Data Protection for Microsoft Exchange Server
Installation and User’s Guide
Note

Before using this information and the product it supports, read the general information under "Notices" on page 161.
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Summary of changes

This section summarizes changes made to the Data Protection for Exchange product and this publication. Technical changes to the text are indicated by vertical lines (|) in the margin to the left of the change.

Technical changes for Version 5.3.3 - January 2007

The following changes have been made to this publication:

VSS Instant Restore support for DS6000 and DS8000 storage subsystems

This publication is a refresh of the March 2006 Version 5.3.3 edition. This January 2007 edition documents support for VSS Instant Restore operations on DS6000 and DS8000 storage subsystems. See “VSS Instant Restore” on page 10 for details regarding this support.
About this guide

The subject of this publication is Data Protection for Exchange, a component of the IBM Tivoli Storage Manager for Mail product.

Data Protection for Exchange performs online backups of Microsoft® Exchange Server databases to Tivoli Storage Manager storage. This integration with the Microsoft Exchange Server application program interface (API) maximizes the protection of data, thus providing a comprehensive storage management solution.

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

Throughout this document, the term Windows® (unless otherwise specified) refers to the following operating systems:
• Windows 2000 Server
• Windows Server 2003

Throughout this document, the term Exchange Server (unless otherwise specified) refers to the following products:
• Exchange 2000 Server
• Exchange Server 2003

Who should read this guide

The target audience for this publication are system installers, system users, Tivoli Storage Manager administrators, and system administrators.

In this book, it is assumed that you have an understanding of the following applications:
• Microsoft Exchange Server
• Tivoli Storage Manager server
• Tivoli Storage Manager backup-archive client
• Tivoli Storage Manager Application Program Interface
• Microsoft Volume Shadow Copy Service (VSS) technology (knowledge of this application is only assumed if you plan to perform VSS operations)

It is also assumed that you have an understanding of one of the following operating systems:
• Windows 2000 Server
• Windows Server 2003

Publications

This section lists related IBM Tivoli Storage Manager publications. It also describes how to access Tivoli® publications online and how to order Tivoli publications.

IBM Tivoli Storage Manager library

The following documents are available in the IBM Tivoli Storage Manager library:
• IBM Tivoli Storage Manager for Windows Backup-Archive Client Installation and User’s Guide
Provides information for an end-user to install, configure, and use the Tivoli Storage Manager client on Windows operating systems.

- **IBM Tivoli Storage Manager for UNIX and Linux Backup-Archive Clients Installation and User’s Guide**
  Provides information for an end-user to install, configure, and use the Tivoli Storage Manager client on UNIX and Linux operating systems.

- **IBM Tivoli Storage Manager for Windows Administrator’s Guide**
  Provides concepts and procedures for configuring and customizing the Tivoli Storage Manager server on Windows operating systems.

- **IBM Tivoli Storage Manager for Windows Administrator’s Reference**
  Provides details about administrative commands, server options, and server utilities for Tivoli Storage Manager server on Windows operating systems.

- **IBM Tivoli Storage Manager for AIX Administrator’s Guide**
  Provides concepts and procedures for configuring and customizing the Tivoli Storage Manager server on AIX operating systems.

- **IBM Tivoli Storage Manager for AIX Administrator’s Reference**
  Provides details about administrative commands, server options, and server utilities for Tivoli Storage Manager server on AIX operating systems.

- **IBM Tivoli Storage Manager for Sun Solaris Administrator’s Guide**
  Provides concepts and procedures for configuring and customizing the Tivoli Storage Manager server on Sun Solaris operating systems.

- **IBM Tivoli Storage Manager for Sun Solaris Administrator’s Reference**
  Provides details about administrative commands, server options, and server utilities for Tivoli Storage Manager server on Sun Solaris operating systems.

- **IBM Tivoli Storage Manager Messages**
  Provides explanations and suggested actions for messages issued by the Tivoli Storage Manager server program for storage management services, the administrative client graphical user interface, administrative command line client, data protection clients, and backup-archive client.

- **IBM Tivoli Storage Manager: Problem Determination Guide**
  This guide describes how to diagnose problems with Tivoli Storage Manager.

- **IBM Tivoli Storage Manager Using the Application Program Interface**
  Provides information to help you add Tivoli Storage Manager application program interface calls to an existing application and to write programs with general-use program interfaces that obtain the services of Tivoli Storage Manager.

- **IBM Tivoli Storage Manager for SAN for AIX Storage Agent User’s Guide**
  Provides an overview of LAN-free data transfer and detailed explanations about configuring and using the Tivoli Storage Manager client, storage agent, and server.

- **IBM Tivoli Storage Manager for SAN for HP-UX Storage Agent User’s Guide**
  Provides an overview of LAN-free data transfer and detailed explanations about configuring and using the Tivoli Storage Manager client, storage agent, and server.

- **IBM Tivoli Storage Manager for SAN for Linux Storage Agent User’s Guide**
  Provides an overview of LAN-free data transfer and detailed explanations about configuring and using the Tivoli Storage Manager client, storage agent, and server.

- **IBM Tivoli Storage Manager for SAN for Sun Solaris Storage Agent User’s Guide**
Provides an overview of LAN-free data transfer and detailed explanations about configuring and using the Tivoli Storage Manager client, storage agent, and server.

- IBM Tivoli Storage Manager for SAN for Windows Storage Agent User’s Guide
  Provides an overview of LAN-free data transfer and detailed explanations about configuring and using the Tivoli Storage Manager client, storage agent, and server.

Related publications
The following IBM publications provide additional information.
- IBM TotalStorage DS6000 Introduction and Planning Guide
  This publication provides an overview of the IBM TotalStorage DS6000, and provides the feature codes for ordering standard and optional features. It also provides planning guidelines for DS6000 installation and configuration.
- IBM TotalStorage DS6000 Host Systems Attachment Guide
  This guide provides information about:
  - Attaching the IBM DS6000 to an open-systems host with Small Computer System Interface (SCSI) adapters.
  - Attaching the DS6000 to an open-systems host with fibre-channel adapters.
  - Connecting IBM Enterprise Systems Connection ESCON cables to an IBM S/390 and IBM (zSeries) host systems.
  - Connecting IBM Enterprise Systems Fibre Connection (FICON) cables to an S/390 and zSeries host systems.
- IBM TotalStorage DS6000 Command-Line Interface User’s Guide
  This guide introduces the IBM TotalStorage DS command-line interfaces (CLI). It also provides command syntax and reference information for commands that can be used through the IBM TotalStorage DS6000 Command Line Interfaces.
- IBM TotalStorage DS8000 Introduction and Planning Guide
  This publication provides an overview of the IBM TotalStorage DS8000, and provides the feature codes for ordering standard and optional features. It also provides planning guidelines for DS8000 installation and configuration.
- IBM TotalStorage DS8000 User’s Guide
  This publication provides the procedures for using the IBM TotalStorage DS8000. It includes an overview of the DS8000 and guidelines for:
  - Operating the DS8000.
  - Operating the Hardware Management Console.
  - Using optional software for the DS8000.
  - Migrating data to the DS8000.
  - Analyzing problems.
  - Disaster Recovery.
- IBM TotalStorage DS8000 Host Systems Attachment Guide
  This guide provides information about:
  - Attaching the IBM DS8000 to an open-systems host with Small Computer System Interface (SCSI) adapters.
  - Attaching the DS8000 to an open-systems host with fibre-channel adapters.
  - Connecting IBM Enterprise Systems Connection ESCON cables to an IBM S/390 and IBM (zSeries) host systems.
- Connecting IBM Enterprise Systems Fibre Connection (FICON) cables to an S/390 and zSeries host systems.

- **IBM TotalStorage SAN Volume Controller Configuration Guide**
  Provides information about how to configure the SAN Volume Controller.

- **IBM TotalStorage SAN Volume Controller Configuration Guide Supplement (VSS)**
  Provides information about how to install and use Microsoft Volume Shadow Copy service with the SAN Volume Controller.

- **IBM TotalStorage SAN Volume Controller Planning Guide**
  This publication introduces the IBM TotalStorage SAN Volume Controller, its components and its features. It also provides planning guidelines for installing and configuring the SAN Volume Controller.

- **CIM Agent and Console for IBM TotalStorage SAN Volume Controller**
  Provides license information for IBM TotalStorage Common Information Model Agent.

- **IBM TotalStorage SAN Volume Controller CIM Agent Developer’s Reference**
  This Guide helps developers retrieve and abstract CIM Agent object classes and properties. This will help developers to use object classes and models to create copy services and LUN masking.

- **Installation and Setup Instructions for the IBM TotalStorage N3700 and EXP600 Expansion Unit**
  This manual provides basic information required to install and set up an IBM TotalStorage N3700 and disk expansion unit EXP600. It also provides information required to connect an N3700 to a network, additional shelves, a power source, third party devices, and/or to an ASCII terminal.

- **IBM TotalStorage N3700 Hardware and Service Guide**
  This manual provides basic information required to install and set up an IBM TotalStorage N3700, models A10 and A20. It also provides information required to connect an N3700 to a network, additional shelves, a power source, third party devices, and/or to an ASCII terminal. This manual also provides information required to configure, monitor, troubleshoot and replace the N3700. Finally, it provides regulatory information.

- **IBM Tivoli Storage Manager in a Clustered Environment**
  This IBM Redbook describes how to implement IBM Tivoli Storage Manager Version 5.3 products in highly available clustered environments. It is intended for those who want to plan, install, test, and manage these products in various environments by providing best practices and showing how to develop scripts for clustered environments.

- **Using IBM Tivoli Storage Manager for Copy Services to Back Up Microsoft Exchange with VSS**
  This IBM Redbook describes how to plan, configure and run IBM Tivoli Storage Manager for Copy Services in a Microsoft Exchange environment.

## Accessing terminology online

The *Tivoli Software Glossary* includes definitions for many of the technical terms related to Tivoli software. The *Tivoli Software Glossary* is available at the following Tivoli software library Web site:

http://publib.boulder.ibm.com/tividd/glossary/tivoliglossarymst.htm
The IBM Terminology Web site consolidates the terminology from IBM product libraries in one convenient location. You can access the Terminology Web site at the following Web address:

http://www.ibm.com/software/globalization/terminology

**Accessing publications online**

IBM® posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli software information center Web site. Access the Tivoli software information center by first going to the Tivoli software library at the following Web address:


Scroll down and click the **Product manuals** link. In the Tivoli Technical Product Documents Alphabetical Listing window, click the <**Tivoli Storage Manager**> link to access the product library at the Tivoli software information center.

**Note:** If you print PDF documents on other than letter-sized paper, set the option in the **File → Print** window that allows Adobe Reader to print letter-sized pages on your local paper.

**Ordering publications**

You can order many Tivoli publications online at the following Web site:


You can also order by telephone by calling one of these numbers:

- In the United States: 800-879-2755
- In Canada: 800-426-4968

In other countries, contact your software account representative to order Tivoli publications.

**Tivoli Technical Training**

For Tivoli technical training information, refer to the following IBM Tivoli Education Web site:

http://www.ibm.com/software/tivoli/education

**Accessibility**

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

For additional information, see the appendix, Appendix E, “Accessibility,” on page 141.
Support information

If you have a problem with your IBM software, you want to resolve it quickly. IBM provides the following ways for you to obtain the support you need:

- Searching knowledge bases: You can search across a large collection of known problems and workarounds, Technotes, and other information.
- Obtaining fixes: You can locate the latest fixes that are already available for your product.
- Contacting IBM Software Support: If you still cannot solve your problem, and you need to work with someone from IBM, you can use a variety of ways to contact IBM Software Support.

For more information about these three ways of resolving problems, see Appendix D, “Support information,” on page 135.

IBM Tivoli Storage Manager Web site

Technical support information and publications are available at the following address: http://www.ibm.com/software/sysmgmt/products/support/IBMTivoliStorageManager.html

By accessing the Tivoli Storage Manager home page, you can access subjects that interest you. You can also keep up-to-date with the newest Tivoli Storage Manager product information.

IBM Tivoli Storage Manager for Mail Web site

The IBM Tivoli Storage Manager for Mail Web site contains a knowledge base of articles and information related to backup and restore issues. Access this information at: http://www.ibm.com/software/sysmgmt/products/support/IBMTivoliStorageManagerforMail.html If you plan to perform VSS operations, the IBM Tivoli Storage Manager for Copy Services Web site contains a knowledge base of VSS-related articles and information: http://www.ibm.com/software/sysmgmt/products/support/IBMTivoliStorageManagerforCopyServices.html

IBM TotalStorage Web site

Technical support information and publications are available at the following address: http://www.ibm.com/servers/storage

By accessing the IBM TotalStorage home page, you can access detailed information regarding product compatibility requirements. You can also keep up-to-date with the newest IBM TotalStorage product information.

Conventions used in this book

This guide uses several conventions for special terms and actions, operating system-dependent commands and paths.

Typeface conventions

This guide uses the following typeface conventions:

Bold
• Commands, keywords, authorization roles, or other information that you
must use.
• Example: Log on to the server as root user.

*italics*
• Values or variables that you must provide.
• Emphasized words and phrases.
• Example: The node name of the production node and backup node must not
be the same.

**bold italics**
• Options and parameters.
• Example: Specify the value for the compression option.

*monospace*
• Directories, parameters, URLs, and output examples.
• Example: The product is installed in the C:\program
files\tivoli\tsm\client\ba directory.

UPPER CASE
• Environment variables associated with Tivoli Storage Manager, operating
systems, or Exchange Server.
• Example: Make sure the DSM_DIR environment variable is set correctly.

Reading syntax diagrams

This section describes how to read the syntax diagrams used in this book. To read
a syntax diagram, follow the path of the line. Read from left to right, and top to
bottom.
• The ➔ symbol indicates the beginning of a syntax diagram.
• The ➔ symbol at the end of a line indicates the syntax diagram continues on
the next line.
• The ➔ symbol at the beginning of a line indicates a syntax diagram continues
from the previous line.
• The ➔ symbol indicates the end of a syntax diagram.

Syntax items, such as a keyword or variable, can be:
• On the line (required element)
• Above the line (default element)
• Below the line (optional element).

<table>
<thead>
<tr>
<th>Syntax Diagram Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviations:</td>
<td>➔KEYWOrd ➔</td>
</tr>
</tbody>
</table>

Uppercase letters denote the shortest acceptable truncation. If an item appears
entirely in uppercase letters, it cannot be truncated.

You can type the item in any combination of uppercase or lowercase letters.

In this example, you can enter KEYWO, KEYWORD, or KEYWOrd.
Symbols:

Enter these symbols exactly as they appear in the syntax diagram.

- Asterisk
- Braces
- Colon
- Comma
- Equal Sign
- Hyphen
- Parentheses
- Period
- Space

Variables:

Italicized lowercase items (var_name) denote variables.

In this example, you can specify a var_name when you enter the KEYWORD command.

Repetition:

An arrow returning to the left means you can repeat the item.

A character or space within the arrow means you must separate repeated items with that character or space.

A footnote by the arrow references the number of times you can repeat the item.

Notes:

1. Specify repeat as many as 5 times.

Required Choices:

When two or more items are in a stack and one of them is on the line, you must specify one item.

In this example, you must choose A, B, or C.

Optional Choice:

When an item is below the line, that item is optional. In the first example, you can choose A or nothing at all.

When two or more items are in a stack below the line, all of them are optional. In the second example, you can choose A, B, C, or nothing at all.
### Syntax Diagram Description

#### Defaults:

Defaults are above the line. The default is selected unless you override it. You can override the default by including an option from the stack below the line.

In this example, A is the default. You can override A by choosing B or C. You can also specify the default explicitly.

#### Repeatable Choices:

A stack of items followed by an arrow returning to the left means you can select more than one item or, in some cases, repeat a single item.

In this example, you can choose any combination of A, B, or C.

#### Syntax Fragments:

Some diagrams, because of their length, must fragment the syntax. The fragment name appears between vertical bars in the diagram. The expanded fragment appears between vertical bars in the diagram after a heading with the same fragment name.

---

<table>
<thead>
<tr>
<th>Syntax Diagram Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defaults:</td>
<td>![Diagram]</td>
</tr>
<tr>
<td></td>
<td>Defaults are above the line. The default is selected unless you override it. You can override the default by including an option from the stack below the line.</td>
</tr>
<tr>
<td></td>
<td>![Diagram]</td>
</tr>
<tr>
<td></td>
<td>In this example, A is the default. You can override A by choosing B or C. You can also specify the default explicitly.</td>
</tr>
<tr>
<td>Repeatable Choices:</td>
<td>![Diagram]</td>
</tr>
<tr>
<td></td>
<td>A stack of items followed by an arrow returning to the left means you can select more than one item or, in some cases, repeat a single item.</td>
</tr>
<tr>
<td></td>
<td>![Diagram]</td>
</tr>
<tr>
<td></td>
<td>In this example, you can choose any combination of A, B, or C.</td>
</tr>
<tr>
<td>Syntax Fragments:</td>
<td>![Diagram]</td>
</tr>
<tr>
<td></td>
<td>Some diagrams, because of their length, must fragment the syntax. The fragment name appears between vertical bars in the diagram. The expanded fragment appears between vertical bars in the diagram after a heading with the same fragment name.</td>
</tr>
</tbody>
</table>
Chapter 1. Data Protection for Exchange Overview

This section provides introductory information about Data Protection for Exchange.

Key features

Data Protection for Exchange provides the following key features:

Table 1. Data Protection for Exchange key features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Referred to as:</th>
<th>For more information see:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform a VSS Backup to the Tivoli Storage Manager server using an alternate machine instead of a production machine.</td>
<td>Off-loaded Backup</td>
<td>“Off-loaded Backup” on page 8</td>
</tr>
<tr>
<td>Restore VSS Backups that reside on Tivoli Storage Manager server storage to their original location.</td>
<td>VSS Restore</td>
<td>“VSS Restore” on page 10</td>
</tr>
<tr>
<td>Restore VSS Backups that reside on local shadow volumes using file-level copy mechanisms.</td>
<td>VSS Fast Restore</td>
<td>“VSS Fast Restore” on page 10</td>
</tr>
<tr>
<td>Restore VSS Backups that reside on local shadow volumes using hardware-assisted volume-level copy mechanisms.</td>
<td>VSS Instant Restore</td>
<td>“VSS Instant Restore” on page 10</td>
</tr>
<tr>
<td>Restore a VSS Backup to an alternate machine.</td>
<td>Alternate server restore</td>
<td>Appendix C, “Advanced restore procedures,” on page 133</td>
</tr>
<tr>
<td>Tivoli Storage Manager policy-based management of VSS snapshot backups.</td>
<td>Server policy</td>
<td>“How Tivoli Storage Manager server policy affects Data Protection for Exchange” on page 16</td>
</tr>
<tr>
<td>Restore the .edb, .stm, and .log files from a legacy backup that resides on Tivoli Storage Manager server storage to an alternate path for use with third-party products (such as Individual Mailbox Restore utilities).</td>
<td>restorefiles command</td>
<td>“RESTOREFILES” on page 92</td>
</tr>
<tr>
<td>A single graphical user interface for performing legacy and VSS backup, restore, and query operations.</td>
<td>GUI</td>
<td>Chapter 4, “Using the Graphical User Interface (GUI),” on page 45</td>
</tr>
<tr>
<td>A single command line interface for performing legacy and VSS backup, restore, and query operations.</td>
<td>CLI</td>
<td>Chapter 5, “Using the Command Line Interface,” on page 57</td>
</tr>
</tbody>
</table>

Note that in order to use VSS features, you must also install the following:

- IBM Tivoli Storage Manager for Copy Services Microsoft Exchange VSS Integration Module (required for basic VSS operations)
**Additional features**

Data Protection for Exchange helps protect and manage Exchange Server data by making it easy to perform the following actions:

- Back up Exchange Server storage groups and transaction logs
- Maintain multiple versions of Exchange Server storage group and transaction log backups
- Restore storage group and transaction log backups and replay the transaction log files
- Automatically inactivate previous backups when performing a full backup
- Automate scheduled backups (see Appendix A, “Using the Tivoli Storage Manager scheduler,” on page 119)
- Set automatic expiration of backup objects that are based on version limit and retention period (see “How Tivoli Storage Manager server policy affects Data Protection for Exchange” on page 16)
- Monitor results through the Data Protection for Exchange activity log and automatically prune the activity log
- Query a local Exchange Server or a Tivoli Storage Manager server for configuration information
- Legacy restore of mailbox databases into the Exchange Server 2003 Recovery Storage Group (RSG)
- Legacy back up and restore of Exchange Site Replication Service (SRS) databases
- Legacy back up and restore of Exchange Key Management Service (KMS) databases (Exchange 2000 Server only)
• Participate in Microsoft Cluster Server (MSCS) fail-over environments (see “Microsoft Cluster Server (MSCS) Support” on page 19)
• Obtain online task and concept help (see “Documentation” on page 20)
• View online documentation for Data Protection for Exchange
• Globalization Support

Backup Processing: Overview

A backup performed by Data Protection for Exchange creates a copy of an Exchange Server storage group on Tivoli Storage Manager server storage. The backup includes any associated transaction logs.

When a Legacy backup operation is initiated, Data Protection for Exchange performs the following actions:
1. Begins a session with a Tivoli Storage Manager server.
2. Informs the Exchange Server that a backup is ready to begin.
3. Forwards data from the Exchange Server to the Tivoli Storage Manager server.
4. Informs the Exchange Server that the backup is complete.
5. Ends the Tivoli Storage Manager server session.

Data Protection for Exchange provides backup and restore functions for the Exchange storage groups and associated transaction logs. Data Protection for Exchange does not provide a complete disaster recovery solution for an Exchange Server. In a disaster recovery situation, Data Protection for Exchange only restores storage groups. Other files need to be restored in a disaster recovery situation. Refer to your Microsoft Exchange Server documentation for a comprehensive discussion of disaster recovery considerations.

Personal folders and personal address books that are stored on Outlook clients are not protected by Data Protection for Exchange. The Tivoli Storage Manager Backup-Archive client can be used on the Outlook client platform to back up and restore these files. Since the Outlook client normally keeps these files locked when running, you should stop the Outlook client before backing up or restoring these files. Note that since Tivoli Storage Manager Backup-Archive client provides open file support, you may be able to back up and restore these files while the Outlook client is running.

VSS Backup processing: Overview

It is important to understand that Data Protection for Exchange VSS Backup operations are implemented through the Tivoli Storage Manager backup-archive client. The client serves as the VSS Requestor that communicates with VSS to access the Exchange data in order to create shadow copies of Exchange storage groups. Thus, Data Protection for Exchange serves as a front end for VSS Backup operations and performs the following actions when a VSS Backup operation is initiated:
1. Validates the state of Exchange server objects.
2. Begins a session with a Tivoli Storage Manager server.
3. Verifies that the VSS service is running and that the Exchange writer is available.
4. The Tivoli Storage Manager VSS Requestor lists the backup components through the VSS Writer.
5. The Tivoli Storage Manager VSS Requestor performs the VSS snapshot backup preparation stage.
6. The Tivoli Storage Manager VSS Requestor performs the actual VSS Backup.
7. The Tivoli Storage Manager VSS Requestor performs an integrity check on the VSS Backup.
8. The Tivoli Storage Manager VSS Requestor backs up the data (and metadata) to a Tivoli Storage Manager server. Optionally, the movement of data to a Tivoli Storage Manager server can be off-loaded to an alternate machine that has the Tivoli Storage Manager VSS Requestor installed and configured.
9. The Tivoli Storage Manager VSS Requestor marks the backup as complete in VSS.
10. Ends the Tivoli Storage Manager server session.

Because of the role the backup-archive client performs as the VSS Requestor, features such as LAN free backup, database encryption, and data compression require that options related to these features be specified in the backup-archive client options file (and not the Data Protection for Exchange options file) for VSS operations.

**Note:** You must install the Tivoli Storage Manager for Copy Services Exchange VSS Integration Module to perform VSS operations. This module enables the backup-archive client to serve as the VSS Requestor.

**VSS Service**
The VSS Service manages and directs three VSS software applications:

**VSS Writer**
The VSS Writer is the Microsoft Exchange Server. It is installed with the Exchange Server 2003 software and requires no configuration.

**VSS Requestor**
The VSS Requestor is the Tivoli Storage Manager backup-archive client.

**VSS Provider**
The VSS provider manages the volumes where the Exchange data resides. Configuration requirements are based upon the type of VSS provider used in your environment. For example:

- If you are using the standard Windows System provider (referred to as the Windows VSS System Provider throughout this book), no configuration is required.
- If you are using a VSS software provider, consult the documentation provided with your VSS software provider.
- If your Exchange storage is configured on a disk storage subsystem and you plan to perform Off-loaded backups or full-copy snapshot backups (versus copy-on-write (COW) snapshot backups as described in “VSS Backup” on page 6), you must install a VSS hardware provider.
- If you plan to perform VSS Instant Restores, be aware that IBM TotalStorage SAN Volume Controller, DS6000, and DS8000 are the only storage subsystems that support VSS Instant Restores and require a VSS provider. Therefore, you MUST install and configure IBM TotalStorage Support for Microsoft Virtual Disk and Volume Shadow Copy Services as your VSS hardware provider in order to perform VSS Instant Restores. VSS provider support and documentation for IBM TotalStorage disk storage subsystems is available at the following Web site: http://www-1.ibm.com/support/docview.wss?rs=591uid=ssg1S4000342

For more information about VSS technology, see the Microsoft Technical Reference document “How Volume Shadow Copy Service Works” at the following Web site: http://www.microsoft.com/technet/prodtechnol/windowsserver2003/library/TechRef/2b0d2457-b7d8-42c3-b6c9-59c145b7765f.mspx
Backup types

Data Protection for Exchange provides five types of backup:

**Full Backup (Legacy and VSS)**
A full backup backs up the specified storage group as well as associated transaction logs. Data Protection for Exchange deletes these log files after the storage group and logs are successfully backed up. The log files are not deleted if storage groups are not mounted.

**Incremental Backup (Legacy only)**
An incremental backup only backs up transaction logs, and then deletes them. These log files are not deleted if the backup fails. Restoration of an Exchange Server storage group from an incremental backup requires the following:
- Restore of the last full backup
- Restore of any other incremental backups performed between the full backup and this incremental backup
- Restore of this incremental backup

The log files are not deleted if storage groups are not mounted.

**Differential Backup (Legacy only)**
A differential backup only backs up transaction logs, but does not delete them. If you perform a full backup and then perform only differential backups, the last full backup plus the latest differential backup has all data needed to bring the storage group back to the most recent state. This type of backup is also called a cumulative incremental backup.

Restoring an Exchange Server storage group from a differential backup requires the following:
- Restore of the last full backup
- Restore of this differential backup, but no other differential backups

**Copy Backup (Legacy and VSS)**
A copy backup is similar to a full backup except that transaction log files are not deleted after the backup. A copy backup is used to make a full backup of the Exchange Server storage group without disrupting any backup procedures that use incremental or differential backups.

**Database Copy Backup (Legacy only)**
A database copy backup is a special type that backs up only the specified database as well as its associated transaction logs. The transaction log files are not deleted after the backup. A database copy backup is used to make a special full backup of the database without disrupting any backup procedures that use incremental or differential backups.

**Note:** When circular logging is enabled, you cannot use differential or incremental backups. This is because data loss could occur if the log wrapped before an incremental or differential backup is done. If you choose a backup strategy that involves incremental or differential backups, you must disable circular logging for the Exchange storage group from the Exchange Administrator program.

For more information on circular logging, see your Microsoft Exchange Server documentation.
Backup methods

Legacy Backup
A legacy backup is a specialized API backup that functions with the Exchange server storage engine. It is occasionally referred to as the Exchange server streaming backup and restore API. This is the type of backup provided by previous releases of Data Protection for Exchange.

The following characteristics are true of Legacy backups:
• Full, copy, incremental, differential, and database copy backup types are supported.
• Backup granularity is at the database and storage group level.
• Backups are stored on Tivoli Storage Manager server storage.
• Backups are managed through Tivoli Storage Manager server policy.
• Backups can be performed in a Microsoft Cluster Server (MSCS) environment.
• Backups provide Exchange Server database zeroing functionality.
• Backups provide Exchange Server database integrity check functionality.
• Backup and restore of SRS and KMS databases is supported.

VSS Backup
A VSS Backup uses Microsoft Volume Shadow Copy Service technology to produce an online snapshot (point-in-time consistent copy) of Exchange data that can be stored on local shadow volumes or on Tivoli Storage Manager server storage. Both of these storage destinations require that sufficient space be available for the snapshot. A VSS Backup means the Exchange server is not in "backup mode" for an extended period of time because the length of time to perform the snapshot is usually measured in seconds and not hours. In addition, a VSS Backup allows a snapshot of large amounts of data at one time since the snapshot works at the volume level.

Optionally, VSS Backups can be stored locally on VSS shadow volumes that are directly accessible by the Exchange system, as long as sufficient space is available for the snapshot. These types of backups are fast because data is not placed into Tivoli Storage Manager server storage. Restoring these backups is also fast because the Exchange data is not transferred from Tivoli Storage Manager server storage over the network. VSS Backups are only available on Exchange Server 2003 and Windows Server 2003.

When performing VSS Backups and moving data to Tivoli Storage Manager server storage, sufficient space on local snapshot volumes is still required to hold the snapshot. For Exchange data backed up to Tivoli Storage Manager server storage, the Exchange data on the snapshot volume is sent to the Tivoli Storage Manager server. Once the data transfer to the server is complete, the snapshot volume is made available for reuse. If you are storing VSS Backups locally and the maximum number of local backup versions to be maintained (as specified by the Tivoli Storage Manager policy) is reached, the oldest backup version is expired in order to create the snapshot for the backup to Tivoli Storage Manager server storage. See "How Tivoli Storage Manager server policy affects Data Protection for Exchange" on page 16 for details regarding how Tivoli Storage Manager proceeds in this situation.

For Exchange data backed up to local shadow volumes, the snapshot backup resides on the shadow copy volume.
For Exchange data backed up to both destinations, a local snapshot backup is
performed and the Exchange data on the local snapshot volume is sent to the
Tivoli Storage Manager server. The local snapshot volume is retained as a local
backup.

The following characteristics are true of VSS Backup:
• Full and copy backup types are supported. Incremental, differential, and
database copy backup types are not supported.
• Backup granularity is at the storage group level only.
• Backups are managed through Tivoli Storage Manager server policy.
• Backups can be stored on local shadow volumes, Tivoli Storage Manager server
storage, or both locations.
• Different policy settings can be defined for each storage location and backup
method.
• Backups to Tivoli Storage Manager server storage can be off-loaded to an
alternate machine as resource relief for production servers.
• Backups can be performed in a Microsoft Cluster Server (MSCS) environment.
• Backups do not provide Exchange Server database zeroing functionality.
• Backups provide Exchange Server database integrity check functionality.
• Backup and restore of SRS and KMS are not supported.
• Backup and restore into a Recovery Storage Group are not supported.
• There is no automatic retry for Data Protection for Exchange VSS operations like
there is for legacy operations.

Consider the following requirements when planning for VSS Backups:
• Continue to schedule and perform Legacy backups in your strategy.
• Make sure you have a well-defined and tested recovery plan that meets your
service level objectives.
• Use single hardware LUNs for each storage group.
• Use basic disks.
• If you plan to keep some VSS snapshot backups on local shadow volumes only,
make sure to consider the VSS provider-specific implementation and
configuration options when setting up your strategy. For example, if your VSS
hardware provider supports a full-copy snapshot versus a copy-on-write (COW)
snapshot mechanism, be aware that full-copy type implementations have greater
disk storage requirements but are less risky because they do not rely on the
original volume to restore the data. COW implementations require much less
disk storage but rely completely on the original volume to perform a restore.
Since these implementations are entirely controlled by the VSS provider and not
Data Protection for Exchange, make sure to consult your VSS provider
documentation for a complete understanding of your VSS implementation.
• You cannot perform parallel VSS Backups as this feature is not supported by
VSS.
• Do not enable circular logging since it has severe limitations and possible
negative impacts.
• Do not place multiple volumes on the same LUN. Microsoft recommends that
you configure a single volume/single partition/single LUN as 1 to 1 to 1.

System Provider: Be aware that if you are using the Windows VSS System
Provider, no configuration is required.
**Software or Hardware Provider:** If you use a software or hardware provider, consider the following requirements when planning for VSS Backups:

- If a hardware provider is used, the disks that contain Exchange data must be configured as basic.
- Place databases files for each storage group on their own dedicated logical volume.
- Place logs for each storage group on their own logical volume.
- Do not place non-Exchange data on storage volumes that are dedicated to Exchange.
- When using hardware snapshot providers, do not share storage group LUNs with other storage groups or applications.
- Make sure to read and follow specific installation and configuration instructions in the documentation provided by your VSS provider vendor.

**SAN Volume Controller:** If you use SAN Volume Controller, consider the following requirements when planning for VSS Backups:

- Place databases files for each storage group on their own dedicated logical volume.
- Place logs for each storage group on their own logical volume.
- Do not place non-Exchange data on storage volumes that are dedicated to Exchange.
- When using hardware snapshot providers, do not share storage group LUNs with other storage groups or applications.
- Only one backup is allowed to occur while the background copy process is pending. A new backup is not performed until the background copy process for the previous backup completes. As a result, local backups for SAN Volume Controller storage subsystems should be initiated at a frequency greater than the time required for the background copy process to complete.

**Off-loaded Backup**

An off-loaded backup uses an alternate machine to move the data to the Tivoli Storage Manager server. This type of backup shifts the backup load from the production machine to another machine. This frees the production system to serve the Exchange server. This requires that a VSS hardware provider that supports transportable shadow copy volumes is installed on the production and secondary machines.

---

**Restore Processing: Overview**

A restore obtains backup copies of Exchange storage groups and transaction logs and returns them to the Exchange Server.

The Exchange Information Store service must be running but the databases being restored within the storage group must be dismounted.

When a Legacy restore operation is initiated, Data Protection for Exchange performs the following actions:

1. Data Protection for Exchange prompts the user to dismount the databases or cancel the restore operation entirely. This prompt occurs in the GUI only. Command line interface users must dismount necessary databases.
2. Starts a session with a Tivoli Storage Manager server.
3. Informs the Exchange Server that a restore is about to begin.
4. Restores the specified storage group(s) and logs from the Tivoli Storage Manager server. The logs are restored to a temporary location as specified by the user.

When performing a restore of a mailbox database with Exchange Server 2003, if a Recovery Storage Group exists, the mailbox database will be restored to the Recovery Storage Group instead of to the original storage group. Also, when restoring a mailbox database to a Recovery Storage Group, you must specify the option to replay restored logs only or the restore operation may fail. Select **Replay Restored Logs ONLY** in the GUI Restore Window or specify `/recover=applyrestoredlogs` on the command line. This note ONLY applies to Legacy restores. VSS Restores to the Recovery Storage Group are NOT supported by Microsoft.

5. Informs the Exchange Server that the restore has completed. At this point you have the option of:
   - starting recovery
   - mounting the databases (when recovery completes)

6. Ends the Tivoli Storage Manager server session.

Depending on the backup strategy you choose, restoring an Exchange storage group can involve restoring multiple backup objects from the Tivoli Storage Manager server. See “Backup strategies” on page 13.

To restore an individual item such as a message, mailbox, or folder, use Data Protection for Exchange to restore the entire database containing the desired mailbox or public folder to an alternate Exchange Server. From the alternate Exchange Server, use the Exchange Administrator program to access and copy the item you want. See Appendix C, “Advanced restore procedures,” on page 133 for details on performing this procedure.

You can also use Data Protection for Exchange to restore mailbox databases to a Recovery Storage Group with Exchange Server 2003. See “Exchange 2003 Recovery Storage Group” on page 134 for details on performing this procedure. With Microsoft Exchange Server, you can also use the item Recovery feature of the Exchange Client to recover messages and folders which are accidentally deleted. Exchange 2000 Server and Exchange Server 2003 also provide a “deleted mailbox” feature to recover deleted mailboxes. For more information, see your Microsoft Exchange Server documentation.

The **restorefiles** command restores the .edb, .stm, and .log files from a specified Data Protection for Exchange backup (that resides on Tivoli Storage Manager server storage) into a specified directory. It also enables third-party Individual Mailbox Restore products. See “RESTOREFILES” on page 92 for more information about this command. The `brickback.doc` file (located in the default Data Protection for Exchange installation directory) also provides information on how to perform brick-level backup and restore operations.

