition threatens. This function can also eliminate the expense of client hardware upgrades.

Tivoli Storage Manager provides these services:

- **Backup and Restore Services**

Backup and restore services allow backup-archive clients to generate backup copies of data at specified intervals and restore the data from these copies when required. These services protect against workstation or file server media failure, accidental file deletion, data corruption, data vandalism, or site-wide disasters.

- **Archive and Retrieve Services**

Archive and retrieve services provide backup-archive clients with point-in-time copies of data for long-term storage.

- **Server Hierarchical Storage Management Services**

Server hierarchical storage management services migrate client files from expensive storage media to less expensive storage media (from disk to tape, for example). Administrator-defined thresholds for each storage pool determines file migration. Migration applies to all backup and archive client files.

- **Automation Services**

Tivoli Storage Manager administrators can increase productivity by automating common storage administration tasks.

- **Administration Services**

Tivoli Storage Manager administration services provide support for routine monitoring, administration, and accounting. Administrators can manage the server from another system or the same system. The Tivoli Storage Manager utilities allow the administrator to perform these functions:

- Set client and server options
- Define devices
- Format storage volumes
- Add additional clients
- Label tape volumes

Tivoli Storage Manager monitors scheduled operations and maintains status information in the database. An administrator can export data to removable media. Other servers can import this data, making the export and import

features a convenient utility for moving server data. The administrator can specify the accounting option generated at the end of each client session.

- **Security Services**

Security services control user access to Tivoli Storage Manager data, storage, policy definitions, and administrative commands.

- **Disaster Recovery Management**

Disaster recovery management helps the administrator implement a comprehensive backup and recovery procedure for important business applications, data, and records.

Chapter 2. Installing TDP for Oracle

This chapter provides information on the required client environment for TDP for Oracle and instructions on installing TDP for Oracle on a Windows server.

Make sure that these conditions exist for TDP for Oracle installation:

- A Tivoli Storage Manager server Version 4.1.0 (or later) is configured and available to manage data backed up from TDP for Oracle.
- A user with administrative authority has installed TDP for Oracle on a Windows server.

After installing TDP for Oracle, you must perform the following configuration tasks:

1. Define options in the TDP for Oracle options file, `tdpo.opt`.
2. Register your client node with a Tivoli Storage Manager server.
3. Define Tivoli Storage Manager policy requirements.
4. Initialize the password.

For these task instructions, see “Chapter 3. Configuring TDP for Oracle” on page 7.

Windows Client Environment

This section lists hardware and software required by TDP for Oracle on a Windows platform. See the `readme1st.txt` file that is shipped on the product installation media for the most current information.

Hardware Requirements

- A Pentium 166 processor (or faster) or equivalent
- 64 MB of RAM minimum (96 MB recommended)
- 6 MB of disk space

Software Requirements

- Operating system: Windows 2000 or Windows NT 4.0 or later with service pack (SP) 4+
- Tivoli Storage Manager Server Version 4.1.0 (or later)
- Tivoli Storage Manager API Version 4.2.1 (or later)

Note: The Tivoli Storage Manager API is included on the product media. If you have already installed a later level API, the latest version is retained during installation.

- Oracle8i Server (Version 8.1.7) or Oracle9i Server (Version 9.0.1) with RMAN.

Communication Methods

TDP for Oracle supports the communication methods supported by the Tivoli Storage Manager client API and the Tivoli Storage Manager server.

Installing TDP for Oracle

The following instructions assume that a Windows NT 4.0 or Windows 2000 Server program is running on the client workstation.

Note: TDP for Oracle must be installed from an account that has administrator privileges to the local system.

These instructions step you through the installation of TDP for Oracle:

1. Insert the TDP for Oracle CD-ROM into the CD-ROM drive.

Note: Windows automatically starts the InstallShield wizard for you. If the wizard is not enabled, perform the following steps:

- a. Select Run from the Start menu.
- b. Enter `x:\setup` where `x` is your CD-ROM drive letter.
- c. Click OK to start the installation program.

Alternatively, you can double-click `setup.exe` using the file manager.

2. Follow the instructions displayed on your screen.

Note: From the Welcome dialog you can view the `readme1st.txt` file, which includes installation information.

If TDP for Oracle 2.2 was not previously installed on your system, you can install TDP for Oracle into the Tivoli Storage Manager base directory of your choice. TDP for Oracle 2.2 will install to the `\Agent0BA` directory under this base default directory:

```
c:\Program Files\Tivoli\Tivoli Storage Manager\
```

If Version 2.1 of TDP for Oracle exists on your system, TDP for Oracle 2.2 will replace it in the same directory.

Attention: It is highly recommended that you install all Tivoli Storage Manager products and components into the same base directory.

If TDP for Oracle 2.2 was previously installed, the Program Maintenance dialog prompts you to Repair the program if files are missing or corrupt, or to Remove the existing version from your computer.

3. Click Finish to complete the installation.

Note: The installation process does *not* overwrite the existing options files, `dsm.opt` or `tdpo.opt`, nor log files, nor does the uninstall process delete such files.

Chapter 3. Configuring TDP for Oracle

This chapter explains the following tasks for configuring TDP for Oracle:

1. Define options in the TDP for Oracle options file, `tdpo.opt`.
2. Register the node that contains TDP for Oracle with a Tivoli Storage Manager server.
3. Define Tivoli Storage Manager policy requirements.
4. Initialize the password with a Tivoli Storage Manager server.

1. TDP for Oracle Options File (`tdpo.opt`)

TDP for Oracle 2.2. depends on the `tdpo.opt` options file for behavior and performance. This options file is located in the install directory with the TDP for Oracle library.

Attention: TDP for Oracle Version 2.1 allowed environment variables that are declared in RMAN scripts. In Version 2.2, these environment variables are declared as options *in* the `tdpo.opt` file, **not** in RMAN scripts. As a result, TDP for Oracle now ignores all Version 2.1 environment variables declared in an RMAN script.

The only environment variable Version 2.2 recognizes in an RMAN script is the fully qualified path name to the `tdpo.opt` file. Therefore, you must edit existing RMAN scripts to use the ***TDPO_OPTFILE=fully qualified path and options file name*** variable instead of other environment variables.

The following is an example of declaring the path to the options file in RMAN:

```
allocate channel t1 type 'sbt_tape' parms
'ENV=(TDPO_OPTFILE=c:\RMAN\scripts\tdpo.opt)'
```

If you do not provide a fully qualified path name, TDP for Oracle uses the `tdpo.opt` file in the install directory.

Note: Though it is possible to change values in the options file, you *cannot* effect changes to the **DSMI** options unless you restart the Oracle service. TDP for Oracle loads these values from the default `tdpo.opt` file into the default install directory when the Oracle service begins.

Considerations:

- RMAN and the **tdpoconf** and **tdposync** utilities use the options defined in the `tdpo.opt` file.
- By default, the `tdpo.opt` file is located in the directory where TDP for Oracle is installed.

Defining Options

Only the following options can be set in the `tdpo.opt` file:

DSMI_LOG

This option points to the directory that contains the TDP for Oracle error log file, `tdpoerror.log`.

DSMI_ORC_CONFIG

This option points to the Tivoli Storage Manager client user options file,

dsm.opt. It is necessary to define this if your dsm.opt or any other Tivoli Storage Manager options files are installed in a location other than the default install path.

TDPO_FS

This option names the file space on the Tivoli Storage Manager server. Use this option to back up each Oracle target database to its own file space when you have more than one Oracle database. The file-space name is a string of 1 to 1024 characters. When setting up this option, do not use a directory delimiter in front of the file-space name.

The default generated by TDP for Oracle is \adsmorc unless you specify a different object name using TDPO_FS.

TDPO_DATE_FMT

This option specifies the format you want to use to display dates. You can specify a number between 1 and 5 inclusively. The default value is 1.

- 1 MM/DD/YYYY (This is the default)
- 2 DD-MM-YYYY
- 3 YYYY-MM-DD
- 4 DD.MM.YYYY
- 5 YYYY.MM.DD

TDPO_NUM_FMT

This option specifies the format you want to use to display numbers. You can specify a number between 1 and 6 inclusively. The default value is 1.

- 1 1,000.00 (This is the default)
- 2 1,000,00
- 3 1 000,00
- 4 1 000.00
- 5 1.000,00
- 6 1'000,00

TDPO_TIME_FMT

This option specifies the format you want to use to display system time. You can specify a number between 1 and 4 inclusively. The default value is 1.

- 1 23:00:00 (This is the default)
- 2 23,00,00
- 3 23.00.00
- 4 12:00:00 A/P

TDPO_LANGUAGE

This option specifies the national language in which to display TDP for Oracle messages in the error log file. You can specify the following:

ameng

American English (This is the default)

bportuguese

Brazilian Portuguese

french	Standard French
german	Standard German
italian	Standard Italian
japanese	Japanese
korean	Korean
schinese	Chinese, Simplified
spanish	Standard Spanish
tchinese	Chinese, Traditional

TDPO_MGMT_CLASS_2

This option specifies the second management class used for copy 2 in the RMAN duplex copy command.

TDPO_MGMT_CLASS_3

This option specifies the second management class used for copy 3 in the RMAN duplex copy command.

TDPO_MGMT_CLASS_4

This option specifies the second management class used for copy 4 in the RMAN duplex copy command. Four copies are the maximum allowed by RMAN.

For more information on management class options for duplex copying, see “Using the Duplex Copy Function” on page 14.