When a VSS restore operation is initiated, Data Protection for Exchange performs the following actions:

1. Validates the state of Exchange server objects.
2. When using the Data Protection for Exchange GUI, you are prompted whether to dismount the databases within the selected storage group.
3. Begins a session with a Tivoli Storage Manager server.
4. Verifies that the VSS service is running and that the Exchange writer is available.
5. The Tivoli Storage Manager VSS Requestor performs the VSS snapshot restore preparation stage.
6. The Tivoli Storage Manager VSS Requestor restores the backup data.
7. The Tivoli Storage Manager VSS Requestor marks the restore as complete in VSS.
8. Optionally, mounts databases to run recovery.

**Restore methods**

**Legacy Restore**
A legacy restore is the type of restore provided by previous releases of Data Protection for Exchange. It restores legacy backups (Exchange database files and log files) from Tivoli Storage Manager server storage to their original location. Like a legacy backup, it uses a specialized API restore that functions with the Exchange server storage engine. It is occasionally referred to as the Exchange server streaming backup and restore API.

**VSS Restore**
This restores VSS Backups (Exchange database files and log files) that reside on Tivoli Storage Manager server storage to their original location. The following characteristics are true of VSS Restores:

- Full and copy backup types can be restored. Incremental, differential, and database copy backup types are not supported by VSS and therefore, cannot be restored.
- Restore granularity is at the database level.
- Supports restoring one (or more) storage groups from a VSS snapshot backup located on Tivoli Storage Manager server storage.
- VSS requires that data must always be restored to the same drive letters and paths as existed during the original backup.
- Restores can be performed in a Microsoft Cluster Server (MSCS) environment.
- Due to a Microsoft limitation, Recovery Storage Group (RSG) restores and restores of SRS and KMS backups are not supported.
- Supports restoring a VSS Backup (directly from Tivoli Storage Manager server storage) to an alternate machine.

**VSS Fast Restore**
A VSS Fast Restore restores VSS Backups that reside on local shadow volumes. In general, restore processing can conclude within minutes instead of hours in this situation. The following characteristics are true of VSS Fast Restore restores:

- Full and copy backup types can be restored. Incremental, differential, and database copy backup types are not supported by VSS and therefore, cannot be restored.
- Restore granularity is at the database level.
- The key component of producing a VSS Fast Restore is the speed with which the application can become operational with the data that resides on local shadow volumes. Be aware that even though the data is restored relatively quickly, the transaction logs must still be replayed after the restore and therefore, the time of recovery for the application can increase.

**VSS Instant Restore**
A VSS Instant Restore is when a set of target volumes (that contain a valid snapshot) are copied back to the original source volumes using hardware-assisted
volume-level copy mechanisms. The application can return to normal operations as soon as the hardware-assisted volume-level copy has been started and the log replay is complete.

The key component of producing a VSS Instant Restore is the speed with which the application can become operational with the data that resides on local shadow volumes. Be aware that even though the data is restored relatively quickly, the transaction logs must still be replayed after the restore and therefore, the time of recovery for the application can increase.

Be aware that a VSS Instant Restore is only possible when all of the data (from the storage group or database specified for restore) resides on storage subsystems supported by the VSS Instant Restore. If part of the data being restored (including the log files) resides on a local disk, a VSS Instant Restore of this data is not supported. In this situation, a VSS Fast Restore is performed.

When performing a VSS Instant Restore, you must restore ALL databases within the specified storage group. You cannot perform a partial restore (partial) while using VSS Instant Restore. Although Data Protection for Exchange allows this operation to begin, it will either fail or complete with undesirable consequences. If you need to restore just one database from a VSS Backup that resides on local VSS shadow volumes on DS or SAN Volume Controller disks, make sure to select the Disable VSS Instant Restore option in the Data Protection for Exchange GUI Restore Window or specify /instantrestore=no on the command line interface. If VSS Instant Restore capability is needed for single databases, make sure to place these databases in their own storage group.

Although VSS Instant Restore is the default restore method when all Exchange data specified for restore resides on storage subsystems supported by the VSS Instant Restore, a failover to VSS Fast Restore can occur when an error is detected early enough in the VSS Instant Restore process to trigger the failover. In this situation, an error is logged in the dserror.log file used by the DSMAGENT. However, a failover to VSS Fast Restore may not always be possible. For example, if an error occurs later in the restore process (such as a pending background copy on the storage subsystem, a failure to start the FlashCopy operation on the snapshot provider system, or other hardware error), VSS Instant Restore processing fails without a failover to VSS Fast Restore.

VSS Instant Restore does not support SSL for Common Information Model Object Manager (CIMOM) communication. As a result, perform the following tasks before attempting a VSS Instant Restore:

1. Configure the CIMOM server to accept communication without SSL by specifying these values for the following options in the CIMOM cimom.properties file:

   ```
   Port=5988
   ServerCommunication=HTTP
   DigestAuthentication=false
   SslEnabled=false (SVC only)
   ```

   Restart the CIMOM service after making these changes.

2. If you are using SAN Volume Controller, you must also change these WebSphere files so that they use the new CIMOM settings (the CIMOM is located by default in the svcconsole directory):
C:\Program Files\IBM\svcconsole\console\embeddedWAS\installedApps\DefaultNode\ICAConsole.ear\ICAConsole.war\WEB-INF
C:\Program Files\IBM\svcconsole\console\embeddedWAS\installedApps\DefaultNode\SVCConsole.ear\SVCConsole.war\WEB-INF
C:\Program Files\IBM\svcconsole\console\embeddedWAS\config\cells\DefaultNode\applications\ICAConsole.ear\deployments\ICAConsole\ICAConsole.war\WEB-INF
C:\Program Files\IBM\svcconsole\console\embeddedWAS\config\cells\DefaultNode\applications\SVCConsole.ear\deployments\SVCConsole\SVCConsole.war\WEB-INF

Restart the WebSphere service after making these changes.

Be aware of the following considerations when planning for VSS Instant Restore:

- Requires IBM TotalStorage Support for Microsoft Volume Shadow Copy Service software.
- Backups must reside on the same DS6000, DS8000, or SAN Volume Controller storage subsystem to which they are restored.

**Backward compatibility:** On DS storage:

- Backups created with IBM Tivoli Storage Manager for Copy Services Version 5.3.3 on local shadow volumes that reside on DS storage cannot be restored via VSS Instant Restore using IBM Tivoli Storage Manager for Copy Services Version 5.4. You must create backups on local shadow volumes (residing on DS storage) using IBM Tivoli Storage Manager for Copy Services Version 5.4 in order to restore them via VSS Instant Restore.
- Backups created with IBM Tivoli Storage Manager for Copy Services Version 5.3.3 on local shadow volumes (residing on DS storage) can be restored via VSS Fast Restore using IBM Tivoli Storage Manager for Copy Services Version 5.4.

On SAN Volume Controller storage: Backups created with IBM Tivoli Storage Manager for Copy Services Version 5.3.3 on local shadow volumes that reside on SAN Volume Controller storage can be restored via VSS Instant Restore (and VSS Fast Restore) using IBM Tivoli Storage Manager for Copy Services Version 5.4.
Backup strategies

Depending on your specific requirements regarding network traffic, backup window, and acceptable restore times, you might choose to follow different backup strategies. It is important to completely understand all aspects of Exchange Server disaster recovery as well as backup considerations recommended by Microsoft. Refer to your Exchange Server documentation for this information. Some commonly used strategies are described below.

- If you choose a strategy that involves incremental or differential backups, circular logging must be disabled on the storage groups of the Exchange Server.
- You should not mix incremental and differential backups. Differential backups will only back up changes made since the last incremental backup. Incremental backups performed after differential backups contain all changes since the last incremental or full backup. Restores are more complicated when using a mixed strategy. You need to determine on an individual basis which transaction log backups (differential or incremental) to restore along with the full backup.
- If you plan to use VSS Backups, you should continue to use Legacy Backups as well.
- When scheduling Legacy and VSS Backups, make sure they do not overlap.
- Incremental and differential legacy backups cannot be restored with full or copy VSS Backups.

Full backups only

This approach is best for Exchange Servers that are relatively small because each backup contains enough data to restore the entire storage group. Each backup takes longer to perform, but the restore process is the most efficient because only the most recent (or other appropriate) full backup needs to be restored.

Full backup plus incremental backups

This strategy is commonly used when the normal backup window or network capacity cannot support a full backup each time. In such cases, a periodic full backup followed by a series of incremental backups allows the backup window and network traffic to be minimized during peak usage times. For example, you can perform full backups on the weekend and incremental backups during the week. The full backups can be done during low usage times when a larger backup window and increased network traffic can be tolerated. The restore process becomes more complex, however, because a full backup, as well as subsequent incremental backups, must be restored. In addition, transactions within the logs must be applied which increases process time. As a result, the more transactions applied, the longer the recovery process.

If you use this backup strategy, you must decide whether the Tivoli Storage Manager storage management policies are modified, to ensure all incremental backups are stored together on the Tivoli Storage Manager server (collocated). This helps improve restore performance by reducing the number of media mounts necessary for restoring a series of incremental backups. See “How Tivoli Storage Manager server policy affects Data Protection for Exchange” on page 16 for more information.

Full backup plus differentials

This process provides an easier restore than the full plus incremental backup. This approach might be useful if your backup window and network capacity can handle the backup of all transaction logs that accumulate between full backups.
This is because it requires the transfer of only one differential plus the last full backup to accomplish a restore. However, the same amount of data must be transferred in the differential image, as in the series of incremental backups.

Therefore, a full backup plus differential backup policy increases network traffic and Tivoli Storage Manager storage usage. This assumes that the differential backups are performed with the same frequency as the incremental backups.

You should carefully consider whether there is sufficient advantage to justify the additional resource necessary to resend all prior transaction logs with each subsequent differential backup.

**Using VSS and Legacy Backups together**

Microsoft supports and recommends using both methods of backup in your complete backup strategy. However, Microsoft also states that you cannot mix the two types of backups. For example, a Legacy incremental or differential backup cannot be applied to a VSS full or copy backup. This is noted in the Microsoft Exchange Server 2003 SDK documentation. The Exchange store will prevent you from mixing backup types.

Also, be aware of the following best practice:
- Legacy and VSS Backups to Tivoli Storage Manager server storage are usually dictated by time, not versions.
- Backups to local shadow volumes are usually dictated by versions because of space limitations and provisioning of VSS storage.

**Table 2. Backup strategy characteristics**

<table>
<thead>
<tr>
<th>Strategy characteristics</th>
<th>Legacy backup only</th>
<th>Legacy backup plus VSS backup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available backup types:</td>
<td>COPY 1+ per month</td>
<td>Legacy COPY 1+ per month</td>
</tr>
<tr>
<td></td>
<td>FULL 1+ per week</td>
<td>Legacy FULL 1+ per week</td>
</tr>
<tr>
<td></td>
<td>INCR 1+ per day</td>
<td>VSS FULL 1+ per day</td>
</tr>
<tr>
<td>Available restore types:</td>
<td>Restore to production Exchange Server</td>
<td>VSS:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• VSS Restore¹</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• VSS Fast Restore²</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• VSS Instant Restore³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Legacy:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Restore to the production Exchange Server</td>
</tr>
<tr>
<td>Restore attributes:</td>
<td>FULL, COPY, INCR, DIFF, DBCOPY</td>
<td>FULL, COPY</td>
</tr>
<tr>
<td></td>
<td>Server and storage group level restore granularity</td>
<td>Server and storage group level restore granularity</td>
</tr>
<tr>
<td></td>
<td>Point-in-time recovery</td>
<td>Point-in-time recovery</td>
</tr>
<tr>
<td></td>
<td>Roll-forward recovery</td>
<td>Roll-forward recovery</td>
</tr>
<tr>
<td></td>
<td>Restore to alternate machine</td>
<td>Restore to alternate machine</td>
</tr>
</tbody>
</table>
Files are copied from the Tivoli Storage Manager server directly to the production source volumes.

Files are copied from local shadow volumes directly to the production source volumes.

Snapshot volumes are copied to the production source volumes. SAN Volume Controller, DS6000, or DS8000 is required to perform this type of restore.

Using VSS operations in a cluster

Data Protection for Exchange supports VSS operations in a clustered Exchange Server environment.

Requirements

The following requirements must be met for VSS operations to perform successfully in a cluster environment:

- The `vssaltstagingdir` option must be specified when the following circumstances are true of your cluster environment:
  - Tivoli Storage Manager performs the VSS operations.
  - VSS Backups are stored on local shadow volumes.

This option must be specified in the dsm.opt file for all potential `localdsmagentnode` nodes that could be running the Tivoli Storage Manager Remote Client Agent Service (DSMAGENT):

```
localdsmagentnode
```

```
vssaltstagingdir d:\dir
```

d: represents a shared drive that is accessible by all nodes in the cluster. It can also be a disk that follows the Virtual Exchange Server. `\dir` represents a directory located on the shared drive. This option must be specified on all nodes that are used in the cluster. For example:

```
vssaltstagingdir Q:\TSMVSS
```

- When registering nodes to the Tivoli Storage Manager server specifically for VSS operations, do not specify the Tivoli Storage Manager `Userid=NONE` parameter. VSS operations will fail when this parameter is specified.

- Make sure to specify the following options in each of the dsm.opt files that are used for the `LOCALDSMAGENT`, `REMOTEDSMAGENT`, and `OFFLOAD` machines:

  ```
  CLUSTERMODE NO
  CLUSTERVERS ONLY NO
  ```

Limitations

Be aware of these limitations when performing VSS operations in a cluster environment:

- All servers within the cluster must use the same levels of Tivoli Storage Manager, Windows, and other applicable software.

- Microsoft KB921181 is required to perform VSS Instant Restore in a cluster environment.

- Dynamic disks are not supported.

- VSS Backups that reside on local VSS shadow volumes can only be restored to the physical node that created the VSS Backup. For example, if NODE_A of a cluster created a VSS Backup and stored it on local shadow volumes, NODE_B of the cluster cannot restore that particular VSS Backup. NODE_B can only restore VSS Backups stored on the Tivoli Storage Manager server or VSS
Backups stored on local shadow volumes that were created by NODE_B. This is due to a limitation related to VSS cluster support and not to Tivoli Storage Manager.

- VSS Backups that reside on local VSS shadow volumes may be deleted in the event of a cluster failover. This means that if NODE_A of a cluster created a local VSS Backup and afterward, the Exchange Server fails over to NODE_B, if a Data Protection for Exchange VSS operation is performed on NODE_B of the cluster, the local VSS Backup created by NODE_A will be deleted. This is caused by the fact that the Microsoft VSS architecture is not cluster aware.

- The Tivoli Storage Manager Client Acceptor Daemon (CAD) must be installed on each cluster node so that it can continue operations in the event of a failover. Make sure the CAD service name is the same on all cluster nodes so that it can be started by a generic cluster service.

- It is recommended that the Local DSMAgent client node be a separate node from your normal backup-archive client, as this CAD service will need to be made a non cluster option.

- The Remote DSMAgent client node does not require you to register a separate node for each server within the cluster as this server only acts as a secondary server.

- Use the Microsoft vssadmin and vshadow commands to verify the environment.

- A Data Protection for Exchange configuration file should be configured for each node in the cluster. These files are almost identical, except that the localdsmagendDate parameter points to the corresponding local DSMAgent on each node.

If you plan to perform scheduled VSS operations in a cluster environment, be aware of these considerations:

- Install the Tivoli Storage Manager scheduler as a Windows service on both cluster nodes.

- If the command file resides on a local drive, you must make sure that it remains consistent on all cluster nodes. Optionally, you can create the command file on a shared drive. Make sure the objects parameter (specified with the define schedule command on the Tivoli Storage Manager server) points to this command file.

Additional useful cluster information is available in the IBM Redbook, Using IBM Tivoli Storage Manager for Copy Services to Back Up Microsoft Exchange with VSS.

---

**How Tivoli Storage Manager server policy affects Data Protection for Exchange**

Tivoli Storage Manager policy determines how Data Protection for Exchange backups are managed on Tivoli Storage Manager storage. The Tivoli Storage Manager server recognizes Data Protection for Exchange as a node. Data that is backed up to Tivoli Storage Manager storage from this Data Protection for Exchange node is stored and managed according to settings specified for Tivoli Storage Manager server policy items.

Tivoli Storage Manager policy can manage the VSS Backups that are placed on local shadow volumes as well as in Tivoli Storage Manager server storage pools. The Tivoli Storage Manager server is responsible for managing VSS Backups, whether the backup is stored on local shadow volumes or on the Tivoli Storage Manager server. Be aware that while a VSS snapshot (created for back up to Tivoli Storage Manager server storage) is deleted after the backup completes, a VSS
snapshot (created for back up to local shadow volumes) remains active until the backup version is expired according to the policy settings for VSS Backups on local shadow volumes.

The number of local backup versions maintained by the Tivoli Storage Manager server is determined by the value specified by the Tivoli Storage Manager server verexists parameter (defined in the copy group of the management class to which the local backup belongs). The number of Target Volume sets allocated for local backups should be equal to the verexists parameter. For example, if verexists=3, then at least three sets of Target Volumes must be allocated for the backup to complete successfully. If only two sets of Target Volumes are allocated, the third and subsequent backup attempt will fail. If more sets of Target Volumes exist than the number specified by the verexists parameter, these sets are ignored by the Tivoli Storage Manager server.

The policy management of local backups is responsible for reconciling the local backup repository with the information stored on the Tivoli Storage Manager server. For example, if Target Volume LUNs that were used for a local backup are removed from the storage subsystem, the information representing the backup on the Tivoli Storage Manager server must be reconciled. Likewise if the Tivoli Storage Manager server policy has determined that a local backup copy is no longer needed, the local backup manager must free the Target Volume LUNs to the storage subsystem so that these LUNs can be used for future backup operations. Tivoli Storage Manager automatically detects these situations and performs the reconciliation.

**Important**

Tivoli Storage Manager requires that sufficient storage space be available to create shadow volumes required for VSS Backup processing. Even when the VSS Backup destination is the Tivoli Storage Manager server, storage space to create a shadow volume is still required (though on a temporary basis). Since the value of the verexists parameter (specified for your local backup policy) determines the number of backup versions to retain on local shadow volumes, a verexists=1 setting will cause the deletion of an existing backup on local shadow volumes (during a VSS Backup to Tivoli Storage Manager server storage) in order to create enough temporary space for the new snapshot. Therefore, if you want to keep N backups on local shadow volumes and also perform VSS Backups to Tivoli Storage Manager server storage, make sure you provision enough storage space on local shadow volumes and specify verexists=N+1.

Make sure to specify a verexists value that accommodates your VSS Backup goals. If you have limited storage space for VSS operations and are restricted to a verexists=1 setting, you can take advantage of the Backup Destination BOTH option. This stores the backup on local shadow volumes as well as sends a copy to Tivoli Storage Manager server storage.

It is possible for VSS Backups (that Data Protection for Exchange creates and stores on local shadow volumes) to be modified and deleted from outside of Tivoli Storage Manager control. For example, the Microsoft VSSADMIN DELETE SHADOWS command can remove a VSS Backup managed by Tivoli Storage Manager without Tivoli Storage Manager being able to prevent such a removal. In such a situation, Tivoli Storage Manager recognizes the backup removal and reconciles its index of available backups with what resides on local shadow.
volumes. It is important to be aware of this potential for removal and establish a strategy that protects VSS Backup data stored on local shadow volumes from being compromised.

Be aware that the following issues impact your Tivoli Storage Manager policy for managing VSS Backups:

- Overall backup strategy.
- Length of time that VSS Backups will reside on Tivoli Storage Manager server storage.
- Number of VSS Backup versions to reside on Tivoli Storage Manager server storage.
- Types of VSS Backups to reside on Tivoli Storage Manager server storage.
- Number of VSS Backup versions to reside on local shadow volumes.
- Types of VSS Backups to reside on local shadow volumes.
- The amount of available target volume storage provisioned for VSS operations.

Security

Data Protection for Exchange must be registered to the Tivoli Storage Manager server and use the appropriate node name and password when connecting to the Tivoli Storage Manager server. Standard Tivoli Storage Manager security requirements apply to Data Protection for Exchange. Data Protection for Exchange must be running under an account that has Domain Administrator privileges and Read/Write access to the local registry.

Performance

Many factors can affect the backup and restore performance of your Exchange Server. Some of these, such as hardware configuration, network type, and capacity, are beyond the control of Data Protection for Exchange. These factors are not within the scope of this document. However, some options that are related to Data Protection for Exchange can be tuned for optimum performance. See “Specifying Data Protection for Exchange options” on page 34 for details regarding these options.

In addition, be aware of how the following issues affect performance:

- Backups to local shadow volumes eliminates the transfer of data to the Tivoli Storage Manager server.
- During VSS Backup processing, integrated Exchange integrity checking reads every page in the files to be backed up. As a result, backup processing time can be significant. You can specify the \texttt{iskipintegritycheck} parameter to bypass integrity checking. However, this parameter is only valid for copy-type VSS Backups as Microsoft requires integrity checking be performed for full-type VSS Backups.
- The time required to perform a snapshot ranges from seconds to minutes, depending on the type of VSS provider used.
- Backup-archive client settings can affect performance when backing up data to the Tivoli Storage Manager server.

Buffering (Legacy only)

Data Protection for Exchange is a multithread application that uses asynchronous execution threads to transfer data between the Exchange servers and Tivoli Storage Manager servers. To accomplish this, multiple data buffers are used to allow one
thread to receive data from one side, while another thread sends data to the other side. For example, one thread reads data from an Exchange Server while another thread sends data to the Tivoli Storage Manager server. As a result, the Exchange Server continues sending data to available buffers regardless of the ability of the Tivoli Storage Manager server to receive the data. The number and size of buffers that are allocated for this can be configured through the Settings dialog in the Data Protection for Exchange GUI. The number and size of buffers can also be specified in the buffers and buffersize parameters on the command line interface. For more information, see Chapter 5, “Using the Command Line Interface,” on page 57.

LAN Free

Running Data Protection for Exchange in a LAN free environment allows data to be sent directly to storage devices. As a result, data bypasses potential network congestion. However, you must be properly equipped to operate in a LAN free environment. The Tivoli Storage Manager Managed System for SAN Storage Agent User's Guide provides detailed information about setting up a LAN Free environment.

In addition to specific LAN free requirements, you must specify the enablelanfree option for Data Protection for Exchange to activate this LAN free feature.

- For Legacy backups, specify enablelanfree yes in the Data Protection for Exchange options file.
- For VSS Backups, specify enablelanfree yes in the backup-archive client options file.

Microsoft Cluster Server (MSCS) Support

Data Protection for Exchange supports Exchange Servers running in MSCS configurations. The list below provides information you should consider when running Data Protection for Exchange in an MSCS environment.

Note: References to the Exchange Server in this section pertain to the virtual Exchange Server name in an MSCS environment.

- Data Protection for Exchange must be installed on both nodes of the cluster. In addition, when installing Data Protection for Exchange, it must be installed on a disk local to each node (not a shared cluster disk).
- Use identical configurations in the Tivoli Storage Manager options file when configuring Data Protection for Exchange on each node of the cluster. You must specify clusternode yes in the Data Protection for Exchange options file.
- When using the Tivoli Storage Manager scheduler for automating backups, you must install the scheduler service on both nodes of the cluster to enable failover support. See Appendix A, “Using the Tivoli Storage Manager scheduler,” on page 119 for more information.
- The Tivoli Storage Manager server treats backups as coming from a single server (the virtual Exchange server) regardless of the cluster node on which the backup was performed.
- When running in an MSCS environment, Data Protection for Exchange must be invoked from the command line with the lexserver parameter. For example, if the Exchange virtual server name on the Microsoft Cluster is excsv1, the GUI invocation is
tdpxec /lexserver=exc1
and an example command line interface invocation is
tdpexcc backup "First Storage Group" full /excserver=excvs1

Documentation

This refreshed *Data Protection for Exchange Installation and User’s Guide* (January 2007) is provided in the following locations in PDF and XHTML format:

- IBM Tivoli Storage Manager for Mail 5.4 Quick Start CD
- IBM Tivoli Storage Manager for Copy Services 5.4 Quick Start CD
- Tivoli Information Center

The March 2006 edition is installed with the product in the C:\Program Files\Tivoli\TSM\doc directory (by default).

GUI online help is also provided for specific information related to tasks that are performed in the Data Protection for Exchange GUI. After launching the GUI, go to Help->*Data Protection for Microsoft Exchange Server*. The online help displays.

Globalization

Data Protection for Exchange supports the following languages:

- American English
- Brazilian Portuguese
- French
- German
- Italian
- Japanese
- Korean
- Simplified Chinese
- Spanish
- Traditional Chinese

If you want to use a language other than English, you must install the Language Pack for the desired language. See the description of “Language Packs” on page 25 for detailed information.
Chapter 2. Installing Data Protection for Exchange

This section provides information on the client environment that must exist before you install Data Protection for Exchange. Detailed instructions are also provided on installing Data Protection for Exchange on a Windows 2000 Server or Windows Server 2003 workstation.

See the READMEDEPG EXC_enu.htm file that is shipped on the product installation media for current information.

Environment requirements

This section describes the minimum hardware, software, and operating system information required for the proper installation of Data Protection for Exchange.

Hardware

Data Protection for Exchange requires the following minimum hardware:

Table 3. Minimum hardware requirements

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware Description</th>
<th>Disk Space</th>
<th>RAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy or VSS Backup and</td>
<td>One Intel Pentium or equivalent 166 (or higher) processor.</td>
<td>11 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td>and Restore</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VSS Off-loaded backup</td>
<td>A storage subsystem with a VSS hardware provider</td>
<td>See Provider documentation</td>
<td>See Provider documentation</td>
</tr>
<tr>
<td>VSS Instant Restore</td>
<td>One of the following:</td>
<td>See disk storage subsystem documentation</td>
<td>See disk storage subsystem documentation</td>
</tr>
<tr>
<td></td>
<td>• IBM TotalStorage DS6000 disk storage subsystem</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• IBM TotalStorage DS8000 disk storage subsystem</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• IBM TotalStorage SAN Volume Controller Version 2.1.x (or later)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• IBM TotalStorage SAN Volume Controller Version 3.1.x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data Protection for Exchange VSS operations are available on any hardware that supports Microsoft VSS requirements. Refer to your VSS provider documentation for required levels. The following list identifies some hardware storage subsystems that were tested with Data Protection for Exchange VSS operations:

- IBM TotalStorage DS6000 and a machine with a processor supported by DS6000 with IBM Common Interface Model (CIM) Agent for DS Open API.
- IBM TotalStorage DS8000 and a machine with a processor supported by DS8000 with IBM Common Interface Model (CIM) Agent for DS Open API.
- IBM TotalStorage N3700 with Network Appliance (NetApp) SnapDrive Version 3.2 (or later). Make sure to see important NetApp requirement and configuration information on the READMEDEPG EXC_enu.htm file.
• NetApp fabric-attached storage (FAS) system with NetApp SnapDrive Version 3.2 (or later).
• IBM TotalStorage SAN Volume Controller Version 2.1.x (or later) or Version 3.1.x.

Contact your hardware storage subsystem vendor for exact details of their support of VSS operations.

You must have a hardware storage subsystem that supports transportable shadow copies and delivers a VSS hardware provider for the hardware storage subsystem that adheres to Microsoft VSS Provider API standards.

IBM TotalStorage DS6000 and DS8000 disk storage subsystems require IBM TotalStorage VSS Hardware Provider Version 2.4.2 (or later).

For detailed information regarding current hardware product compatibility requirements, see the IBM TotalStorage Web site: http://www.ibm.com/servers/storage

Software and operating system

Data Protection for Exchange requires the following levels of Tivoli Storage Manager software:

• Tivoli Storage Manager backup-archive client Version 5.3.3 (or later).
  Version 5.4 (or later) is required to perform VSS Instant Restore operations on DS6000 or DS8000 storage subsystems.
• Tivoli Storage Manager API Version 5.3.3 (or later).
• Tivoli Storage Manager server
  - Version 5.3.0 (or later) is required for Legacy backup and restore.
  - Version 5.3.2 (or later) is required for VSS operations.

Data Protection for Exchange requires the following minimum software and operating system combinations:

Table 4. Minimum software and operating system requirements

<table>
<thead>
<tr>
<th>Feature</th>
<th>Operating System</th>
<th>Exchange Server</th>
<th>VSS Provider</th>
<th>Tivoli Storage Manager for Copy Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy Backup and Restore</td>
<td>Microsoft Windows 2000¹</td>
<td>Exchange 2000 Server¹</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>One of the following:</td>
<td></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>• Microsoft Windows 2000¹</td>
<td>Exchange 2003²</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>• Microsoft Windows 2003²</td>
<td></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Basic VSS support</td>
<td>Microsoft Windows 2003²</td>
<td>Exchange 2003²</td>
<td>Any VSS provider that is supported by Microsoft rules for VSS providers.</td>
<td>Microsoft Exchange VSS Integration Module Version 5.3.3⁷</td>
</tr>
<tr>
<td>Feature</td>
<td>Operating System</td>
<td>Exchange Server</td>
<td>VSS Provider</td>
<td>Tivoli Storage Manager for Copy Services</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>VSS Off-loaded Backup</td>
<td>Microsoft Windows 2003&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Exchange Server 2003&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Any VSS provider that supports transportable shadow copies.&lt;sup&gt;5&lt;/sup&gt;</td>
<td>Microsoft Exchange VSS Integration Module Version 5.3.3 (or later)&lt;sup&gt;7&lt;/sup&gt;</td>
</tr>
<tr>
<td>VSS Instant Restore</td>
<td>Microsoft Windows 2003&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Exchange Server 2003&lt;sup&gt;4&lt;/sup&gt;</td>
<td>On DS storage subsystems:</td>
<td>On DS storage subsystems:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• IBM TotalStorage VSS Hardware Provider 2.4.2 (or later)</td>
<td>• Microsoft Exchange VSS Integration Module Version 5.3.3 (or later)&lt;sup&gt;7&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>On SAN Volume Controller storage subsystems:</td>
<td>• Hardware Devices Snapshot Integration Module Version 5.4.0 (or later)&lt;sup&gt;8&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• IBM TotalStorage SAN Volume Controller Version 2.1.x (or later) or Version 3.1.x&lt;sup&gt;6&lt;/sup&gt;</td>
<td>On SAN Volume Controller storage subsystems:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• IBM TotalStorage VSS Hardware Provider 2.4.3 (or later)</td>
<td>• Microsoft Exchange VSS Integration Module Version 5.3.3 (or later)&lt;sup&gt;7&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

1. Windows 2000 Server, Advance Server, or DataCenter Server. All versions must be at Service Pack 4 (or later).
3. Exchange 2000 Server must be at Service Pack 3 (or later). MSCS support is available.
4. Exchange Server 2003 must be at Service Pack 1 (or later). MSCS support is available.
5. The VSS hardware provider must be installed on both machines that are involved in an Off-loaded backup.
6. IBM Subsystem Device Driver (SDD) 1.6.0.2 with Host Attachment Scripts 1.1.0.3. (or later) is required.
7. The Microsoft Exchange VSS Integration Module is dependent upon the base Data Protection for Exchange product and must be installed to perform any VSS operations.
8. The Hardware Devices Snapshot Integration Module is dependent upon the base Tivoli Storage Manager backup-archive client product and must be installed to perform VSS Instant Restore operations.
Installation procedure

Attention: See the README file on the Tivoli Information Center for the latest information regarding Data Protection for Exchange:
http://publib.boulder.ibm.com/infocenter/tivihelp/v1r1/index.jsp

These instructions step you through the installation of Data Protection for Exchange. Make sure to read the Installation Considerations section for important installation information.

Data Protection for Exchange is available in the following packages:

Paid in Full
This package contains a license component and is a complete stand-alone release of the product.

Program Temporary Fix (PTF)
This package does not contain a license component. It is created to install over a previously installed version of Data Protection for Exchange.

Installation considerations:
- The default installation directory is Program Files\Tivoli\TSM\TDPExchange. If a Tivoli Storage Manager product exists, the path to that product becomes the Data Protection for Exchange default installation directory. You can override the default installation directory and specify a different installation directory. However, installing all Tivoli Storage Manager products and components into the same base directory is highly recommended. The base directory is Program Files\Tivoli\TSM. Note that you cannot override subdirectory names.
- If you are storing backup objects created by Data Protection for Exchange Version 1, you must retain Data Protection for Exchange Version 1 for as long as you retain those backup objects.
- To uninstall Data Protection for Exchange (Version 1, Version 2, Version 5.1.5, or Version 5.2.1), open the Control Panel on your Windows workstation and select the Add/Remove Programs item.
Follow these steps to install Data Protection for Exchange:

1. Insert the Data Protection for Exchange CD into the CD drive.

   **Note:**
   - Data Protection for Exchange must be installed from an account having Domain Administrator privileges to the local system.

   If autostart is not enabled, perform the following steps:
   a. Select **Run** from the Start menu.
   b. Enter `X:\TDPExchange\win32\client\setup` where `X` is your CD drive letter.
   c. Click **OK** to start the installation program.

2. Select a language for the installation (see “Language Packs” for more information).

3. Follow the installation instructions contained in the prompt windows.

4. Click **Finish** to complete the installation of the Data Protection for Exchange base product.

5. (VSS only): If you plan to perform basic VSS operations, you must also install the Tivoli Storage Manager for Copy Services Microsoft Exchange VSS Integration Module. This module is located in the `X:\TDPExchange\x32\plugin\setup` directory on the Tivoli Storage Manager for Copy Services CD where `X` is your CD drive letter. Double-click the "setup" file to launch the installation. This module installs in the `Program Files\Tivoli\TSM\TDPExchange` directory.

6. (VSS only): If you plan to perform VSS Instant Restores, you must also install the Tivoli Storage Manager for Copy Services Hardware Devices Snapshot Integration Module (in addition to the Tivoli Storage Manager for Copy Services Microsoft Exchange VSS Integration Module). This module is located in the `X:\tsmcl\x32\plugin` directory on the Tivoli Storage Manager for Copy Services CD where `X` is your CD drive letter. Double-click the "setup" file to launch the installation. This module installs in the `Program Files\Tivoli\TSM\baclient\plugins` directory.

**Language Packs**

To view the Data Protection for Exchange GUI, command line output, and messages in a language other than English, install the desired Language Pack provided on the product CD. The Language Pack executable files are located in the `TDPExchange\x32\languages\xxx` directory on the product CD. The `xxx` directory represents the three-letter country code associated with that language. Double-click the "setup" file to launch the installation. After installing the Language Pack, activate the language by updating the Data Protection for Exchange configuration file (`tdpexc.cfg` by default) using either of these methods:

- Use the `set` command with the `language` parameter to specify the desired language. For example:
  ```
  tdpexc set lang=fra
  ```
  See the description of the `language` parameter on page 103 for a list of available languages and their three-letter country codes.

- Use the Configuration Editor in the Data Protection for Exchange GUI by selecting **Edit->Configuration->Regional->Language**. The GUI Configuration Editor will show the installed languages in their long form. For example:
  ```
  English (United States)
  ```
If you are installing Data Protection for Exchange in a Microsoft Cluster Server environment, repeat the installation procedure on the secondary node of your cluster.

After successfully installing Data Protection for Exchange, see Chapter 3, “Configuring Data Protection for Exchange,” on page 27 for important configuration information.
Chapter 3. Configuring Data Protection for Exchange

This chapter is divided into two major sections:

- **Part I: Configuration overview**
  This section provides detailed information about setting Data Protection for Exchange and Tivoli Storage Manager options, policies, and preferences. For best results, it is recommended that you read this information carefully before performing any configuration tasks.

- **Part II: Configuration procedure**
  This section provides detailed step-by-step instructions on how to configure Data Protection for Exchange for both Legacy and VSS Backups.

- **Part III: Verify your configuration**
  This section provides instructions on how to verify that Data Protection for Exchange is installed and configured properly, including those components required for VSS Backups. Data Protection for Exchange should be ready for backup and restore processing upon successful completion of this verification procedure.

**What applications must I configure?** This table identifies the software applications that must be configured to perform certain features.