2. Registering Your Node with the Tivoli Storage Manager Server

Before you can begin requesting services from a Tivoli Storage Manager server, the server must recognize your client node name. Tivoli Storage Manager uses a node name and a password (if one is required) to identify each workstation. Tivoli Storage Manager maintains a password for each node. The process of setting up a node name and password is called *registration*.

Your Tivoli Storage Manager administrator must register your node name as a client with the server. You can then back up and restore Oracle data with the server.

You need to provide the following information to your administrator:

- Your node name. If a Tivoli Storage Manager client already exists on your workstation, we recommend that you use a separate and unique node name for TDP for Oracle on the same workstation.
- The initial password you want to use, if a password is required.

Your administrator defines the following:

- The policy domain to which your client node belongs.

A policy domain contains policy sets and management classes defined by your Tivoli Storage Manager administrator. A policy domain controls how Tivoli Storage Manager manages the objects you back up.

Note: We recommended that the administrator define a unique policy domain for Oracle node names. Rather than binding a different management class for Oracle backups, we recommend that you specify a different domain for Oracle backups with a separate management class. For management class details, see “3. Defining Tivoli Storage Manager Policy Requirements” on page 11.

- Whether the user of TDP for Oracle with this node can choose to compress objects before sending them to the server. For more on compression, see “Tivoli Storage Manager Options” on page 10.
- Whether your application allows you to delete backup data from Tivoli Storage Manager storage. The administrator must register the node with BACKDELETE authority (BACKDELETE=YES) so that old backups can be deleted.

Request the Tivoli Storage Manager administrator to register your node with the server and to inform you of the password.

Tivoli Storage Manager Options

After you register TDP for Oracle to the Tivoli Storage Manager server, you must configure several Tivoli Storage Manager parameters. The Tivoli Storage Manager administrator provides you with the node name, password, and the communication methods with the appropriate parameters for connecting to the Tivoli Storage Manager server.

These values, together with other parameters, are stored in a Tivoli Storage Manager options file in the TDP for Oracle install directory. The default options file name is `dsm.opt`. To modify the initial `dsm.opt` file, display and edit `dsm.opt` by using a text editor.

Parameters to specify in the options file are:

nodename

The Tivoli Storage Manager node name contains a string of 1 to 64 characters. This parameter is used to specify a unique node name for TDP for Oracle. This prevents any confusion with an existing Tivoli Storage Manager backup-archive client.

The default is the value that is returned by **hostname**.

passwordaccess

The ***passwordaccess*** option must be set to *generate*. In this mode, the Tivoli Storage Manager API saves the current password (encrypted) in the Windows registry and automatically generates a new one when the current one expires. This method of password management is useful when running scheduled, unattended backups because it ensures that the backup never fails due to an expired password. The default value is *prompt*.

compression

Specifying *on* causes the Tivoli Storage Manager API to compress data before sending it to the Tivoli Storage Manager server. If you enable compression, it affects performance in two ways:

- CPU utilization is higher on the workstation on which TDP for Oracle is running.
- Network bandwidth utilization is lower because of fewer transmitted bytes.
- Storage usage on the Tivoli Storage Manager server is reduced.

Considerations:

You might want to turn compression *on* if any of the following conditions exist:

- The network adapter has a data overload.
- Communications between the TDP for Oracle and Tivoli Storage Manager server are over a low bandwidth connection.
- There is heavy network traffic.

It might be better to leave compression *off* in the following cases:

- The computer running TDP for Oracle has a CPU overload; the added CPU usage can impact other applications including Oracle Server. You can monitor CPU and network resource utilization by using the Performance Monitor program shipped with Windows.
- You are not constrained by network bandwidth. In this case, you can achieve the best performance by leaving compression *off* and enabling hardware compaction on the tape drive, which also reduces storage requirements.

Note: The Tivoli Storage Manager administrator can restrict use of the compression option by specifying, on the Tivoli Storage Manager server side, that a particular node:

- Always uses compression.
- Never uses compression.
- Leaves the decision up to the client (default).

The value of the compression option for TDP for Oracle is honored only if the Tivoli Storage Manager administrator leaves the compression decision to the user.

enablelanfree

By specifying ***enablelanfree*** yes, you can run backup operations in a LAN-free environment if you are equipped to do so. By shifting the movement of data to a storage area network (SAN), you can avoid the constraints of the network. For more information, see "LAN-free data transfer" on page 2.

For additional information on creating the `dsm.opt` file and available options, see *IBM Tivoli Storage Manager for Windows Backup-Archive Installation and User's Guide*.

3. Defining Tivoli Storage Manager Policy Requirements

Because all backup objects inserted into the Tivoli Storage Manager backup storage pool have unique file names generated by RMAN, they never expire on the Tivoli Storage Manager server. As a result, TDP for Oracle requires these special Tivoli Storage Manager policy domain settings:

Backup Copy Group Values

TDP for Oracle provides a delete function to remove unwanted backup objects from the Tivoli Storage Manager server. You must set the following Backup Copy Group parameters for the delete function to work:

- VERDELETED=0
- RETONLY=0.

Then, when TDP for Oracle marks a backup object **inactive**, that object is deleted from the Tivoli Storage Manager server the next time expiration processing occurs. A backup object is marked inactive when you delete it through the TDP for Oracle interface.

Notes:

1. The Tivoli Storage Manager administrator must register your node by specifying `BACKDELETE=YES` in order for backup objects to be deleted.
2. The following Backup Copy Group parameters are not applicable to TDP for Oracle:
 - `FREQUENCY`
 - `VEREXISTS`
 - `RETEXTRA`
 - `MODE`
 - `SERIALIZATION`TDP for Oracle accepts default values for these parameters.
3. An Archive Copy Group is not required (although it can exist) because TDP for Oracle stores all objects as backup objects on Tivoli Storage Manager.

Management Class

Tivoli Storage Manager uses management classes to manage backups on the Tivoli Storage Manager server. When you back up a database, the default management class for your node is used. You must have a different management class defined for TDP for Oracle because its policy requirements might differ from Tivoli Storage Manager backup-archive client settings. We recommend that you define a separate policy domain where the default management class has the required settings. Register all TDP for Oracle nodes to that separate policy domain.

If you choose to define a new management class within an existing policy domain (not the default management class for that domain), then you must add an `INCLUDE` statement to the TDP for Oracle options file to bind all objects to that management class.

To assign a management class name `ORCBACKUP` to all Oracle backups with the default file-space name **adsmorc**, add this `INCLUDE` statement to the `dsm.opt` file:

```
include \adsmorc\...\* orcbakup
```

All the files backed up with a default file-space name of **adsmorc** are assigned to management class `ORCBACKUP`.

For more information on defining or updating Tivoli Storage Manager policy domains and copy groups, see your Tivoli Storage Manager administrator, *IBM Tivoli Storage Manager for Windows Backup-Archive Installation and User's Guide*, or the appropriate Tivoli Storage Manager Administrator's Guide for your server platform.

4. Initializing the Password

The administrator must run the **tdpoconf** utility program to set the password before you use TDP for Oracle. See "Password Command" on page 19 for more information.

Chapter 4. Using RMAN and TDP for Oracle

This chapter covers various operational issues such as invoking RMAN, using scripts in Version 2.2, duplex copying, removing old backups, and reporting problems.

TDP for Oracle allows you to perform full or partial, and offline or online backups. When you identify which database to back up, Oracle locates all necessary files and sends them to the Tivoli Storage Manager server through TDP for Oracle. The TDP for Oracle user interface is the Oracle Recovery Manager (RMAN) command line.

RMAN Description and Function

The production Oracle database you back up is called the *target database*. A separate database called the *recovery catalog* contains information about data file and control file copies, backup sets, archived redo logs, and other key elements for recovery.

RMAN performs two main functions:

- It maintains the RMAN meta data in the control file or recovery catalog.
- It communicates with the Oracle database and the operating system in order to create, restore, and recover backup sets.

It is recommended that you use the recovery catalog with RMAN; the recovery catalog contains details of all backup and recovery operations. RMAN uses the catalog to identify the relationship between backups and database files, automatically deciding which recovery events will minimize mean recovery time.

Note: If you do not use the recovery catalog, RMAN gathers all the necessary information from the database's control file but cannot support point-in-time recovery.

Accessing RMAN

You can access RMAN through either of two means:

- The RMAN command-line interface
- The Backup Manager component of Oracle Enterprise Manager

Note: The full set of RMAN features is only available through the command-line interface.

Invoking RMAN

Invoke RMAN for backup and restore operations of Oracle databases. This example assumes that the catalog database is set up and the target database is registered with the catalog database. Invoke RMAN with this command:

```
c:> rman target xxx/yyy@target rcvcat aaa/bbb@catalog  
cmdfile bkdb.scr msglog bkdb.log
```

This starts RMAN in this sequence:

```
target xxx/yyy@target: connect to target database
using user xxx and password yyy with connect string target
rcvcat aaa/bbb@catalog: connect to catalog database
using user aaa and password bbb with connect string catalog
cmdfile bkdb.scr: run bkdb.scr script
msglog bkdb.log: log the output messages in bkdb.log
```

In the above example, RMAN creates a log file bkdb.log in the current working directory. If an error occurs, you will see the error stack in the log file.

Scripts

TDP for Oracle no longer picks up environment variables specified in an RMAN script. The *only* environment variable TDP for Oracle 2.2 recognizes within an RMAN script is the fully qualified path name to the tdpo.opt file. Therefore, you must edit existing RMAN scripts to use the **TDPO_OPTFILE=fully qualified path and options file name** variable in place of other environment variables.

Example

This script allocates two parallel connections to the Tivoli Storage Manager server:

```
bkdb.scr Script:
run
{
  allocate channel t1 type 'sbt_tape' parms
    'ENV=(TDPO_OPTFILE=c:\RMAN\scripts\tdpo.opt)';
  allocate channel t2 type 'sbt_tape' parms
    'ENV=(TDPO_OPTFILE=c:\RMAN\scripts\tdpo.opt)';

  backup
    filesperset 5
    format 'df_%t_%s_%p'
      (database);

  release channel t1;
  release channel t2;
}
```

Notes:

1. To back up to Tivoli Storage Manager using TDP for Oracle, you must specify type 'sbt_tape' in the RMAN script.
2. It is highly recommended that you use a separate TDP for Oracle options file for *each* database that you back up to Tivoli Storage Manager.
3. When the Oracle service is started, it loads TDP for Oracle, which makes API function calls to read the dsm.opt options defined by DSMI_ORC_CONFIG in tdpo.opt. Therefore, any changes you make to the DSMI values in tdpo.opt are not effective until all Oracle services are shut down and restarted.

Using the Duplex Copy Function

Oracle8i Version 8.1.7 and Oracle 9i Version 9.0.1 allow you to make up to four exact duplicate copies of a backup that can be stored on different backup media. TDP for Oracle 2.2 supports this duplex backup copy feature. This feature uses different management classes for each backup copy.

For example, to create four backup copies:

1. Specify the following option in the RMAN backup script:
set duplex 4

2. Define the following options in the `tdpo.opt` file:
 - `TDPO_MGMT_CLASS_2`
 - `TDPO_MGMT_CLASS_3`
 - `TDPO_MGMT_CLASS_4`
3. Run the RMAN backup script.

The following backup behavior occurs:

- The first backup copy is bound to the default management class to which the node is registered.
- The second backup copy is bound to the management class defined by the `TDPO_MGMT_CLASS_2` option.
- The third backup copy is bound to the management class defined by the `TDPO_MGMT_CLASS_3` option.
- The fourth backup copy is bound to the management class defined by the `TDPO_MGMT_CLASS_4` option.

Considerations:

- When using the duplex copy feature, ensure that no `INCLUDE` options are defined for Oracle backups.
- You will receive an error message if you specify `set duplex 4` in the RMAN backup script and do not define enough `TDPO_MGMT_CLASS` options in the `tdpo.opt` file.
- Make sure the storage pool information for each backup copy group within the management classes is not the same.
- Make sure backups from these different storage pools are not migrated to the same storage pool at a later time.
- Be aware that duplicate data will be sent across the network.
- Be aware that if you specify `set duplex 4` and allocate *one* channel in the RMAN backup script, RMAN will start *four* sessions to the Tivoli Storage Manager server. Likewise, if you specify `set duplex 4` and allocate *two* channels in the RMAN backup script, RMAN will start *eight* sessions to the Tivoli Storage Manager server.
- Make sure RMAN does not start more sessions than the maximum mount points allowed by the Tivoli Storage Manager server. This server option restricts the number of tape mounts used at one time by the node. You can view the maximum mount points allowed by the server for a particular node by entering the following command from a Tivoli Storage Manager Administrative Client prompt:

```
q node f=d
```
- The `MAXNUMMP` parameter in the `NODE` definition on the Tivoli Storage Manager server controls how many mount points are allowed by a particular node. See the appropriate Tivoli Storage Manager Administrator's Guide for your server platform for more details.

We recommend that you review current Oracle documentation regarding the duplex copy function.

Removing Old Backups

TDP for Oracle uses the Tivoli Storage Manager backup repository. Each database backup creates a new object with a unique name. Because these objects have unique names, they always remain active and never expire. This allows the Database Administrator (DBA) to control and coordinate copies removed from the Tivoli Storage Manager server with RMAN.

To remove an old backup, issue this command from the RMAN prompt:

```
run
{
  allocate channel for delete type 'sbt_tape' parms
    'ENV=(TDPO_OPTFILE=c:\RMAN\scripts\tdpo.opt)';

  change backupset primary_key delete;
}
```

Note: To enter a number value for the *primary key* variable, look up the value in the RMAN catalog.

For management class parameters that affect object removal, refer to “3. Defining Tivoli Storage Manager Policy Requirements” on page 11.

See the Oracle RMAN manual for more information on the **change** command and its options.

Reporting Problems

This section provides troubleshooting information to help resolve problems encountered while using TDP for Oracle.

1. If TDP for Oracle does not start, check the `tdpoerror.log` file. The `tdpoerror.log` file is located
 - a. in the directory specified in your `tdpo.opt` file by the `DSMI_LOG` variable.
 - b. If write permissions do not exist for the directory specified by your `tdpo.opt` file, then look in the current working directory.
 - c. If the `tdpo.opt` file is not located in the current working directory, then look in the TDP for Oracle installation directory.
2. Run the **tdpoconf showenvironment** command to collect information on your options file (`-tdpo_optfile=`) and specified output files (`-outfile=`).
 - If the above command ran successfully, check its output to see if the setup worked as expected.
 - If the above command failed, check the `tdpoerror.log` file as described in Step 1.
3. Fix the problem and re-run the **tdpoconf** utility.
4. If the problem persists, gather the following information:
 - A problem description file that includes the command you used and the session output you received when the problem occurred.
 - The `tdpo.opt` file
 - The `dsm.opt` file
 - The `tdpoerror.log` file
 - The RMAN log file
 - The Tivoli Storage Manager API trace file

To generate the API trace file, add the following lines in your `dsm.opt` file:

```
tracefile c:\tivoli\tsm\agentoba\tsmapi.out
traceflag api api_detail pid tid
```

 - The node information on the Tivoli Storage Manager server. To obtain this information, enter:

```
query node <nodename> format=detail
```
 - The Tivoli Storage Manager server activity log. To obtain this information, enter this Tivoli Storage Manager administrator command:

```
query actlog
```
 - The TDP for Oracle trace file

To generate the TDP for Oracle trace file, add the following lines in your `tdpo.opt` file:

```
tdpo_trace_flags orcleve10 orcleve11 orcleve12
tdpo_trace_file c:\tivoli\tsm\agentoba\tdpo.out
tdpo_trace_max 8000
```

where:

orcleve10

Traces out function exit points when errors occur.

orcleve11

Traces out normal function entry and exit points.

orcleve12

Traces out more detailed information.

Note: Any path and file name can be specified for the ***tdpo_trace_file*** and ***tracefile*** parameters. Specify the value of the ***tdpo_trace_max*** parameter in kilobytes. The range of values are 0 to 10000.

See *IBM Tivoli Storage Manager Using the Application Program Interface* for application client return codes.

Requesting Tivoli Storage Manager Service

If you need Tivoli Storage Manager customer assistance, call: 1-800-237-5511. Inform the customer service representative that you are using TDP for Oracle. To help determine the problem, provide the customer service representative with the following information:

- The operating system platform, version, and release level of the machine on which your Tivoli Storage Manager Server product is installed.
- The version and release level of your Tivoli Storage Manager Server product. To determine this, enter this command: **q status**.
- The operating system platform, version, and release level of the machine on which your TDP for Oracle product is installed.
- The version and release level of your TDP for Oracle product. This information is available by running the configuration utility **tdpoconf showenvironment**. You can also locate this information in the readme file. The Tivoli Data Protection library version number displays two strings: information about the Tivoli Storage Manager API and information about TDP for Oracle.

Chapter 5. Using the Utilities

This chapter describes how to use the TDP for Oracle utilities, **tdpoconf** and **tdposync**, from the command-line interface. The executables, `tdpoconf.exe` and `tdposync.exe`, are stored in the directory where TDP for Oracle is installed.

Use the **tdpoconf** utility for password maintenance and general TDP for Oracle setup and maintenance. Use the **tdposync** utility to remove backup objects from the Tivoli Storage Manager server in cases where TDP for Oracle only partially deletes files.

Command-Line Syntax and Characteristics

The TDP for Oracle utilities use the following command-line syntax:

```
tdpoconf <command> <0 or more optional parameters>
```

```
tdposync <command> <0 or more optional parameters>
```

The command-line parameters have the following characteristics:

- Indicate minimum abbreviations for keywords in upper case.
- Begin optional parameters with a dash (-).
- Optional parameters can appear in any order.
- Some keyword parameters require a value separated by the equal sign (=).
- If a parameter requires more than one value, the values are separated with commas.
- A space separates the invocation from the command and the command from any optional parameters.
- Separate each parameter by a space.
- Enclose a parameter value that includes spaces in double quotes.

TDPOCONF

This utility provides setup tasks to ease the configuration of TDP for Oracle. The utility uses the `tdpo.opt` file in the install directory to centralize information for setup purposes.

Two commands are available using the **tdpoconf** utility:

- **password**
- **showenvironment**

Password Command

Use the **password** command to create a new password or change an existing password on the Tivoli Storage Manager server. This utility prompts you for both the old and new passwords.

Syntax

```
➤ TDPOCONF -PASSWord [ -TDPO_OPTFILE=installed tdpo.opt | pathname ] ➤
```

Optional Parameters

-TDPO_OPTFILE=pathname

This parameter specifies the fully qualified path name to the `tdpo.opt` file. If you choose not to specify this option, the default path is used.