*Table 5. List of applications to configure*

<table>
<thead>
<tr>
<th>To use these features:</th>
<th>You must configure these applications:</th>
</tr>
</thead>
</table>
| • Legacy backup  
  • Legacy restore | • Data Protection for Exchange  
  • Tivoli Storage Manager server  
  • Tivoli Storage Manager backup-archive client scheduler |
|                        |                                        |
| • VSS Backup  
  • VSS Restore | • Data Protection for Exchange  
  • Tivoli Storage Manager server  
  • Tivoli Storage Manager backup-archive client scheduler  
  • Tivoli Storage Manager backup-archive client local Client Acceptor Daemon (CAD) (Local DSMAGENT Node)  
  • VSS software provider and/or VSS hardware provider |
|                        |                                        |
| • VSS Backup  
  • VSS Restore  
  • Off-loaded backup | • Data Protection for Exchange  
  • Tivoli Storage Manager server  
  • Tivoli Storage Manager backup-archive client scheduler  
  • Tivoli Storage Manager backup-archive client local CAD (Local DSMAGENT Node)  
  • Tivoli Storage Manager backup-archive client remote CAD (Remote DSMAGENT Node)  
  • VSS software provider and/or VSS hardware provider |
Table 5. List of applications to configure (continued)

<table>
<thead>
<tr>
<th>To use these features:</th>
<th>You must configure these applications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• VSS Backup</td>
<td>• Data Protection for Exchange</td>
</tr>
<tr>
<td>• VSS Restore</td>
<td>• Tivoli Storage Manager server</td>
</tr>
<tr>
<td>• VSS Instant Restore</td>
<td>• Tivoli Storage Manager backup-archive client scheduler</td>
</tr>
<tr>
<td>• Off-loaded backup</td>
<td>• Tivoli Storage Manager backup-archive client local CAD (Local DSMAGENT Node)</td>
</tr>
<tr>
<td></td>
<td>• Tivoli Storage Manager backup-archive client remote CAD (Remote DSMAGENT Node)</td>
</tr>
<tr>
<td></td>
<td>• VSS software provider and/or VSS hardware provider</td>
</tr>
</tbody>
</table>

Part I: Configuration overview

This section provides guidelines about available options, recommended settings, and other useful information needed to configure Data Protection for Exchange. It is recommended that you review this information before performing the configuration tasks described in “Part II: Configuration procedure” on page 39. For an overview of the various VSS components, see “VSS Service” on page 4.

Back up to Tivoli Storage Manager storage versus back up to local shadow volumes

When creating policy for your backups, consider these differences between backing up data to Tivoli Storage Manager storage versus VSS disks.

**Tivoli Storage Manager storage**

Backups to Tivoli Storage Manager server storage are usually dictated by time, not versions.

A Tivoli Storage Manager backup operation stores the backed up data on Tivoli Storage Manager server storage. Although this type of backup typically takes longer to process than a backup to local shadow volumes, a Tivoli Storage Manager backup is necessary when long term storage is needed such as saving Exchange data on tape for archival purposes. Tivoli Storage Manager backups are also necessary for disaster recovery situations when the disks that are used for local backups are unavailable. By maintaining multiple backup copies on Tivoli Storage Manager server storage, a point in time copy is available should backups on the local shadow volumes become corrupt or deleted.

**Local shadow volumes**

Backups to local shadow volumes are usually dictated by versions because of space limitations and provisioning of VSS storage.

Sufficient local storage space must be available on local shadow volumes for a VSS backup strategy to be successful. Make sure there is enough available storage space assigned to the volumes to accommodate your Data Protection for Exchange backup operations. Environment and storage resources also impact how many backup versions are maintained on local shadow volumes (for VSS Fast Restore and VSS Instant Restore) and how many backup versions are maintained on Tivoli
Storage Manager server (VSS Restore and longer term storage). It is recommended that different sets of policies be created for backups to both local shadow volumes and to Tivoli Storage Manager server storage. If you are using a VSS provider other than the Windows VSS System Provider, make sure to review the documentation for that specific VSS provider.

**VSS operations in DS and SAN Volume Controller environments**

In order to determine how much storage space is required for each local backup, be aware that the backup LUNs require the same amount of storage space as the original LUNs. For example, if you have a 100GB database residing on a 200GB LUN, you will need a 200GB LUN for each backup version.

**VSS operations in IBM N-series and NetApp environments**

Be aware that in environments that contain IBM N-series and NetApp systems, snapshots created using the IBM N-series and NetApp snapshot provider are stored on the same volume where the LUN resides. Disk space consumed by a local backup consists only of the blocks that have changed since the last local backup was created. The following formula can be used to help determine how much space is required for each local backup:

\[
\text{Amount of data changed per hour} \times \text{number of hours before a local backup expires}
\]

In addition, Write Anywhere File Layout (WAFL) reserves blocks equal to two times the specified size of the LUN to be used. This space reservation ensures writes for virtual disks. The following example demonstrates how to calculate the size of these volumes:

| Database size of an Exchange storage group: | 100GB |
| Number of local backups to be kept: | 3 |
| Snapshot for TSM backup: | 1 |
| duration for TSM backup: | 2hr |
| Backup frequency: | 3hrs |
| The duration before a local backup is expired: | 9 hrs |
| Amount of data changed/added/deleted per hr: | 50MB |
| Space required for each local backup: | 50+50+450 = 550 MB |
| Space required for 3 local backups + 1 TSM backup: | 450+3*50+2 = 1450 MB |
| The volume size required for the storage group: | 100*2 (space reservation) + 1.5 = 201.5 GB |

**Recommended Tivoli Storage Manager policy settings**

Make sure the following policy items are defined with the recommended settings.

Consult your Tivoli Storage Manager administrator or see the *IBM Tivoli Storage Manager for Windows Administrator’s Guide* and the *IBM Tivoli Storage Manager for Windows Administrator’s Reference* for complete information on defining or updating these Tivoli Storage Manager policy items.

**Domain**

Create a policy domain on the Tivoli Storage Manager server to be used exclusively for Data Protection for Exchange backups.

**Policy Set**

Policy sets contain management classes (which contain copy groups) that determine the rules by which Data Protection for Exchange backups are performed and managed. Define the policy set to the policy domain to which Data Protection for Exchange backups belong. Note that the policy set must be activated and only one policy set can be active in the policy domain.
Management Class
Define a management class for backups residing on local shadow volumes and a management class for backups residing on Tivoli Storage Manager server storage. Different management classes provide the opportunity for specialized policies for each storage destination. For example, you can maintain six versions of local VSS Backups of a given storage group (VERExists=6) while maintaining only two versions of the same storage group on Tivoli Storage Manager server storage (VERExists=2). In addition, you can create a separate management class for copy backup types for use in long term storage. Such policies can maximize storage resources and provide more control over your storage strategy.

Be aware that since Legacy backups on Tivoli Storage Manager server storage, VSS Backups on Tivoli Storage Manager server storage (COPY and FULL), and VSS Backups on local shadow volumes (COPY and FULL) all have different Tivoli Storage Manager server naming and therefore, can each have their own management class, it is possible to have five active backups of the same storage group. Make sure your backup strategy is planned and well-defined before defining management classes.

Copy Group
Define the copy group as a backup copy group and not an archive copy group.
Since Data Protection for Exchange stores all objects as backup objects on Tivoli Storage Manager in backup storage pools, an archive copy group is not required, although an archive copy group can exist. The following backup copy group parameters significantly influence your backup policy:

VERExists
Determines the maximum number of Exchange Server database backup versions to retain for databases that exist on the Data Protection for Exchange client system.

VERDeleted
Determines the maximum number of Exchange Server database backup versions to retain for databases that have been deleted from the Data Protection for Exchange client system after being backed up by Tivoli Storage Manager.

RETExtra
Determines the number of days to retain an Exchange Server database backup version after that version becomes inactive.

RETOOnly
Determines the number of days to retain the last Exchange Server database backup version of a database that has been deleted from the Data Protection for Exchange client system. Be aware that incremental backups do not participate in expirations (due to version limit) because there is never more than one version of an incremental backup object. This is because incremental backups are always uniquely named. However, all Legacy backup objects for an Exchange Server storage group are inactivated when a new full backup of that Exchange Server storage group is performed (VSS backup objects remain active). Therefore, the retention period set in the RETOnly parameter controls the expiration of incremental backup objects.

When setting the value of the RETOnly parameter for incremental backups, the value must be (at a minimum) as long as the value set for the full backup objects to which the incremental backups are associated. You can use the same management class for incremental backups and the full
backup objects (that are retained the longest) to be sure an adequate value is used. However, all Legacy backup objects for an Exchange Server storage group are inactivated when a new Legacy full backup of that Exchange Server storage group is performed (VSS backup objects remain active).

**MODE, SERialization, FREQuency**
You can accept default values for these backup copy group parameters as they are not applicable to Data Protection for Exchange.

It is recommended that you discuss these parameters with your Tivoli Storage Manager server administrator in order to accomplish your backup strategy.

**Storage Pool**
A single restore can require a full backup, a differential backup, and multiple incremental backups. It is recommended to use collocation if these backups are stored on removable media. Use collocation by file space (define stgpool COLlocate=FilEspaño) if you plan to restore multiple storage groups in parallel. This is recommended because all data for any one storage group is stored within one Tivoli Storage Manager server file space.

**Data Protection for Exchange node name: Recommended settings**
The machine where Data Protection for Exchange is installed must be registered to the Tivoli Storage Manager server with a node name. This node name owns and manages all Data Protection for Exchange data that is backed up to the Tivoli Storage Manager server. Specify this node name with the nodename option in the dsm.opt options file located (by default) in the Data Protection for Exchange installation directory. Note that in order to perform VSS operations, you may need to register node names for additional machines. See “Proxy node definitions (VSS Backups)” on page 32 for details about this task.

Be aware of the following Tivoli Storage Manager parameter conditions when registering your Data Protection for Exchange node name (machine) to the Tivoli Storage Manager server:

- **MAXNUMMP** This parameter determines the maximum number of mount points a client node is allowed to use on the Tivoli Storage Manager server during a backup operation.
- **TXNGroupmax** This parameter determines the number of files transferred as a group between the client and server between transaction commit points. This parameter MUST have a value of 12 or greater.
- **COMPression** This parameter determines whether the Data Protection for Exchange node compresses data before sending it to the Tivoli Storage Manager server during a backup operation. Specify **COMPression=Client** to allow the Data Protection for Exchange node to make the decision whether to compress data via the value of the client **COMPression** option specified in the options file (dsm.opt) located in the Data Protection for Exchange directory.

**Note:** If you are running Data Protection for Exchange on a Microsoft Cluster Server, it is recommended that the node name match the Exchange virtual server name.

See the IBM Tivoli Storage Manager for Windows Administrator’s Reference for complete information regarding these parameters.
Proxy node definitions (VSS Backups)
Since Data Protection for Exchange VSS Backup operations are implemented through the Tivoli Storage Manager backup-archive client, you must use node names specifically for VSS operations in addition to using a node name for where Data Protection for Exchange is installed. As part of the configuration procedure, a proxy relationship is defined for these various node names. This proxy relationship allows node names to perform operations on behalf of another node name. When registering these nodes to the Tivoli Storage Manager server for VSS operations, do not specify the Tivoli Storage Manager *Userid*=NONE parameter. VSS operations will fail when this parameter is specified.

There are two types of node names defined in proxy node relationships:
- **Target node**: A node name that controls backup and restore operations and that also owns the data on the Tivoli Storage Manager server.
- **Agent node**: A node name that performs operations on behalf of a target node.

Required node names for basic VSS operations
To perform basic VSS operations, you must have one target node and one agent node:

<table>
<thead>
<tr>
<th>Proxy node type</th>
<th>Nodename</th>
<th>Where to specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target node</td>
<td>Data Protection for Exchange node name</td>
<td>Use the <em>nodename</em> option in the Data Protection for Exchange options file (dsm.opt)</td>
</tr>
<tr>
<td>Agent node</td>
<td>Local DSMAGENT Node</td>
<td>Use the <em>localdsmagentnode</em> parameter in the Data Protection for Exchange configuration file (tdpexc.cfg)</td>
</tr>
</tbody>
</table>

**Target node**
This is the node name where Data Protection for Exchange is installed. This node name (specified with the *nodename* option in the dsm.opt file) is referred to as the Data Protection for Exchange node name.

**Agent node**
This is the node name where the backup-archive client and VSS provider are installed. This node is responsible for performing the VSS operations as Data Protection for Exchange itself does not perform any direct VSS operations. This node name is referred to as the Local DSMAGENT Node and is specified with the *localdsmagentnode* parameter in the Data Protection for Exchange configuration file (tdpexc.cfg by default). You can use the **Configuration** task in the **Edit Menu** of the GUI or the **tdpexc set** command to specify this parameter.

**Note**: The agent node and target node will be on the same machine for basic VSS operations.

Required node names for VSS off-loaded backups
To perform VSS off-loaded backups, you must have one target node and two agent nodes:
Table 7. Required node names for VSS off-loaded backups

<table>
<thead>
<tr>
<th>Proxy node type</th>
<th>Nodename</th>
<th>Where to specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target node</td>
<td>Data Protection for Exchange node name</td>
<td>Use the <em>nodename</em> option in the Data Protection for Exchange options file (dsm.opt)</td>
</tr>
<tr>
<td>Agent node</td>
<td>Local DSMAGENT Node</td>
<td>Use the <em>localdsmagentnode</em> parameter in the Data Protection for Exchange configuration file (tdpexc.cfg)</td>
</tr>
<tr>
<td>Agent node</td>
<td>Remote DSMAGENT Node</td>
<td>Use the <em>remotedsmagentnode</em> parameter in the Data Protection for Exchange configuration file (tdpexc.cfg)</td>
</tr>
</tbody>
</table>

**Target node**
This is the node name where Data Protection for Exchange is installed. This node name (specified with the *nodename* option in the dsm.opt file) is referred to as the Data Protection for Exchange node name.

**Agent node**
This is the node name where the backup-archive client and VSS provider are installed. This node is responsible for performing the VSS operations as Data Protection for Exchange itself does not perform any direct VSS operations. This node name is referred to as the Local DSMAGENT Node and is specified with the *localdsmagentnode* parameter in the Data Protection for Exchange configuration file (tdpexc.cfg by default). You can use the **Configuration** task in the **Edit Menu** of the GUI or the **tdpexc set** command to specify this parameter.

**Agent node**
The node name of a separate machine that must also have the backup-archive client, VSS provider, and the Exchange System Management Tools installed (make sure you install the same level of the Exchange System Management Tools that is installed on your Exchange production server). This machine is responsible for performing the movement of VSS snapshot data from local shadow volumes to the Tivoli Storage Manager server. It is also responsible for performing the Exchange Integrity Check. This node name is referred to as the Remote DSMAGENT Node and is specified with the *remotedsmagentnode* parameter in the Data Protection for Exchange configuration file (tdpexc.cfg by default). You can use the **Configuration** task in the **Edit Menu** of the GUI or the **tdpexc set** command to specify this parameter. The choice of available machines depends on whether the machines have access to the local shadow volumes that contain the VSS snapshot backups. This node name is only valid for VSS environments that support transportable shadow copies. It is not supported if you are using the default VSS system provider. Refer to your VSS provider documentation for details.

Make sure that the *localdsmagentnode* and *remotedsmagentnode* are registered to the same Tivoli Storage Manager server that is specified in the Data Protection for Exchange options file (dsm.opt) and the backup-archive client options file (also dsm.opt).
Specifying Data Protection for Exchange options

Once Data Protection for Exchange is registered to Tivoli Storage Manager, several Data Protection for Exchange parameters need to be configured. The Tivoli Storage Manager administrator should have provided you with the node name, password, and the communications method with the appropriate parameters to connect to the Tivoli Storage Manager server. These values, together with other parameters, are stored in an options file located (by default) in the Data Protection for Exchange installation directory. The default options file name is dsm.opt. To modify the initial dsm.opt file, open dsm.opt using a text editor.

Attention: Make sure that the Data Protection for Exchange options file (dsm.opt) and the backup-archive client options file (also dsm.opt) specify the same Tivoli Storage Manager server.

The options file includes the following parameters, which are required for initial configuration:

**NODename**
The Tivoli Storage Manager node name is the unique name by which Tivoli Storage Manager recognizes the machine running Data Protection for Exchange.

**COMMMetho**
This option specifies the communication protocol to use between the Data Protection for Exchange node with the Tivoli Storage Manager server. Data Protection for Exchange supports the same set of communication protocols supported by other Tivoli Storage Manager clients on Win 32 platforms. Depending on the chosen commmethod, the connectivity parameters for that commmethod need to be specified as well.

The following additional options are not required for initial configuration. By default they are not specified, but you can modify the default settings:

**PASSWORDAccess**
This option instructs the Tivoli Storage Manager API to store 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 recommended when running scheduled, unattended backups since it ensures that the backup never fails because of an expired password. The default is prompt.

A utility program named dsmcutil.exe allows you to manage (update or display) the password as stored in the registry. This utility program is distributed with the Tivoli Storage Manager backup-archive client package. For more information on using the dsmcutil program, see the dsmcutil.hlp file or the dsmcutil.txt file which are distributed with the Tivoli Storage Manager backup-archive client package.

**CLUSTERNode**
This option directs the Tivoli Storage Manager API and Data Protection for Exchange to be cluster-aware when running in a MSCS environment. This option must be specified for Data Protection for Exchange to function properly on a MSCS.

**ENABLELANFree**
This option allows Data Protection for Exchange to run in a LAN-free environment (if you are equipped to do so). To perform a LAN-free backup with Data Protection for Exchange, a Tivoli Storage Manager Storage Agent
must be installed on the same machine and enablelanfree yes must be specified in the options file. See Managed System for SAN Storage Agent User’s Guide for detailed information about LAN-free environments.

**ENABLECLIENTENCRYPTKEY**

This option encrypts Exchange databases during backup and restore processing. One random encryption key is generated per session and is stored on the Tivoli Storage Manager server with the object in the server database. Although Tivoli Storage Manager manages the key, a valid database must be available in order to restore an encrypted object. Specify enableclientencryptkey yes in the options file. In addition, assign the type of encryption to use by specifying the encryptiontype option in this same options file. You can specify DES56 (56-bit) or AES128 (128bit). The default is AES128. In this same file, you must also specify the databases you want encrypted by adding an include statement with the include.encrypt option. Transparent encryption is only available on Tivoli Storage Manager server and API Version 5.3.0 (or later). Note that files that are backed up using encryption CANNOT be restored by an older API.

- For Legacy backups, specify these encryption options in the Data Protection for Exchange options file.
- For VSS Backups, specify these encryption options in the backup-archive client options file. It is recommended that you refer to the encryption information available in the client documentation before attempting to encrypt your storage groups.

Perform the following tasks to encrypt your Exchange database Legacy backups:

1. Verify that you are running version 5.3.0 (or later) of the Tivoli Storage Manager server and Tivoli Storage Manager API.

2. Edit the options file for Data Protection for Exchange and add the following three options:
   a. Add the enableclientencryptkey yes option.
   b. Add the encryptiontype option with the type of encryption to use.
   c. Add your include statements with the include.encrypt option. For example, to encrypt all Exchange data, specify the following:
      include.encrypt "\*

      To encrypt all the data in Storage Group 1, specify the following:
      include.encrypt "SERVER_NAME\Storage Group 1\*

**COMPRESSION**

This option instructs the Tivoli Storage Manager API to compress data before sending it to the Tivoli Storage Manager server; this reduces traffic and storage requirements. If you enable compression, it affects performance in two ways:

- CPU utilization is higher on the machine on which Data Protection for Exchange is running.
- Network bandwidth utilization is lower because fewer bytes are sent.
- Storage usage on the Tivoli Storage Manager server is reduced.

You may want to specify compression yes if any of the following conditions exist:

- The network adapter has a data overload.
- Communications between the Data Protection for Exchange and Tivoli Storage Manager server are over a low bandwidth connection.
• There is heavy network traffic.
• You can also use the compressalways yes option (with the compression yes setting) to specify that file compression continues even if the file grows as a result of compression.

It may be better to specify compression no in the following cases:
• The computer running Data Protection for Exchange has a CPU overload; the added CPU usage can impact other applications including the Exchange Server. You can monitor CPU and network resource utilization 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 NO and enabling hardware compaction on the tape drive, which also reduces storage requirements.

The Tivoli Storage Manager administrator can override the compression option setting for the Data Protection for Exchange node when registering or updating the node 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 value).

Considerations:
• For Legacy backups, specify the compression option in the Data Protection for Exchange options file.
• For VSS Backups, specify the compression option in the backup-archive client options file. It is recommended that you refer to compression information available in the client documentation before attempting to compress your data.

INCLUDE and EXCLUDE

Note: Only use include and exclude statements to set policy for Legacy backups. Use the VSS_POLICY statement in the Data Protection for Exchange configuration file to set policy for VSS backups. See “Specifying Data Protection for Exchange preferences” on page 38 for more information.

A Data Protection for Exchange Legacy backup object name is composed of a series of qualifiers, each either an Exchange name or a Data Protection for Exchange constant, where the qualifiers are separated by a backslash (\). The general include and exclude syntax is:
include "objectNameSpecification" [ManagementClassName]
exclude "objectNameSpecification"

where objectNameSpecification is:
ExchangeServerName\ExchangeStorageGroupName\...\backupType

where backupType is one of the following:
full, copy, incr, diff, dbcopy
**Note:** Important! The Tivoli Storage Manager API does not allow sending any of the three data types (meta, data, logs) that comprise an Exchange database backup to different storage destinations on the Tivoli Storage Manager server.

This example excludes Storage Group 1 from a backup:

```plaintext
EXCLUDE "SERVER1\Storage Group 1\...\*"
```

This example binds all objects for storage group SG2 to management class CLASS1:

```plaintext
INCLUDE "SERVER1\SG2\...\*" CLASS1
```

This example binds all Directory backups to management class CLASS2:

```plaintext
INCLUDE "SERVER2\Directory\...\*" CLASS2
```

This example binds all incremental objects to management class CLASS3:

```plaintext
INCLUDE "SERVER3\...\incr" CLASS3
```

Consider the following behavior when setting `include` and `exclude` statements:

- The wildcard character (*) matches zero or more characters.
- The wildcard character (?) matches any one character.
- The wildcard character (*) within a qualifier replaces zero or more characters only within that qualifier. The qualifier itself must exist in the matching object name. To match zero or more qualifiers, use ellipses (\...\).
- Incremental object names are always unique. These names contain qualifiers whose values make them unique. Incremental object names are generated at the time of the backup and therefore are not predictable and cannot be specified.
- Include/exclude lists are processed from the bottom up and processing stops at the first match. To ensure that more specific specifications are processed at all, the more general specification should be listed before the more specific ones, so as to be processed after the more specific specifications. Otherwise, the more general specification will match the target before the more specific specifications are seen.
- When a match is found, processing of the list stops and the statement that matches is examined.
  - If it is an `exclude` statement, the matching object name is not backed up.
  - If it is an `include` statement, the matching object name is backed up.

If the `include` statement contains a ManagementClassName, that management class is associated with the object name, for this backup and for all backups of the same name on the current node.

- If a match is not found, the object is backed up using the default management class for the current node.
- If a match is found for an `include` that specifies a management class but the specified management class is not valid for the current node, the default management class for the current node is used.
- Exchange storage group names must be of the correct case, as shown by the displayed results from the `query exchange` or `query tsm`. Data Protection for Exchange constants must be lower case: meta, data, logs. However, at this time the Windows Tivoli Storage Manager API assumes
the specifications are for a Windows file system and ignores case. Because they may be honored in the future, the correct case should always be used.

Notes:
1. If you are running Data Protection for Exchange on a Microsoft Cluster Server, the options file on both nodes of the cluster must be identical.
2. You can create additional Data Protection for Exchange options files to point to other Tivoli Storage Manager servers. You can also create more than one options file, each with different parameters, to use with a single Tivoli Storage Manager server.

Specifying Data Protection for Exchange preferences
Data Protection for Exchange configuration parameters are defined in the Data Protection for Exchange configuration file (tdpexc.cfg by default). These configuration parameters determine such preferences as the location of your log file, how date and time stamps display, and the number of buffers to use.

You can set the values of the Data Protection for Exchange configuration parameters in two ways:
• The Configuration task in the Edit Menu of the Data Protection for Exchange GUI. See “Edit Menu” on page 46.
• The tdpexc set command in the Data Protection for Exchange Command Line Interface. See “SET” on page 102.

Note the following characteristics of Data Protection for Exchange configuration parameters:
• The value of a configuration parameter specified on a command line invocation overrides (but does not change) the value of the configuration parameter specified in the Data Protection for Exchange configuration file.
• During a command line invocation that does not specify an overriding value for a configuration file parameter, the values in the default Data Protection for Exchange configuration file (tdpexc.cfg) are used.

See “SET” on page 102 for descriptions of available configuration parameters.

Set policy for VSS backups by specifying the VSSPOLICY statement in your Data Protection for Exchange configuration file. Note that you must specify this statement manually. You cannot specify it using the tdpexc set command or the Configuration task in the Edit Menu of the Data Protection for Exchange GUI.

VSSPOLICY statements are processed from the bottom up and processing stops at the first match. To ensure that more specific specifications are processed at all, the more general specification should be listed before the more specific ones, so as to be processed after the more specific specifications. Otherwise, the more general specification will match the target before the more specific specifications are seen.

Specify the following information in the VSSPOLICY statement:
VSSPOLICY <srvname> "<strgrpname>" <backuptype> <backupdest> <mgmtcls>

The statement contains the following values:
• <srvname> Name of the Exchange Server or wildcard character: *
• "<strgrpname>" Name of storage group or wildcard character: *
• <backuptype> Backup type: FULL or COPY or wildcard character: *
Part II: Configuration procedure

This section provides step-by-step instructions on how to configure the required applications to perform Data Protection for Exchange backup and restore operations. Configuration tasks are presented in sequential order based on the location of where the tasks must be performed:

1. On the Tivoli Storage Manager server
2. On the machine running the Exchange Server
3. On the machine running the off-loaded backups (VSS only)

Be aware that for each step, there are tasks that are only to be performed for VSS operations. These steps are clearly identified by the text: VSS only.

Attention:

If you plan to perform VSS operations in a MSCS environment, make sure to specify the following options in each of the dsm.opt files that are used for the LOCALDSMAGENT, REMOTEDSMAGENT, and OFFLOAD machines:

```
CLUSTERNODE NO
CLUSTERDISKSONLY NO
```

1. On the Tivoli Storage Manager server:

Perform these steps on the Tivoli Storage Manager server:

- **Step 1.** Define the policy domains, policy sets, management classes, copy groups, and storage pools needed to meet your Data Protection for Exchange backup and restore requirements.

**For additional information:**

How Tivoli Storage Manager server policy affects Data Protection for Exchange

Recommended Tivoli Storage Manager policy settings For VSS operations, Tivoli Storage Manager server authentication must be on.

- **Step 2.** Register your Data Protection for Exchange node name and password with the Tivoli Storage Manager `register node` command. For example:

```
register node <DP> <DPpassword>
```

For VSS operations, this node is the Target Node. Note that when registering nodes to the Tivoli Storage Manager server specifically for VSS operations, do not specify the Tivoli Storage Manager `Userid=NONE` parameter. VSS operations will fail when this parameter is specified.
For additional information:

Data Protection for Exchange node name: Recommended settings

__Step 3. If not already defined, register your Tivoli Storage Manager backup-archive client node name and password for the machine where the Exchange Server installed. For example:

   register node <BAnodename> <BApassword>

For VSS operations, this agent node is the Local DSMAGENT Node.

For additional information:

Proxy node definitions (VSS Backups)

__Step 4. (VSS only) If you plan to perform off-loaded backups, register the Tivoli Storage Manager backup-archive client node name and password for the machine that will perform the VSS off-loaded backups. For example:

   register node <BAOFF> <BAOFFpassword>

This agent node is the Remote DSMAGENT Node. Note that BAOFF is used in this example (and in Step 5) to differentiate between this Remote DSMAGENT Node and the Local DSMAGENT Node (Step 3). You can replace BAOFF with the node name of your backup-archive client. If you do not plan to perform off-loaded backups, you can skip this step.

For additional information:

Proxy node definitions (VSS Backups)

__Step 5. (VSS only) Define the proxy node relationship (for the Target Node and agent nodes) with the Tivoli Storage Manager grant proxynode command. For example:

   grant proxynode target=DB agent=BAnodename,BAOFF

For additional information:

Proxy node definitions (VSS Backups)

2. On the machine running the Exchange Server:

   Perform these steps on the machine where the Exchange Server is installed and running:

   __Step 1. Specify your Data Protection for Exchange node name and communication method in the dsm.opt file located (by default) in the Data Protection for Exchange installation directory. Additional options are also available.

   For additional information:

   Specifying Data Protection for Exchange options

   __Step 2. Specify your Data Protection for Exchange preferences (such as language, date format, log file, etc.) in the tdpexc.cfg file located (by default) in the Data Protection for Exchange installation directory. Use the set command or the Configuration task in the Edit Menu of the Data Protection for Exchange GUI.
**For additional information:**
Specifying Data Protection for Exchange preferences
Set command Positional Parameters

---

**Step 3.** *(VSS Only):* Specify your VSSPOLICY statement in your Data Protection for Exchange configuration file.

**For additional information:**
Specifying Data Protection for Exchange preferences
Set command Positional Parameters

---

**Step 4.** *(VSS Only):* Configure the Tivoli Storage Manager backup-archive client (if it is not already configured). If the backup-archive client is already configured, you can use existing client services. The backup-archive client Setup Wizard can guide you through the configuration process (if needed). In the backup-archive client GUI menu, select Utilities->Setup Wizard->Help me configure the TSM Backup Archive Client. Note that the node name for this machine is referred to as the Local DSMAGENT Node and is specified with the `localdsmagentnode` parameter in the Data Protection for Exchange configuration file (tdpexc.cfg by default).

**For additional information:**
IBM Tivoli Storage Manager for Windows Backup-Archive Client Installation and User’s Guide
“Proxy node definitions (VSS Backups)” on page 32

---

**Step 5.** *(VSS Only):* Install and configure the Tivoli Storage Manager Client Acceptor Daemon (CAD) Service (if not already installed and configured). You can use an existing client CAD Service if one is already installed and configured. The backup-archive client Setup Wizard can guide you through the CAD installation process (if needed). In the backup-archive client GUI menu, select Utilities->Setup Wizard->Help me configure the TSM Web Client. Make sure this CAD service is running before proceeding to Step 6.

---

**Step 6.** *(VSS Only):* Install and configure the Tivoli Storage Manager Remote Client Agent Service (DSMAGENT) if it is not already installed and configured. The backup-archive client Setup Wizard can guide you through the configuration process. In the backup-archive client GUI menu, select Utilities->Setup Wizard->Help me configure the TSM Web Client. You can use the existing DSMAGENT if one is already installed and configured.

---

**Step 7.** *(VSS Only):* Install the Tivoli Storage Manager Copy Services Exchange VSS Integration Module from the product (if it is not already installed).

---

**Step 8.** *(VSS Only):* If you plan to perform VSS Instant Restores, install the Tivoli Storage Manager Copy Services Hardware Devices Snapshot Integration Module from the product (if it is not already installed). Note that a SAN Volume Controller, DS6000, or DS8000 storage subsystem is also required to perform VSS Instant Restores.

---

**Step 9.** *(VSS Only):* Add the Microsoft Exchange Server binary path to the PATH statement in the system environment variables. For example:

```
"C:\Program files\Exchsrvr\bin"
```

Verify that the “ESEUTIL.EXE” executable exists in this directory.

---

**Step 10.** *(VSS Only):* Install and configure a VSS provider. Consult the VSS provider documentation for information regarding configuration of
that software. Note that there is no installation or configuration required if you are using the default Windows VSS System Provider.

__Step 11.__(VSS Only): Define storage space to hold VSS Backups that will reside on local shadow volumes. Make sure you define enough space to hold all copies of the VSS Backups as designated by your policies. See “Back up to Tivoli Storage Manager storage versus back up to local shadow volumes” on page 28 for recommendations regarding sufficient disk storage space.

3. **On the machine running the Off-loaded backups (VSS only):**

Perform these steps on the machine running the off-loaded backups:

__Step 1. Configure the Tivoli Storage Manager backup-archive client (if it is not already configured). If the backup-archive client is already configured, you can use existing client services. The backup-archive client Setup Wizard can guide you through the configuration process (if needed). In the backup-archive client GUI menu, select **Utilities->Setup Wizard->Help me configure the TSM Backup Archive Client**. Note that the node name for this machine is referred to as the Remote DSMAGENT Node and is specified with the `remotedsmagentnode` parameter in the Data Protection for Exchange configuration file (tdpexc.cfg by default).

*For additional information:*
*IBM Tivoli Storage Manager for Windows Backup-Archive Client Installation and User’s Guide*

__Step 2. Install and configure the Tivoli Storage Manager Client Acceptor Daemon (CAD) Service (if not already installed and configured). You can use an existing client CAD Service if one is already installed and configured. The backup-archive client Setup Wizard can guide you through the CAD installation process (if needed). In the backup-archive client GUI menu, select **Utilities->Setup Wizard->Help me configure the TSM Web Client**.

__Step 3. Install and configure the Tivoli Storage Manager Remote Client Agent Service (DSMAGENT). The backup-archive client Setup Wizard can guide you through the configuration process. In the backup-archive client GUI menu, select **Utilities->Setup Wizard->Help me configure the TSM Web Client**.

__Step 4. Install the Microsoft Exchange Server management tools from the Microsoft Exchange Server installation media. Take note of the Microsoft Exchange Server Management tools binary directory (for example: C:\Program Files\Exchsrvr\bin). Verify that the `ESEUTIL.EXE` executable exists in this directory. Data Protection for Exchange uses this tool to run automatic integrity checking of the VSS backup.

*Notes:*

a. The Exchange Server does not need to be installed or running on this machine. Only the Microsoft Exchange Server management tools are required to be installed on this machine.

b. See your Microsoft Exchange Server documentation for necessary license requirements.

__Step 5. Add the Microsoft Exchange Server binary path to the PATH statement in the system environment variables. For example:

'C:\Program Files\Exchsrvr\bin'
Step 6. Install and configure a VSS provider (if you are not using the default system VSS provider). Consult the VSS provider documentation for information regarding configuration of that software.

Part III: Verify your configuration

Before attempting to perform a backup or restore operation, verify that Data Protection for Exchange is installed and configured correctly by running the `query exchange` command on the machine where the Exchange Server is installed and running. For example:

tdpexc query exchange

This command returns information and status about the Exchange Server, storage groups, circular logging, and VSS components (when configured for VSS operations). The following output example shows that the configuration is correct and ready for Legacy backups, VSS Backups (Local DSM Agent Node), and VSS Off loaded backups (Remote DSM Agent Node):

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

ACN5057I The C:\Program Files\Tivoli\TSM\TDPExchange\tdpexc.log log file has been pruned successfully.

Microsoft Exchange Server Information
-------------------------------------
Server Name: ONY
Domain Name: optimus.zor.local
Exchange Server Version: 6.5.7638.1

Storage Groups with Databases and Status
----------------------------------------
First Storage Group
Circular Logging - Disabled
forfun store
  Mailbox Store (ONY) Online
  Public Folder Store (ONY) Online

stg3
Circular Logging - Disabled
  mail1
  mail2
  mail3

stg_big
Circular Logging - Disabled
  mail1
  mail2
  mail3
  mail4

test
Circular Logging - Disabled
  test1

Volume Shadow Copy Service (VSS) Information
--------------------------------------------
Writer Name : Microsoft Exchange Writer
Local DSM Agent Node: svc_{ba}
Remote DSM Agent Node: svc_{offload}
Writer Status: Online
Selectable Components: 4

Note that the following two errors are commonly returned when performing a VSS operation. Information is provided to help locate the cause of the error.

ANS1017E (RC-50) Session rejected: TCP/IP connection failure
   This is displayed when the Tivoli Storage Manager backup-archive client
   CAD is either not running or is not configured properly.

ANS1532E (RC5722) Proxy Rejected: Proxy authority has not been granted to this node.
   This is displayed when the Tivoli Storage Manager server has not been
   configured for the proxy nodes correctly.
Chapter 4. Using the Graphical User Interface (GUI)

This section provides information on how to use the Data Protection for Exchange GUI to perform the following:

- Perform a Legacy backup of Exchange storage groups and transaction logs, including Exchange Site Replication Service (SRS) and Exchange Key Management Service (KMS) databases.
- Perform a VSS Backup of Exchange storage groups and transaction logs.
- Perform a VSS Off-loaded backup of Exchange storage groups and transaction logs.
- Restore Exchange storage groups and transaction logs.
- Restore the SRS database.
- Restore the KMS database.
- Modify the Data Protection for Exchange configuration.
- Select short cuts from the Data Protection for Exchange Toolbar.

Note: The term Tree View refers to the directory tree view in the left frame of a backup or restore window. The term List View refers to the scrollable list of objects in the right frame of a backup or restore window.

GUI overview

The Data Protection for Exchange GUI consists of a main window with the following:
- Common menu bar
- Toolbar
- Backup window
- Restore window

Each of the backup and restore windows contain a directory tree and operation controls.