Example

The following displays sample output of the **tdpoconf password** command:

```
C:\Tivoli\Tsm\Agent0ba>tdpoconf password
*****
*      Tivoli Data Protection for Oracle Utility
* Password file initialization/update program
*****

Please enter current password:

****
Please enter new password:

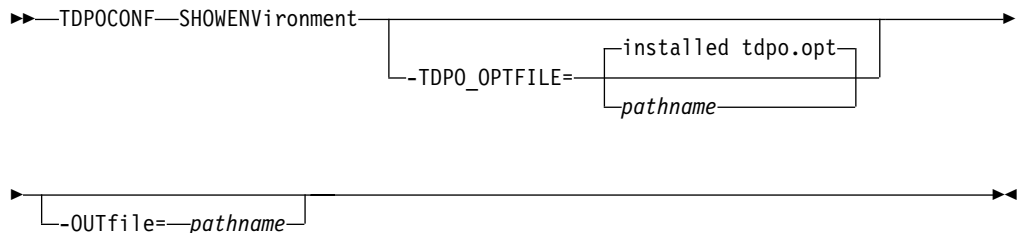
****
Please reenter new password for verification:
****
ANS0260I Password successfully changed.
```

Showenvironment Command

Use the **showenvironment** command to query the Tivoli Storage Manager server using the options set in **-tdpo_optfile**, the `tdpo.opt` file in the default install directory, or the default values set by TDP for Oracle. The screen output displays information about the Tivoli Storage Manager API and server. This command is useful when troubleshooting TDP for Oracle setup. For example, if the password file initializes improperly, **tdpoconf showenvironment** reports this error immediately. This prevents complications from occurring if such an error was undetected.

Note: For initial setup, we recommended that you direct the output to a file with the **-outfile** option. This ensures that the desired environment is set correctly before using RMAN.

Syntax



Optional Parameters

-TDPO_OPTFILE=pathname

This parameter specifies the fully qualified path name to the `tdpo.opt` file. This is the options file that is used by the utilities and the TDP for Oracle library.

-OUTfile=pathname

This parameter specifies the fully qualified path name to the output file. The formatted text of this file is the same content that appears as output to the screen.

Example

The following displays sample output of the **tdpoconf showenvironment** command:

```
C:\Tivoli\Tsm\Agent0ba>tdpoconf showenv

TDP FOR ORACLE INFORMATION
Version:          2
Release:         2
Level:           1
Sublevel:        0
Platform:        TDP Oracle NT

TSM SERVER INFORMATION
Server Name:      DSMSERV
Server Type:      AIX-RS/6000
Server Address:   MYSERVER.MYSITE.MYCOMPANY.COM
Server Port:      1500
Communication Method: TCP/IP

SESSION INFORMATION
Node Name:        AGENT_NODE
Node Type:        TDP Oracle NT
DSMI_DIR:         C:\Tivoli\TSM\api
DSMI_CONFIG:      C:\Tivoli\TSM\Agent0BA\dsm.opt
TDP0_OPTFILE:    C:\Tivoli\TSM\Agent0BA\tdpo.opt
Compression:     FALSE
```

TDPOSYNC

Attention: Deleted files cannot be restored! When using this utility to delete files, ensure that you do not log on under the wrong node name, query a different database than intended, and delete files in error. Double-check the node name listed at the top of the PICK window. See “Optional Parameters” on page 23 and “Sample PICK Window” on page 24 for further details.

This utility checks for items on the Tivoli Storage Manager server that are not in the RMAN catalog and allows you to repair such discrepancies. You can reclaim space on the server by removing unwanted objects in Tivoli Storage Manager storage.

When deleting backup sets by policy, RMAN deletes entries in the recovery catalog before confirmation from the Tivoli Storage Manager server. In cases where management class parameters are incorrectly set, RMAN tries to delete backup sets from the Tivoli Storage Manager server and fails. When this happens, RMAN can no longer identify these backups through the catalog even though the file still exists on the Tivoli Storage Manager server. This utility therefore synchronizes the contents of the servers.

When you invoke **tdposync**, the utility does the following:

1. Prompts you for information
2. Gathers information about Oracle catalog databases
3. Queries the Oracle backup catalog and the Tivoli Storage Manager server

4. Displays formatted output to the screen (files that exist on Tivoli Storage Manager but not in the RMAN catalog)
5. Prompts you to do *one* of the following:
 - Delete any files found causing the discrepancy.
 - Delete all files.
 - Exit the program without deleting files from the Tivoli Storage Manager server.

Considerations

Consider the following information before using the **tdposync** command.

- Re-synchronize Oracle catalogs with the target databases before running the **tdposync syncdb** command. First, connect to the target database and the catalog database. The following is an example:

```
$ rman target agnttest/agnttest@target rcvcat rman/rman@rman
```

When connected to both databases, type `resync catalog` at the RMAN prompt.

- If the information for **sqlplus** that you provide to **tdposync** is incorrect (such as logon, password, or connect string information), **sqlplus** stops at its logon screen. In this case, you need to log on again at the prompt by using the following:

```
login/password@connectstring
```

When you enter the correct input, **tdposync** proceeds correctly.

- By default, TDP for Oracle asks you to synchronize with one Oracle catalog at a time. However, you must use **-numcatalogs=number** if you use multiple Oracle catalogs to back up multiple target databases to the same file space, the same node name, and the same owner name on the same Tivoli Storage Manager server. This is necessary so that **tdposync** has all the information to correctly query both Oracle and Tivoli Storage Manager. For more information, see “Optional Parameters” on page 23.

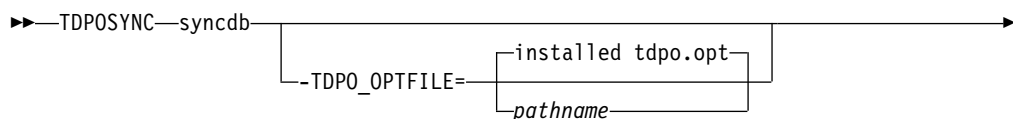
Attention: Failure to provide all pertinent and correct information can result in erroneous output. To prevent this, see the next consideration.

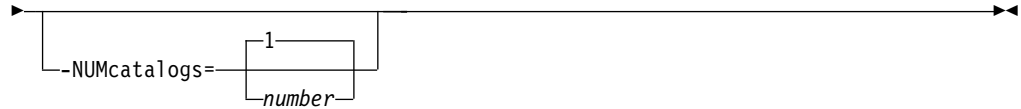
- If you have more than one Oracle database, back up each Oracle target database to its own file space on the Tivoli Storage Manager server. To do this, use the **TDPO_FS** option in the `tdpo.opt` file. In addition, we recommend that you use a separate TDP for Oracle options file for *each* database that you back up to Tivoli Storage Manager. In this way, it is only necessary to synchronize one catalog at a time (once for each target database). This minimizes the display of wrong information in the PICK window.

Syncdb Command

One command, **syncdb**, is available using **tdposync**.

Syntax





Optional Parameters

-TDPO_OPTFILE=pathname

This parameter specifies the fully qualified path name to the `tdpo.opt` file. This is the options file that is used by the utilities and the TDP for Oracle library. This file contains the information for the Tivoli Storage Manager server name and address that **tdposync** needs for synchronizing.

Note: For **syncdb *tdpo_optfile***, you must specify the same options file values that were used to perform the original backup operations.

-NUMcatalogs=number

This parameter specifies the number of Oracle catalog databases that you want to synchronize and prompts you for information for each catalog. Specify this option only when you use *multiple* Oracle catalogs to back up *multiple* target databases to the same Tivoli Storage Manager server under the same file space, node name, and owner name.

If, for example, you back up only *one* target database using two catalogs, you do *not* need to specify this option. However, you must specify **numcatalogs** if you back up *two* target databases using two catalogs (one catalog for each) to the same Tivoli Storage Manager server under the same file space, node name, and owner name. If you fail to provide information for the second catalog database (by not specifying two catalogs), backups done through that catalog database will be displayed as eligible for deletion.

According to the number you specify for **-numcatalogs**, you are prompted for the user name, password, and connect string for each. If you do not specify **-numcatalogs**, the default is 1, and you are prompted only once.

Example

When you specify the **numcatalogs** option with the **syncdb** command, you are prompted for input for each catalog on the node. For example:

```
C:\Tivoli\Tsm\Agent0ba>tdposync syncdb -numcatalogs=2 -tdpo_optfile=c:\RMAN\scripts\tdpo.opt
```

```
Catalog 1 User Name: rman
```

```
Catalog 1 Password: rman
```

```
Catalog 1 Connect String: rman
```

```
Catalog 2 User Name: rman
```

```
Catalog 2 Password: rman
```

```
Catalog 2 Connect String: rman
```

From Date (MM/DD/YYYY): 01/01/2000

To Date (MM/DD/YYYY): 01/01/2001

Note: From Date implicitly searches from time=00:00:01 and To Date implicitly searches to time=23:59:59 of the same day.

Sample PICK Window

The PICK window provides the following useful information to help you decide if the files displayed are indeed out of synchronization with the Oracle catalog:

- The node with which you are querying the Tivoli Storage Manager server
- The date of the file backup
- The size of the backup
- The backup name (\fs\orcnt\backup file name)

Attention: Use caution when selecting files for deletion. If you are unsure that the files in question are really out of synchronization, do further research before deleting them. Files *cannot* be restored once they are deleted.