Menu bar

The Data Protection for Exchange GUI Menu Bar consists of the following items and menu list functions:

File
- Exit the program.

Edit
- Configure Data Protection for Exchange. The default configuration settings are contained in the tdpexc.cfg file.

View
- Refresh the Tree View.

Utilities
- Change the Tivoli Storage Manager password or display Tivoli Storage Manager server information.

Help
- Obtain Data Protection for Exchange help, view online books, Tivoli Storage Manager Web access, and information about Data Protection for Exchange.
Edit Menu

Configuration

This allows you to modify the Data Protection for Exchange configuration file. If a configuration file is not specified, the tdpexc.cfg file is used. If no configuration file is found, a default file is created which contains all the default settings for the parameters. A different configuration file can be specified by invoking the GUI from the command line with the /configfile parameter.

Clicking this menu item displays the Data Protection for Exchange Settings dialog with the following five tabs and their settings:

• General Tab

Temporary Log Restore Path
Enter the default temporary path to use when restoring logs and patch files. For best performance, the path specified should be on a different physical device than the current active logger. If you choose to not enter a path, the default is the value of the TEMP environment variable. When performing full, copy, or database copy restores, all log files residing in the specified path are erased.

Note: Do not specify double-byte characters (DBCS) within the temporary log path. This is not supported by Data Protection for Exchange or Microsoft.

Wait for Tape Mounts for Backup or Restore
Check this box when you want Data Protection for Exchange to wait for tape media to be mounted for backup and restore operations. This setting is applicable when the Tivoli Storage Manager server is configured to store the backup data on tape media. With backup data on removable media it is likely that during backup and restore operations a wait period will occur during storage volume mounts. If a wait occurs this setting specifies whether Data Protection for Exchange should wait for the media mount or stop the current operation. Wait for tape mounts is the default.

Use VSS Backup as the default Backup method
Check this box to set VSS Backups as the default backup method. Be aware of the following considerations when using this parameter:

- Make sure the Local DSMAGENT Node name parameter is specified.
- VSS Backups can only be restored using VSS.
- You cannot mix a VSS Backup with a Legacy backup.
- This parameter is unavailable if the Microsoft Exchange VSS Integration Module is not installed.

The default value is to use the Legacy backup method.

• Performance Tab (Applies to legacy backups only)

TDP Buffers (default value: 3)
Select a number (2 to 8) that specifies the number of communication data buffers Data Protection for Exchange uses when transferring data between Data Protection for Exchange and the Tivoli Storage Manager server. Each buffer is the size
specified in the **TDP Buffer Size** parameter. Note that this parameter applies to Legacy backups only.

**TDP Buffer Size (default value: 1024)**
Select a number (64 to 8192) that specifies the size of the buffers used by Data Protection for Exchange to transfer data to the Tivoli Storage Manager server. Note that this parameter applies to Legacy backups only.

- **Logging Tab**
  
  **Log File Name (default value: tdpexc.log)**
  Enter the name of the file into which you want Data Protection for Exchange to write activity log information.

  **Prune Old Entries (default value: selected)**
  Check this box to enable pruning of the activity log. Specify the number of days (0 to 9999) to keep old entries. Data Protection for Exchange prunes entries greater than this number when you initialize this application. The default value is to keep the entries for 60 days. Click on the Prune Now button to prune the activity log immediately.

- **Regional Tab**

  **Language (default value: American English)**
  Specify the language to use for displaying the GUI and Data Protection for Exchange messages. The following languages are available during installation:
  - English (United States) (This is the default).
  - Brazilian Portuguese
  - Chinese (Simplified)
  - Chinese (Traditional)
  - French
  - German
  - Italian
  - Japanese
  - Korean
  - Spanish
  The language you specify does not become effective until you exit and restart the GUI.

  **Date Format (default value: mm/dd/yyyy)**
  Specify the date format of your choice.
  - **dd** Day of the Month
  - **mm** Month of the Year
  - **yyyy** Year

  **Time Format (default value: hh:mm:ss)**
  Specify the format for displaying time.
  - **hh** Hours (24-hour day)
  - **mm** Minutes in an hour
  - **ss** Seconds in a minute
**Number Format** *(default value: xxx,xxx.dd)*
Specify the format for displaying numbers. The choices on the display represent several ways to place the decimal, comma, and spaces.

- **VSS Backup Tab**

**Default Backup Destination** *(default value: TSM Server)*
Select the default storage location for your backups. You can select from the following storage locations:

- **TSM Server**
  The data is stored on Tivoli Storage Manager server storage only. This is the default.

- **Local**
  The backup is stored on local shadow volumes only.

- **Both**
  The backup is stored on both Tivoli Storage Manager server storage and local shadow volumes. Note that if this parameter is selected, the Tivoli Storage Manager server backup cannot be off-loaded.

Note that this parameter is only valid when using the VSS backup method.

**Local DSMAGENT Node name**
Specify the Tivoli Storage Manager node name (agent node) of the local client machine that performs VSS operations and moves the VSS data from local shadow volumes to Tivoli Storage Manager server storage during Tivoli Storage Manager server backups. This parameter must be specified for VSS operations to be performed.

**Remote DSMAGENT Node name**
Specify the Tivoli Storage Manager node name (agent node) of the remote client machine that moves the VSS data from local shadow volumes to Tivoli Storage Manager server storage during off-loaded backups.

For specific considerations related to these configuration settings, see “SET” on page 102.

**View Menu**

*Refresh tree view*
When the tree is refreshed, the GUI will:
- clear all selections
- clear all List View information for all Storage Groups
- rebuild the directory tree
- completely expand the directory tree

If you simply move back and forth between the Backup and Restore tabs without refreshing, you do not lose the current selections or Tree View. If you switch from the Restore tab to the Backup tab, perform a new backup, then switch back to the Restore tab, you must refresh the Restore directory tree to see the new backup.

*Show only Active objects*
Select this option to display only active backup objects in the List View. This is the default value.
Show all objects
Select this option to display both active and inactive objects in the List View.

Auto Select
Select this option to quickly select the backup objects to restore. When Auto Select is off, you must click on all objects to be restored. When Auto Select is on (the default value), additional selections are automatically made as you click.

The following is characteristic of Auto Select:
• Operates when you click on a full, differential, or incremental backup in the List View. Auto Select also operates when you click on a storage group or server name in the Tree View.
• Ignores copy and database copy backups.
• If you click on a full backup, the latest associated differential or all associated incremental backups are selected.
• If you click on a differential backup, the associated full backup is also selected.
• If you click on an incremental backup, the associated full backup and all associated earlier incremental backups are also selected.
• Operates when you deselect a full, differential, incremental, storage group, or server name.

Auto Select will not make additional selections in the following two situations:
• If a combination of differential and incremental backups exist for a full backup. For example, if you clicked on a full backup that had associated incremental and differential backups, only the full backup is selected.
• If a differential or incremental backup is selected and no associated full backup can be found.

To override the characteristics of Auto Select, deselect the Auto Select option and manually select what you need.

Utilities Menu
Change TSM Password
This dialog prompts you to enter the old password, then enter the new password twice, in order to verify the new password. See "CHANGETSMPASSWORD" on page 99 for additional information.

TSM Server Information
This window displays the following Tivoli Storage Manager server connection information:
• Nodename
• Server Network Host Name
• Tivoli Storage Manager API Version
• Server Name
• Server Type
• Server Version
• Compression Mode
• Domain Name
• Active Policy Set
• Default Management Class
Help Menu

Data Protection for Microsoft Exchange Server
Launches Data Protection for Exchange online help.

Books Online
Launches the March 2006 edition of the Data Protection for Exchange
Installation and User’s Guide.

TSM Web Access
Launches an online help panel that contains links to IBM, Tivoli Storage
Manager, and Exchange Server Web site links.

About Data Protection for Microsoft Exchange Server
Launches a splash screen that contains product release information.

Toolbar
The Toolbar provides short cuts to frequently used tasks such as:
• Refresh the Tree View
• Edit Data Protection for Exchange configuration
• Display IBM, Tivoli Storage Manager, and Exchange Server Web site links
• Display the the March 2006 edition of the Data Protection for Exchange Installation
  and User’s Guide

GUI Invocation
The following parameters can be entered when the GUI is launched from the
command line interface:

/configfile
Specify this parameter to override the default Data Protection for Exchange
configuration file (tdpexc.cfg).
For example, to specify the configuration file, file.cfg, located in the
/temp/test directory during the GUI invocation, you would enter the
following command in the Data Protection for Exchange command line
interface:
tdpexc /CONFIGfile=c:\temp\test\file.cfg

/exserver
Specify this parameter to override the default Exchange server. The default
Exchange server is the local Exchange server. IMPORTANT! If you are
running Data Protection for Exchange in a MSCS, you MUST invoke the
GUI with the /exserver parameter from the Data Protection for Exchange command line.
For example, to specify the Exchange server exc1 during the GUI
invocation, you would enter the following command in the Data Protection for Exchange command line interface:
tdpexc /EXCSERVER=exc1

/tsmoptfile
Specify this parameter to override the default Tivoli Storage Manager
option file (dsm.opt).
For example, to specify the file.opt option file located in the \temp\test
directory during the GUI invocation, you would enter the following
command in the Data Protection for Exchange command line interface:
tdpexc /TSMOPTFile=c:\temp\test\file.opt
Backup and Restore Window

Data Protection for Exchange provides separate windows for backup and restore operations. Each window contains its own directory tree, list, and tab controls.

Considerations

- Both Legacy and VSS operations are performed from the same tab.
- The backup window is the initial window visible upon startup of the GUI.
- You cannot close, minimize, or move the backup or restore window independently of the main GUI window.
- Note that a VSS related feature is greyed out when the Exchange VSS Integration Module is not installed.

Highlighting and Selecting

- When an item is highlighted in the Tree, information about all the items one level under the highlighted item is displayed in the List View. For example, if a Storage Group is highlighted in the Restore Tree, all Tivoli Storage Manager backups for that Storage Group are displayed in the List View.
- The following list contains exception
  - If the Site, Organization, or Domain name is highlighted in the Backup Tree, information about the Site, Organization, or Domain, Exchange server, and version level are displayed in the List View.
  - If the Information Store item is highlighted in the Backup Tree, the List View displays status for all Storage Groups.
  - If the server name is highlighted in the Restore Tree, the List View displays all Storage Groups and their backups (indented under the Storage Group).
- Highlighting the List View has no effect.
- To select an item for backup or restore, click on the square selection box to the left of the item name. Clicking on a selection box in the Tree will also highlight that item, displaying associated information in the List View.
- Double-clicking on a selection box in the Tree will select that item and collapse or expand the Tree at that point. An item can be selected from both the Tree and the List View.
- If a selection box contains an "X", the selection is disabled for that item. You may still be able to backup or restore the item. For example, if a Storage Group item has a disabled selection box in the Tree and all the List View items also have disabled selection boxes, then those items cannot be selected for backup or restore. This can happen only if you have an empty Tivoli Storage Manager server file space. See the restore option Auto Select for additional information on selecting items in the Tree and List View.

Note that some selectable items, such as inactive Tivoli Storage Manager Backups, can only be selected in the List View.

Messages

Please be aware of the following IMPORTANT messages when performing backup or restore operations:

- Selecting multiple Copy, Full, or Database Copy backups, or any combination of these backups, for restore, a warning message will ask you if you want to continue. If you continue, all backups will be restored but only the latest backup will take affect. All the time spent restoring the earlier backups will be wasted.
- When you request a backup to be restored, Data Protection for Exchange will first check to make sure any databases have been dismounted. If they have not,
you will be prompted to stop them or cancel the restore. After a restore, you can check the *Mount Databases After Restore* option, or mount them from outside Data Protection for Exchange.

---

**GUI Tasks**

**How to perform a Legacy Backup**

This procedure assumes that Data Protection for Exchange and the Tivoli Storage Manager server are properly configured in your environment. See Chapter 3, “Configuring Data Protection for Exchange,” on page 27 for detailed instructions on how to configure these applications. You must have local registry rights (for all versions of Exchange Server) to perform a Data Protection for Exchange backup.

Follow these steps to perform a Legacy backup of your data:

1. Start the Data Protection for Exchange GUI. If you are running Data Protection for Exchange in a MSCS:

   **Notes:**
   a. If you are backing up the Site Replication Service (SRS), you must initialize the SRS database through the cluster administrator. The SRS must be running in order to be backed up.
   b. You MUST invoke the GUI with the *lexceserver* parameter from the Data Protection for Exchange command line.

   Note that if you are backing up the Key Management Service (KMS), the KMS must be running in order to be backed up.

2. From the Tree View, select one or more storage groups to back up. You can also select one or more storage groups to back up in the List View. Note that you cannot back up more than one application (SRS, KMS, IS) in a single operation.

3. In the Backup Options section of the Backup window, select the *Legacy Backup* method.

4. Specify the type of backup to perform with the *Backup Type* drop-down menu. Note that you cannot perform a database copy of an SRS or KMS database.

5. Click on the *Backup* button to begin the backup operation.

**How to perform a VSS Backup**

This procedure assumes that Data Protection for Exchange, the Tivoli Storage Manager backup-archive client, the Tivoli Storage Manager server, the Microsoft Exchange VSS Integration Module, and a VSS or VDS provider are properly configured in your environment. See Chapter 3, “Configuring Data Protection for Exchange,” on page 27 for detailed instructions on how to configure these applications. You must have local registry rights (for all versions of Exchange Server) to perform a Data Protection for Exchange backup.

Follow these steps to perform a VSS Backup of your data:

1. Start the Data Protection for Exchange GUI. If you are running Data Protection for Exchange in a MSCS, you MUST invoke the GUI with the *lexceserver* parameter from the Data Protection for Exchange command line.

2. Make sure a *Local DSMAGENT Node name* is specified. You can specify this node name using the Data Protection for Exchange Settings window. From the File Menu, click on *Edit -> Configuration -> VSS Backup Tab*.

3. From the Tree View, select one or more storage groups to back up. You can also select one or more storage groups to back up in the List View.
4. In the Backup Options section of the Backup window, select the VSS Backup method. Note that this method will automatically be selected when the Use VSS as the default Backup method parameter is selected in the Data Protection for Exchange Settings window. If the Microsoft Exchange VSS Integration Module is not installed, the VSS Backup method is not available.

5. Specify the storage destination of your backup with the Backup Destination drop-down menu.

6. Specify the type of backup to perform with the Backup Type drop-down menu. Note that you can only perform a full, copy, or copy without integrity check backup with the VSS Backup method.

7. Click on the Backup button to begin the backup operation.

How to perform a VSS Off-loaded Backup

An off-loaded backup uses an alternate machine (specified with the Remote DSMAGENT Node parameter) to move Exchange data to Tivoli Storage Manager server storage. This may help reduce network, I/O, and CPU resources associated with the production machine from being impacted during backup processing. It also uses the alternate machine to perform the Exchange Integrity Check.

This procedure assumes that Data Protection for Exchange, the Tivoli Storage Manager backup-archive client, the Tivoli Storage Manager server, the Microsoft Exchange VSS Integration Module, and a VSS or VDS provider are properly configured in your environment. See Chapter 3, “Configuring Data Protection for Exchange,” on page 27 for detailed instructions on how to configure these applications. You must have local registry rights (for all versions of Exchange Server) to perform a Data Protection for Exchange backup.

Follow these steps to perform a VSS off-loaded backup of your data:

1. Start the Data Protection for Exchange GUI. If you are running Data Protection for Exchange in a MSCS, you MUST invoke the GUI with the \lexcserver parameter from the Data Protection for Exchange command line.

2. Make sure a Local DSMAGENT Node name is specified. You can specify this node name using the Data Protection for Exchange Settings window. From the File Menu, click on Edit -> Configuration -> VSS Backup Tab.

3. Make sure a Remote DSMAGENT Node name is specified. You can specify this node name using the Data Protection for Exchange Settings window. From the File Menu, click on Edit -> Configuration -> VSS Backup Tab.

4. From the Tree View, select one or more storage groups to back up. You can also select one or more storage groups to back up in the List View.

5. In the Backup Options section of the Backup window, select the VSS Backup method. Note that this method will automatically be selected when the Use VSS as the default Backup method option is selected in the Data Protection for Exchange Settings window. If the Microsoft Exchange VSS Integration Module is not installed, the VSS Backup method is not available.

6. In the Backup Destination drop-down menu, select TSM Server (Offloaded).

7. Specify the type of backup to perform with the Backup Type drop-down menu. Note that you can only perform a full, copy, or copy without integrity check backup with the VSS off-loaded backup method.

8. Click on the Backup button to begin the backup operation.
Restoring Exchange storage groups

Note: You must have local registry rights (for all versions of Exchange Server) to perform a Data Protection for Exchange restore.

When you restore a storage group, be aware that data which exists in the storage group is overwritten and is no longer available after the restore is complete.

Perform the following steps to restore an Exchange server storage group:
1. Start the Data Protection for Exchange GUI.
2. Click on the Restore tab.
3. From the Tree View, select the Exchange server storage group to restore. To restore a particular database, first highlight the storage group in the Tree View. Then select the database to be restored in the List View. To restore all available storage groups, highlight the Exchange server in the Tree View.
   The List View displays the following information about your backups:
   • Backup Method (Legacy or VSS)
   • Type (Full, Incremental, Differential, Copy, Database Copy)
   • Backup Location (TSM Server or VSS Device)
   • Management Class (The Tivoli Storage Manager server management class to which the backup belongs.)
4. Select the appropriate restore options in the Restore Options section. See “Restore options” on page 55 for details.
5. Click on the Restore button to begin the restore operation.

Note: When performing a restore of mailbox databases with Exchange Server 2003, if a Recovery Storage Group exists, mailbox databases will be restored to the Recovery Storage Group instead of to the original storage group. Also, when restoring a mailbox database to a Recovery Storage Group, you must specify the Replay Restored Logs ONLY option in the GUI Restore Window or the restore operation may fail. This note ONLY applies to Legacy restores. VSS Restores to the Recovery Storage Group are NOT supported by Microsoft.

VSS restore considerations
Be aware of the following considerations when performing VSS restores. Unless otherwise specified, “VSS restores” refers to all restore types that use VSS (VSS Restore, VSS Fast Restore, VSS Instant Restore):
• VSS restores ignore the Recovery Storage Group and are placed directly into the production database.
• The VSS Backups to be restored must be from the same snapshot (i.e. contain the same timestamp). VSS Backups that contain different timestamps must be restored one at a time and cannot be restored together in a single operation.
• A VSS Instant Restore overwrites the entire contents of the source volumes. However, you can avoid overwriting the source volumes by selecting the Disable VSS Instant Restore option. This option bypasses volume-level copy and uses file-level copy instead to restore the files from a VSS Backup that resides on local shadow volumes.
• Unlike Legacy restores (which only dismount the database being restored), VSS restores dismount all databases in the storage group that is being restored. This is a Microsoft requirement.
• If a hardware provider is used, the disks that contain Exchange data must be configured as basic.

• Be aware that when a VSS restore from local shadow volumes is performed, the bytes transferred will display "0". That is because no data ("0") is restored from the Tivoli Storage Manager server.

• When performing a VSS Instant Restore, you must restore ALL databases within the specified storage group. You cannot perform a partial restore \((\text{partial})\) while using VSS Instant Restore. Although Data Protection for Exchange allows this operation to begin, it will either fail or complete with undesirable consequences. If you need to restore just one database from a VSS Backup that resides on local VSS shadow volumes on DS or SAN Volume Controller disks, make sure to select the \text{Disable VSS Instant Restore} option in the Data Protection for Exchange GUI Restore Window. If VSS Instant Restore capability is needed for single databases, make sure to place these databases in their own storage group.

\section*{Restoring the Site Replication Service (SRS)}

When you restore an SRS database, be aware that data which exists in the SRS database is overwritten and is no longer available after the restore is complete.

Perform the following steps to restore an SRS database:

1. Stop the SRS service.
2. Rename the SRSDATA folder (located in the Exchange folder path) to a name of your choice.
3. Start the SRS service.
4. Start the Data Protection for Exchange GUI.
5. Click on the \text{Restore} tab.
6. From the Tree View, select the SRS database for restore. You cannot restore more than one application (SRS, KMS, IS) in a single operation.
7. Select the appropriate restore options.
8. Click on the \text{Restore} button to begin the restore operation.

\section*{Restoring the Key Management Service (KMS)}

When you restore a KMS database, be aware that data which exists in the KMS database is overwritten and is no longer available after the restore is complete.

Perform the following steps to restore a KMS database:

1. Start the Data Protection for Exchange GUI.
2. Click on the \text{Restore} tab.
3. From the Tree View, select the KMS database for restore. You cannot restore more than one application (KMS, SRS, IS) in a single operation.
4. Select the appropriate restore options.
5. Click on the \text{Restore} button to begin the restore operation.

\section*{Restore options}

\textit{Run Recovery}

Select this option to specify whether to replay just the restored logs or to replay both the restored and current logs. When recovery is not run, the databases are not online. As a result, recovery must be run for Legacy restores by either another restore operation (with \textit{Run Recovery} specified) or manually using the ESEUTIL utility.
• Select **Replay Restored AND Current Logs** to replay any transaction log entries appearing in the current active transaction log. This includes both current and restored logs. This is the default value. Note that this option is not supported for VSS Instant Restore.

• Select **Replay Restored Logs ONLY** to replay any transactions appearing in the restored transaction logs. IMPORTANT: After performing this type of restore, it is highly recommended that you perform a new full backup.

**Note:** When performing a restore of a mailbox database with Exchange Server 2003, if a Recovery Storage Group exists, the mailbox database will be restored to the Recovery Storage Group. You must specify the **Replay Restored Logs ONLY** option when restoring a mailbox database to a Recovery Storage Group or the restore operation may fail. This note ONLY applies to Legacy restores. VSS Restores to the Recovery Storage Group are NOT supported by Microsoft.

**Mount Databases After Restore**
Select this option to automatically mount databases within the storage group after the recovery completes. With Exchange Server 2003, if the Legacy restore operation is a mailbox restore to the Recovery Storage Group, the database mounted is the database in the Recovery Storage Group, not the database in the original storage group.

**Disable VSS Instant Restore**
Select this option to bypass volume-level copy and instead use file-level copy to restore the files from a VSS Backup that resides on local shadow volumes. Bypassing volume-level copy means that Exchange database files, log files, and the checkpoint file are the only data overwritten on the source volumes. This can result in a longer restore processing time. If this option is not selected, volume level snapshot restore is used for these VSS Backup if the backup exists on volumes that support it. The default value is to use volume level snapshot restore if supported.

---

**Data Protection for Exchange in a MSCS environment**

Consider the following information when running Data Protection for Exchange in a MSCS environment:

• The **GUI MUST** be invoked from the command line with the *excserver* parameter. For example, if the Exchange virtual server name on the Microsoft Cluster is *exc1*, the command line entry (GUI invocation) is
  
  tdpexc /excserver=exc1

• The **Start** menu shortcut for the Data Protection for Exchange GUI application MUST be modified. Modify the **Start** menu shortcut for the Data Protection for Exchange GUI application by performing the following steps:
  1. Right-mouse click on the Data Protection for Exchange GUI icon.
  2. Select **Properties**.
  3. Select **Shortcut**.
  4. Enter the following text in the **Target** window:

     "C:\Program Files\Tivoli\TSM\TDPEXchange\tdpexc.exe /excserver=exc1"

where Data Protection for Exchange is installed in the default installation directory and the Exchange virtual server name is *exc1*. 
Chapter 5. Using the Command Line Interface

This chapter describes how to use the Data Protection for Exchange command line interface. Each command includes a syntax diagram and a description. See "Reading syntax diagrams" on page xiii for more information.

The next section is an overview of the command line interface. The commands are described in the following categories:

- Query
- Backup
- Restore
- Changetsmpassword
- Set
- Help

The Data Protection for Exchange command line interface can also be used when scheduling automatic backups of Exchange databases. See Appendix A, “Using the Tivoli Storage Manager scheduler,” on page 119 for a discussion of using the Tivoli Storage Manager scheduler with Data Protection for Exchange.
Overview

The name of the Data Protection for Exchange command line interface is **tdpexcc.exe**. This program is located in the directory where Data Protection for Exchange is installed.

The command line parameters have the following characteristics:

- positional parameters do not include a leading slash (/) or dash (-)
- optional parameters can appear in any order after the required parameters
- optional parameters begin with a forward slash (/) or a dash (-)
- minimum abbreviations for keywords are indicated in upper case text
- some keyword parameters require a value
- for those keyword parameters that require a value, the value is separated from the keyword with an equal sign (=)
- if a parameter requires more than one value after the equal sign, the values are separated with commas
- each parameter is separated from the others by using spaces
- if a parameter’s value includes spaces, the value must be enclosed in double quotes
- a positional parameter can appear only once per command invocation

Issue the `tdpexcc ?` or `tdpexcc help` command to display help for the command line interface.
Query Commands

There are three basic query commands: one command for the Exchange Server, one command to view Data Protection for Exchange configuration information, and one command for the Tivoli Storage Manager server. The query commands allow you to:

- Query the status of the local Exchange Server
- Query a list of Data Protection for Exchange configuration information
- Query a list of Exchange backups in Tivoli Storage Manager storage and Tivoli Storage Manager server connection information

QUERY EXCHANGE

Use this command to query the local Exchange Server for general information.

The query exchange command returns the following information:

- Version and level of the Exchange Server
- Domain and Server Names
- Storage groups and all database names with status of each
- Exchange Server 2003 Recovery Storage Group status
- Whether the storage group has circular logging enabled
- VSS Information (only applicable when configured for VSS operations)

Syntax

```
TDPEXCC Query EXCHANGE

[ /CONFIGfile= configfilename ]

[ /EXCSERVER= server-name ]

[ /LOGfile= logfilename ]

[ /LOGPrune= numdays ]

[ /LOGPrune=no ]
```

Optional Parameters

/CONFIGfile= configfilename

Use the /configfile parameter to specify the name of the Data Protection for Exchange configuration file that contains the values for the Data Protection for Exchange configuration options. See “SET” on page 102 for details about the contents of the file.

The configfilename variable can include a fully qualified path. If the configfilename variable does not include a path, the Data Protection for Exchange installation directory is used.

Considerations

- If the configfilename variable includes spaces, the entire /configfile parameter entry must be placed in double quotes. For example:
  /CONFIGfile="c:\Program Files\file.cfg"
- If the /configfile parameter is not specified, the default value is tdpxc.cfg.
• If the /configfile parameter is specified but the configfilename variable is not specified, the default value is tdpexc.cfg.

/EXCSERVER=server-name

Use the /excserver parameter to specify the name of the Exchange Server to query.

The server-name variable specifies the name of the Exchange Server to query.

Considerations

• If the Exchange Server to query is a member of a Microsoft Cluster Server, this parameter must be specified and should be set to the name of the Exchange virtual server.

• The default value is the local Exchange Server.

/LOGFile=logfile

Use the /logfile parameter to specify the name of the activity log file generated by Data Protection for Exchange.

The logfile variable identifies the name of the activity log file.

If the specified log file does not exist, a new log file is created. If the specified log file exists, new log entries are appended to the file. The logfile variable can include a fully-qualified path. However, if no path is specified, the log file is written to the Data Protection for Exchange installation directory.

If the logfile variable includes spaces, the entire /logfile parameter entry must be placed in double quotes. For example:

/LOGFile="c:\Program Files\mytdpexchange.log"

If the /logfile parameter is not specified, log records are written to the default log file, tdpexc.log.

The /logfile parameter cannot be turned off. You always get logging.

When using multiple simultaneous instances of Data Protection for Exchange to perform operations, use the /logfile parameter to specify a different log file for each instance used. This directs logging for each instance to a different log file and prevents interspersed log file records. Failure to specify a different log file for each instance can result in unreadable log files.

/LOGPrune=numdays|No

Use the /logprune parameter to disable log pruning or to explicitly request a prune of the log for one command run. By default, log pruning is enabled and performed once per day. The numdays variable represents the number of days to save log entries. By default, 60 days of log entries are saved in the prune process. You can use the Data Protection for Exchange GUI or the set command to change the defaults so that log pruning is disabled, or so that more or less days of log entries are saved. The command line user may use the /logprune parameter to override these defaults for one command run. Note that when the value of the /logprune variable numdays is a number in the range 0 to 9999, a prune is performed even if one has already been performed for the day.

Changes to the value of the timeformat or dateformat parameter can result in an undesired pruning of the Data Protection for Exchange log file. If you are running a command that may prune the log file and the value of the
timeformat or dateformat parameter has changed, perform one of the following to prevent undesired pruning of the log file:

- Make a copy of the existing log file.
- Specify a new log file with the logfile parameter or logfile setting.

Examples

Example 1: The tdpexc query exchange command queries the Exchange server. An example of the output when this command is performed on Exchange Server 2003 is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

ACN5057I The C:\Program Files\Tivoli\TSM\TDPEExchange\tdpexc.log log file has been pruned successfully.

Microsoft Exchange Server Information
---------------------------------------
Server Name: TESEXCH
Domain Name: emmaeus.test.local
Exchange Server Version: 6.0.4417.0

Storage Groups with Databases and Status
----------------------------------------
First Storage Group
Circular Logging - Disabled
  Mailbox Store (TESEXCH) Online
  Public Folder Store (TESEXCH) Online

Second Storage Group
Circular Logging - Disabled
  Mailbox Store SSG 1 Online
  stg3
  Circular Logging - Disabled
  mail3 Online

Example 2: This tdpexc query exchange command queries an Exchange Server 2003. The output example displays that a Recovery Storage Group exists and that all mailbox database will be restored to it.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Microsoft Exchange Server Information
---------------------------------------
Server Name: GUEST5
Domain Name: guest5.quest00.local
Exchange Server Version: 6.5.6944.0

Storage Groups with Databases and Status
----------------------------------------
First Storage Group
Circular Logging - Disabled
  Mailbox Store (GUEST5) Online
  Public Folder Store (GUEST5) Online
Example 3: In this example, the `tdpexc query exchange` command queried an Exchange Server that is configured for VSS operations. The following output is displayed:

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

ACN5057I The C:\Program Files\Tivoli\TSM\TDPExchange\tdpexc.log log file has been pruned successfully.

Microsoft Exchange Server Information
-------------------------------------------
Server Name: ONY
Domain Name: optimus.zor.local
Exchange Server Version: 6.5.7638.1

Storage Groups with Databases and Status
-------------------------------------------
First Storage Group
Circular Logging - Disabled
    forfun store Online
    Mailbox Store (ONY) Online
    Public Folder Store (ONY) Online

stg3
Circular Logging - Disabled
    mail1 Online
    mail2 Online
    mail3 Online

stg_big
Circular Logging - Disabled
    mail1 Online
    mail2 Online
    mail3 Online
    mail4 Online

test
Circular Logging - Disabled
    test1 Online

Volume Shadow Copy Service (VSS) Information
-------------------------------------------
Writer Name : Microsoft Exchange Writer
Local DSMAgent Node : svc_ba
Remote DSMAgent Node : svc_offload
Writer Status : Online
Selectable Components : 4
QUERY TDP

Use this command to query a list of the current values set in the configuration file for Data Protection for Exchange.

Syntax

```
>>TDP - Query TDP

/CONFIGfile=tpexc.cfg

/LOGFile=tpexc.log

60 /LOGPrune=No
```

Optional Parameters

/CONFIGfile=confilename

Use the /configfile parameter to specify the name of the Data Protection for Exchange configuration file that contains the values for the Data Protection for Exchange configuration options. See “SET” on page 102 for details about the contents of the file.

The confilename variable can include a fully qualified path. If the confilename variable does not include a path, the Data Protection for Exchange installation directory is used.

Considerations

- If the confilename variable includes spaces, the entire /configfile parameter entry must be placed in double quotes. For example:
  `/CONFIGfile="c:\Program Files\file.cfg"`
- If the /configfile parameter is not specified, the default value is `tpexc.cfg`.
- If the /configfile parameter is specified but the confilename variable is not specified, the default value is `tpexc.cfg`.

/LOGFile=logfilename

Use the /logfile parameter to specify the name of the activity log file generated by Data Protection for Exchange.

The logfilename variable identifies the name of the activity log file.

If the specified log file does not exist, a new log file is created. If the specified log file exists, new log entries are appended to the file. The logfilename variable can include a fully-qualified path. However, if no path is specified, the log file is written to the Data Protection for Exchange installation directory.

If the logfilename variable includes spaces, the entire /logfile parameter entry must be placed in double quotes. For example:

```
/LOGFile="c:\Program Files\mytdpexchange.log"
```

If the /logfile parameter is not specified, log records are written to the default log file, `tpexc.log`.

The /logfile parameter cannot be turned off. You always get logging.
When using multiple simultaneous instances of Data Protection for Exchange to perform operations, use the `/logfile` parameter to specify a different log file for each instance used. This directs logging for each instance to a different log file and prevents interspersed log file records. Failure to specify a different log file for each instance can result in unreadable log files.

`/LOGPrune=|numdays|` **No**

Use the `/logprune` parameter to disable log pruning or to explicitly request a prune of the log for one command run. By default, log pruning is enabled and performed once per day. The `numdays` variable represents the number of days to save log entries. By default, 60 days of log entries are saved in the prune process. You can use the Data Protection for Exchange GUI or the `set` command to change the defaults so that log pruning is disabled, or so that more or less days of log entries are saved. The command line user may use the `/logprune` parameter to override these defaults for one command run. Note that when the value of the `/logprune` variable `numdays` is a number in the range 0 to 9999, a prune is performed even if one has already been performed for the day.

Changes to the value of the `timeformat` or `dateformat` parameter can result in an undesired pruning of the Data Protection for Exchange log file. If you are running a command that may prune the log file and the value of the `timeformat` or `dateformat` parameter has changed, perform one of the following to prevent undesired pruning of the log file:

- Make a copy of the existing log file.
- Specify a new log file with the `/logfile` parameter or `logfile` setting.

**Example**

The `tdpexc query tdp` command queries the values set in the Data Protection for Exchange configuration file. An example of the output in a Legacy configuration is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Data Protection for Exchange Preferences
-------------------------------

<table>
<thead>
<tr>
<th>BACKUPDESTination</th>
<th>TSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKUPMETHOD</td>
<td>LEGACY</td>
</tr>
<tr>
<td>BUFFers</td>
<td>3</td>
</tr>
<tr>
<td>BUFFERSIZE</td>
<td>1024</td>
</tr>
<tr>
<td>DATEformat</td>
<td>1</td>
</tr>
<tr>
<td>LANGUAGE</td>
<td>ENU</td>
</tr>
<tr>
<td>LOCALDSMAgentnode</td>
<td>tdpexc.log</td>
</tr>
<tr>
<td>LOGFile</td>
<td>60</td>
</tr>
<tr>
<td>LOGPrune</td>
<td>Yes</td>
</tr>
<tr>
<td>MOUNTWait</td>
<td>1</td>
</tr>
<tr>
<td>NUMBERformat</td>
<td>1</td>
</tr>
<tr>
<td>REMOTEDSMAgentnode</td>
<td></td>
</tr>
<tr>
<td>TEMPLOGRESTOREPath</td>
<td>E:\ TEMP</td>
</tr>
<tr>
<td>TIMEformat</td>
<td>1</td>
</tr>
</tbody>
</table>
An example of the output in a VSS configuration is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Data Protection for Exchange Preferences
----------------------------------------

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKUPDESTination</td>
<td>TSM</td>
</tr>
<tr>
<td>BACKUPMETHod</td>
<td>VSS</td>
</tr>
<tr>
<td>BUFFers</td>
<td>3</td>
</tr>
<tr>
<td>BUFFERSize</td>
<td>1024</td>
</tr>
<tr>
<td>DATEformat</td>
<td>1</td>
</tr>
<tr>
<td>LANGUAGE</td>
<td>ENU</td>
</tr>
<tr>
<td>LOCALDSSAgentnode</td>
<td>svc_ba</td>
</tr>
<tr>
<td>LOGFile</td>
<td>tdpexc.log</td>
</tr>
<tr>
<td>LOGPrune</td>
<td>60</td>
</tr>
<tr>
<td>MOUNTWait</td>
<td>Yes</td>
</tr>
<tr>
<td>NUMberformat</td>
<td>1</td>
</tr>
<tr>
<td>REMOTEDSSAgentnode</td>
<td>machine1_ba</td>
</tr>
<tr>
<td>TEMPLELOGRESTOREPath</td>
<td>c:\tdp\tdptemplog</td>
</tr>
<tr>
<td>TIMEFormat</td>
<td>1</td>
</tr>
</tbody>
</table>

Chapter 5. Using the Command Line Interface  65
Use this command to query Tivoli Storage Manager for information about the Tivoli Storage Manager API and the Tivoli Storage Manager server. This command can also display a list of backups that are stored on the Tivoli Storage Manager server that match the storage groups entered. Active and inactive objects can be displayed.

By default, only the active backup objects are displayed. To include inactive backup versions in the list, use the /all optional parameter.

**Syntax**

```
TDPEXCC—Query TSM *—sg-name,sg-nameN—FULL

/sm590000 SM590000

/aCTive

/ALL

/CONFIgfile= tdpexc.cfg

/configfilename

/FROMEXCERVER= server-name

/LOGFile= tdpexc.log

/logfilename

/LOGPrune= numdays

/SKIPINTEGRITYCHECK

/TSMNODE= tsmnodename

/TSMOPTFile= dsm.opt

/tsmoptfilename

/TSMPassword= tsmpassword

/FULL | COPY | INCRemental | DIFFerential | DBCopy db-name
```

**Positional Parameters**

The following positional parameters specify the object to query. If none of these positional parameters are specified, only the Tivoli Storage Manager API and Tivoli Storage Manager server information is displayed:

* | DIR | IS | sg-name

* Query all backup objects for all storage groups

sg-name Query all backup objects for the specified storage group. Multiple entries are separated by commas.

The following positional parameters specify the type of backup to query. If this parameter is not specified, all backup types will be displayed:

FULL | COPY | INCRemental | DIFFerential | DBCopy db-name
FULL  Query only Full backup types
COPY  Query only Copy backup types
INCRemental
    Query only Incremental backup types
DIFFerential
    Query only Differential backup types
DBCopy db-name
    Query only database copy backups for database db-name.

Optional Parameters
/ACtive
    Use the /active parameter to display active backup objects only. This is the default.
/ALL
    Use the /all parameter to display both active and inactive backup objects. If the /all parameter is not specified, only active backup objects are displayed.

/CONFIGfile=confilename
    Use the /configfile parameter to specify the name of the Data Protection for Exchange configuration file that contains the values for the Data Protection for Exchange configuration options. See “SET” on page 102 for details about the contents of the file.

    The confilename variable can include a fully qualified path. If the confilename variable does not include a path, the Data Protection for Exchange installation directory is used.

Considerations
  • If the confilename variable includes spaces, the entire /configfile parameter entry must be placed in double quotes. For example: /CONFIGfile="c:\Program Files\file.cfg"
  • If the /configfile parameter is not specified, the default value is tdpexc.cfg.
  • If the /configfile parameter is specified but the confilename variable is not specified, the default value is tdpexc.cfg.

/FROMEXCSERVER=server-name
    Use the /fromexcserver parameter to specify the name of the Exchange Server where the original backup was performed.

    The default is the local Exchange Server. However, you must specify the name if the Exchange Server is not the default or is a member of an MSCS.

/LOGFile=logfilename
    Use the /logfile parameter to specify the name of the activity log file generated by Data Protection for Exchange.

    The logfilename variable identifies the name of the activity log file.

    If the specified log file does not exist, a new log file is created. If the specified log file exists, new log entries are appended to the file. The logfilename variable can include a fully-qualified path. However, if no path is specified, the log file is written to the Data Protection for Exchange installation directory.

    If the logfilename variable includes spaces, the entire /logfile parameter entry must be placed in double quotes. For example:
/LOGFile="c:\Program Files\mytdpexchange.log"

If the /logfile parameter is not specified, log records are written to the
default log file, tdpexc.log.

The /logfile parameter cannot be turned off. You always get logging.

When using multiple simultaneous instances of Data Protection for Exchange to perform operations, use the /logfile parameter to specify a
different log file for each instance used. This directs logging for each
instance to a different log file and prevents interspersed log file records.
Failure to specify a different log file for each instance can result in
unreadable log files.

/LOGPrune=numdays | No
Use the /logprune parameter to disable log pruning or to explicitly request
a prune of the log for one command run. By default, log pruning is
enabled and performed once per day. The numdays variable represents the
number of days to save log entries. By default, 60 days of log entries are
saved in the prune process. You can use the Data Protection for Exchange
GUI or the set command to change the defaults so that log pruning is
disabled, or so that more or less days of log entries are saved. The
command line user may use the /logprune parameter to override these
defaults for one command run. Note that when the value of the /logprune
variable numdays is a number in the range 0 to 9999, a prune is performed
even if one has already been performed for the day.

Changes to the value of the timeformat or dateformat parameter can result in
an undesired pruning of the Data Protection for Exchange log file. If you
are running a command that may prune the log file and the value of the
timeformat or dateformat parameter has changed, perform one of the
following to prevent undesired pruning of the log file:

• Make a copy of the existing log file.
• Specify a new log file with the /logfile parameter or logfile setting.

/TSMNODE=tsmnnodename
The tsmnnodename variable refers to the Tivoli Storage Manager node name
Data Protection for Exchange uses to log on to the Tivoli Storage Manager
server. You can also store the node name in the Tivoli Storage Manager
options file. The command line parameter overrides the value in the Tivoli
Storage Manager options file if PASSWORDACCESS is set to PROMPT.
This parameter is not valid when PASSWORDACCESS is set to
GENERATE.

/TSMOPTFile=tsmoptfilename
The tsmoptfilename variable identifies the Data Protection for Exchange
options file.

The file name can include a fully qualified path name. If no path is
specified, the directory where Data Protection for Exchange is installed is
searched.

If the tsmoptfilename variable includes spaces, the entire /tsmoptfile
parameter entry must be placed in double quotes. For example:
/TSMOPTFile="c:\Program Files\file.opt"

The default is dsm.opt.
/TSMPassword=tsmpassword

The tsmpassword variable refers to the Tivoli Storage Manager password. Data Protection for Exchange uses this to log on to the Tivoli Storage Manager server. If you specified PASSWORDACCESS GENERATE in the Data Protection for Exchange options file, then the password need not be provided here because the one stored in the registry is used. However, in order to store the password in the registry, you must specify the Tivoli Storage Manager password the first time Data Protection for Exchange connects to the Tivoli Storage Manager server.

If you do specify a password on the command line when PASSWORDACCESS GENERATE is in effect, then the command line value is ignored unless the password for this node has not yet been stored in the registry. In that case, the specified password is the one that is stored in the registry and used for the current command execution.

If PASSWORDACCESS PROMPT is in effect, and a password value is not specified on the command line, then you are prompted for a password.

The Tivoli Storage Manager password Data Protection for Exchange uses to log on to the Tivoli Storage Manager server can be up to 63 characters in length.

Examples

Example 1: The tdpexc query tsm command displays information about the Tivoli Storage Manager API and Tivoli Storage Manager server. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:  
Data Protection for Microsoft Exchange Server  
Version 5, Release 3, Level 3  
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

ACN5057I The C:\Program Files\Tivoli\TSM\TDE\tdpecc.log log file has been pruned successfully.

Tivoli Storage Manager Server Connection Information  
-----------------------------------------------

Nodename ......................... TURKEY  
NetWork Host Name of Server .............. FIRELY.DOMAINXYZ.COM  
TSM API Version ....................... Version 5, Release 3, Level 3  

Server Name ......................... FIRELY  
Server Type ......................... Windows  
Server Version ....................... Version 5, Release 3, Level 2.0  
Compression Mode ..................... Client Determined  
Domain Name ......................... TSSVT1  
Active Policy Set ..................... TSSVT1  
Default Management Class .............. TSSVT1
Example 2: The `tdpexcc query tsm * /all` command displays information about the list of backups on the Tivoli Storage Manager server. An example of the output when this command is performed on Exchange Server 2003 in a VSS configuration is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Querying Tivoli Storage Manager server for a list of database backups, please wait...

Backup List
-------------------

Exchange Server : ONYX
Storage Group : stg2

<table>
<thead>
<tr>
<th>Backup Date</th>
<th>Size</th>
<th>S Fmt</th>
<th>Type</th>
<th>Loc</th>
<th>Object Name/Database Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/17/2006 09:47:06</td>
<td>114.04MB</td>
<td>I VSS full</td>
<td>Srv</td>
<td>20060117094706</td>
<td>mailbox1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>65.01MB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7,184.00KB</td>
</tr>
<tr>
<td>01/17/2006 10:09:00</td>
<td>64.04MB</td>
<td>A VSS full</td>
<td>Srv</td>
<td>20060117100900</td>
<td>mailbox1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42.02MB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15.01MB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7,184.00KB</td>
</tr>
<tr>
<td>01/17/2006 13:16:23</td>
<td>79.04MB</td>
<td>A VSS full</td>
<td>Loc</td>
<td>20060117131623</td>
<td>mailbox1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42.02MB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30.01MB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7,184.00KB</td>
</tr>
</tbody>
</table>
Backup Command

The backup command is shown below.

**BACKUP**

The backup command performs Exchange Server storage group backups from the Exchange Server to Tivoli Storage Manager server storage. You must have local registry rights (for all versions of Exchange Server) to perform a Data Protection for Exchange backup. This command also backs up Key Management Service (KMS) databases and Site Replication Service (SRS) databases. Use the /lexapplication option when backing up these databases.

When a full Legacy backup is performed, all active Legacy backups previous to this full backup are automatically inactivated for the particular storage group that is being backed up.

**Note:** Microsoft Exchange Server considers the wildcard character (*) to be an invalid character when used in database and storage group names. As a result, database and storage groups that contain the wildcard character (*) in their name will not be backed up.

When a full VSS snapshot backup (created for back up to local shadow volumes) is performed, the backup remains active until the backup version is expired on the Tivoli Storage Manager server according to the defined server policy. As a result, five different active backups can exist at the same time:

- Legacy
- VSS local (full)
- VSS local (copy)
- VSS Tivoli Storage Manager server (full)
- VSS Tivoli Storage Manager server (copy)

For SAN Volume Controller storage subsystems, only one backup is allowed to occur while the background copy process is pending. A new backup is not performed until the background copy process for the previous backup completes. As a result, local backups for SAN Volume Controller storage subsystems should be initiated at a frequency greater than the time required for the background copy process to complete.

See “Backup strategies” on page 13 for additional information related to the backup command.

Data Protection for Exchange supports the following types of backup:

**Full (Legacy and VSS)**

Back up the entire storage group and transaction logs, and if a successful backup is obtained, deletes the transaction logs

**Incremental (Legacy only)**

Back up the transaction logs, and if a successful backup is obtained, deletes the transaction logs

**Differential (Legacy only)**

Back up the transaction logs but do NOT delete them

**Copy (Legacy and VSS)**

Back up the entire storage group and transaction logs, do NOT delete the transaction logs
**Database Copy (Legacy only)**

Back up only the specified database and transaction logs, do NOT delete the transaction logs (Exchange 2000 Server only)

**Note:** If there are databases within a storage group that are not mounted at the time of the backup, the transaction logs will NOT be deleted.

**Syntax**

```
>> TDPEXCC BACKup

/sg-name,sg-nameN
//SRS Storage
//"Key Management Service"

-FULL

-COPY

/BACKUPDESTination=

-TSM

-LOCAL

-BOTH

/BACKUPMETHod=

-LEGACY

-VSS

/BUFFers=

-3

-numbuffers

/BUFFERSize=

-1024

-buffersize

/CONFIGfile=

-tdpexc.cfg

-logfilename

/exapplication=

-EXCSERVER=

-server-name

/logFile=

-tdpexc.log

-logfilename

/LOGPrune=

-60

-numdays

/MOUNTWait=

-Yes

-Offload

-Quiet

-SKIPINTEGRITYCHECK

/TSMNODE=

-tsmnodename

/TSMOPTFile=

-dsm.opt

-tsmoptfilename

/TSMPassword=

-tsmpassword
```
**Positional Parameters**

The following positional parameters specify the object to back up:

* | DIR | IS | sg-name

- Back up all storage groups sequentially.

* * *  

  sg-name

  Back up the specified storage group. Multiple entries are separated by commas. If any storage group contains commas or blanks, enclose the storage group name in quotes.

The following positional parameters specify the type of backup to perform:

FULL | COPY | INCREMENTAL | DIFFERENTIAL | DBCopy db-name

- **FULL (Legacy and VSS)**
  Back up the entire storage group and transaction logs, and if a successful backup is obtained, truncate the transaction logs.

- **COPY (Legacy and VSS)**
  Back up the entire storage group and transaction logs, do NOT truncate the transaction logs.

- **INCREMENTAL (Legacy only)**
  Back up the transaction logs, and if a successful backup is obtained, truncate the transaction logs.

- **DIFFERENTIAL (Legacy only)**
  Back up the transaction logs but do NOT truncate them.

- **DBCopy db-name (Legacy only)**
  Back up only the specified database and transaction logs, do NOT truncate the transaction logs. Note that this type of backup is not available with a VSS snapshot backup.

If there are databases within a storage group that are not mounted at the time of the backup, the transaction logs will NOT be truncated.

**Optional Parameters**

/BACKUPDESTINATION=TSM | LOCAL | BOTH

Use the /backupdestination parameter to specify the location where the backup is stored.

You can specify:

- **TSM**  
  The backup is stored on Tivoli Storage Manager server storage only. This is the default.

- **LOCAL**  
  The backup is stored on local shadow volumes only. This is only valid when the /backupmethod parameter specifies VSS.

- **BOTH**  
  The backup is stored on Tivoli Storage Manager server storage and local shadow volumes. This is only valid when the /backupmethod parameter specifies VSS.

/BACKUPMETHOD=LEGACY | VSS

Use the /backupmethod parameter to specify the manner in which the backup is performed.

You can specify:
LEGACY
The backup is performed with the legacy API. This is the Exchange streaming backup and restore API as used in previous versions of Data Protection for Exchange. This is the default.

VSS The backup is performed with VSS.

/BUFFers=numbuffers
Use the /buffers parameter to specify the number of data buffers used for moving data between the Exchange Server and the Tivoli Storage Manager API during Legacy backup and restore operations. Separate, asynchronous execution threads are used by Data Protection for Exchange for communicating with the Exchange Server and Tivoli Storage Manager APIs. Increasing the number of data buffers improves throughput by reducing the possibility of one thread having to wait for another thread.

The numbuffers variable refers to the number of data buffers to use. The number of data buffers can be from 2 to 8. The default number of data buffers is 3.

/BUFFERSize=buffersize
Use the /buffersize parameter to specify the size of data buffers used to move data between the Exchange Server and the Tivoli Storage Manager API during Legacy backup and restore operations.

The buffersize variable refers to the size of the data buffers in kilobytes. The size of the data buffers can be from 64 to 8192 kilobytes. The default size of the data buffers is 1024 kilobytes.

/CONFIGfile=configfilename
Use the /configfile parameter to specify the name of the Data Protection for Exchange configuration file that contains the values for the Data Protection for Exchange configuration options. See “SET” on page 102 for details about the contents of the file.

The configfilename variable can include a fully qualified path. If the configfilename variable does not include a path, the Data Protection for Exchange installation directory is used.

Considerations
• If the configfilename variable includes spaces, the entire /configfile parameter entry must be placed in double quotes. For example:
  /CONFIGfile="c:\Program Files\file.cfg"
• If the /configfile parameter is not specified, the default value is tdpexc.cfg.
• If the /configfile parameter is specified but the configfilename variable is not specified, the default value is tdpexc.cfg.

/EXCAPPlication=KMS|SRS
Use the /excapplication parameter to specify the name of the KMS database or SRS database to be backed up during a Legacy backup operation. You must also specify "SRS Storage" or "Key Management Service" for the storage group name in the command line syntax. The KMS or SRS database must be online and running to be backed up.

You can specify:
  KMS The Key Management Service database is backed up.
  SRS The Site Replication Service database is backed up.
If no value is specified, Data Protection for Exchange backs up the Information Store database.

/EXCSERVER=server-name  
Use the /excserver parameter to specify the name of the Exchange Server to be backed up.  
The server-name variable specifies the name of the Exchange Server to be backed up.

Considerations  
• If the Exchange Server to be backed up is a member of a Microsoft Cluster Server, this parameter must be specified and must be set to the Exchange virtual server name.  
• The default value is the local Exchange Server.

/LOGFile=logfilename  
Use the /logfile parameter to specify the name of the activity log file generated by Data Protection for Exchange.  
The logfilename variable identifies the name of the activity log file.  
If the specified log file does not exist, a new log file is created. If the specified log file exists, new log entries are appended to the file. The logfilename variable can include a fully-qualified path. However, if no path is specified, the log file is written to the Data Protection for Exchange installation directory.  
If the logfilename variable includes spaces, the entire /logfile parameter entry must be placed in double quotes. For example:  
/LOGFile="c:\Program Files\mytdpexchange.log"  
If the /logfile parameter is not specified, log records are written to the default log file, tdpxc.log.  
The /logfile parameter cannot be turned off. You always get logging.

When using multiple simultaneous instances of Data Protection for Exchange to perform operations, use the /logfile parameter to specify a different log file for each instance used. This directs logging for each instance to a different log file and prevents interspersed log file records. Failure to specify a different log file for each instance can result in unreadable log files.

/LOGPrune=numdays | No  
Use the /logprune parameter to disable log pruning or to explicitly request a prune of the log for one command run. By default, log pruning is enabled and performed once per day. The numdays variable represents the number of days to save log entries. By default, 60 days of log entries are saved in the prune process. You can use the Data Protection for Exchange GUI or the set command to change the defaults so that log pruning is disabled, or so that more or less days of log entries are saved. The command line user may use the /logprune parameter to override these defaults for one command run. Note that when the value of the /logprune variable numdays is a number in the range 0 to 9999, a prune is performed even if one has already been performed for the day.

Changes to the value of the timeformat or dateformat parameter can result in an undesired pruning of the Data Protection for Exchange log file. If you are running a command that may prune the log file and the value of the
timeformat or dateformat parameter has changed, perform one of the following to prevent undesired pruning of the log file:

- Make a copy of the existing log file.
- Specify a new log file with the /logfile parameter or logfile setting.

/MOUNTWait=Yes | No
If the Tivoli Storage Manager server is configured to store the backup data on removable media (such as tapes), then it is possible that the Tivoli Storage Manager server might indicate to Data Protection for Exchange that it is waiting for a required storage volume to be mounted. If that occurs, this parameter allows you to specify whether Data Protection for Exchange should wait for the media mount or stop the current operation.

You can specify:
Yes Wait for tape mounts. This is the default.
No Do not wait for tape mounts.

/OFFLOAD
Specifying this parameter to perform the integrity check and backup of files to Tivoli Storage Manager on the machine specified by the remotedsagentnode instead of the local machine. This parameter is ONLY valid when /backupmethod=VSS and /backupdestination=TSM.
Note that this parameter requires a VSS provider that supports transportable shadow copies. It is not supported with the default Windows VSS System Provider.

/Quiet This parameter prevents status information from being displayed. This does not affect the level of information written to the activity log.

/SKIPINTEGRITYCHECK
Specify this parameter to bypass the Exchange integrity check typically performed during a backup. This parameter is ONLY valid when /backupmethod=VSS and the backup type is COPY.

Attention:

When using this parameter, it is possible that the stored backup is not valid because it is not being verified with the Exchange integrity check utility. Make sure that you have a valid backup stored on Tivoli Storage Manager server storage.

/TSMNODE=tsmnodename
The tsmnodename variable refers to the Tivoli Storage Manager node name Data Protection for Exchange uses to log on to the Tivoli Storage Manager server. You can also store the node name in the Tivoli Storage Manager options file. The command line parameter overrides the value in the Tivoli Storage Manager options file if PASSWORDACCESS is set to PROMPT. This parameter is not valid when PASSWORDACCESS is set to GENERATE.

/TSMOPTFile=tsmoptfilename
The tsmoptfilename variable identifies the Data Protection for Exchange options file.

The file name can include a fully qualified path name. If no path is specified, the directory where Data Protection for Exchange is installed is searched.

If the tsmoptfilename variable includes spaces, the entire /tsmoptfile parameter entry must be placed in double quotes. For example:
/TSMOPTFile="c:\Program Files\file.opt"

The default is \textit{dsm.opt}.

/TSMPassword=tsmpassword

The \texttt{tsmpassword} variable refers to the Tivoli Storage Manager password
Data Protection for Exchange uses to log on to the Tivoli Storage Manager server. If you specified PASSWORDACCESS GENERATE in the Data Protection for Exchange options file, then the password need not be provided here because the one stored in the registry is used. However, in order to store the password in the registry, you must specify the Tivoli Storage Manager password the first time Data Protection for Exchange connects to the Tivoli Storage Manager server.

If you do specify a password on the command line when PASSWORDACCESS GENERATE is in effect, then the command line value is ignored unless the password for this node has not yet been stored in the registry. In that case, the specified password is the one that is stored in the registry and used for the current command execution.

If PASSWORDACCESS PROMPT is in effect, and a password value is not specified on the command line, then you are prompted for a password.

The Tivoli Storage Manager password Data Protection for Exchange uses to log on to the Tivoli Storage Manager server can be up to 63 characters in length.

\textbf{Examples}

\textbf{Example 1:} The \texttt{tdpexc} backup \texttt{"First Storage Group","Second Storage Group"} \texttt{incremental} command performs an incremental backup of Exchange 2000 Server storage groups identified as \texttt{First Storage Group} and \texttt{Second Storage Group}. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Starting storage group backup...

Beginning incr backup of First Storage Group, 1 of 2.
Full: 0 Read: 278 Written: 0 Rate: 0.00 Kb/Sec
Full: 2 Read: 9437462 Written: 5243158 Rate: 2 284.82 Kb/Sec
Full: 2 Read: 15728934 Written: 12583198 Rate: 3 797.37 Kb/Sec
Full: 0 Read: 20971822 Written: 20971822 Rate: 4 834.82 Kb/Sec
Full: 0 Read: 20971822 Written: 20971822 Rate: 4 834.82 Kb/Sec

Backup of First Storage Group completed successfully.

Beginning incr backup of Second Storage Group, 2 of 2.
Full: 0 Read: 198 Written: 0 Rate: 0.00 Kb/Sec
Full: 1 Read: 7340238 Written: 5243078 Rate: 2 305.35 Kb/Sec
Full: 0 Read: 10485966 Written: 10485966 Rate: 3 179.20 Kb/Sec
Full: 0 Read: 10485966 Written: 10485966 Rate: 3 179.20 Kb/Sec

Backup of Second Storage Group completed successfully.

Total storage groups requested for backup: 2
Total storage groups backed up: 2
Total storage groups expired: 0
Total storage groups excluded: 0
Throughput rate: 4048.43 Kb/Sec
Total bytes transferred: 31 457 788
Elapsed processing time: 7.59 Secs

Example 2: The tdpexcc backup "Second Storage Group" dbe "Mailbox Store SSG 1" command performs a database copy backup of Exchange 2000 Server database Mailbox Store SSG 1, located in storage group Second Storage Group. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

ACNS057I The C:\Program Files\Tivoli\TSM\TDPExchange\tdpexc.log log file has been pruned successfully.
Starting storage group backup...

Beginning dbcopy backup of storage group <Second Storage Group>,
database <Mailbox Store SSG 1>, 1 of 1.
Full: 2 Read: 7348466 Written: 3154162 Rate: 2 502.22 Kb/Sec
Full: 0 Read: 7356900 Written: 7356900 Rate: 3 221.74 Kb/Sec
Full: 2 Read: 7356900 Written: 11551204 Rate: 2 223.61 Kb/Sec
Full: 0 Read: 7356900 Written: 12608200 Rate: 2 353.79 Kb/Sec

Backup of Second Storage Group completed successfully.

Total storage groups requested for backup: 1
Total storage groups backed up: 1
Total storage groups expired: 0
Total storage groups excluded: 0

Throughput rate: 2 390.20 Kb/Sec
Total bytes transferred: 12 608 200
Elapsed processing time: 5.24 Secs

Example 3: The tdpexcc backup stg2 full /backupdestination=tsm /backupmethod=vss command performs a full VSS Backup of Exchange 2003 Server storage group stg2 to Tivoli Storage Manager server storage. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Connecting to TSM Server as node 'SVC_TDP'...
Connecting to Local DSM Agent 'svc_ba'...

Beginning VSS backup of 'stg2'...

Preparing to backup using snapshot.
Executing system command: Exchange integrity check for storage group 'stg2'
Files Examined/Completed/Failed: [17 / 17 / 0] Total Bytes: 67192452

VSS Backup operation completed with rc = 0
Files Examined : 17
Files Completed : 17
Files Failed : 0
Total Bytes : 67192452
Example 4: The tdpexec backup stg2 full /backupdestination=local /backupmethod=vss command performs a full VSS Backup of Exchange 2003 Server storage group stg2 to local shadow volumes. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Connecting to TSM Server as node 'SVC_TDP'...
Connecting to Local DSM Agent 'svc_ba'...

Beginning VSS backup of 'stg2'...

Preparing to backup using snapshot.
Executing system command: Exchange integrity check for storage group 'stg2'
  Files Examined/Completed/Failed: [ 10 / 10 / 0 ]  Total Bytes: 33547

VSS Backup operation completed with rc = 0
  Files Examined : 10
  Files Completed : 10
  Files Failed : 0
  Total Bytes : 33547

Example 5: The tdpexec backup * full /backupdestination=both /backupmethod=vss command performs a full VSS Backup of Exchange 2003 Server storage groups stg2, stg3, stg4, and First Storage Group to local shadow volumes and to Tivoli Storage Manager server storage. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Connecting to TSM Server as node 'TDP_REAL'...
Connecting to Local DSM Agent 'ba_real'...
Starting storage group backup...

Beginning VSS backup of 'stg2', 'First Storage Group', 'stg4', 'stg3'...

Preparing to backup using snapshot.
Executing system command: Exchange integrity check for storage group 'stg4'
Executing system command: Exchange integ chk strg grp 'First Storage Group'
Executing system command: Exchange integrity check for storage group 'stg2'
Executing system command: Exchange integrity check for storage group 'stg3'
  Files Examined/Completed/Failed: [ 187 / 187 / 0 ]  Total Bytes: 6706246239

VSS Backup operation completed with rc = 0
  Files Examined : 187
  Files Completed : 187
  Files Failed : 0
  Total Bytes : 6706246239


**Restore Commands**

The restore commands are described in this section.

**RESTORE**

Use this command to restore a storage group backup from Tivoli Storage Manager storage to an Exchange Server. You must have local registry rights (for all versions of Exchange Server) to perform a Data Protection for Exchange restore. This command also restores Key Management Service (KMS) databases and Site Replication Service (SRS) databases. Use the `lexapplication` option when restoring these databases.

When using the restore command, keep the following points in mind:

- When restoring inactive backups or active incremental backups, use the `/object` parameter to specify the name of the backup object to restore. This object name uniquely identifies the backup instance in Tivoli Storage Manager storage. You can issue a `tdpexcc query tsm` command to obtain a list of the object names.

  **Note:** If the `tdpexcc restore sgname incr` command is entered (without the `/object` parameter) to restore multiple active incremental backups, all multiple active incremental backups are restored sequentially. The `/object` parameter is used to restore only one incremental backup at a time.

- IMPORTANT: To initiate recovery, you MUST use the `/recover` parameter when restoring the last backup object of a storage group. In addition, the value of `/templogrestorepath` should not be the same value as the current location for the storage group. If the value is the same, corruption can occur.
  - Specify `/recover=applyalllogs` to replay the restored transaction log entries AND the current active transaction log entries.
  - Specify `/recover=applyrestoredlogs` to replay ONLY the restored transaction log entries. The current active transaction log entries will NOT be replayed.

  **Note:** When choosing this option for a restore, your next backup MUST be a full or copy backup.

Failure to use the `/recover` parameter when restoring the last backup set of a storage group leaves the databases unmountable. If this occurs, for Legacy backups you can either restore the last backup again and specify the `/recover=value` option or you can use the Microsoft ESEUTIL /cc command to run recovery manually.

- Specify `/mountdatabases=yes` if you are restoring the last backup set and you want the databases within the storage group automatically mounted after the recovery completes. Note that when restoring mailbox databases to a Recovery Storage Group with Exchange Server 2003, the mailbox databases will be restored to the Recovery Storage Group (when a Group exists) and that the original databases will not be dismounted. Only transaction logs that are contained in the backup will be applied to the mailbox database when performing a Recovery Storage Group restore. You must specify `/recover=applyrestoredlogs` when restoring a mailbox database to a Recovery Storage Group or the restore operation may fail.

The GUI provides an easy-to-use, flexible interface to help you perform a restore operation. The interface presents information in a way that allows multiple selection and, in some cases, automatic operation.
Note: Microsoft Exchange Server considers the wildcard character (*) to be an invalid character when used in database and storage group names. As a result, database and storage groups that contain the wildcard character (*) in their name will not be backed up.

Data Protection for Exchange supports the following types of restore:

**Full (Legacy and VSS)**
- Restore a Full type backup

**Copy (Legacy and VSS)**
- Restore a Copy type backup

**Incremental (Legacy only)**
- Restore an Incremental type backup

**Differential (Legacy only)**
- Restore a Differential type backup

**Database copy (Legacy only)**
- Restore a Database Copy type backup.

**VSS restore considerations**

Be aware of the following considerations when performing VSS restores. Unless otherwise specified, "VSS restores" refers to all restore types that use VSS (VSS Restore, VSS Fast Restore, VSS Instant Restore):

- VSS restores ignore the Recovery Storage Group and are placed directly into the production database.
- The VSS Backups to be restored must be from the same snapshot (i.e. contain the same timestamp). VSS Backups that contain different timestamps must be restored one at a time and cannot be restored together in a single operation.
- A VSS Instant Restore overwrites the entire contents of the source volumes. However, you can avoid overwriting the source volumes by specifying /INSTANTRESTORE=NO. This parameter bypasses volume-level copy and uses file-level copy instead to restore the files from a VSS Backup that resides on local shadow volumes.
- Unlike Legacy restores (which only dismount the database being restored), VSS restores dismount all databases in the storage group that is being restored.
- If a hardware provider is used, the disks that contain Exchange data must be configured as basic.
- Be aware that when a VSS restore from local shadow volumes is performed, the bytes transferred will display "0". That is because no data ("0") is restored from the Tivoli Storage Manager server.
Positional Parameters
The following positional parameters specify the object to restore:

* | sg-name
   * Restore all storage groups sequentially.
   sg-name
   Restore the specified storage group. Multiple entries are separated by commas. If any storage group contains commas or blanks, enclose the storage group name in quotes.

The following positional parameters specify the type of restore to perform:

FULL | COPY | INCRemental | DIFFerential | DBCopy db-name

FULL (Legacy and VSS)
Restore a Full type backup

COPY (Legacy and VSS)
Restore a Copy type backup

INCRemental (Legacy only)
Restore an Incremental type backup

DIFFerential (Legacy only)
Restore a Differential type backup

DBCopy db-name (Legacy only)
Restore the db-name database copy backup.

Optional Parameters

/BACKUPDESTination= TSM | LOCAL
Use the /backupdestination parameter to specify the location from where the backup is to be restored. The default is the value (if present) specified in the Data Protection for Exchange preferences file (tdpexc.cfg). If no value is present, the backup is restored from Tivoli Storage Manager server storage.

You can specify:

TSM The backup is restored from Tivoli Storage Manager server storage.
This is the default if no value is specified in the Data Protection for Exchange preferences file (tdpexc.cfg).

**LOCAL**

The backup is restored from the local shadow volumes.

**/BACKUPMETHod=LEGACY | VSS**

Use the /backupmethod parameter to specify the manner in which the restore is performed. The default is the value (if present) specified in the Data Protection for Exchange preferences file (tdpexc.cfg). If no value is present, the backup is restored with the legacy API.

You can specify:

**LEGACY**

The restore is performed with the legacy API. This is the default if no value is specified in the Data Protection for Exchange preferences file (tdpexc.cfg).

**VSS**

The restore is performed with VSS.

**/BUFFers=numbuffers**

Use the /buffers parameter to specify the number of data buffers used for moving data between the Exchange Server and the Tivoli Storage Manager API during Legacy restore operations. Separate, asynchronous execution threads are used by Data Protection for Exchange for communicating with the Exchange Server and Tivoli Storage Manager APIs. Increasing the number of data buffers improves throughput by reducing the possibility of one thread having to wait for another thread.

The numbuffers variable refers to the number of data buffers to use. The number of data buffers can be from 2 to 8. The default number of data buffers is 3.

**/BUFFERSIze=buffersize**

Use the /buffersize parameter to specify the size of data buffers used to move data between the Exchange Server and the Tivoli Storage Manager API during Legacy backup and restore operations.

The buffersize variable refers to the size of the data buffers in kilobytes. The size of the data buffers can be from 64 to 8192 kilobytes. The default size of the data buffers is 1024 kilobytes.

**/CONFIGfile=configfilename**

Use the /configfile parameter to specify the name of the Data Protection for Exchange configuration file that contains the values for the Data Protection for Exchange configuration options. See “SET” on page 102 for details about the contents of the file.

The configfilename variable can include a fully qualified path. If the configfilename variable does not include a path, the Data Protection for Exchange installation directory is used.

**Considerations**

- If the configfilename variable includes spaces, the entire /configfile parameter entry must be placed in double quotes. For example: /CONFIGfile="c:\Program Files\file.cfg"
- If the /configfile parameter is not specified, the default value is tdpexc.cfg.
- If the /configfile parameter is specified but the configfilename variable is not specified, the default value is tdpexc.cfg.
/EXCAPplication=KMS | SRS
Use the /excapplication parameter to specify the name of the KMS database or SRS database to be restored.

You can specify:
  KMS  The Key Management Service database is restored.
  SRS  The Site Replication Service database is restored.

If no value is specified, Data Protection for Exchange restores the Information Store database.

Note: Restoring a KMS or SRS database requires special considerations. It is recommended that you review these considerations documented in the Microsoft Product Services Support White Paper, "Exchange 2000 Server Database Recovery", available at this Web site:

/EXCSERVer=server-name
Use the /excserver parameter to specify the name of the Exchange Server to restore to.

The server-name variable specifies the name of the Exchange Server to be restored to.

Considerations
• If the Exchange Server to be restored is a member of a Microsoft Cluster Server, this parameter must be specified and must be set to the name of the Exchange virtual server.
• The default value is the local Exchange Server.

/FROMEXCSERVer=server-name
Use the /fromexcserver parameter to specify the name of the Exchange Server where the original backup was performed.

The default is the local Exchange Server. However, you must specify the name if the Exchange Server is not the default or is a member of an MSCS.

/INSTANTRESTORE=Yes | No
Use the /instantrestore parameter to specify whether to use volume level snapshot or file level copy to restore a VSS Backup that resides on local shadow volumes. Note that a SAN Volume Controller, DS6000, or DS8000 storage subsystem is required to perform VSS Instant Restores.

You can specify:
  Yes  Use volume level snapshot restore for a VSS Backup that resides on local shadow volumes if the backup exists on volumes that support it. This is the default.
  No   Use file level copy to restore the files from a VSS Backup that resides on local shadow volumes. Note that bypassing volume-level copy means that Exchange database files, log files, and the checkpoint file are the only data overwritten on the source volumes.

/LOGFile=logfilename
Use the /logfile parameter to specify the name of the activity log file generated by Data Protection for Exchange.

The logfilename variable identifies the name of the activity log file.
If the specified log file does not exist, a new log file is created. If the specified log file exists, new log entries are appended to the file. The logfilename variable can include a fully-qualified path. However, if no path is specified, the log file is written to the Data Protection for Exchange installation directory.

If the logfilename variable includes spaces, the entire /logfile parameter entry must be placed in double quotes. For example:

/logfile="c:\Program Files\mytdpexchange.log"

If the /logfile parameter is not specified, log records are written to the default log file, tdpxc.log.

The /logfile parameter cannot be turned off. You always get logging.

When using multiple simultaneous instances of Data Protection for Exchange to perform operations, use the /logfile parameter to specify a different log file for each instance used. This directs logging for each instance to a different log file and prevents interspersed log file records. Failure to specify a different log file for each instance can result in unreadable log files.

/LOGPrune=numdays | No

Use the /logprune parameter to disable log pruning or to explicitly request a prune of the log for one command run. By default, log pruning is enabled and performed once per day. The numdays variable represents the number of days to save log entries. By default, 60 days of log entries are saved in the prune process. You can use the Data Protection for Exchange GUI or the set command to change the defaults so that log pruning is disabled, or so that more or less days of log entries are saved. The command line user may use the /logprune parameter to override these defaults for one command run. Note that when the value of the /logprune variable numdays is a number in the range 0 to 9999, a prune is performed even if one has already been performed for the day.