The following displays sample output of the PICK window:

```
Tivoli Data Protection for Oracle
Synchronize utility PICK Window
Node Name:          AGENT_NODE
```

	Backup Date	Size	Backup Name
1.	02/19/2001 09:19:59	50.35MB	\adsmorc\orcnt\1kc2cnfv_1_1
2.	02/19/2001 11:36:20	427.08MB	\adsmorc\orcnt\4kc3cnfv_1_1
3.	02/19/2001 07:14:30	508.00MB	\adsmorc\orcnt\4qcgdhfr_1_1
4.	02/19/2001 07:21:38	763.94MB	\adsmorc\orcnt\4ocf8999_1_1
5.	02/26/2001 11:00:11	69.12MB	\adsmorc\orcnt\4ocf8999_1_2
6.	02/26/2001 11:00:12	950.09MB	\adsmorc\orcnt\4ocf8999_1_3
7.	02/26/2001 11:00:13	656.69MB	\adsmorc\orcnt\4rch25jk_1_1
8.	02/26/2001 11:00:14	135.36MB	\adsmorc\orcnt\4rch25jk_1_2
9.	02/26/2001 11:00:15	298.01MB	\adsmorc\orcnt\4rch25jk_1_30

```
0-----10-----20-----30-----40-----50-----60-----70
<U>=Up <D>=Down <T>=Top <B>=Bottom <R#>=Right <L#>=Left
<G#>=Goto Line # <#>=Toggle Entry <+>=Select A|<->=Deselect All
<#:#+>=Select A Range <#:#->=Deselect A Range <O>=Ok <C>=Cancel
pick>
```

A plus (+) marks files selected for deletion. To delete selected files:

1. Enter OK at the PICK prompt.

A warning message appears to confirm deletion of the selected files.

2. Enter Yes to delete the selected files from the Tivoli Storage Manager server.

Chapter 6. Using the Tivoli Storage Manager Scheduler

This section describes how to use the Tivoli Storage Manager scheduler with TDP for Oracle to automate online backups of Oracle server databases. The example illustrates the use of the Tivoli Storage Manager Version 4 scheduler client.

For more information on using the scheduler, see *IBM Tivoli Storage Manager for Windows Backup-Archive Installation and User's Guide*.

Note: To ensure that this example works, obtain and install the latest Tivoli Storage Manager backup-archive client. The backup-archive client must reside on the same workstation as TDP for Oracle to use the scheduler. The latest Tivoli Storage Manager client program temporary fixes (PTF)s (service packs) are available from the following Web site:

http://www.tivoli.com/support/storage_mgt/

After TDP for Oracle is registered to a Tivoli Storage Manager server and installed on the Oracle server, perform these steps:

1. On the Tivoli Storage Manager server:
 - a. Define a schedule to launch a Windows command file in the policy domain to which TDP for Oracle is registered.
 - b. Associate the TDP for Oracle node to the defined schedule.
2. On the Oracle Server where TDP for Oracle is installed:
 - a. Install the Tivoli Storage Manager scheduler client as a Windows service for TDP for Oracle. If a scheduler already exists for the regular Tivoli Storage Manager backup client, install another one for TDP for Oracle.
 - b. Configure the scheduler to run under the Oracle Site Services account.
 - c. Define a command file that contains TDP for Oracle commands to do the desired backup.

Note: Refer to Windows documentation for details on creating a Windows command file.

- d. Start the scheduler installed in step 2a (this is step 2.1 in some HTML browsers).

Example of Scheduler to Automate Backups

This example assumes:

- TDP for Oracle is registered to a Tivoli Storage Manager server with a node name of *NodeA1* and a password of *PasswordA1* in policy domain *PolicyA1*.
- The event to be scheduled is a daily backup of the online database. The backups are to begin between 9:00 and 9:15 pm.

This procedure is flexible because you can define a command file with any set of commands you choose. This allows you to use the same command file to define schedules on other Tivoli Storage Manager servers.

On the Tivoli Storage Manager server:

1. Enter the following command on the server console or from an administrative client to define the schedule. You can enter this command on the server console or from an administrative client. The administrative client does not have to be running on the same system as the Tivoli Storage Manager server.

```
def sched policya1 daily_orcbkup desc="Daily Online DB Backup"
action=command objects="c:\tivoli\tsm\agentoba\orcsched.cmd"
starttime=21:00 duration=15 duru=minutes period=1 perunits=day dayofweek=any
```

Tivoli Storage Manager displays this message:

```
ANR2500I Schedule DAILY_ORCBKUP defined in policy domain POLICYA1.
```

2. To associate TDP for Oracle to this backup schedule, issue the following command:

```
define association oracle daily_orcbkup nodea1
```

Tivoli Storage Manager displays this message:

```
ANR2510I Node NODEA1 associated with schedule DAILY_ORCBKUP in policy domain
POLICYA1.
```

A backup event (schedule) is now defined on the Tivoli Storage Manager server. The schedule runs a command file called `c:\tivoli\tsm\agentoba\sched\orcsched.cmd`. The backup starts around 9:00 pm., is performed once a day, and can start on any day of the week.

Note: Use the Tivoli Storage Manager administrative commands **query schedule** and **query association** to confirm that the schedule and association are set correctly. See the appropriate Tivoli Storage Manager Administrator's Guide for your server platform.

On the workstation with the Oracle Server:

This example assumes:

- The installation directory of the Tivoli Storage Manager client on the Oracle Server is:

```
c:\tivoli\tsm\baclient
```

- The installation directory of TDP for Oracle on the Oracle server is:

```
c:\tivoli\tsm\agentoba
```

- The options files in each of these directories have been updated so that the communication parameters point to the Tivoli Storage Manager server.
 1. Login using a Windows account that has administrative privileges.
 2. Open a Windows command prompt window.
 3. In the window, issue this command:

```
cd /c c:\tivoli\tsm\baclient
```

Note:

If a Tivoli Storage Manager scheduler exists on your workstation (for the regular backups of the Windows system), install another one (with a unique name) to run the schedules defined for TDP for Oracle. The Tivoli Storage Manager scheduler needs a different node name than the regular Tivoli Storage Manager backup client.

If the path contains a space, for example `c:\program files\tivoli\tsm\baclient`, place quotation marks around the section of the path name that contains a space. For example, `c:"program files"`. You can also use the short form of the path name. The short form of a path name is made up of the first six characters in the path followed by a tilde (~) and unique identifier. The following is an example of the short form of the path name: `c:\progr~1\tivoli\tsm\baclient`

4. In the command prompt window, enter this command:

```
dsmcutil inst /name:"Tivoli Storage Manager Oracle Bkup Scheduler"  
/node:rangoon /password:rangoon /autostart:yes  
/clientdir:"c:\tivoli\tsm\baclient"  
/optfile:"c:\tivoli\tsm\agentoba\dsm.opt"  
/validate:yes
```

This is an example of the output:

```
dsmcutil inst /name:"TSM Oracle Bkup Scheduler"  
/node:nodeal /password:passwordal /autostart:yes  
/clientdir:"c:\tivoli\tsm\baclient" /validate:yes  
  
TSM Windows NT Client Service Configuration Utility  
Command Line Interface Version 4.00.a  
Last Updated Feb 17 2001 (Non-Unicode Build)  
TSM Api Version 4.1.2  
  
Command: Install TSM Client Service  
Machine: RANGOON(Local Machine)
```

Installing TSM Client Service:

```
Machine           : RANGOON  
Service Name      : TSM Oracle Bkup Scheduler  
Client Directory  : C:\tivoli\tsm\baclient  
Automatic Start   : yes  
Logon Account     : LocalSystem
```

The service was successfully installed.

Creating Registry Keys ...

```
Updated registry value 'ImagePath' .  
Updated registry value 'EventMessageFile' .  
Updated registry value 'TypesSupported' .  
Updated registry value 'OptionsFile' .  
Updated registry value 'EventLogging' .  
Updated registry value 'ClientNodeName' .  
Updated registry value 'ADSMClientKey' .  
Updated registry value 'TSM Oracle Bkup Scheduler' .
```

```
Generating registry password ...  
Authenticating TSM password for node NODEA1 ...
```

```
Connecting to TSM Server via client options file  
'C:\Tivoli\TSM\baclient\dsm.opt' ...
```

Password authentication successful.

The registry password for TSM node NODEA1 has been updated.

Starting the 'TSM Oracle Bkup Scheduler' service

The service was successfully started.

Note that the options file that is defined for TDP for Oracle is used by the scheduler when validating the node and password. The options files are also used when contacting the Tivoli Storage Manager server for schedule information. This example assumes that communication parameters in the dsm.opt file point to the Tivoli Storage Manager server to which the Oracle databases are to be backed up.

If this message appears:

A communications error occurred connecting to the Tivoli Storage Manager server

Ensure that the `dsm.opt` file contains entries that point to the correct Tivoli Storage Manager server. Also ensure that the Tivoli Storage Manager server is running. If you have to correct one of these, enter the following command:

```
dsmcutil remove /name:"Tivoli Storage Manager Oracle Bkup Scheduler"
```

Then re-enter the command given in Step 4.