Changes to the value of the timeformat or dateformat parameter can result in an undesired pruning of the Data Protection for Exchange log file. If you are running a command that may prune the log file and the value of the timeformat or dateformat parameter has changed, perform one of the following to prevent undesired pruning of the log file:

- Make a copy of the existing log file.
- Specify a new log file with the /logfile parameter or logfile setting.

/MOUNTDAbases=No | Yes

Use the /mountdatabases parameter to specify whether to mount the databases after the restore operation completes. You MUST specify one of the following values:

Yes    Mount the databases after the restore operation completes.
No    Do not mount the databases after the restore operation completes.
      This is the default.

/MOUNTWait=Yes | No

If the Tivoli Storage Manager server is configured to store the backup data on removable media (such as tapes), then it is possible that the Tivoli Storage Manager server might indicate to Data Protection for Exchange that it is waiting for a required storage volume to be mounted. If that occurs, this parameter allows you to specify whether Data Protection for Exchange should wait for the media mount or stop the current operation.
You can specify:

Yes Wait for tape mounts. This is the default.
No Do not wait for tape mounts.

/Object=object-name
Use the /object parameter to specify the name of the backup object you want to restore. The object name uniquely identifies each backup object and is created by Data Protection for Exchange.

Use the Data Protection for Exchange query tsm command to view the names of the backup objects.

If the tdpexcc restore sname incr command is entered (without the /object parameter) to restore multiple active incremental backups, all multiple active incremental backups are restored sequentially. The /object parameter is used to restore only one incremental backup at a time.

/Partial=dbname1,dbnameN
Use the /partial parameter to specify that only the named databases (dbname1,dbnameN) within the full or copy backup should be restored.

Considerations

• If you specify this option, you must include at least one valid database name.
• If you do not specify this option, all databases within the backup are restored.
• You cannot specify this parameter while using VSS Instant Restore. You must restore ALL databases within the specified storage group when performing a VSS Instant Restore. Although Data Protection for Exchange allows this operation to begin, it will either fail or complete with undesirable consequences. If you need to restore just one database from a VSS Backup that resides on local VSS shadow volumes on DS or SAN Volume Controller disks, make sure to specify /instantrestore=no on the command line interface. If VSS Instant Restore capability is needed for single databases, make sure to place these databases in their own storage group.

/Quiet This parameter prevents status information from being displayed. This does not affect the level of information written to the activity log.

/RECOVER=APPLYRESToredlogs | APPLYALLlogs
Use this parameter to specify whether or not you want to run recovery after you restore an object. It is recommended this parameter be specified on the last backup object restored for any particular storage group. To initiate recovery, you MUST use the /recover parameter when restoring the last backup object of a storage group. In addition, the value of /templogrestorepath should not be the same value as the current location for the storage group. If the value is the same, corruption can occur.

Failure to use the /recover parameter when restoring the last backup set of a storage group leaves the databases unmountable. If this occurs, you can either restore the last backup again and specify the /recover=value option or you can use the Microsoft ESEUTIL /cc command to run recovery manually.

You MUST specify one of the following values when using this parameter:

APPLYALLlogs
Specify /recover=applyalllogs to replay the restored transaction log entries AND the current active transaction log entries. Any
transaction logs entries that appear in the current active transaction log are replayed. This is the default.

**APPLYRESToredlogs**
Specify /recover=applyrestoredlogs to replay ONLY the restored transaction log entries. The current active transaction log entries will NOT be replayed. When restoring a mailbox database to a Recovery Storage Group on Exchange Server 2003, you must specify /recover=applyrestoredlogs or the restore operation may fail.

**Note:** When choosing this option for a restore, your next backup MUST be a full or copy backup.

**Considerations**
- When restoring multiple backup objects, the /recover option should be used on the restore of the last object.

**Note:** If you specify /recover=applyrestoredlogs when performing a restore, the next backup of the storage group MUST be a full backup.

**/TEMPLOGREStorepath=path-name**
Use the /templogrestorepath parameter to specify the default temporary path to use when restoring logs and patch files. For best performance, this should be on a different physical device than the current active logger.

If the /templogrestorepath parameter is not specified, the default value is the value specified by the TEMPOLOGRESTOREPATH option in the Data Protection for Exchange configuration file. The default Data Protection for Exchange configuration file is `tdpexc.cfg`.

If the /templogrestorepath parameter is not specified and the value does not exist in the Data Protection for Exchange configuration file, the TEMP environment variable value is used.

**Note:** When performing a full, copy, or dbcopy restore, all log files residing in the path specified by the /templogrestorepath parameter are erased.

In addition, the value of /templogrestorepath should not be the same value as the current location for the storage group. If the value is the same, corruption can occur.

**Note:** Do not specify double-byte characters (DBCS) within the temporary log path. This is not supported by Data Protection for Exchange or Microsoft.

**/TSMNODe=tsmnodename**
The tsmnodename variable refers to the Tivoli Storage Manager node name Data Protection for Exchange uses to log on to the Tivoli Storage Manager server. You can also store the node name in the Tivoli Storage Manager options file. The command line parameter overrides the value in the Tivoli Storage Manager options file if PASSWORDACCESS is set to PROMPT. This parameter is not valid when PASSWORDACCESS is set to GENERATE.

**/TSMOPTFile=tsmoptfilename**
The tsmoptfilename variable identifies the Data Protection for Exchange options file.
The file name can include a fully qualified path name. If no path is specified, the directory where Data Protection for Exchange is installed is searched.

If the tsmpoptfilename variable includes spaces, the entire /tsmoptfile parameter entry must be placed in double quotes. For example:
/TSMOPTFile="c:\Program Files\file.opt"

The default is dsm.opt.

/TSMPassword=tsmpassword

The tsmpassword variable refers to the Tivoli Storage Manager password. Data Protection for Exchange uses to log on to the Tivoli Storage Manager server. If you specified PASSWORDACCESS GENERATE in the Data Protection for Exchange options file, then the password need not be provided here because the one stored in the registry is used. However, in order to store the password in the registry, you must specify the Tivoli Storage Manager password the first time Data Protection for Exchange connects to the Tivoli Storage Manager server.

If you do specify a password on the command line when PASSWORDACCESS GENERATE is in effect, then the command line value is ignored unless the password for this node has not yet been stored in the registry. In that case, the specified password is the one that is stored in the registry and used for the current command execution.

If PASSWORDACCESS PROMPT is in effect, and a password value is not specified on the command line, then you are prompted for a password.

The Tivoli Storage Manager password Data Protection for Exchange uses to log on to the Tivoli Storage Manager server can be up to 63 characters in length.

Examples

Example 1: The tdpexc restore sg3.sg3 full /recover=applyalllogs command restores a full type backup of the Exchange 2000 Server storage group identified as sg3.sg3, and replays the restored transaction log entries AND the current active transaction log entries. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:  
Data Protection for Microsoft Exchange Server  
Version 5, Release 3, Level 3.0  
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Starting Microsoft Exchange restore...

Logging on to the Tivoli Storage Manager server, please wait...

Beginning full restore of storage group sg3.sg3 <07/16/2002 11:14:12>,
1 of 1, to sg3.sg3
Full: 1 Read: 26314796 Written: 26314796 Rate: 3,589.11 Kb/Sec
Restore of sg3.sg3 completed successfully.

Total backups inspected: 1
Total backups requested for restore: 1
Total backups restored: 1
Throughput rate: 1,054.11 Kb/Sec
Total bytes transferred: 26,314,796
Elapsed processing time: 24.38 Secs
Example 2: The `tdpexcc restore sg3.sg3 dbcopy "A Public Store" /recover=applyallogs` command restores a database copy backup of Exchange 2000 Server database "A Public Store", located in storage group sg3.sg3, and replays the restored transaction log entries AND the current active transaction log entries. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Starting Microsoft Exchange restore...
Logging on to the Tivoli Storage Manager server, please wait...

Beginning dbcopy restore of storage group sg3.sg3 <07/19/2002 10:25:26>,
1 of 1, to sg3.sg3
Full: 1 Read: 10511010 Written: 10511010 Rate: 4,015.91 Kb/Sec
Restore of sg3.sg3 completed successfully.

Total backups inspected: 1
Total backups requested for restore: 1
Total backups restored: 1

Throughput rate: 1,024.52 Kb/Sec
Total bytes transferred: 10,511,010
Elapsed processing time: 10.02 Secs

Example 3: The `tdpexcc restore stg2 full /backupdestination=tsm /backupmethod=vss` command restores a full VSS Backup of Exchange Server 2003 storage group stg2 from Tivoli Storage Manager server storage to local shadow volumes. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Connecting to TSM Server as node 'SVC_TDP'...
Connecting to Local DSM Agent 'svc_ba'...

Beginning VSS restore of 'stg2'...

Files Examined/Completed/Failed: [14 / 14 / 0]  Total Bytes: 88135694

VSS Restore operation completed with rc = 0
Files Examined : 14
Files Completed : 14
Files Failed : 0
Total Bytes : 88135694

Example 4: The `tdpexcc restore stg4 full /backupdestination=local /backupmethod=vss` command restores a full VSS Backup of Exchange Server 2003 storage group stg4 from local shadow volumes. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Connecting to TSM Server as node 'TDP_REAL'...
Connecting to Local DSM Agent 'ba_real'...
Starting Microsoft Exchange restore...
Beginning VSS restore of 'stg4'...

VSS Restore operation completed with rc = 0
- Files Examined : 7
- Files Completed : 7
- Files Failed : 0
- Total Bytes : 0
RESTOREFILES

Use this command to restore the .edb, .stm, and .log files from a specified Data Protection for Exchange backup (that resides on Tivoli Storage Manager server storage) into a specified directory. Note the following information about this command:

- This command applies to Legacy backups only. It does not apply to VSS Backups.
- The restore operation will fail if previous restore files exist.
- This command does not restore the data to the Exchange Server.
- This command does not require an Exchange Server to be installed on or accessible from the machine where the restorefiles command is issued. As a result, files can be restored to an alternative machine or to an alternative directory on the same machine as the Exchange Server.
- This command also restores Key Management Service (KMS) files and Site Replication Service (SRS) files. Use the /excapplication parameter when restoring these files.
- When restoring files from an inactive backup or an active incremental backup, use the /object parameter to specify the name of the backup object. The object name uniquely identifies the backup instance in Tivoli Storage Manager server storage. A list of backup object names is obtained by issuing the query tsm command.
- This command is only available on the command line interface. It is not available in the Data Protection for Exchange GUI.

Data Protection for Exchange supports the following types of restores using the restorefiles command:

Full    Restore the files from a Full type backup.
Copy    Restore the files from a Copy type backup.
Incremental
    Restore the files from an Incremental type backup.
Differential
    Restore the files from a Differential type backup.
Database copy
    Restore the files from a Database Copy type backup.

Syntax

```
   TDPEXCC—RESTOREFILES—FULL—COPY—INCREMENTal—DIFFerential—DBCopy—db-name
   /BUFFers= numbuffers /BUFFERSIze= buffersize
```

Positional Parameters
The following positional parameters specify the object to restore:

\* | sg-name

  * Restore all storage group files sequentially.

    sg-name

    Restore the specified storage group files. Multiple entries are separated by commas. If any storage group contains commas or blanks, enclose the storage group name in quotes.

The following positional parameters specify the type of backup from which the files are restored:

FULL | COPY | INCRemental | DIFFerential | DBCopy db-name

  FULL Restore the files from a Full type backup.

  COPY Restore the files from a Copy type backup.

  INCRemental Restore the files from an Incremental type backup.

  DIFFerential Restore the files from a Differential type backup.

  DBCopy db-name Restore the files from the db-name database copy backup.
Optional Parameters

/BUFFers=numbuffers
Use the /buffers parameter to specify the number of data buffers used for retrieving data from the Tivoli Storage Manager API.

The numbuffers variable refers to the number of data buffers to use. The number of data buffers can be from 2 to 8. The default number of data buffers is 3.

/BUFFERSize=buffersize
Use the /buffersize parameter to specify the size of data buffers used to retrieve data from the Tivoli Storage Manager API.

The buffersize variable refers to the size of the data buffers in kilobytes. The size of the data buffers can be from 64 to 8192 kilobytes. The default size of the data buffers is 1024 kilobytes.

/CONFIGfile=configfilename
Use the /configfile parameter to specify the name of the Data Protection for Exchange configuration file that contains the values for the Data Protection for Exchange configuration options. See “SET” on page 102 for details about the contents of the file.

The configfilename variable can include a fully qualified path. If the configfilename variable does not include a path, the Data Protection for Exchange installation directory is used.

Considerations
- If the configfilename variable includes spaces, the entire /configfile parameter entry must be placed in double quotes. For example:
  /CONFIGfile="c:\Program Files\file.cfg"
- If the /configfile parameter is not specified, the default value is tdpexc.cfg.
- If the /configfile parameter is specified but the configfilename variable is not specified, the default value is tdpexc.cfg.

/EXCAPPlication=KMS|SRS
Use the /excapplication parameter to specify the name of the KMS database or SRS database from which files will be restored.

You can specify:
- KMS The Key Management Service database files are restored.
- SRS The Site Replication Service database files are restored.

If no value is specified, Data Protection for Exchange restores the Information Store database files.

/FROMEXCSERVER=servername
Use the /fromexcserv server-parameter to specify the name of the Exchange Server where the original backup was performed. The default is the local machine name.

/INTO=pathname
Use the /into parameter to specify the root directory where files are to be restored. The restorefiles operation creates a subdirectory under the root directory that contains the name of the storage group. Restored files are placed in that subdirectory. If the /into parameter is not specified, the files will be restored into directory from which the restorefiles command is issued. For example, if Data Protection for Exchange is installed in the c:\Program Files\Tivoli\TSM\TDPEXchange directory and the following
command is issued from the E:\Somdir location:

```
c:\"Program Files\"Tivoli\TSM\TDPEXchange\tpexc restorefiles
ThirdSG full, then the files are restored to the subdirectories in the
E:\Somdir location:
E:\Somdir\ThirdSG\083_1.edb
E:\Somdir\ThirdSG\083_1.stm
E:\Somdir\ThirdSG\E0200001.log
```

/LOGFile=logfile
Use the /logfile parameter to specify the name of the activity log file
generated by Data Protection for Exchange.

The logfile variable identifies the name of the activity log file.

If the specified log file does not exist, a new log file is created. If the
specified log file exists, new log entries are appended to the file. The
logfile variable can include a fully-qualified path. However, if no path
is specified, the log file is written to the Data Protection for Exchange
installation directory.

If the logfile variable includes spaces, the entire /logfile parameter
entry must be placed in double quotes. For example:

```
/LOGFile="c:\Program Files\mytdpexchange.log"
```

If the /logfile parameter is not specified, log records are written to the
default log file, tdpexchange.log.

The /logfile parameter cannot be turned off. You always get logging.

When using multiple simultaneous instances of Data Protection for
Exchange to perform operations, use the /logfile parameter to specify a
different log file for each instance used. This directs logging for each
instance to a different log file and prevents interspersed log file records.
Failure to specify a different log file for each instance can result in
unreadable log files.

/LOGPrune=numdays|No
Use the /logprune parameter to disable log pruning or to explicitly request
a prune of the log for one command run. By default, log pruning is
enabled and performed once per day. The numdays variable represents the
number of days to save log entries. By default, 60 days of log entries are
saved in the prune process. You can use the Data Protection for Exchange
GUI or the set command to change the defaults so that log pruning is
disabled, or so that more or less days of log entries are saved. The
command line user may use the /logprune parameter to override these
defaults for one command run. Note that when the value of the /logprune
variable numdays is a number in the range 0 to 9999, a prune is performed
even if one has already been performed for the day.

Changes to the value of the timeformat or dateformat parameter can result
in an undesired pruning of the Data Protection for Exchange log file. If you
are running a command that may prune the log file and the value of the
timeformat or dateformat parameter has changed, perform one of the
following to prevent undesired pruning of the log file:

- Make a copy of the existing log file.
- Specify a new log file with the /logfile parameter or logfile setting.

/MOUNTWait=Yes|No
If the Tivoli Storage Manager server is configured to store the backup data
on removable media (such as tapes), then it is possible that the Tivoli Storage Manager server might indicate to Data Protection for Exchange that it is waiting for a required storage volume to be mounted. If that occurs, this parameter allows you to specify whether Data Protection for Exchange should wait for the media mount or stop the current operation.

You can specify:

- **Yes** Wait for tape mounts. This is the default.
- **No** Do not wait for tape mounts.

/Obj**ect**=object-name

Use the /object parameter to specify the name of the backup object files you want to restore. The object name uniquely identifies each backup object and is created by Data Protection for Exchange.

Use the Data Protection for Exchange **query tsm** command to view the names of the backup objects.

If the tdpexcc restore sname incr command is entered (without the /object parameter), all multiple active incremental backup files are restored sequentially. The /object parameter is used to restore files from only one incremental backup at a time.

/PAR**Tial**=dbname1,dbnameN

Use the /partial parameter to specify that only files from the named databases (dbname1,dbnameN) within the full or copy backup should be restored into the alternative directory.

**Considerations**

- If you specify the /partial parameter, you must include at least one valid database name.
- If you do not specify the /partial parameter, all files within the backup are restored.

/Qui**et**

This parameter prevents status information from being displayed. This does not affect the level of information written to the activity log.

/TSMNODe=tsmnodename

The tsmnodename variable refers to the Tivoli Storage Manager node name Data Protection for Exchange uses to log on to the Tivoli Storage Manager server. You can also store the node name in the Tivoli Storage Manager options file. The command line parameter overrides the value in the Tivoli Storage Manager options file if PASSWORDACCESS is set to PROMPT. This parameter is not valid when PASSWORDACCESS is set to GENERATE.

/TSMOPTFile=tsmoptfilename

The tsmoptfilename variable identifies the Data Protection for Exchange options file.

The file name can include a fully qualified path name. If no path is specified, the directory where Data Protection for Exchange is installed is searched.

If the tsmoptfilename variable includes spaces, the entire /tsmoptfile parameter entry must be placed in double quotes. For example:

/TSMOPTFile="c:\Program Files\file.opt"

The default is dsm.opt.
The /TSMPassword variable refers to the Tivoli Storage Manager password. Data Protection for Exchange uses to log on to the Tivoli Storage Manager server. If you specified PASSWORDACCESS GENERATE in the Data Protection for Exchange options file, then the password need not be provided here because the one stored in the registry is used. However, in order to store the password in the registry, you must specify the Tivoli Storage Manager password the first time Data Protection for Exchange connects to the Tivoli Storage Manager server.

If you do specify a password on the command line when PASSWORDACCESS GENERATE is in effect, then the command line value is ignored unless the password for this node has not yet been stored in the registry. In that case, the specified password is the one that is stored in the registry and used for the current command execution.

If PASSWORDACCESS PROMPT is in effect, and a password value is not specified on the command line, then you are prompted for a password.

The Tivoli Storage Manager password Data Protection for Exchange uses to log on to the Tivoli Storage Manager server can be up to 63 characters in length.

**Examples**

**Example 1:** This command, `tdpexcc restorefiles Finance COPY /INTO=e:\test /FROMEXCSERVER=excsrv12 /TSMNODE=excsrv12
/TSMPASSWORD=password`, restores backup files from a COPY type backup of the Finance storage group (from the Exchange Server 2003 named excsrv12) into the e:\test directory. The restored files are:

- e:\test\Finance\E0000011.log
- e:\test\Finance\E0000012.log
- e:\test\Finance\MB1.edb
- e:\test\Finance\MB1.stm
- e:\test\Finance\MB2.edb
- e:\test\Finance\MB2.stm
- e:\test\Finance\MB3.edb
- e:\test\Finance\MB3.stm

**Example 2:** This command, `tdpexcc restorefiles FSG FULL /PARTIAL=Mailbox2 /INTO=e:\test /FROMEXCSERVER=excsrv05 /TSMNODE=excsrv05
/TSMPASSWORD=password`, restores Mailbox2 backup files from a FULL type backup of the FSG storage group (from the Exchange 2000 Server named excsrv05) into the e:\test directory. The restored files are:

- e:\test\FSG\E0000029.log
- e:\test\FSG\E000002A.log
- e:\test\FSG\Mailbox2.edb
- e:\test\FSG\Mailbox2.stm
Example 3: First, this command, `tdpexcc q tsm /all /FROMEXCSERVER=EXCH1`, queries the Tivoli Storage Manager server for all active and inactive backups that were originally backed up from the Exchange Server named `EXCH1`. The command displays the following backup objects:

```
IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
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Querying Tivoli Storage Manager server for a list of database backups, please wait...

Backup List
---------
Exchange Server : EXCH1
Storage Group : Second Storage Group

<table>
<thead>
<tr>
<th>Backup Date</th>
<th>Size</th>
<th>S Fmt</th>
<th>Type</th>
<th>Loc</th>
<th>Object Name/Database Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>02/14/2006 14:01:19</td>
<td>2,940.06MB</td>
<td>A Lgcy</td>
<td>full</td>
<td>Srv</td>
<td>20060214140119</td>
</tr>
<tr>
<td></td>
<td>2,003.02MB</td>
<td></td>
<td></td>
<td>mailbox_jie</td>
<td></td>
</tr>
<tr>
<td></td>
<td>924.02MB</td>
<td></td>
<td></td>
<td>Second Mail Store</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8,212.39KB</td>
<td></td>
<td></td>
<td>Second Public Store</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5,120.09KB</td>
<td></td>
<td></td>
<td>Logs</td>
<td></td>
</tr>
<tr>
<td>02/14/2006 14:24:59</td>
<td>2,950.05MB</td>
<td>A VSS</td>
<td>full</td>
<td>Loc</td>
<td>20060214142459</td>
</tr>
<tr>
<td></td>
<td>15.01MB</td>
<td></td>
<td></td>
<td>Logs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8,208.00KB</td>
<td></td>
<td></td>
<td>Second Public Store</td>
<td></td>
</tr>
<tr>
<td></td>
<td>924.02MB</td>
<td></td>
<td></td>
<td>Second Mail Store</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2,003.02MB</td>
<td></td>
<td></td>
<td>mailbox_jie</td>
<td></td>
</tr>
</tbody>
</table>
```

Second, this command, `tdpexcc restorefiles "Second Storage Group" FULL /OBJECT=20060214140119 /INTO=c:\test /FROMEXCSERVER=EXCH1 /TSMNODE=tdp_geo /TSMPASSWORD=password`, restores backup files of 02/14/2006 14:01:19 FULL type backup of the storage group named `Second Storage Group` (from the Exchange Server 2003 named `EXCH1`) into the `e:\test` directory. The command displays the following output:

```
IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
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Starting Microsoft Exchange restore...
Logging on to the Tivoli Storage Manager server, please wait...

Beginning full restore of storage group Second Storage Group <02/14/2006 14:01:19>, 1 of 1, to Second Storage Group
Full: 2  Read: 2327880532  Written: 2325783380  Rate: 2,475.62 Kb/Sec
Waiting for TSM server...
Full: 0  Read: 3082876092  Written: 3082876092  Rate: 2,475.36 Kb/Sec
Restore of Second Storage Group completed successfully.

Total backups inspected: 1
Total backups requested for restore: 1
Total backups restored: 1
Throughput rate: 2,475.36 Kb/Sec
Total bytes transferred: 3,082,876,092
Elapsed processing time: 1,216.24 Secs
```
Preference Commands

CHANGETSMPASSWORD

Use this command to change the Tivoli Storage Manager password used by Data Protection for Exchange to log on to the Tivoli Storage Manager server. If you do not enter the old and new passwords, Data Protection for Exchange prompts you for the old and new passwords. Data Protection for Exchange does not display the password on the screen.

The Tivoli Storage Manager password Data Protection for Exchange uses to log on to the Tivoli Storage Manager server can be up to 63 characters in length.

Syntax

```
/SM590000
TDPEXCC

CHANGETSMPassword oldpassword newpassword verifypassword

/CONFIGfile= configfilename
/LOGFile= logfilename

/LOGPrune= numdays

/SKIPINTEGRITYCHECK

/TSMNODE= tsmnodename

/TSMOPTFile= tsmoptfilename
```

Positional Parameters

The following positional parameters specify required password information:

```
oldpassword newpassword verifypassword
```

- **oldpassword**
  Specifies the current password used by Data Protection for Exchange.

- **newpassword**
  Specifies the new password used by Data Protection for Exchange.

- **verifypassword**
  Specifies the new password again for verification.

If any of these values are not entered during a command invocation, you are prompted for them.

Optional Parameters

```
/CONFIGfile= configfilename
```

Use the /configfile parameter to specify the name of the Data Protection
for Exchange configuration file that contains the values for the Data Protection for Exchange configuration options. See “SET” on page 102 for details about the contents of the file.

The configfilename variable can include a fully qualified path. If the configfilename variable does not include a path, the Data Protection for Exchange installation directory is used.

Considerations

• If the configfilename variable includes spaces, the entire /configfile parameter entry must be placed in double quotes. For example:
  /CONFIGfile="c:\Program Files\file.cfg"

• If the /configfile parameter is not specified, the default value is tdpexc.cfg.

• If the /configfile parameter is specified but the configfilename variable is not specified, the default value is tdpexc.cfg.

/LOGFile=logfile

Use the /logfile parameter to specify the name of the activity log file generated by Data Protection for Exchange.

The logfile variable identifies the name of the activity log file.

If the specified log file does not exist, a new log file is created. If the specified log file exists, new log entries are appended to the file. The logfile variable can include a fully-qualified path. However, if no path is specified, the log file is written to the Data Protection for Exchange installation directory.

If the logfile variable includes spaces, the entire /logfile parameter entry must be placed in double quotes. For example:
  /LOGFile="c:\Program Files\mytdpexchange.log"

If the /logfile parameter is not specified, log records are written to the default log file, tdpexc.log.

The /logfile parameter cannot be turned off. You always get logging.

When using multiple simultaneous instances of Data Protection for Exchange to perform operations, use the /logfile parameter to specify a different log file for each instance used. This directs logging for each instance to a different log file and prevents interspersed log file records. Failure to specify a different log file for each instance can result in unreadable log files.

/LOGPrune=numdays | No

Use the /logprune parameter to disable log pruning or to explicitly request a prune of the log for one command run. By default, log pruning is enabled and performed once per day. The numdays variable represents the number of days to save log entries. By default, 60 days of log entries are saved in the prune process. You can use the Data Protection for Exchange GUI or the set command to change the defaults so that log pruning is disabled, or so that more or less days of log entries are saved. The command line user may use the /logprune parameter to override these defaults for one command run. Note that when the value of the /logprune variable numdays is a number in the range 0 to 9999, a prune is performed even if one has already been performed for the day.
Changes to the value of the **timeformat** or **dateformat** parameter can result in an undesired pruning of the Data Protection for Exchange log file. If you are running a command that may prune the log file and the value of the **timeformat** or **dateformat** parameter has changed, perform one of the following to prevent undesired pruning of the log file:

- Make a copy of the existing log file.
- Specify a new log file with the `/logfile` parameter or `logfile` setting.

/TSMNODE=tsmnodename

The `tsmnodename` variable refers to the Tivoli Storage Manager node name Data Protection for Exchange uses to log on to the Tivoli Storage Manager server. You can also store the node name in the Tivoli Storage Manager options file. The command line parameter overrides the value in the Tivoli Storage Manager options file if PASSWORDACCESS is set to PROMPT. This parameter is not valid when PASSWORDACCESS is set to GENERATE.

/TSMOPTFILE=tsmoptfilename

The `tsmoptfilename` variable identifies the Data Protection for Exchange options file.

The file name can include a fully qualified path name. If no path is specified, the directory where Data Protection for Exchange is installed is searched.

If the `tsmoptfilename` variable includes spaces, the entire `/tsmoptfile` parameter entry must be placed in double quotes. For example:

/TSMOPTFILE="c:\Program Files\file.opt"

The default is `dsm.opt`.

**Example**

The `tdpexcc changetsmpassword oldpw newpw newpw` command changes the Tivoli Storage Manager password used by Data Protection for Exchange. An example of the output is displayed below.

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
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ACNO260I Password successfully changed.
**SET**

Use this command to set the Data Protection for Exchange configuration parameters defined in the Data Protection for Exchange configuration file, *tdpexc.cfg* by default.

The value of a configuration parameter specified on a command line invocation overrides (but does not change) the value of the configuration parameter specified in the Data Protection for Exchange configuration file.

During a command line invocation that does not specify an overriding value for a configuration file parameter, the values in the default Data Protection for Exchange configuration file (*tdpexc.cfg*) are used.

**Syntax**

```
/TDPEXCC-SET BACKUPDESTINATION=TSM|LOCAL|BOTH /CONFIGfile=tdpexc.cfg
```

- **BACKUPDESTINATION**
  - **TSM**
  - **LOCAL**
  - **BOTH**
- **CONFIGfile**

**Positional Parameters**

The following positional parameters specify the values in the Data Protection for Exchange configuration file. You can set only one value for each *tdpexc set* command run:

**BACKUPDESTination**=TSM | LOCAL | BOTH

Use the BACKUPDESTINATION positional parameter to specify the storage location for your backup. You can specify:

- **TSM**
  - The backup is stored on Tivoli Storage Manager server storage only. This is the default.

- **LOCAL**
  - The backup is stored on local shadow volumes only.

- **BOTH**
  - The backup is stored on both Tivoli Storage Manager server storage and local shadow volumes.

**BACKUPMETHOD**=Legacy | VSS

Use the BACKUPMETHOD positional parameter to specify the method for your backup. You can specify:

- **LEGACY**
  - Data Protection for Exchange uses the legacy API to perform the backup. This is the default.
VSS  Data Protection for Exchange uses VSS to perform the backup.

BUFFers=numbuffers
Use the BUFFers positional parameter to specify the number of data buffers used for moving data between the Exchange Server and the Tivoli Storage Manager API. Increasing the number of data buffers can improve throughput. You can specify a value of 2 through 8 in the numbuffers value.

BUFFERSize=buffersize
Use the BUFFERSize positional parameter to specify the size of data buffers used to move data between the Exchange Server and the Tivoli Storage Manager API.

The buffersize variable refers to the size of the data buffers in kilobytes. The size of the data buffers can be from 64 to 8192 kilobytes. The default size of the data buffers is 1024 kilobytes.

DATEformat=dateformatnum
Use the DATEformat positional parameter to select the format you want to use to display dates.

The dateformatnum variable displays the date in one of the following formats. Select the format number that corresponds to the format you want to use.

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

Changes to the value of the dateformat parameter can result in an undesired pruning of the Data Protection for Exchange log file (tdpexc.log by default). You can avoid losing existing log file data by performing one of the following:

- After changing the value of the dateformat parameter, make a copy of the existing log file before running Data Protection for Exchange.
- Specify a new log file with the /logfile parameter.

LANGUAGE=language
Specify the three-character code of the language you want to use to display messages:

CHS  Simplified Chinese
CHT  Traditional Chinese
DEU  Standard German
ENU  American English (This is the default.)
ESP  Standard Spanish
FRA  Standard French
ITA  Standard Italian
JPN  Japanese
KOR  Korean
PTB  Brazilian Portuguese

LOCALDSMAgentnode=nodename
Specify the node name of the local machine that performs the VSS backups. This positional parameter must be specified for VSS operations to be performed.
LOGFile=logfile

Use the LOGFile positional parameter to specify the name of the activity log file generated by Data Protection for Exchange. The Data Protection for Exchange activity log records significant events, such as completed commands and error messages.

The logfile variable identifies the name of the activity log file. If the specified log file does not exist, a new log file is created. If the specified log file exists, new log entries are appended to the file. The logfile variable can include a fully-qualified path. However, if no path is specified, the log file is assigned to the Data Protection for Exchange installation directory.

LOGPrune=numdays|No

Use the LOGPrune positional parameter to disable log pruning or to set log pruning parameters. By default, log pruning is enabled and performed once per day. The numdays variable represents the number of days to save log entries. You can specify a value of No or 0 through 9999. By default, 60 days of log entries are saved in the prune process.

MOUNTWait=Yes|No

Use the MOUNTWait positional parameter to specify whether Data Protection for Exchange should wait for removable media to mount (such as tapes or CD-ROMs) or to stop the current operation. This situation occurs when the Tivoli Storage Manager server is configured to store backup data on removable media and waits for a required storage volume to be mounted.

Specify Yes for Data Protection for Exchange to wait until all initial volumes of any required removable media are made available to the Tivoli Storage Manager server before completing the command.

Specify No for Data Protection for Exchange to terminate the command (if removable media are required). An error message will display.

NUMberformat=fmtnum

Use the NUMberformat positional parameter to specify the format you want to use to display numbers.

The fmtnum variable displays numbers using one of the following formats. Select the format number that corresponds to the format you want to use.

1 n,nnn,dd. This is the default.
2 n,nnn,dd.
3 n nnn,dd
4 n nnn,dd
5 n,nnn,dd
6 n,nnn,dd

REMOTEDESMAgentnode=nodename

Specify the node name of the machine that moves the VSS data to Tivoli Storage Manager server storage during off-loaded backups.

TEMPLOGRESTorepath=path-name

Use the TEMPLOGRESTorepath positional parameter to specify the default temporary path to use when restoring logs and patch files. For best performance, the path specified in the path-name should be on a different physical device than the current active logger. If the path-name variable
includes spaces, the entire TEMPLOGRESTorepath positional parameter entry must be placed in double quotes. For example:
TEMPLOGRESTorepath="c:\Program Files\file.log"

Note: Do not specify double-byte characters (DBCS) within the temporary log path. This is not supported by Data Protection for Exchange or Microsoft.

TIMEformat=formatnumber
Use the TIMEformat positional parameter to specify the format in which you want system time displayed.

The formatnumber variable displays time in one of the following formats. Select the format number that corresponds to the format you want to use.

1  HH:MM:SS This is the default.
2  HH,MM,SS
3  HH.MM.SS
4  HH:MM:SSA/P

Optional Parameters
/CONFIGfile=configfilename
Use the /configfile parameter to specify the name of the Data Protection for Exchange configuration file in which these values will be set.

The configfilename variable can include a fully qualified path. If the configfilename variable does not include a path, the Data Protection for Exchange installation directory is used.

Considerations
• If the configfilename variable includes spaces, the entire /configfile parameter entry must be placed in double quotes.
• If the /configfile parameter is not specified, the default value is tdpexc.cfg.
• If the /configfile parameter is specified but the configfilename variable is not specified, the default value is tdpexc.cfg.

Example
The tdpexc set logfile=d:\tsm\tdpexchange\exchange.log command specifies exchange.log, in the d:\tsm\tdpexchange directory, as the Data Protection for Exchange log file instead of the default Data Protection for Exchange log file, tdpexc.log, located in the directory where Data Protection for Exchange is installed. An example of the output is displayed below.

ACN5054I The preference has been set successfully.
TDPEXCC HELP

Use this command to display help for Data Protection for Exchange commands. This command lists one or more commands and their parameters.

Syntax

```
TDPEXCC ? command help
```

Optional Parameters

The following optional parameters specify the help to be displayed:

* | command

Identifies the specific Data Protection for Exchange command that is to be displayed. If the wildcard character (*) is used, help for all Data Protection for Exchange commands is displayed.

The valid command names are shown below:

- BACKup
- CHANGETSMPassword
- HELP
- Query
- RESTore
- RESTOREFiles
- SET

* | subcommand

Help can be displayed for commands that have several subcommands, for example, the query command. If you do not specify a subcommand or the wildcard character (*), help for all Data Protection for Exchange query commands is displayed.