5. TDP for Oracle must be running under the Oracle Site Services account in order to be able to access the Oracle backup APIs. The TDP for Oracle Scheduler must log on using that account. The scheduler account information can be specified using the services applet in the control panel.
6. Create a command file called:

```
c:\tivoli\tsm\agentoba\orcsched.cmd
```

The following is an example of the `orcsched.cmd` file:

```
rem =====
rem orcsched.cmd
rem =====

rem =====
rem set rman executable
rem =====
set ora_exe=c:\oracle\ora81\bin\rman

rem =====
rem set script and log directory
rem =====
set ora_script_dir=c:\oracle\scripts\

rem =====
rem run the backup script
rem =====

%ora_exe% target xxx/yyy@target rcvcat aaa/bbb@catalog
cmdfile %ora_script_dir%bkdb.scr msglog %ora_script_dir%bkdb.log
```

Note: *Complete paths* must be given for all file names and non-system commands in the command file. The scheduler checks the Windows system directory for input and produces its output by default.

7. The scheduler is now installed, but has not started. To start the scheduler, issue this command in the Windows console window:

```
net start "Tivoli Storage Manager Oracle Bkup Scheduler"
```

The following message displays:

```
The Tivoli Storage Manager Oracle Bkup Scheduler service is starting.
The Tivoli Storage Manager Oracle Bkup Scheduler service was started successfully.
```

Note that because the `/autostart:yes` option is used, the Tivoli Storage Manager scheduler automatically starts each time the Windows system is rebooted.

Your system is now ready to run automatic daily online database backups.

Notes:

1. If you want to use the Tivoli Storage Manager server-prompted scheduling mode, make sure the ***tcclientaddress*** and ***tcclientport*** options are specified in the TDP for Oracle option file. If you want to run more than one scheduler, use the same ***tcclientaddress***. However, you must use different values for ***tcclientport*** in addition to the different node names. An example of running more than one scheduler is scheduling TDP for Oracle as well as the regular Windows NT backup client.

Server-prompted scheduling is supported only when TCP/IP communication is used. By default, TDP for Oracle uses the client polling schedule mode.

2. If any changes that affect the scheduler are made to the TDP for Oracle options file, the scheduler has to be restarted in order to pick up the changes. An example of this is the Tivoli Storage Manager server address, the schedule mode, or the client TCP address or port. This can be done by entering these commands:

```
net stop "Tivoli Storage Manager Oracle Bkup Scheduler"  
net start "Tivoli Storage Manager Oracle Bkup Scheduler"
```

3. The file named ***dsmsched.log*** contains status information for the Tivoli Storage Manager scheduler. Though the default directory is `\tivoli\tsm\baclient\dsmsched.log` (the install directory), you can specify a different directory, such as `\tivoli\tsm\agentoba\sched\dsmsched.log` using the ***schedlogname*** option in the TDP for Oracle options file.

Appendix. Client Messages

ANU0003S An internal processing error has occurred.

Explanation: An internal processing error has occurred.

System Action: Processing ends.

User Response: Retry the operation. If this error persists, contact your service representative.

ANU0004E An unknown error has been detected.

Explanation: An internal processing error has occurred that prevents the generation of a message for a return code.

System Action: Processing continues.

User Response: Retry the operation. If this error persists, contact your service representative.

ANU0005E Out of memory. Stop other processes and retry the operation.

Explanation: The machine has run out of memory.

System Action: Processing continues.

User Response: Free up some system memory and retry the operation.

ANU0053E License file (*licensefile*) could not be opened.

Explanation: An attempt was made to read from the license file. This attempt failed.

System Action: Processing ends.

User Response: Reinstall the product. This will ensure that the correct license file is installed.

ANU0054E Read failure on license file (*licensefile*).

Explanation: An attempt was made to read from the license file. This attempt failed.

System Action: Processing ends.

User Response: Reinstall the product. This will ensure that the correct license file is installed.

ANU0055E Write failure on license file (*licensefile*).

Explanation: An attempt was made to write to the license file. This attempt failed.

System Action: Processing ends.

User Response: Be sure that there is enough space on the workstation to write the file. If there is, try running the command again.

ANU0056E Data in the license file (*licensefile*) is not in a valid format.

Explanation: An attempt was made to read information from the license file. This attempt failed.

System Action: Processing ends.

User Response: Reinstall the product.

ANU0057E The checksum in the license file (*licensefile*) does not match the license string text.

Explanation: An attempt was made to read information from the license file. The checksum was not valid so it appears that the license file is not at the correct level.

System Action: Processing ends.

User Response: Reinstall the product.

ANU0058E The 'Try and Buy' license has expired.

Explanation: This is an error message that indicates that the 'Try and Buy' license that was detected has expired.

System Action: Processing ends.

User Response: This product is no longer valid for use. A valid license must be obtained before running the product.

ANU0100E Incomplete command:

Explanation: This message displays the incomplete command that was entered.

System Action: Processing ends.

User Response: Re-enter the complete command.

ANU0101E Invalid argument:

Explanation: This message displays the command that was entered, up to and including the invalid command or option argument that was detected.

System Action: Processing ends.

User Response: Re-enter the command specifying a valid argument for the command or option.

ANU0102E Invalid command:

Explanation: This message displays the invalid command that was entered.

System Action: Processing ends.

User Response: Re-enter a valid command.

ANU0103E Invalid option for the specified command:

Explanation: This message displays the command that was entered, up to and including the option that was detected as invalid for the command.

System Action: Processing ends.

User Response: Re-enter the command specifying valid command options.

ANU0104E Invalid option:

Explanation: This message displays the command that was entered, up to and including the invalid option that was detected.

System Action: Processing ends.
User Response: Re-enter the command specifying valid command options.

ANU0105E Missing argument:
Explanation: This message displays the command that was entered, up to and including the command or option whose required argument is missing.
System Action: Processing ends.
User Response: Re-enter the command specifying a valid argument for the command or option.

ANU0106E The following options cannot be specified together:
Explanation: This message displays the conflicting command options that were entered.
System Action: Processing ends.
User Response: Re-enter the command specifying valid command options.

ANU0107E This command requires one of the following options:
Explanation: This message displays the options that were missing from the command entered.
System Action: Processing ends.
User Response: Re-enter the command specifying one of the command options required by the command.

ANU0108E Multiple dbnames are not allowed.
Explanation: A Restore command was issued and either multiple dbnames were specified for the dbname positional parameter into, relocate or to options or a wildcard character was part of the specified dbname, into, relocate or to option.
System Action: Processing ends.
User Response: Re-enter the command either specifying a single value for the positional parameter or option in error.

ANU0109E Equal numbers of the relocate and to options must be specified.
Explanation: Unequal numbers of the relocate and to options were specified on a restore command.
System Action: Processing ends.
User Response: Re-enter the command specifying the same number of relocate and to options.

ANU0110E Wildcards are not allowed as part of the following parameters/options:
Explanation: This message displays the positional parameters and/or options that were specified incorrectly.
System Action: Processing ends.
User Response: Re-enter the command specifying the correct parameters and/or options.

ANU0132W Tracing could not be started. Processing will continue.

Explanation: There was a problem trying to begin tracing.

System Action: Processing will continue with the command entered.

User Response: There should be other messages along with this one. Refer to the other messages to determine the problem.

ANU0133W Could not locate installation directory. Attempting to continue...

Explanation: An attempt was made to read the registry to determine where the Tivoli Data Protection application client was installed. This attempt failed.

System Action: Processing will continue with the command entered.

User Response: There should be other messages along with this one. Refer to the other messages to determine the problem. If the problem can not be determined, it may be necessary to reinstall the application client code. This will ensure that the registry entries are set up correctly.

ANU0134W Could not locate log directory. Processing will continue...

Explanation: An attempt was made to read the registry to determine where the Tivoli Data Protection application client log is located. This attempt failed.

System Action: Processing will continue with the command entered.

User Response: There should be other messages along with this one. Refer to the other messages to determine the problem. If the problem can not be determined, it may be necessary to reinstall the application client code. This will ensure that the registry entries are set up correctly.

ANU0150I Operation canceled by user.

Explanation: The user has requested that the Tivoli Data Protection application client end by entering ctrl-C.

System Action: Processing ends.

User Response: None

ANU0151E Errors occurred while processing the request.

Explanation: Attempting to process the request entered, an error occurred.

System Action: Processing ends.

User Response: Attempt to determine the source of the errors from viewing the log file. Correct the problems and try running the command again.

ANU0152I Performance stats: *seconds* seconds spent in *apicall* API calls

Explanation: The indicated number of seconds were spent making API calls for the indicated system.

System Action: Processing continues.

User Response: None

ANU0153I Performance stats: *seconds* seconds spent in *function*

Explanation: The indicated number of seconds were spent the named function.

System Action: Processing continues.

User Response: None

ANU0154E The Tivoli Data Protection application client cannot work with the version of the Tivoli Storage Manager API you have installed. Please install version *version.release.level* or greater.

Explanation: The version of the Tivoli Storage Manager API currently installed on the system is older than the version used to build the Tivoli Data Protection application client.

System Action: Processing ends.

User Response: Install a version of the Tivoli Storage Manager API at or later than the indicated level. A copy is distributed with the Tivoli Data Protection application client.

ANU0155E The Tivoli Data Protection application client cannot work with the release of Tivoli Storage Manager API you have installed. Please install release *version.release.level* or greater.

Explanation: The release of the Tivoli Storage Manager API currently installed on the system is older than the release used to build the Tivoli Data Protection application client.

System Action: Processing ends.

User Response: Install a release of the Tivoli Storage Manager API at or later than the indicated level. A copy is distributed with the Tivoli Data Protection application client.

ANU0156E Could not load the Tivoli Storage Manager API.

Explanation: The Tivoli Storage Manager API could not be loaded.

System Action: Processing ends.

User Response: Ensure the Tivoli Storage Manager API is correctly installed. Run the Tivoli Data Protection application client with the `/TRACEFLAGS=API /TRACEFILE=filename` options and view the tracefile to determine why it could not be loaded. Another possible cause is that the `TSMAPI.DLL` does not exist in the system directory. Re-install the Tivoli Storage Manager API, if this is the case.

ANU0160E An authentication error occurred with your stored Tivoli Storage Manager password.

Explanation: You were unable to log on to the Tivoli Storage Manager server due an authentication error.

System Action: Processing stops.

User Response: The stored Tivoli Storage Manager password may have become corrupted. Contact your Tivoli Storage Manager server administrator.

ANU0161E Authentication error. The password entered is not valid. You are not logged on to the Tivoli Storage Manager server.

Explanation: An incorrect password was entered.

System Action: Processing stops.

User Response: Enter the correct Tivoli Storage Manager password and try again.

ANU0162E The passwords entered do not match. Please enter them again.

Explanation: An incorrect password was entered.

System Action: Processing stops.

User Response: Enter the passwords again.

ANU0163E The directory path needs to be fully-qualified.

Explanation: The `/intopath` option was specified. However, this path needs to be fully-qualified.

System Action: Processing stops.

User Response: Re-enter the command again giving a fully-qualified `/intopath`.

ANU0167E The fully-qualified file name is too long.

Explanation: An attempt was made to use a fully-qualified file name that was too long. This attempt failed.

System Action: Processing ends.

User Response: None

ANU0200E File (*filename*) could not be opened for reading.

Explanation: An attempt was made to open a file for reading. This attempt failed.

System Action: Processing ends.

User Response: None

ANU0201E File (*filename*) could not be opened for writing.

Explanation: An attempt was made to open a file for writing. This attempt failed.

System Action: Processing ends.

User Response: None

ANU0202E Read failure on file (*filename*).
Explanation: An attempt was made to read from a file. This attempt failed.
System Action: Processing ends.
User Response: None

ANU0203E Write failure on file (*filename*).
Explanation: An attempt was made to write to a file. This attempt failed.
System Action: Processing ends.
User Response: None

ANU0204E File (*filename*) could not be closed.
Explanation: An attempt was made to close a file. This attempt failed.
System Action: Processing ends.
User Response: None

ANU0205E File (*filename*) statistics could not be obtained.
Explanation: An attempt was made to obtain file statistics. This attempt failed.
System Action: Processing ends.
User Response: None

ANU0206E Directory (*directory*) could not be created.
Explanation: An attempt was made to create a directory. This attempt failed.
System Action: Processing ends.
User Response: None

ANU0207E Directory path (*directorypath*) is too long.
Explanation: An attempt was made to use a directory path that was too long. This attempt failed.
System Action: Processing ends.
User Response: None

ANU0208E There is not enough disk space for the operation attempted.
Explanation: An attempted operation required more disk space than was available. The attempt failed.
System Action: Processing ends.
User Response: None

ANU0209E The rename of file (*filename1*) to (*filename2*) failed.
Explanation: An attempt was made to rename a file. This attempt failed.
System Action: Processing ends.
User Response: None

ANU0210E The Tivoli Storage Manager high level qualifier is too long.
Explanation: An attempt was made to use a Tivoli Storage Manager high level qualifier that was too long. This attempt failed.

System Action: Processing ends.
User Response: None

ANU0211E The Tivoli Storage Manager low level qualifier is too long.
Explanation: An attempt was made to use a Tivoli Storage Manager low level qualifier that was too long. This attempt failed.
System Action: Processing ends.
User Response: None

ANU0212E The Tivoli Storage Manager filesystem name is too long.
Explanation: An attempt was made to use a Tivoli Storage Manager filesystem name that was too long. This attempt failed.
System Action: Processing ends.
User Response: None

ANU0213E The maximum number of objects allowed per Tivoli Storage Manager transaction is too small.
Explanation: In order to maintain backup data integrity, multiple backup objects are sent to the Tivoli Storage Manager server in a single transaction. The Tivoli Storage Manager server has indicated that the maximum number of objects allowed per transaction is less than the minimum required by the Tivoli Data Protection application client.
System Action: Processing ends.
User Response: Increase the maximum number of objects allowed per transaction on the Tivoli Storage Manager server and retry the operation.

ANU0214E The backup object's management class backup copy group does not exist.
Explanation: The Tivoli Storage Manager server has indicated that the backup object's management class backup copy group does not exist.
System Action: Processing ends.
User Response: Contact your Tivoli Storage Manager server administrator.

ANU0215E All backup objects do not have the same management class backup copy destination.
Explanation: In order to maintain backup data integrity, multiple backup objects are sent to the Tivoli Storage Manager server within a single transaction. All backup objects within a single transaction are required to have the same management class backup copy destinations.
System Action: Processing ends.
User Response: Contact your Tivoli Storage Manager server administrator.

ANU0216E Unable to obtain space information for volume (*volumename*).

Explanation: An attempt was made to obtain space information for a volume. This attempt failed.

System Action: Processing ends.

User Response: None

ANU0217E The Tivoli Storage Manager filesystem name is invalid.

System Action: Processing ends.

User Response: Contact your service representative.

ANU0218E The Tivoli Storage Manager high level qualifier is invalid.

System Action: Processing ends.

User Response: Contact your service representative.

ANU0219E The Tivoli Storage Manager low level qualifier is invalid.

System Action: Processing ends.

User Response: Contact your service representative.

ANU0256E The password in your Tivoli Storage Manager options file has expired. Please change your password on the Tivoli Storage Manager server using the 'change password' command and then either change or remove the password value in your options file.

Explanation: Your Tivoli Storage Manager password has expired. You need to change your password.

System Action: Processing ends.

User Response: Obtain a new password for your Tivoli Storage Manager node using the change password command or by asking your Tivoli Storage Manager Administrator to change your password.

ANU0257E Your password has expired.

Explanation: Your Tivoli Storage Manager password has expired. A new password needs to be obtained.

System Action: Processing ends.

User Response: Obtain a new password for your Tivoli Storage Manager node using the change password command or by asking your Tivoli Storage Manager Administrator to change your password.

ANU0258E You did not enter a valid password. Processing ends.

Explanation: The password that was entered was not a valid password.

System Action: Processing ends.

User Response: Re-enter the command specifying a valid password.

ANU0259E The password you entered for verification does not match the password you entered for your new password. Your password will not be changed.

Explanation: The password you entered for verification of your new password does not match the new password that was entered.

System Action: Processing ends.

User Response: Try again to change your password being sure to enter the same password for the new password and for the verification password.

ANU0260I Password successfully changed.

Explanation: The change password command completed successfully

System Action: Processing ends.

User Response: None

ANU0261I There are no backups for the server named *servername*.

Explanation: There are no backups on the Tivoli Storage Manager server for the specified server name.

System Action: Processing ends.

User Response: None

ANU0263E Failed to start Web browser with a return code of *returncode*.

Explanation: An attempt was made to start the web browser to view the TSM HTML book. This attempt failed.

System Action: Processing ends.

User Response: Start your web browser manually and point it to bookfrm.htm in the agent htm directory.

ANU0264I Could not find the default browser defined. An attempt will be made to use Microsoft's Internet Explorer.

Explanation: An attempt was made to read the registry to determine the default browser. However, there was not one defined. It will be determined where Microsoft Internet Explorer is installed.

System Action: Processing continues.

User Response: It is possible that a default browser is not defined for the system. This is okay. An attempt will be made to use Microsoft's Internet Explorer.

ANU0265E Could not find Internet Explorer.

Explanation: An attempt was made to read the registry to determine where Microsoft's Internet Explorer was installed. This attempt failed.

System Action: Processing ends.

User Response: Make sure that the registry is set up correctly for Internet Explorer.

ANU0266E Could not find the Tivoli Storage Manager HTML books.

Explanation: An attempt was made to read the registry to determine where the Tivoli Storage Manager books were installed. This attempt failed.

System Action: Processing ends.

User Response: It may be necessary to reinstall the application client code. This will ensure that the registry entries are set up correctly.

ANU0267E The verify password entered does not match the new password entered.

Explanation: The verify password does not match the new password.

System Action: Processing ends.

User Response: Retry the command with a matching verify password.

ANU0300E Invalid restore type.

Explanation: The type of restore requested is invalid.

System Action: Processing ends.

User Response: Re-enter the command specifying a valid restore type.

ANU0301E Invalid backup type.

Explanation: The type of backup requested is invalid.

System Action: Processing ends.

User Response: Re-enter the command specifying a valid backup type.

ANU0302E A failure occurred on stripe number (stripe number), rc = return code

Explanation: A failure occurred on the numbered stripe.

System Action: Processing ends.

User Response: There should be other messages along with this one. Refer to the other messages to determine the problem.

ANU351E Invalid trace keyword - 'keyword'

Explanation: A TRACEFLAG option in the user configuration file or on the command line is incorrect.

System Action: Client program did not initialize or tracing was not enabled in the applet.

User Response: Correct the value. See the entry for TRACEFLAGS in the *Trace Facility Guide* document for a list of valid trace flags.

ANU357E Unable to open trace output file file-name.