The valid subcommand names for the query command are shown below:

- EXChange
- TDP
- TSM

Examples

Example 1: The tdpecc help command displays available help for Data Protection for Exchange. The following output is displayed:

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

Choose from the following commands:

```
TDPEXCC BACKup *|sgname1,...,sgnameN backuptype
where backuptype can be:
  FULL|COPY|INCRemental|DIFFerential|DBCopy dbname
[/BACKUPDESTination=TSM|LOCAL|BOTH] (default: TSM)
[/BACKUPMETHod=LEGACY|VSS] (default: LEGACY)
[/BUFFers=numbuffers] (default: 3)
[/BUFFERSIze=buffersize] (default: 1024)
[/CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)
[/EXCAPPlication=KMS|SRS] (default: Information Store)
[/EXCSERVer=servername] (default: local exchange server)
[/LOGfile=tdpexc.log|logfilename] (default: tdpexc.log)
```
Chapter 5. Using the Command Line Interface

```
[/LOGPrune=60|n|No] (default: 60)
[/MOUNTWait=Yes|No] (default: Yes)
[/OFFLOAD]
[/Quiet]
[/SKIPINTEGRITYCHECK]
[/TSMNODE=nodename]
[/TSMOPTFile=dsm.opt|filename] (default: dsm.opt)
[/TSMPassword=password]

TDPEXCC CHANGETSMPassword [oldpw [newpw [verifypw]]]
[/CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)
[/LOGFile=tdpexc.log|filename] (default: tdpexc.log)
[/LOGPrune=60|n|No] (default: 60)
[/MOUNTWait=Yes|No] (default: Yes)
[/MOUNTDAtabases=No|Yes] (default: No)
[/MOUNTWait=Yes|No] (default: Yes)
[/OBJect=object] (default: current active object)
```

Valid command names:
- **Backup**
- **EXCHange**
- **HELP**
- **RESTore**
- **RESTOREFiles**
- **SET**

Valid subcommands:
- **EXCHangE**
- **TDP**
- **TSM**

**TDPEXCC Query EXCHange**

```
[/CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)
[/EXCSERVer=servername] (default: local exchange server)
[/LOGFile=tdpexc.log|filename] (default: tdpexc.log)
[/LOGPrune=60|n|No] (default: 60)
```

**TDPEXCC Query TDP**

```
[/CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)
[/LOGFile=tdpexc.log|filename] (default: tdpexc.log)
[/LOGPrune=60|n|No] (default: 60)
```

**TDPEXCC Query TSM [sgname1,...,sgnameN [backuptype]]**

where backuptype can be:
- **FULL**
- **COPY**
- **INCREMENTAL**
- **DIFFERENTIAL**
- **DBCopy dbname**
- **[ACTIVE]**
- **[ALL]**

```
[/CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)
[/EXCSERVer=servername] (default: local exchange server)
[/LOGFile=tdpexc.log|filename] (default: tdpexc.log)
[/LOGPrune=60|n|No] (default: 60)
```

**TDPEXCC RESTore [sgname1,...,sgnameN backuptype**

where backuptype can be:
- **FULL**
- **COPY**
- **INCREMENTAL**
- **DIFFERENTIAL**
- **DBCopy dbname**

```
[/BACKUPDESTination=TSM|LOCAL] (default: TSM)
[/BACKUPMETHOD=LEGACY|VSS] (default: LEGACY)
[/BUFFERS=numbuffers] (default: 3)
[/BUFFERSIZE=buffersize] (default: 1024)
```

```
[/EXCAPPLICATION=KMS|SRS] (default: Information Store)
[/EXCSERVer=servername] (default: local exchange server)
[/INSTANTRESTORE=Yes|No] (default: Yes)
[/LOGFile=tdpexc.log|filename] (default: tdpexc.log)
[/LOGPrune=60|n|No] (default: 60)
```

```
[/MOUNTDAtabases=No|Yes] (default: No)
[/MOUNTWait=Yes|No] (default: Yes)
```

```
[/OBJect=object] (default: current active object)
```
TDPEXCC RESTOREFiles *sgname1,...,sgnameN backuptype
where backuptype can be:
  FULL|COPY|INCRemental|DIFFerential|DBCopy dbname

BUFFers=numbuffers] (default: 3)
BUFFERSize=buffersize] (default: 1024)
[CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)
[EXCAPPlication=KMS|SRS] (default: Information Store)
FROMEXCSERVER=servername] (default: local exchange server)
INTO=path] (default: current path)
LOGfile=tdpexc.log|logfilename] (default: tdpexc.log)
LOGPrune=60|n|No] (default: 60)
MOUNTWait=Yes|No] (default: Yes)
OBJect=object] (default: current active object)
PARTial=dbname1,...,dbnameN] (default: NONE)
Quiet
TSMNODE=nodename
TSMOPTFile=dsm.opt|filename] (default: dsm.opt)
TSMPassword=password

TDPEXCC SET PARMname=value
[CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)

where PARMname and default values are:
BACKUPDESTination=TSM|LOCAL|BOTH
BACKUPMETHod=LEGACY|VSS
BUFFers=3 (2..8)
BUFFERSize=1024 (64..6192)
DATEformat=
  1  MM/DD/YYYY
  2  DD-MM-YYYY
  3  YYYY-MM-DD
  4  DD.MM.YYYY
  5  YYYY.MM.DD
LANGuage=3-letter country code
ENU  American English
PTB  Brazilian Portuguese
CHS  Chinese, Simplified
CHT  Chinese, Traditional
FRA  Standard French
DEU  Standard German
ITA  Standard Italian
JPN  Japanese
KOR  Korean
ESP  Standard Spanish
LOCALDSMAGENTNODE=nodename
LOGFile=tdpexc.log|filename
LOGPrune=60 (0..9999) | No
MOUNTWait=Yes|No] (default: Yes)
NUMBERformat=
  1  n,nnn.dd
  2  n,nnn,dd
  3  n nnn,dd
  4  n nnn,dd
  5  n.nnn,dd
  6  n''nnn,dd
REMOTEDSMAGENTNODE=nodename
TEMPLOGRestorepath=pathname
TIMEformat=
  1  HH:MM:SS
TDPEXCC Backup "Storage Group 1" full
TDPEXCC Query TSM

**Example 2:** The **tdpexc help query** command displays available help for Data Protection for Exchange query commands. The following output is displayed:

IBM Tivoli Storage Manager for Mail:
Data Protection for Microsoft Exchange Server
Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation 1998, 2006. All rights reserved.

TDPEXCC Query EXCHange
   [/CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)
   [/EXCSERVER=servername] (default: local exchange server)
   [/LOGFile=tdpexc.log|logfilename] (default: tdpexc.log)
   [/LOGPrune=60|n|No] (default: 60)

TDPEXCC Query TDP
   [/CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)
   [/LOGFile=tdpexc.log|logfilename] (default: tdpexc.log)
   [/LOGPrune=60|n|No] (default: 60)

TDPEXCC Query TSM [sgname1,...,sgnameN [backuptype]]
where backuptype can be:
   FULL|COPY|INCRemental|DIFFerential|DBCopy dbname
   [/ACTIVE]
   [/ALI]
   [/CONFIGfile=tdpexc.cfg|filename] (default: tdpexc.cfg)
   [/FROMEXCSERVER=servername] (default: local exchange server)
   [/LOGFile=tdpexc.log|logfilename] (default: tdpexc.log)
   [/LOGPrune=60|n|No] (default: 60)
   [/TSMNODE=nodename]
   [/TSMOPTFile=dsm.opt|filename] (default: dsm.opt)
   [/TSMPassword=password]
Chapter 6. Quick configuration (Legacy)

Note: This Quick configuration applies to Legacy backups only. If you plan to perform VSS operations, you must follow configuration instructions provided in Chapter 3, “Configuring Data Protection for Exchange,” on page 27.

This section provides instructions on how to perform a quick install, configuration, and Legacy back up of a storage group using the Data Protection for Exchange GUI on a Windows 2000 Server workstation running Exchange Server 2000. It minimizes set up time and allows you to proceed quickly to a state where you can begin backing up your Exchange storage group(s). See Chapter 3, “Configuring Data Protection for Exchange,” on page 27 for detailed instructions on how to customize Data Protection for Exchange for your environment and processing needs.

1. Install Data Protection for Exchange from an account that has Domain Administrator privileges on the local system.
   - Detailed installation instructions are available in “Installation procedure” on page 24.

2. In the Program Files\Tivoli\TSM\TDPEXchange directory, edit this dsm.opt file with the following options:
   - nodename: Specify the nodename of the machine where Data Protection for Exchange is installed. This is the unique name by which the Tivoli Storage Manager server recognizes your machine.
   - tcpserveraddress: Specify the TCP/IP address of the Tivoli Storage Manager server to which you will back up your Exchange databases. You can specify the address as a domain name (server.xyz.company.com) or a dot address (10.100.23.5).

3. Launch the Data Protection for Exchange GUI by selecting Start–>Programs–>Tivoli Storage Manager–>Data Protection for Exchange–>Exchange Client GUI. By default, the Backup window displays and Legacy Backup is selected as the backup method.

4. Select the Exchange storage group(s) you want to back up in the Exchange Server tree by clicking on the box next to the desired storage group(s).

5. Select Full in the Backup Type drop-down menu of the Backup window.

6. Click the Backup button to start the backup process. Enter the Tivoli Storage Manager password provided by your Tivoli Storage Manager administrator when prompted. A Backup Progress panel displays that shows the progress of your backup.

7. When the backup is complete, click the OK button to return to the Backup window.

8. Exit the GUI by selecting File–>Exit in the Menu bar.

At this point, Data Protection for Exchange is installed, configured, and has performed the initial full backup of the selected storage group(s). Review the rest of this publication to become familiar with Data Protection for Exchange features, policies, procedures, and backup strategies, including VSS operations.
Chapter 7. Frequently asked questions

This section contains information on frequently asked questions regarding Data Protection for Exchange.

Can I use IBM Tivoli Storage Manager for Copy Services Version 5.4 to perform a VSS Instant Restore of backups created with IBM Tivoli Storage Manager for Copy Services Version 5.3.3?

On DS storage: Backups created with IBM Tivoli Storage Manager for Copy Services Version 5.3.3 on local shadow volumes that reside on DS storage cannot be restored via VSS Instant Restore using IBM Tivoli Storage Manager for Copy Services Version 5.4. You must create backups on local shadow volumes (residing on DS storage) using IBM Tivoli Storage Manager for Copy Services Version 5.4 in order to restore them via VSS Instant Restore. Backups created with IBM Tivoli Storage Manager for Copy Services Version 5.3.3 on local shadow volumes (residing on DS storage) can be restored via VSS Fast Restore using IBM Tivoli Storage Manager for Copy Services Version 5.4.

On SAN Volume Controller storage: Backups created with IBM Tivoli Storage Manager for Copy Services Version 5.3.3 on local shadow volumes that reside on SAN Volume Controller storage can be restored via VSS Instant Restore (and VSS Fast Restore) using IBM Tivoli Storage Manager for Copy Services Version 5.4. See “VSS Instant Restore” on page 10 for more information.

Can I perform VSS operations in a clustered Exchange Server environment?

Yes, Data Protection for Exchange supports VSS operations in a clustered Exchange Server environment. See “Using VSS operations in a cluster” on page 15 for detailed information.

Why can I not perform VSS operations?

The IBM Tivoli Storage Manager for Copy Services Microsoft Exchange VSS Integration Module must be installed. See “Software and operating system” on page 22 for detailed information.

Why can I not perform VSS Instant Restore even though I have SAN Volume Controller or a DS storage subsystem installed?

The IBM Tivoli Storage Manager for Copy Services Hardware Devices Snapshot Integration Module must be installed. See “Software and operating system” on page 22 for detailed information.

Why is my VSS Instant Restore failing over to a VSS Fast Restore?

A failover can occur if the Exchange data resides on storage subsystems that are not supported for VSS Instant Restore. See “VSS Instant Restore” on page 10 for information about failovers.

Can I use VSS Instant Restore to restore a single database (partial restore)?

You cannot perform a partial restore (partial) while using VSS Instant Restore. You must restore all databases within the specified storage group when performing a VSS Instant Restore. Although Data Protection for Exchange allows this operation to begin, it will either fail or complete with undesirable consequences. If you need to restore just one database from a VSS Backup that resides on local VSS shadow volumes on DS or SAN Volume Controller disks, make sure to select the Disable VSS Instant Restore option in the Data Protection for Exchange GUI Restore Window.
or specify /instantrestore=no on the command line interface. If VSS Instant Restore capability is needed for single databases, make sure to place these databases in their own storage group.

**How can I use VSS and Legacy backups together in a common backup strategy?**
See “Using VSS and Legacy Backups together” on page 14 and “Back up to Tivoli Storage Manager storage versus back up to local shadow volumes” on page 28 for detailed information.

**Can I restore Legacy backups and VSS Backups together?**
No, Legacy backups and VSS Backups cannot be mixed due to a Microsoft limitation. See “Using VSS and Legacy Backups together” on page 14 for more information.

**Are VSS Restores restored into the Recovery Storage Group?**
No, VSS Restores ignore the Recovery Storage Group and are placed directly into the production database. This is a Microsoft limitation. See “VSS restore considerations” on page 54 for more information.

**Why are all my databases dismounted when I perform a VSS Restore?**
All databases are dismounted during VSS Restore processing due to a Microsoft requirement.

**How does VSS Instant Restore work?**
VSS Instant Restore is a volume-level hardware-assisted copy where target volumes (that contain the snapshot) are copied back to the original source volumes. A SAN Volume Controller, DS6000, or DS8000 storage subsystem is required to perform VSS Instant Restores. See “VSS Instant Restore” on page 10 for more information.

**Now that I am performing VSS operations, why are there so many active backups?**
Tivoli Storage Manager policy manages VSS Backups residing on local shadow volumes and on Tivoli Storage Manager server storage. This allows for different policies which can lead to an increase in the number of active backups. See “How Tivoli Storage Manager server policy affects Data Protection for Exchange” on page 16 and “Back up to Tivoli Storage Manager storage versus back up to local shadow volumes” on page 28 for more information.

**Can I use dynamic disks with VSS operations?**
No, dynamic disks are not allowed with VSS operations. Disks that contain Exchange data must be configured as basic if a hardware provider is used.

**Can I use UNC drive letters with VSS off-loaded backups?**
No, Data Protection for Exchange VSS off-loaded backups will not process correctly if the Exchange storage group, database, or log location are specified with UNC-based drive letters. For example, the following path uses UNC drive letters and is not supported in a VSS off-loaded backup:

```
\hostsrv1\c$\Program Files\Exchsrvr\First Storage Group
```

The following path is specified correctly:

```
C:\Program Files\Exchsrvr\First Storage Group
```

Drive-based names are supported when using a volume mount point, cluster drive, or both. For example:

```
X:\Exch_Mount_Point\Program Files\Exchsrvr\First Storage Group
```
However, UNC-based naming (as shown in the following example) is not supported when using a volume mount point, cluster drive, or both:

```
\host_srv1\x$\Exch_Mount_Point\Program Files\Exchsrvr\First Storage Group
```

**Why do I receive a TCP/IP timeout failure when I have Windows internal VSS tracing turned on?**

Data Protection for Exchange VSS operations may timeout with a TCP/IP failure when Windows internal VSS tracing is turned on because of the additional time required to write entries to the trace file. You can avoid this issue by increasing the values for the Tivoli Storage Manager server `commtimeout` and `idletimeout` options or by decreasing the amount of Windows internal VSS tracing.

**How do I perform mailbox level backup and restore for Exchange?**

See BRICKBACK.DOC in the Data Protection for Exchange installation directory. BRICKBACK.DOC explains how to use the Microsoft ExMerge utility and the Tivoli Storage Manager Backup-Archive Client to perform an item level backup and restore. Data Protection for Exchange is not involved with that solution.

See Appendix C, “Advanced restore procedures,” on page 133 for information.


**How should I set up my policy settings for Data Protection for Exchange?**

See the following sections for information about Data Protection for Exchange policy settings:

- “How Tivoli Storage Manager server policy affects Data Protection for Exchange” on page 16
- “Specifying Data Protection for Exchange options” on page 34

**How do I perform an alternate server restore?**

See Appendix C, “Advanced restore procedures,” on page 133 for information about performing this procedure.

**What should my Data Protection for Exchange performance settings be?**

The default value of the `buffers` parameter (3) and the `buffersize` parameter (1024) have demonstrated the best performance in testing. However, environment factors such as network speed, physical database layout, machine resources, and Exchange Server resources all affect Data Protection for Exchange performance and should be considered when determining your settings. Note that the `buffers` and `buffersize` parameters apply to Legacy backups only.

See the following sections for more information:

- “Performance” on page 18
- “Specifying Data Protection for Exchange options” on page 34
- `/buffers` and `/buffersize` parameters (with the `backup` command) on page 74.
- `/buffers` and `/buffersize` parameters (with the `restore` command) on page 84.
- `/buffers` parameter (with the `set` command) on page 103.
- `/buffersize` parameter (with the `set` command) on page 103.
Can I restore my Data Protection for Exchange Version 1 backups with later versions of Data Protection for Exchange?
No, you cannot restore Data Protection for Exchange Version 1 backups with later versions of Data Protection for Exchange (versions 2.2.0, 2.2.1, 5.1.5, 5.2.1, or 5.3.3). You must retain Data Protection for Exchange Version 1 for as long as you maintain Version 1 backups.

How do I set deleted item or deleted mailbox retention to avoid a mailbox level backup and restore?
See Appendix C, “Advanced restore procedures,” on page 133 for information related to mailbox level backup and restore.

How do I schedule Data Protection for Exchange backups?
You can schedule Data Protection for Exchange backups by using the Tivoli Storage Manager Backup-Archive client scheduler.
See the following sections for more information:
• Appendix A, “Using the Tivoli Storage Manager scheduler,” on page 119
• “Backup types” on page 5
• “Backup strategies” on page 13

What should I do if I get an “unknown Exchange API error” when running Data Protection for Exchange?
See “What to do when you encounter a problem” on page 135 for more information about error messages.

How do I set up Data Protection for Exchange to run in a cluster?
The following sections contain information about using Data Protection for Exchange in a cluster environment:
• “Microsoft Cluster Server (MSCS) Support” on page 19
• “CLUSTERnode option” on page 34
• “Data Protection for Exchange in a MSCS environment” on page 56
Make sure the user can access the universal naming convention (UNC) share name of the directory specified by the templogrestorepath option. If that is not possible, specify a directory that has a valid share drive available and that is accessible to the user.

How do I know if my backup ran successfully?
A message displays that states the backup completed successfully. In addition, processing information is available in the following files:
• Data Protection for Exchange log file (default: tdpexc.log)
  This file indicates the date and time of a backup, data backed up, and any error messages or completion codes.
• Tivoli Storage Manager server activity log
  Data Protection for Exchange logs information on backup and restore commands to the Tivoli Storage Manager server activity log. A Tivoli Storage Manager administrator can view this log for you if you do not have a Tivoli Storage Manager administrator user ID and password.
• Tivoli Storage Manager API error log file (default: dsierror.log)

To prevent unsuccessful backups, consider the following information:
• Storage group databases in the Exchange Server Information Store must be mounted for a backup to complete successfully.
• An incremental back up of an Exchange Server database can fail if a previous full backup attempt of the same database terminated prematurely. If you receive Data Protection for Exchange errors ACN3025E or ACN4226E, perform a full backup of the database.

• A backup can fail if necessary transaction logs have been deleted or truncated. An error message will display stating that log files or patch files are missing. Perform the following steps to recover from this type of backup failure:
  1. Verify that only one product is performing backups on your system.
  2. Perform a full backup.
  3. If an error is still encountered, shut down and restart the Exchange Server, then perform a full backup.
  4. If an error is still encountered, reboot the machine, then perform a full backup.

**How do the Exchange Server transaction logs get deleted?**
Be aware that the Exchange Server deletes transaction logs, not Data Protection for Exchange. As a result, the Exchange Server only deletes logs containing transactions that have been committed to the Exchange database. During high processing times, the Exchange Server may not delete all the transaction logs. Thus, it is possible that log files remain after the Data Protection for Exchange backup completes.

**What do I do when this Tivoli Storage Manager server error displays: "ANR9999D smmode.c(1xxx): Error validating inserts etc."?**
You do not have to do anything as this message can be ignored. Installing a later version of Tivoli Storage Manager server will prevent this message from being displayed.

**What authority do I need to perform a Data Protection for Exchange backup and restore?**
You must have local registry rights for all versions of Exchange Server. Data Protection for Exchange must be running under an account that has Domain Administrator privileges.

**Should I use the same nodename as used by my Backup-Archive client?**
- **Legacy backups**: It is recommended that you use different node names to simplify scheduling, data separation, and policy management tasks.
- **VSS Backups**: You MUST use different node names.

See “Specifying Data Protection for Exchange options” on page 34 for more information.

**How do I set up LANFree to back up Data Protection for Exchange over my SAN?**
See “LAN Free” on page 19 for more information.

**Can I run Data Protection for Exchange with multiple sessions backing up?**
You can run separate instances of Data Protection for Exchange to back up different storage groups.

See “Backup strategies” on page 13 for more information.
Can I delete a single Data Protection for Exchange backup from the Tivoli Storage Manager server based on the date that the backup was performed?

No. It is not possible to delete a single Data Protection for Exchange backup from the Tivoli Storage Manager server.
Appendix A. Using the Tivoli Storage Manager scheduler

This section demonstrates how to use the Tivoli Storage Manager scheduler with Data Protection for Exchange to automate a full Legacy backup of Exchange Server storage groups. You can automate a full backup of Exchange Server storage groups as well. We recommend that you have the most current Tivoli Storage Manager backup-archive client installed.

For VSS operations, it is recommended that you set up different schedules to meet the policy needs that are defined for your Legacy and VSS backups.

Once Data Protection for Exchange has been registered to a Tivoli Storage Manager server and installed on the Exchange Server, the procedure involves the following steps:

1. **On the Tivoli Storage Manager server:**
   a. Define a schedule to run a Windows command file in the policy domain to which Data Protection for Exchange is registered.
   b. Associate the Data Protection for Exchange node to the defined schedule.

2. **On the machine where Data Protection for Exchange and the Exchange Server are installed:**
   a. Install the Tivoli Storage Manager scheduler client as a Windows service for Data Protection for Exchange. If a scheduler already exists for the regular Tivoli Storage Manager backup-archive client, install another one for Data Protection for Exchange.
   b. Define a command file that contains Data Protection for Exchange commands to perform the desired backup.
   c. If you are running in a cluster server environment, install the Tivoli Storage Manager scheduler as a Windows service *on both cluster nodes.*
   d. If you are running in a cluster server environment, create a new cluster resource that represents the Tivoli Storage Manager scheduler. Verify that the cluster resource is started.
   e. Start the scheduler installed in step 2a (this is step 2.1 in some HTML browsers).

**Example Procedure**

This example assumes the following environment:
- Data Protection for Exchange is registered to a Tivoli Storage Manager server:
  - The node name is *mynode*.
  - The password is *mypassword*.
  - The policy domain is *mydomain*.
- The event to be scheduled:
  - A daily full Legacy backup of all storage groups.
  - The backups begin between 9:00 and 9:15 pm.
- Exchange Server 2003 is installed on a Windows 2003 system.
On the Tivoli Storage Manager server

You must set up a scheduler service on the machine where the backup-archive client is installed before performing this procedure.

1. Create a command file called `c:\excfull.cmd`. A sample command file (`excfull.smp`) is provided in the directory where Data Protection for Exchange is installed. This sample file contains commands necessary to perform a scheduled full Legacy backup of all Exchange Server storage groups to Tivoli Storage Manager storage. You must specify COMPLETE PATHNAMES in the command file for all file names and non-system commands.

Note: Perform the following if you are setting up the scheduler for an Exchange Server running in a cluster environment:

- Your command file must reside on the Exchange Server File Share. The schedule you define on the Tivoli Storage Manager server needs to match this command file. In Step 1 and Step 2, the command file `c:\excfull.cmd` could be `\ExchangeServer\FileShare\excfull.cmd` where `\ExchangeServer\FileShare` is the Exchange Server File Share.
- The `tsmoptfile` and `logfile` options specified in your command file must reflect the location of the options file and log file on the Exchange Server File Share.
- The Exchange virtual server must be specified in the `c:\excfull.cmd` file. Use the `excserv` option to specify the Exchange virtual server in the command text located at the end of the `c:\excfull.cmd` file:
  ```command
tdpexcex backup * full /tsmoptfile=dsm.opt /logfile=excsch.log /excserv=virtualservername>> excfull.log
  ```

  Note that this command text is divided on two lines to accommodate page formatting.

2. Enter the following command 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.

```command
def sched mydomain my_schedule desc="Exchange Daily Full Legacy Backup" action=cmd objects="c:\excfull.cmd" priority=2 starttime=21:00 duration=15 durum=minutes period=1 perunits=day dayofweek=any
  ```

Note that if there is a space in the directory specified for the `object` parameter, then the directory must be enclosed in two sets of quotes. For example:

```command
objects="c:\Program Files\Tivoli\TSM\TDPEXchange\excfull.cmd"
  ```

Tivoli Storage Manager displays this message:

```
ANR2500I Schedule MY_SCHEDULE defined in policy domain MYDOMAIN.
```

3. Issue the following command to associate Data Protection for Exchange to this schedule:

```command
define association mydomain my_schedule mynode
  ```

Tivoli Storage Manager displays this message:

```
ANR2510I Node MYNODE associated with schedule MY_SCHEDULE in policy domain MYDOMAIN.
```

A schedule is now defined on the Tivoli Storage Manager server with the following attributes:
- It runs a command file called `c:\excfull.cmd`.
- It begins at 9:00 pm.
- It is performed daily and can start on any day of the week.
You can use the Tivoli Storage Manager administrative commands query schedule and query association to confirm that the schedule and association are set correctly.

On the Exchange Server

This section of the procedure assumes the following environment:

- The Tivoli Storage Manager Backup-Archive client is installed on the Exchange Server in the d:\Program Files\Tivoli\TSM\baclient directory.
- Data Protection for Exchange is installed on the Exchange Server in the d:\Program Files\Tivoli\TSM\TDPExchange directory.
- The communication options in the dsm.opt option files located in these directories point to the Tivoli Storage Manager server to which the Exchange storage groups are to be backed up.

The options file that is defined for Data Protection for Exchange is used by the scheduler when validating the node and password. The options file is also used when contacting the Tivoli Storage Manager server for schedule information.

If this message displays:

A communications error occurred connecting to the Tivoli Storage Manager Server

Then:

1. make sure the communication options in the dsm.opt file points to the correct Tivoli Storage Manager server.
2. make sure the Tivoli Storage Manager server is running.

Perform the following steps on the Exchange Server:

1. Login using a Windows account that has administrative privileges.
2. Open a Windows command prompt window.
3. In the window, issue the following command:
   
   `cd /d d:\"Program Files\"\Tivoli\TSM\baclient`

   You must place quotation marks around the section of a directory pathname that contains a space (for example: d:\"Program Files\"\Tivoli\TSM\baclient. You can also use the short form of a pathname by placing a tilde (\") and unique identifier after the first six characters in the pathname. An example of the short form of the pathname is shown below:

   `d:\Progra*\Tivoli\TSM\baclient`

   **Note:** If a Tivoli Storage Manager scheduler is already installed on your machine (for the regular backups of the Windows system), you need to install another scheduler (with a unique name) to run the schedules defined for Data Protection for Exchange. The Tivoli Storage Manager scheduler must have a different node name from the regular Tivoli Storage Manager backup-archive client.

4. In the window, issue the following command:

   `dsmcutil inst /name:"Data Protection for Exchange Scheduler" /node:mynode /password:mypassword /autostart:yes /clientdir:"d:\Program Files\Tivoli\TSM\baclient" /optfile:"d:\Program Files\Tivoli\TSM\TDPExchange\dsm.opt" /startnow:no`

   The Windows ID that is used to start the scheduler service may require that you specify the client dsmcutil options ntdomain, ntaccount, and ntpassword in this command.
Note: If you are setting up the scheduler for an Exchange Server running in a cluster environment:

a. Change the /autostart option to no and add the /clusternode and /clustername options. For example:
   /autostart:no /clusternode:yes /clustername:your cluster name

b. Move the Exchange virtual server to the secondary node of the cluster to create the scheduler service. Make sure the secondary node of the cluster has ownership of the Exchange virtual server.

c. The primary node of the cluster must contain the command file on the file share used to create the scheduler service.

d. Copy the options file (dsm.opt in the Step 4 example) to a shared drive associated with the virtual server. For example:
   /optfile:"x:\dsm.opt"

Tivoli Storage Manager displays this output:

TSM Windows Client Service Configuration Utility
Command Line Interface - Version 5, Release 3, Level 3.0
(C) Copyright IBM Corporation, 1990, 2006, All Rights Reserved.
Last Updated May 29 2005
TSM Api Version 5.3.3

Command: Install TSM Client Service
Machine: TDPEX1(Local Machine)

Installing TSM Client Service:

Machine : MYNODE
Service Name : Data Protection for Exchange Scheduler
Client Directory : D:\Program Files\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 'Data Protection for Exchange Scheduler'.
Updated registry value 'ADSMClientKey'.
Updated registry value 'OptionsFile'.
Updated registry value 'EventLogging'.
Updated registry value 'ClientNodeName'.

Generating registry password ...
Authenticating password with Tivoli Storage Manager for node MYNODE ....

Connecting to Tivoli Storage Manager via client options file
'd:\Program Files\Tivoli\TSM\TDPEXchange\dsm.opt' ...

Password authentication successful.

The Registry password for node MYNODE has been updated.

Note: If you need to make corrections after installing a service:

a. Issue the following command to remove the service:
   dsmcutil remove /name:"Data Protection for Exchange Scheduler"
b. Issue the command in Step 4 again to install a new service.

**Note:** If you are setting up the scheduler service for an Exchange Server running in a cluster environment, repeat Step 1 through Step 4 on the secondary node of the cluster. IMPORTANT! The name of the scheduler service created by the dsmc util command in Step 4 and the cluster service must have the same logon authority.

5. The Tivoli Storage Manager scheduler is now installed but has not started. To start the scheduler IN A NON-CLUSTER ENVIRONMENT, issue the following command in the Windows command prompt window:

```
net start "Data Protection for Exchange Scheduler"
```

This output is displayed:

```
The Data Protection for Exchange Scheduler service is starting.
The Data Protection for Exchange Scheduler service was started successfully.
```

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

**Note:** IMPORTANT!

- If you are creating the scheduler service in a non-cluster environment, proceed directly to Step 13.
- If you are creating the scheduler service in a cluster environment, perform Step 6 through Step 13.

The newly created scheduler service is tied to a cluster group. This allows the Tivoli Storage Manager scheduler to correctly fail over between the nodes and also manage automatic password changes.

6. Start the Cluster Administrator.

7. Select the Exchange Server Cluster Group and create a new Resource to represent the Data Protection for Exchange scheduler (File->New->Resource). Make sure the following parameters are specified:

**Resource Type**

Specify Generic Service.

**Group**

Specify the Exchange Virtual Server.

**Possible Owners**

Make sure both node machines are listed. Add them if they are not listed.

**Resource Dependencies**

Make sure the Exchange Virtual server and the shared drives where the options file is located are listed.

**Generic Service->Service Name**

Specify the exact name of the scheduler service.

For example:

Name: Data Protection for Exchange Scheduler
Description: Data Protection for Exchange Scheduler
Resource Type: Generic Service
Group: MARSEXC1

Dependencies: Microsoft Exchange Information Store Instance

Service Name: Data Protection for Exchange Scheduler
Scheduler considerations

Consider the following characteristics when defining a Tivoli Storage Manager schedule:

- If you are using both Legacy and VSS Backups, make sure your backup schedules do not overlap as the second backup may fail. This failure is due to Exchange not allowing Legacy and VSS Backups to process at the same time.

- If you want to use the Tivoli Storage Manager server-prompted scheduling mode, you must ensure that the Data Protection for Exchange option file has the tcpclientaddress and tcpclientport options specified. If you want to run more than one scheduler service, use the same tcpclientaddress. However, you must use different values for tcpclientport (in addition to the different node names). An example of running more than one scheduler service is when you are scheduling Data Protection for Exchange as well as the regular Windows backup client.

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

- If any changes that affect the scheduler are made to the Data Protection for Exchange 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 issuing the following commands:

  net stop "Data Protection for Exchange Scheduler"
  net start "Data Protection for Exchange Scheduler"
**Note:** IMPORTANT! If you are running the scheduler service in a cluster environment, use the Cluster Administrator to stop and restart your scheduler service. Do NOT use the `net stop` and `net start` commands.

- The default Tivoli Storage Manager scheduler log file (dsmsched.log) contains status information for the Tivoli Storage Manager scheduler. In this example, the file is located in this path:
  
  d:\Program Files\Tivoli\TSM\TPExchange\dsmsched.log
  
  You can override this file name by specifying the `schedlogname` option in the Data Protection for Exchange options file.

- Data Protection for Exchange creates its own log file with statistics about the backed up storage group objects when the `logfile` parameter is specified during the `tdpexcc` command. In the sample file (exfull.smp), the log file is excsched.log. This file is different from the Tivoli Storage Manager scheduler log file and must also be different from the file to which the `tdpexcc` command output is redirected. In the example above, this file is excfull.log.

**Note:** Output from scheduled commands are sent to the scheduler log file (dsmsched.log). After scheduled work is performed, check the log to ensure the work completed successfully.

When a scheduled command is processed, the scheduler log might contain the following entry:

```
Scheduled event eventname completed successfully
```

This is merely an indication that Tivoli Storage Manager successfully issued the scheduled command associated with the `eventname`. No attempt is made to determine the success or failure of the command. You should assess the success or failure of the command by evaluating the return code from the scheduled command in the scheduler log. The scheduler log entry for the command’s return code is prefaced with the following text:

```
Finished command. Return code is:
```

- If `passwordaccess generate` is not specified in the `dsm.opt` file, then the Tivoli Storage Manager password needs to be specified on the `tdpexcc` command. To specify the password, use the `!/tsmpassword` parameter in the command file being run by the scheduler (exfull.cmd). You can also specify the password on the Data Protection for Exchange command line. For example:

```
tdpexcc query tsm /tsmnode=mars1 /tsmpassword=newpassword
```

If you plan to perform scheduled VSS operations in a cluster environment, be aware of these considerations:

- Install the Tivoli Storage Manager scheduler as a Windows service on both cluster nodes.
- If the command file resides on a local drive, you must make sure that it remains consistent on all cluster nodes. Optionally, you can create the command file on a shared drive. Make sure the `objects` parameter (specified with the `define schedule` command on the Tivoli Storage Manager server) points to this command file.
Appendix B. Silent installation

Administrators can install Data Protection for Exchange using silent installation. A silent installation runs on its own without any intervention so that administrators are freed from the task of monitoring the installation and providing input to dialog boxes. This method is especially useful when Data Protection for Exchange must be installed on a number of different computers with identical hardware. For example, a company may have 25 Exchange Servers spread out across 25 different sites. To ensure a consistent configuration and to avoid having 25 different people enter Data Protection for Exchange parameters, an administrator may choose to produce an unattended install and make it available to the 25 sites by cutting and sending out 25 CDs or by placing the unattended install package on a file server.