Explanation: A TRACEFILE option in the user configuration file or on the command line used a directory path and *file-name* combination to which you do not have write access.

System Action: Client program did not initialize.

User Response: Change the TRACEFILE value so that it is a location to which you have write access.

ANU366E Unable to close trace output file file-name.

Explanation: An error occurred during the closing of a trace output *file-name* (for example, not enough disk space).

System Action: Processing continues.

User Response: Check the options.doc file for a description of possible causes of the error, or see your system administrator.

ANU367E Unable to write to trace file tracefile. Tracing disabled.

Explanation: An error occurred when writing to the specified *tracefile*.

System Action: Tracing is disabled. Processing continues.

User Response: Ensure the device that the *tracefile* access is available and has sufficient space for the *tracefile*. Retry the command.

ANU368E Invalid trace file name (name too long).

Explanation: A TRACEFILE option in the preferences files used a file name that is too long.

System Action: Client program did not initialize.

User Response: Change the file name used as the TRACEFILE so that it is equal to or less than 255 characters in length.

ANU2525E Input date does not match expected date format or range.

Explanation: The input date does not match the expected date format or range.

System Action: The system returns to the calling procedure.

User Response: Check that the format and length of the date entry matches TDP_DATE_FORMAT type and the range of the date values are valid. Valid days are: 1-31 Valid months are: 1-12 Valid years are: 1990-2089

ANU2500E Oracle passed an invalid mode

Explanation: Invalid mode passed by Oracle.

System Action: The system returns to the calling procedure.

User Response: Contact your system administrator.

ANU2501E Oracle passed a null file name

Explanation: Null file name passed by Oracle.

System Action: The system returns to the calling procedure.

User Response: Contact your system administrator.

ANU2502E Wrong data block size

Explanation: Wrong data block size.

System Action: The system returns to the calling procedure.

User Response: Contact your system administrator.

ANU2503E Object already exists
Explanation: Backup or restore object already exists.
System Action: The system returns to the calling procedure.
User Response: If backing up an object, make sure you generate a unique object name.

ANU2504E Dissimilar Oracle handle
Explanation: The handle passed from Oracle is not the same handle that TSM passed back.
System Action: The system returns to the calling procedure.
User Response: Contact your system administrator.

ANU2505I End of file reached
Explanation: End of file reached.
System Action: The system returns to the calling procedure.
User Response: None.

ANU2506E Wrong Read State
Explanation: The operation must be in READ state.
System Action: The system returns to the calling procedure.
User Response: Contact TSM support.

ANU2507E Runtime API version is outdated
Explanation: Runtime API is lower than compile time API.
System Action: The system returns to the calling procedure.
User Response: Check compile time API level, obtain same or higher level of API library.

ANU2508E Wrong write state
Explanation: The operation must be in WRITE state.
System Action: The system returns to the calling procedure.
User Response: Contact TSM support.

ANU2509E Invalid flag passed
Explanation: Invalid flag passed from Oracle.
System Action: The system returns to the calling procedure.
User Response: Contact your system administrator.

ANU2510E The Caller must be a root user
Explanation: Only a UNIX root user can execute password
System Action: The system returns to the calling procedure.
User Response: Contact your system administrator.

ANU2511E Reduce the number of copies to that specified in RMAN
Explanation: The duplex copy feature has reached maximum allowed copies.
System Action: The system returns to the calling procedure.
User Response: Reduce the number of backup copies to that allowed by RMAN.

ANU2512E Could not open license file: *license file*
Explanation: The license file could not be opened.
System Action: The system returns to the calling procedure.
User Response: Check that the license file exists and the permissions are correct.

ANU2513E Could not read license file: *license file*
Explanation: The license file could not be read.
System Action: The system returns to the calling procedure.
User Response: Check that the license file permissions are correct.

ANU2514E Could not write license file: *license file*
Explanation: The license file could not be written.
System Action: The system returns to the calling procedure.
User Response: Check that the license file permissions are correct.

ANU2515E Invalid data format in license file: *license file*
Explanation: The license file data format is invalid.
System Action: The system returns to the calling procedure.
User Response: Reinstall the license that came with TDP for Oracle.

ANU2516E Bad checksum of license file: *license file*
Explanation: The license file has a bad checksum.
System Action: The system returns to the calling procedure.
User Response: Reinstall the license that came with TDP for Oracle.

ANU2517E Try and Buy Evaluation period is over for license file: *license file*
Explanation: The Try and Buy Evaluation period is over.
System Action: The system returns to the calling procedure.
User Response: Purchase the product or discontinue use.

ANU2518E License file: *license file* not valid for this application

Explanation: The license file is not intended for this application.

System Action: The system returns to the calling procedure.

User Response: Reinstall the license that came with TDP for Oracle.

ANU2519E Could not read password

Explanation: Invalid password or password file not found.

System Action: The system returns to the calling procedure.

User Response: Check that password file exists and is valid.

ANU2521E Error opening *file name*. Check permissions.

Explanation: A directory could not be created.

System Action: The system returns to the calling procedure.

User Response: Check that permissions allow the creation of directories.

ANU2522E No memory

Explanation: There is not enough system memory to complete command.

System Action: The system returns to the calling procedure.

User Response: Free up system resources before continuing.

ANU2523E The Management Class does not match

Explanation: The management class for the query object could not be found.

System Action: The system returns to the calling procedure.

User Response: Contact your system Administrator.

ANU2525E Input date does not match expected date format

Explanation: The input date does not match the expected format - TDP_DATE_FORMAT.

System Action: The system returns to the calling procedure.

User Response: Check that the format and length of date entry matches TDP_DATE_FORMAT type.

ANU2526E Invalid month - Valid entries are 1-12:

Explanation: The Month field must be in range of 1-12.

System Action: The system returns to the calling procedure.

User Response: Check the entry for the valid range.

ANU2527E Invalid day field for this month

Explanation: The Day field is not valid for this month and year.

System Action: The system returns to the calling procedure.

User Response: Check the entry for the valid range for this date.

ANU2528E Invalid year - Valid entries are 1900 - 4999

Explanation: The Year field must be in range of 1900 - 4999.

System Action: The system returns to the calling procedure.

User Response: Check the entry for the valid range.

ANU2529E To Date cannot occur before From Date

Explanation: The specified To Date occurs before From Date.

System Action: The system returns this error.

User Response: Enter a valid To Date that occurs after the From Date.

ANU2530E Screen size is too small for PICK window.

Explanation: You cannot use the PICK on a workstation that has a screen smaller than 20 characters across and 10 lines down.

System Action: The operation was not completed.

User Response: Retry the operation using a workstation that has a screen with the minimum size.

ANU2531E Could not create file for TDPO utility

Explanation: The temporary file could not be created.

System Action: The system returns to the calling procedure.

User Response: Check the status of the filesystem.

ANU2532E Unknown Error - Check TDP for Oracle error log

Explanation: There was an unknown error - check the tdpoerror.log.

System Action: None

User Response: None

ANU2533E SQLPLUS error

Explanation: The utility could not find SQLPLUS or there was a scripting error.

System Action: The system returns to the calling procedure.

User Response: Check that SQLPLUS is installed and in your search path and verify password.

ANU2534E Option file error.
Explanation: The option or option file name is invalid.
System Action: The system returns to the calling procedure.
User Response: Check the tdperror.log file for an explanation of the error.

ANU2535I File /fs/hl/l = number bytes sent
Explanation: This is the total bytes sent to server for that file name
System Action: The system returns to the calling procedure.
User Response: Check the TSM Server activity Log.

ANU2536I File /fs/hl/l = number bytes recieved
Explanation: This is the total bytes recieved from server for that backup file name.
System Action: The system returns to the calling procedure.
User Response: Check the TSM Server activity Log.

ANU2537E Error found while parsing options in TDP for Oracle options file.
Explanation: There was an error found while parsing the TDP for Oracle options file.
System Action: The system returns to the calling procedure.
User Response: Check that the option file and options are valid.

ANU2538E Error found while initializing tracing for TDP for Oracle.
Explanation: Error found while initializing the TDP for Oracle trace facility.
System Action: The system returns to the calling procedure.
User Response: Contact your system administrator.

ANU2539E Function Name: Error - string pointer is NULL.
Explanation: A NULL pointer was passed to TDP for Oracle.
System Action: The system returns to the calling procedure.
User Response: Contact your system administrator.

ANU2571E Could not load the library: tdporacle library
Explanation: Library cannot be loaded.
System Action: The system returns to the calling procedure.
User Response: Check that the library exists.

ANU2600E There is no Registry entry for the TSM API.
Explanation: The Windows Registry entry was not found.
System Action: The system returns to the calling procedure.
User Response: Check that the TSM API is installed correctly.

ANU2601E There is no Registry entry for TDP for Oracle install path.
Explanation: The Registry Entry for the TDP for Oracle install path was not found.
System Action: The system returns to the calling procedure.
User Response: Check that TDP for Oracle was installed correctly.

ANU2602E The object Filespace NameHigh Level NameLow Level Name was not found on the TSM Server
Explanation: The object name was not found on the TSM Server.
System Action: The system returns to the calling procedure.
User Response: Check that the object name is correct and exist on the TSM Server.

ANU2603E The option Option Name in file Filename
Explanation: A wrong option was passed into the TDP for Oracle options file.
System Action: The system returns to the calling procedure.
User Response: Verify that your options are correct in the TDP for Oracle options file.

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