You can perform a silent installation using one of the following methods:

**Setup Program**
Use the `setup` command with the command-line invocation and special silent installation options.

**Microsoft Installer (MSI)**
Use `msiexec.exe` to install the MSI package.

The following options can be used with both silent installation methods:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/i</td>
<td>Specifies the program is to install the product.</td>
</tr>
<tr>
<td>/lv</td>
<td>Specifies verbose logging.</td>
</tr>
<tr>
<td>/qn</td>
<td>Runs the installation without running the external user interface sequence.</td>
</tr>
<tr>
<td>/s</td>
<td>Specifies silent mode.</td>
</tr>
</tbody>
</table>
| /v       | Specifies the Setup Program to pass the parameter string to the call it makes to the MSI executable (`msiexec.exe`). Note the following syntax requirements when invoking the `/v` option:  
  - A backslash (`\`) must be placed in front of any quotation marks (`" "`) that reside within existing quotation marks.
  - Do not include a space between the `/v` command line option and its arguments.
  - Multiple parameters entered with the `/v` command line option must be separated with a space.
  - You can create a log file by specifying the directory and filename at the end of the command. The directory must already exist at the time a silent installation is performed. |
| /x       | Specifies the program is to uninstall the product.                          |
| addlocal | Specifies features to install.                                              |
| allusers | Specifies which users can use the installation package.                    |
| installdir | Specifies the directory where Data Protection for Exchange is to be installed. |

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Table 8. Silent installation options (continued)

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>reboot</strong></td>
<td>Specifies whether or not to prompt the user to reboot the system after silent installation.</td>
</tr>
<tr>
<td></td>
<td>- <em>Force</em> Always prompts user to reboot after silent installation.</td>
</tr>
<tr>
<td></td>
<td>- <em>Suppress</em> Suppress prompt to reboot after silent installation.</td>
</tr>
<tr>
<td></td>
<td>- <em>ReallySuppress</em> Suppress all reboots and prompts to reboot after silent installation.</td>
</tr>
<tr>
<td><strong>rebootyesno</strong></td>
<td>Specifies whether or not to reboot the system after silent installation. Specify <em>Yes</em> to reboot the system after silent installation. Specify <em>No</em> not to reboot the system after silent installation.</td>
</tr>
<tr>
<td><strong>transforms</strong></td>
<td>Specifies language to install.</td>
</tr>
</tbody>
</table>

The following features are used in this procedure and are case sensitive:

Table 9. Silent installation features (base client only)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td>Data Protection for Exchange code</td>
</tr>
<tr>
<td>Docs</td>
<td>Data Protection for Exchange Readme and User’s Guide (HTML and PDF format)</td>
</tr>
<tr>
<td>License_Paid</td>
<td>License file (Used when PAID versions of Data Protection for Exchange are installed)</td>
</tr>
<tr>
<td>License_TryBuy</td>
<td>License file (Used when TryBuy versions of Data Protection for Exchange are installed)</td>
</tr>
</tbody>
</table>

Table 10. Silent installation features (Language Packages only)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LanguageFiles</td>
<td>Language specific files</td>
</tr>
</tbody>
</table>

Table 11. Silent installation features (IBM Tivoli Storage Manager for Copy Services Microsoft Exchange VSS Integration Module only)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plugin</td>
<td>IBM Tivoli Storage Manager for Copy Services Microsoft Exchange VSS Integration Module (enables basic VSS operations)</td>
</tr>
</tbody>
</table>

Table 12. Silent installation features (IBM Tivoli Storage Manager for Copy Services Hardware Devices Snapshot Integration Module only)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plugin</td>
<td>IBM Tivoli Storage Manager for Copy Services Hardware Devices Snapshot Integration Module (enables VSS Instant Restore operations)</td>
</tr>
</tbody>
</table>
The following transforms are used in this procedure:

Table 13. Silent installation transforms

<table>
<thead>
<tr>
<th>Transform</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>1028.mst</td>
<td>CHT Chinese (Traditional)</td>
</tr>
<tr>
<td>1029.mst</td>
<td>CSY Czech</td>
</tr>
<tr>
<td>1031.mst</td>
<td>DEU German</td>
</tr>
<tr>
<td>1033.mst</td>
<td>ENG English</td>
</tr>
<tr>
<td>1034.mst</td>
<td>ESP Spanish</td>
</tr>
<tr>
<td>1036.mst</td>
<td>FRA French</td>
</tr>
<tr>
<td>1038.mst</td>
<td>HUN Hungarian</td>
</tr>
<tr>
<td>1040.mst</td>
<td>ITA Italian</td>
</tr>
<tr>
<td>1041.mst</td>
<td>JPN Japanese</td>
</tr>
<tr>
<td>1042.mst</td>
<td>KOR Korean</td>
</tr>
<tr>
<td>1045.mst</td>
<td>PLK Polish</td>
</tr>
<tr>
<td>1046.mst</td>
<td>PTB Portuguese</td>
</tr>
<tr>
<td>1049.mst</td>
<td>RUS Russian</td>
</tr>
<tr>
<td>2052.mst</td>
<td>CHS Chinese (Simplified)</td>
</tr>
</tbody>
</table>

1 Language support is for the following components only:
- IBM Tivoli Storage Manager for Copy Services Microsoft Exchange VSS Integration Module
- IBM Tivoli Storage Manager for Copy Services Hardware Devices Snapshot Integration Module

This language support does not apply to Data Protection for Exchange.

**Installing with the Setup Program (setup.exe)**

**Note:** This section shows an example of the Data Protection for Exchange silent installation. You must substitute the appropriate feature when installing a language other than English. See Table 10 on page 128.

Run the following command to silently install Data Protection for Exchange to the default installation directory:

```
setup /s /v/qn
```

This example silently installs Data Protection for Exchange to a directory other than the default installation directory and includes custom features:

```
setup /s /v"INSTALLDIR="c:\program files\tivoli\tsm""
ADDLICENSE="Client,License_Paid,Docs"
TRANSFORMS=1033.mst /qn /I+v "e:\log.txt"
```

**Notes:**
1. You must place a backslash (\) before each quotation mark that is within an outer set of quotation marks (").
2. You must place quotation marks (") around the following:
   - A directory path that contains spaces.
• An argument that specifies multiple features. Although quotation marks are needed around the complete argument, you must still place a backslash before each internal quotation mark.

3. All features listed in a custom installation must be listed after the addlocal option.

Creating batch files

A batch file can be created to begin silent install with desired parameters.
• c:\setup.bat — sample script to demonstrate unattended installation.

```batch
@echo off
rem sample silent install script
rem setup /s /v"INSTALLDIR="X:\Desired Install Path" /qn"
rem code could be added after the
rem installation completes to
rem customize the dsm.opt files
rem if desired
rem
```

Installing with MSI (msiexec.exe)

**Note:** This section shows an example of the Data Protection for Exchange silent installation. You must substitute the appropriate .msi package filename and Language Package feature when installing a language other than English. See Table 10 on page 128.

This example silently installs Data Protection for Exchange to a directory other than the default installation directory and includes custom features:

```batch
msiexec /i "IBM Tivoli Storage Manager for Mail - MS Exchange.msi"
RebootYesNo="No" Reboot="Suppress" ALLUSERS=1
INSTALLDIR="c:\program files\tivoli\tsm"
ADDLOCAL="Client,License_Paid,Docs"
TRANSFORMS=1033.mst /qn /v "e:\log.txt"
```

**Notes:**
1. You must place a backslash (\) before each quotation mark that is within an outer set of quotation marks (").
2. You must place quotation marks (") around the following:
   • A directory path that contains spaces.
   • An argument that specifies multiple features. Although quotation marks are needed around the complete argument, you must still place a backslash before each internal quotation mark.
3. All features listed in a custom installation must be specified after the addlocal option.

Installation problems: capturing a log of the installation

In the event of an installation failure, please record symptoms and environment information for the failing install and contact customer support with that information. The following environmental information may be helpful:
• Operating system level
• Service pack
• Hardware description
• Install package (CD-ROM or electronic download) and level
• Any Windows event log that is relevant to the failed install
• Other Windows services active at the time of the install (e.g. anti-virus software)

Before contacting support, you can check for the following:
• You are logged on to the local machine console (not via terminal server).
• You are logged on as a local administrator, not a domain administrator.
  Cross-domain installs are not supported by Tivoli.

Assuming that all looks correct, gather a detailed log of the failing install into a file called setup.log. To do this, run the setup program as follows:

setup /v"/1*v setup.log"

Creating the package on a cd or a file server

The administrator has a choice of making the package available in different ways including burning a CD or placing the package in a shared directory on a file server. Typically, the package contains the Data Protection for Exchange code distribution files and a batch file for silent install.

Creating a silent install package

First you will need to choose a location for the package. If you are burning a CD it is convenient to use a staging directory. If you are placing the package on a file server you can use a staging directory or you can build the package directly on the file server. The following example uses c:\tmp\pkg as a staging directory. It is recommended you have a minimum of 14 MB of free space in the staging directory. The following commands can be executed to create the package.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mkdir c:\tmp\pkg</td>
<td>– Create a staging directory for the silent install package</td>
</tr>
<tr>
<td>cd /d c:\tmp\pkg</td>
<td>– Go to the staging directory</td>
</tr>
<tr>
<td>xcopy g:*.* /s</td>
<td>– Copy the Data Protection for Exchange CD distribution files to the staging directory</td>
</tr>
<tr>
<td>copy c:\setup.bat</td>
<td>– Replace the existing setup.bat with the one created in the previous step</td>
</tr>
</tbody>
</table>

At this point the silent install should be tested. When testing is complete the package can be placed on CD or it can be made available from a shared directory.

Playing back the silent installation

Once the package is available on CD or from a shared directory it can be played back (run) on another machine. Allow enough time for the unattended setup to complete. No visual cues exist to inform you when the installation has finished, although this could be added in the batch file.

• **From a silent install package on CD:**
  If autostart is enabled, the silent install begins as soon as the CD is inserted into the drive. If autostart is not enabled, the silent install can be run by executing the setup.bat file from the root of the CD.

  cd /d g:\
  setup.bat

• **From a distribution directory:**
If the package was placed in a shared directory called tdpdpkg located at \\machine1\d$, another computer could execute the command: net use x \\machine1\d$ to share the drive as drive x. The following command could then be issued:

cd /d x:\tdpdpkg
setup.bat

In either case the silent install begins.

**Setup error messages**

The setup.exe program may produce error messages if it cannot start properly. In most cases you will encounter these messages when a severe error occurs. Rarely will your end users see these messages. When you get an error message, it appears in a message box. Every error message has a number. These are system error messages and there is no way to suppress them in your script.

If you encounter an error you can go to the InstallShield support Web site at URL: http://support.installshield.com/default.asp, and use the Search facility to obtain information on the error.
Appendix C. Advanced restore procedures

Data Protection for Exchange can be used to:
• restore a single mailbox
  See BRICKBACK.DOC in the Data Protection for Exchange installation directory. BRICKBACK.DOC explains how to use the Microsoft ExMerge utility and the Tivoli Storage Manager Backup-Archive Client to perform an item level backup and restore. Data Protection for Exchange is not involved with that solution.
• completely restore a server that has been destroyed
• move Exchange data from an old server to a newer replacement server

Note: Please refer to your Microsoft documentation for a more complete discussion of advanced restore procedures for Exchange servers.

The following procedure explains how to restore your Exchange data once the rest of the machine is recovered or installed.

Note: This explanation does not go into details on how to restore the entire machine or even your Exchange Server. To back up your Windows server and configuration files, including the Exchange Server program and configuration files, you must rely on some other backup facility. An example of a backup facility is located in the IBM Tivoli Storage Manager for Windows Backup-Archive Client Installation and User’s Guide publication.

Complete Restore or Replacement

For information on how to recover an Exchange 2000 Server, see the Microsoft white paper "Disaster Recovery for Microsoft Exchange 2000 Server" at the following URL: http://support.microsoft.com/default.aspx?scid=kb;en-us;326052


Individual Mailbox Restore

For information on how to recover an Exchange 2000 Server mailbox, see the Microsoft white paper "Mailbox Recovery for Microsoft Exchange 2000 Server" at the following URL: http://support.microsoft.com/default.aspx?scid=kb;en-us;326278

Exchange 2003 Recovery Storage Group

This section describes how to restore mailbox databases using the Exchange 2003 Recovery Storage Group feature. This procedure ONLY applies to Legacy restores. VSS Restores to the Recovery Storage Group are NOT supported by Microsoft.

Requirements

The following requirements must be met for this procedure to be successful:

- The mailbox database to be restored can reside on any server running Exchange 2000 Server (Service Pack 3 or later) or Exchange Server 2003 within the same Admin group.
- If you are restoring multiple mailbox stores at the same time, they all must be from a single storage group.
- You must run the restore from an account that has Receive As and Send As permissions on all mailboxes to be restored.
- You cannot use multiple instances of Data Protection for Exchange to restore databases into the Recovery Storage Group simultaneously.

Procedure

Information regarding Recovery Storage Group processing is written to the Data Protection for Exchange activity log file (tdpexc.cfg by default).

Note: When restoring to a Recovery Storage Group, you must specify the option to replay restored logs only or the restore operation may fail. Select Replay Restored Logs ONLY in the GUI Restore Window or specify /recover=applyrestoredlogs on the command line.

This procedure assumes that you have already backed up your storage group.

1. Use the Exchange System Manager to create the Recovery Storage Group (if one does not already exist).
2. Use the Exchange System Manager to add the mailbox database you want to restore to the Recovery Storage Group.
3. Use Data Protection for Exchange to restore the mailbox database. Make sure that no public folders within the storage group are selected. By default, the database is restored directly to the Recovery Storage Group. The Data Protection for Exchange GUI will display a text message to remind you that all mailbox database restores will go to the Recovery Storage Group if a Recovery Storage Group exists.
   - If a Recovery Storage Group does not exist, the database is restored directly to the original storage group.

Note: Please note that only transaction logs that are contained in the backup will be applied to the mailbox database when performing a Recovery Storage Group restore.
4. Use the Microsoft ExMerge utility to perform one of the following:
   - import the mailboxes to the desired storage group; or
   - export the desired mailboxes to external .PST files.
Appendix D. Support information

If you have a problem with your IBM software, you want to resolve it quickly. This section describes the following options for obtaining support for IBM software products:

- “What to do when you encounter a problem”
- “Searching knowledge bases” on page 136
- “Obtaining fixes” on page 137
- “Receiving weekly support updates” on page 137
- “Contacting IBM Software Support” on page 138

What to do when you encounter a problem

If you encounter a problem during Data Protection for Exchange processing, follow these steps as your first attempt to resolve the problem:

1. Retry the operation that failed.
2. If the problem occurred during an incremental, differential, or database copy backup, run a full backup. If the full backup completes successfully, retry the operation that failed.
3. If the problem still exists, close other applications, especially those applications that interact with Exchange (anti-virus applications, for example). Retry the operation that failed.
4. If the problem still exists:
   a. Shut down the Exchange server.
   b. Start the Exchange server again.
   c. Run the operation that failed.
5. If the problem still exists:
   a. Shut down the entire machine.
   b. Start the machine again.
   c. Run the operation that failed.
6. If the problem still exists, determine if it is occurring on other Exchange servers.

Determining if the problem resides on Tivoli Storage Manager or Exchange

This section provides information to help determine if the problem is a Data Protection for Exchange issue or an Exchange issue.

For Legacy operations:

- Try recreating the problem with the Microsoft NTBACKUP utility. This utility uses a call sequence similar to Data Protection for Exchange to run an online backup. If the problem is recreatable with NTBACKUP then the problem most likely exists within the Exchange server.
- Try recreating the problem with the Microsoft BACKREST application. This application can run backups using the Microsoft Exchange APIs. If the problem is recreatable with BACKREST then the problem most likely exists within the Exchange server. Microsoft ships BACKREST with the Exchange Software.
Developer’s Kit (SDK). IBM Service can provide a copy of BACKREST if you encounter problems obtaining or building this application.

- If the error message “ACN5350E An unknown Exchange API error has occurred” is displayed, the Exchange server encountered an unexpected situation. Microsoft assistance may be needed if the problem continues.
- Data Protection for Exchange error messages occasionally contain an HRESULT code. Use this code to search Microsoft documentation and the Microsoft Knowledge Base for resolution information. The Exchange SDK file ESEBKMSG.H contain these messages.

**For VSS operations:** Try recreating the problem with the Microsoft VSHADOW application. This application can run backups using the Microsoft Exchange VSS APIs. If the problem is recreatable with VSHADOW then the problem most likely exists within the VSS provider or the Exchange server. Microsoft ships VSHADOW with the Volume Shadow Copy Services (VSS) Software Developer’s Kit (SDK). IBM Service can provide a copy of VSHADOW if you encounter problems obtaining or building this application.

**Installation Problems: Creating an Installation Log File**

In the event a silent installation fails, gather the following information to assist Customer Support when evaluating your situation:

- operating system level
- service pack
- hardware description
- installation package (CD-ROM or electronic download) and level
- any Windows event log relevant to the failed installation
- Windows services active during the failed installation (for example, anti-virus software)
- whether you are logged on to the local machine console (not via terminal server)
- whether you are logged on as a local administrator, not a domain administrator (Tivoli does not support cross-domain installs)

You can create a detailed log file (setup.log) of the failed installation. Run the setup program (setup.exe) in the following manner:

```
setup /v"1*v setup.log"
```

**Searching knowledge bases**

You can search the available knowledge bases to determine whether your problem was already encountered and is already documented.

**Searching the information center**

IBM provides extensive documentation that can be installed on your local computer or on an intranet server. You can use the search function of this information center to query conceptual information, instructions for completing tasks, and reference information.

**Searching the Internet**

If you cannot find an answer to your question in the information center, search the Internet for the latest, most complete information that might help you resolve your problem.

To search multiple Internet resources for your product, go to this product support web site: http://www.ibm.com/software/sysmgmt/products/support/
IBMTivoliStorageManager.html and look for the section to search the support knowledge base. From this section, you can search a variety of resources including:
- IBM technotes
- IBM downloads
- IBM Redbooks™
- Forums and newsgroups


**Obtaining fixes**

A product fix might be available to resolve your problem. To determine what fixes are available for your IBM software product, follow these steps:
2. Click Downloads and drivers in the Support topics section.
3. Select the Software category.
4. Select a product in the Sub-category list.
5. In the Find downloads and drivers by product section, select one software category from the Category list.
6. Select one product from the Sub-category list.
7. Type more search terms in the Search within results if you want to refine your search.
8. Click Search.
9. From the list of downloads returned by your search, click the name of a fix to read the description of the fix and to optionally download the fix.

For more information about the types of fixes that are available, see the IBM Software Support Handbook at http://techsupport.services.ibm.com/guides/handbook.html.

**Receiving weekly support updates**

To receive weekly e-mail notifications about fixes and other software support news, follow these steps:
2. Click My support in the upper right corner of the page.
3. If you have already registered for My support, sign in and skip to the next step. If you have not registered, click register now. Complete the registration form using your e-mail address as your IBM ID and click Submit.
4. Click Edit profile.
5. In the Products list, select Software. A second list is displayed.
6. In the second list, select the product segment, Storage Management. A third list is displayed.
7. In the third list, select the product sub-segment, Data Protection. A list of applicable products is displayed.
8. Select the products for which you want to receive updates, for example, IBM Tivoli Storage Manager for Mail.
9. Click Add products.
10. After selecting all products that are of interest to you, click Subscribe to email on the Edit profile tab.
11. Select Please send these documents by weekly email.
12. Update your e-mail address as needed.
13. In the Documents list, select Software.
14. Select the types of documents that you want to receive information about.
15. Click Update.

If you experience problems with the My support feature, you can obtain help in one of the following ways:

Online
Send an e-mail message to erchelp@ca.ibm.com, describing your problem.

By phone
Call 1-800-IBM-4You (1-800-426-4968).

Contacting IBM Software Support

IBM Software Support provides assistance with product defects.

Before contacting IBM Software Support, your company must have an active IBM software maintenance contract, and you must be authorized to submit problems to IBM. The type of software maintenance contract that you need depends on the type of product you have:
- For IBM distributed software products (including, but not limited to, Tivoli, Lotus®, and Rational® products, as well as DB2® and WebSphere® products that run on Windows or UNIX® operating systems), enroll in Passport Advantage® in one of the following ways:

  Online
  Go to the Passport Advantage Web site at http://www.lotus.com/services/passport.nsf/WebDocs/Passport_Advantage_Home and click How to Enroll.

  By phone
  For the phone number to call in your country, go to the IBM Software Support Web site at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region.
- For customers with Subscription and Support (S & S) contracts, go to the Software Service Request Web site at https://techsupport.services.ibm.com/ssr/login.
- For IBM eServer® software products (including, but not limited to, DB2 and WebSphere products that run in zSeries®, pSeries®, and iSeries™ environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage Web site at http://www.ibm.com/servers/eserver/techsupport.html.
If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States. From other countries, go to the contacts page of the IBM Software Support Handbook on the Web at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region for phone numbers of people who provide support for your location.

To contact IBM Software support, follow these steps:
1. “Determining the business impact”
2. “Describing problems and gathering information”
3. “Submitting problems” on page 140

**Determining the business impact**

When you report a problem to IBM, you are asked to supply a severity level. Therefore, you need to understand and assess the business impact of the problem that you are reporting. Use the following criteria:

**Severity 1**
The problem has a *critical* business impact. You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.

**Severity 2**
The problem has a *significant* business impact. The program is usable, but it is severely limited.

**Severity 3**
The problem has *some* business impact. The program is usable, but less significant features (not critical to operations) are unavailable.

**Severity 4**
The problem has *minimal* business impact. The problem causes little impact on operations, or a reasonable circumvention to the problem was implemented.

**Describing problems and gathering information**

When describing a problem to IBM, be as specific as possible. Include all relevant background information so that IBM Software Support specialists can help you solve the problem efficiently. To save time, know the answers to these questions:

- What is the version and release level of your Tivoli Storage Manager server product? Enter the `query status` command to determine this information. For example:
  
  `query status`

- What software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can you create the problem again? If so, what steps were performed to create the problem?
- Did you make any changes to the system? For example, did you make changes to the hardware, operating system, networking software, and so on.
- Are you currently using a workaround for the problem? If so, be prepared to explain the workaround when you report the problem.
Submitting problems

You can submit your problem to IBM Software Support in one of two ways:

Online
Click Submit and track problems on the IBM Software Support site at http://www.ibm.com/software/support/probsub.html. Type your information into the appropriate problem submission form.

By phone
For the phone number to call in your country, go to the contacts page of the IBM Software Support Handbook at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region.

If the problem you submit is for a software defect or for missing or inaccurate documentation, IBM Software Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Software Support provides a workaround for you to implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the IBM product support Web pages daily, so that other users who experience the same problem can benefit from the same resolutions.

For more information about problem resolution, see Searching knowledge bases and Obtaining fixes.
Appendix E. Accessibility

Accessibility features help users with physical disabilities, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in this product enable users to do the following:

- Use assistive technologies, such as screen-reader software and digital speech synthesizer, to hear what is displayed on the screen. Consult the product documentation of the assistive technology for details on using those technologies with this product.
- Operate specific or equivalent features using only the keyboard.
- Magnify what is displayed on the screen.

In addition, the product documentation was modified to include features to aid accessibility:

- All documentation is available in both HTML and convertible PDF formats to give the maximum opportunity for users to apply screen-reader software.
- All images in the documentation are provided with alternative text so that users with vision impairments can understand the contents of the images.

Navigating the interface using the keyboard

Standard shortcut and accelerator keys are used by the product and are documented by the operating system. Refer to the documentation provided by your operating system for more information.

Magnifying what is displayed on the screen

You can enlarge information on the product windows using facilities provided by the operating systems on which the product is run. For example, in a Microsoft Windows environment, you can lower the resolution of the screen to enlarge the font sizes of the text on the screen. Refer to the documentation provided by your operating system for more information.
Appendix F. Data Protection for Exchange Messages

ACN0003S  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.

ACN0004E  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.

ACN0005E  Out of memory. Stop other processes and try the operation again.
Explanation: The machine has run out of memory.
System action: Processing continues.
User response: Close unnecessary processes and try the operation again.

ACN0053E  License file (licensefile) could not be opened.
Explanation: An attempt to read from the license file failed.
System action: Processing ends.
User response: Install the product again. This ensures that the correct license file is installed.

ACN0054E  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.

ACN0055E  Write failure on license file (licensefile).
Explanation: An attempt to write to the license file failed.
System action: Processing ends.
User response: Make sure enough space exists on the workstation to write to the license file. If enough space exists, run the command again.

ACN0056E  Data in the license file (licensefile) is not in a valid format.
Explanation: An attempt to read information from the license file failed.
System action: Processing ends.
User response: Install the product again.

ACN0057E  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.

ACN0058E  The 'Try and Buy' license has expired.
Explanation: This '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.

ACN0100E  Incomplete command:
Explanation: This message displays the incomplete command that was entered.
System action: Processing ends.
User response: Re-enter the complete command.

ACN0101E  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.

ACN0102E  Invalid command:
Explanation: This message displays the invalid command that was entered.
System action: Processing ends.
User response: Re-enter a valid command.

ACN0103E  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.

ACN0104E  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.

ACN0105E 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.

ACN0132W Tracing could not be started. Processing will continue.
Explanation: A problem prevented tracing from beginning.
System action: Processing will continue with the command entered.
User response: Refer to the other messages that display with this message to determine the problem.

ACN0133W 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.

ACN0134W 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.

ACN0150I Operation canceled by user.
Explanation: The user has requested that the Data Protection for Microsoft Exchange Server application client end by entering ctrl-C.
System action: Processing ends.
User response: None

ACN0151E 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.

ACN0152I 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

ACN0153I 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

ACN0154E The Data Protection for Microsoft Exchange Server 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 Data Protection for Microsoft Exchange Server 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 Data Protection for Microsoft Exchange Server application client.

ACN0155E The Data Protection for Microsoft Exchange Server 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 Data Protection for Microsoft Exchange Server 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 Data Protection for Microsoft Exchange Server application client.
ACN0156E  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 Data Protection for Microsoft Exchange Server 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.

ACN0160E  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.

ACN0161E  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.

ACN0162E  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.

ACN0163E  The directory path needs to be fully-qualified.
Explanation:  The /intopath option was specified without a fully-qualified path.
System action:  Processing stops.
User response:  Enter the command again and specify a fully-qualified path in the /intopath option.

ACN0167E  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

ACN0200E  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

ACN0201E  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

ACN0202E  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

ACN0203E  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

ACN0204E  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

ACN0205E  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

ACN0206E  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

ACN0207E  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

ACN0208E  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.
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Explanation</th>
<th>System action</th>
<th>User response</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACN0209E</td>
<td>The rename of file (filename1) to (filename2) failed.</td>
<td>An attempt was made to rename a file. This attempt failed.</td>
<td>Processing ends</td>
<td>None</td>
</tr>
<tr>
<td>ACN0210E</td>
<td>The Tivoli Storage Manager high level qualifier is too long.</td>
<td>An attempt was made to use a Tivoli Storage Manager high level qualifier that was too long. This attempt failed.</td>
<td>Processing ends</td>
<td>None</td>
</tr>
<tr>
<td>ACN0211E</td>
<td>The Tivoli Storage Manager low level qualifier is too long.</td>
<td>An attempt was made to use a Tivoli Storage Manager low level qualifier that was too long. This attempt failed.</td>
<td>Processing ends</td>
<td>None</td>
</tr>
<tr>
<td>ACN0212E</td>
<td>The Tivoli Storage Manager filespace name is too long.</td>
<td>An attempt was made to use a Tivoli Storage Manager filespace name that was too long. This attempt failed.</td>
<td>Processing ends</td>
<td>None</td>
</tr>
<tr>
<td>ACN0213E</td>
<td>The maximum number of objects allowed per Tivoli Storage Manager transaction is too small.</td>
<td>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 Data Protection for Microsoft Exchange Server application client.</td>
<td>Processing ends</td>
<td>Increase the maximum number of objects allowed per transaction on the Tivoli Storage Manager server and retry the operation.</td>
</tr>
<tr>
<td>ACN0214E</td>
<td>The backup object’s management class backup copy group does not exist.</td>
<td>The Tivoli Storage Manager server has indicated that the backup object’s management class backup copy group does not exist.</td>
<td>Processing ends</td>
<td>Contact your Tivoli Storage Manager server administrator.</td>
</tr>
<tr>
<td>ACN0215E</td>
<td>All backup objects do not have the same management class backup copy destination.</td>
<td>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.</td>
<td>Processing ends</td>
<td>None</td>
</tr>
<tr>
<td>ACN0216E</td>
<td>Unable to obtain space information for volume (volumename).</td>
<td>An attempt was made to obtain space information for a volume. This attempt failed.</td>
<td>Processing ends</td>
<td>None</td>
</tr>
<tr>
<td>ACN0217E</td>
<td>The Tivoli Storage Manager filespace name is invalid.</td>
<td>The filespace name or directory delimiter is invalid.</td>
<td>Processing ends</td>
<td>Check that the filespace name length, characters, and directory delimiters are valid.</td>
</tr>
<tr>
<td>ACN0218E</td>
<td>The Tivoli Storage Manager high level qualifier is invalid.</td>
<td>The high level qualifier name or directory delimiter is invalid.</td>
<td>Processing ends</td>
<td>Check that the high level qualifier name length, characters, and directory delimiters are valid.</td>
</tr>
<tr>
<td>ACN0219E</td>
<td>The Tivoli Storage Manager low level qualifier is invalid.</td>
<td>The low level qualifier name or directory delimiter is invalid.</td>
<td>Processing ends</td>
<td>Check that the low level qualifier name length, characters, and directory delimiters are valid.</td>
</tr>
<tr>
<td>ACN0256E</td>
<td>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.</td>
<td>Your Tivoli Storage Manager password has expired. You need to change your password.</td>
<td>Processing ends</td>
<td>Obtain a new password for your Tivoli Storage Manager server; node using the change.</td>
</tr>
<tr>
<td>Code</td>
<td>Message</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0257E</td>
<td>Your password has expired.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>Your Tivoli Storage Manager password has expired. A new password needs to be obtained.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>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.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0258E</td>
<td>You did not enter a valid password. Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>The password that was entered was not a valid password.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>Re-enter the command specifying a valid password.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0259E</td>
<td>The password you entered for verification does not match the password you entered for your new password. Your password will not be changed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>The password you entered for verification of your new password does not match the new password that was entered.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>Try again to change your password being sure to enter the same password for the new password and for the verification password.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0260I</td>
<td>Password successfully changed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>The change password command completed successfully</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0261I</td>
<td>There are no backups for the server named servername.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>There are no backups on the Tivoli Storage Manager server for the specified server name.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0263E</td>
<td>Failed to start Web browser with a return code of returncode.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>An attempt was made to start the web browser to view the TSM HTML book. This attempt failed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>Start your web browser manually and point it to bookfrm.htm in the agent htm directory.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0264I</td>
<td>Could not find the default browser defined. An attempt will be made to use Microsoft Internet Explorer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>An attempt was made to read the registry to determine the default browser. However, a default browser is not defined. A determination will be made where Microsoft Internet Explorer is installed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing continues.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>It is possible that a default browser is not defined for the system. This is okay. An attempt will be made to use Microsoft Internet Explorer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0265E</td>
<td>Could not find Internet Explorer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>An attempt was made to read the registry to determine where Microsoft’s Internet Explorer was installed. This attempt failed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>Make sure that the registry is set up correctly for Internet Explorer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0266E</td>
<td>Could not find the Tivoli Storage Manager HTML books.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>An attempt was made to read the registry to determine where the Tivoli Storage Manager books were installed. This attempt failed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>It may be necessary to reinstall the application client code. This will ensure that the registry entries are set up correctly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0267E</td>
<td>The verify password entered does not match the new password entered.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>The verify password does not match the new password.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>Retry the command with a matching verify password.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0300E</td>
<td>Invalid restore type.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>The type of restore requested is invalid.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>Re-enter the command specifying a valid restore type.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN0301E</td>
<td>Invalid backup type.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>The type of backup requested is invalid.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Processing ends.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>Re-enter the command specifying a valid backup type.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACN351E</td>
<td>Invalid trace keyword - 'keyword'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explanation:</td>
<td>A TRACEFLAG option in the user configuration file or on the command line is incorrect.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System action:</td>
<td>Client program did not initialize or tracing was not enabled in the applet.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User response:</td>
<td>Correct the value.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
ACN357E  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.

ACN366E  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.

ACN367E  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.

ACN368E  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.

ACN383E  Specifying the trace file ‘link’ as a
symbolic link is not allowed.
Explanation: Trace file ‘linkname’ cannot be a symbolic
link.
System action: The symbolic link ‘linkname’ is deleted,
the trace file is recreated, and processing stops.
User response: Specify the trace file location with the
‘tracefile’ option.

ACN384E  Symbolic link ‘linkname’ to ‘target’ was
successfully deleted.
Explanation: Log ‘linkname’ cannot be a symbolic link.
System action: The symbolic link ‘linkname’ is deleted,
the log is recreated, and processing stops.
User response: Check the location of the new file. To
specify the location of log files, refer to the user’s
manual for the ‘errorlogname’ option, the
’schedlogname’ option, and the ‘DSM_LOG’
environmental variable.

ACN385E  Unable to delete symbolic link ‘link’.
Explanation: Log ‘linkname’ cannot be a symbolic link.
System action: Processing stops.
User response: Delete the symbolic link ‘linkname’.

ACN476E  program-name: cannot open file file-spec:
error.
Explanation: TDP cannot open the file.
System action: TDP cannot complete the requested
operation.
User response: Retry the operation. If the problem
continues, check with your system administrator.

ACN487E  Specifying the error log ‘link’ as a
symbolic link is not allowed.
Explanation: Error log ‘linkname’ cannot be a symbolic
link.
System action: The symbolic link ‘linkname’ is deleted,
the error log is recreated, and processing stops.
User response: Check the location of the new error
log. To specify the location of the error logs, refer to the
user’s manual for the ‘errorlogname’ option and
‘DSM_LOG’ environmental variable.

ACN488E  Initialization functions cannot open the
error log: log-name, errno = errno-value,
Explanation: The file log-name could not be opened
during initialization. The system set the error code
errno-value. If the reason given is “access denied,” the
current user does not have permission to write to the
log in the directory specified. It is also possible that no
space is available at the given log location.
System action: Processing terminates.
User response: Set the DSM_LOG (or DMSI_LOG)
environment variable to a directory into which the
current user can write. You may also use the
ERRORLOGNAME option to specify a file to which the
current has write permission.

ACN495E  Failure writing to a Tivoli Storage
Manager log or log-related file: file-name,
errno = errno-value, reason
Explanation: A failure was encountered when writing
to one of the log files or a related file named file-name.
The system set the error code errno-value. reason is the
system explanation of that error code. Among other
things, it is possible that no space is available at the
given log location.
System action: Processing terminates.
User response: Set the DSM_LOG (or DMSI_LOG)
environment variable to a directory with adequate
space to write the log data.
**ACN496I**  
TDP is converting the log-file from continuous (pruning) mode to wrapping mode. This process may take several minutes.  
Explanation: The log-file was previously in continuous mode where the only size control was through the use of ERRORLOGRETENTION or SCHEDLOGRETENTION option. This is the first occasion where ERRORLOGMAX or SCHEDLOGMAX is specified for this log, so its format must be changed and old data saved.  
System action: Transition processing continues.  
User response: None.

**ACN497I**  
TDP is converting the log-file from wrapping mode to continuous (pruning) mode. This process may take several minutes.  
Explanation: The log-file was previously in wrapping mode where the size control was through the use of the ERRORLOGMAX or SCHEDLOGMAX option. This is the first occasion where ERRORLOGMAX or SCHEDLOGMAX is not specified for this log, so its format must be changed and old data saved.  
System action: Transition processing continues.  
User response: None.

**ACN498I**  
\( \text{count log records processed.} \)  
Explanation: This is just a progress report to let you know the process is still ongoing.  
System action: Transition processing continues.  
User response: None.

**ACN501E**  
Invalid Proxy Configuration Detected:  
Target Node 'targetnode' is not listed as a valid node to proxy to for Node Name 'nodename'.  
Explanation: The proxy node configuration on the TSM Server is not correct to support this VSS operation.  
System action: The VSS operation stops.  
User response: Contact the TSM Server administrator to have the correct TSM Server GRANT PROXY commands issued to enable proxy authority for the nodes. If the error persists, contact your service representative.

**ACN515E**  
Invalid DSMAGENT Node configuration found for node 'dsmagentnode'.  
Explanation: The DSMAGENT Node specified is not configured properly.  
System action: The VSS operation stops.  
User response: Verify that the DSMAGENT Node specified is correct and that the Client Acceptor Daemon (CAD) is running for the DSMAGENT Node. If the error persists, contact your service representative.

**ACN516I**  
The Windows console event handler received a 'event' console event.  
Explanation: A console event was received by one of the Data Protection for Microsoft Exchange Server processes or programs. The following events can be received:  
- Ctrl-C - This indicates either the user entered the ctrl-c sequence or that one of the Windows services was stopped.  
System action: None.  
User response: None.

**ACN517I**  
An unexpected error was encountered.  
TDP function name : function-name  
function : function-desc  
TDP return code : TSM-rc  
TDP file : file-name (line-number)  
Explanation: None.  
System action: Processing stops.  
User response: Contact the TSM administrator with the information provided in this message.

**ACN518E**  
Backups selected for restore must have the same backup location (TSM or LOCAL).  
Explanation: A VSS restore operation was submitted that specified multiple backup objects. The backup objects chosen had different backup locations. This is not allowed. All backup objects submitted in the same VSS restore operation must have the same backup location, either TSM or LOCAL, but not both.  
System action: The VSS restore operation stops.  
User response: Retry the VSS restore operation specifying one backup object at a time.

**ACN519E**  
The VSS operation failed with rc = returncode.  
Explanation: There was a failure when TSM performed the VSS operation.  
System action: The VSS operation stops.  
User response: Verify that the TSM Client Acceptor Daemon (CAD) is installed, configured, and running properly on the machine. Retry the operation. If the error persists, contact your service representative.

**ACN520E**  
Failed to connect to Local DSMAGENT Node 'localdsmagentnode' at address:port 'address:portnumber'. Verify that the TSM Client Acceptor Daemon (CAD) is installed, configured, and running properly.  
Explanation: An attempt was made to connect to the TSM Client Acceptor Daemon (CAD) running on the local machine. A communication error occurred when this connection was attempted.  
System action: The operation stops.  
User response: In order to perform VSS operations, you must have a TSM Client Acceptor Daemon (CAD) and a TSM Remote Client Agent Service (DSMAGENT)
installed and configured properly. In addition, the TSM Client Acceptor Daemon (CAD) must be running.
Verify that the TSM Client Acceptor Daemon (CAD) is installed, configured, and running properly on the local machine. If the error persists, contact your service representative.

**ACN3500I**  
**Data Protection for Exchange: Starting**  
*backup type backup of object name from server server name.*  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log when a backup is started.  
**System action:** None  
**User response:** None Centrally logged

**ACN3501I**  
**Data Protection for Exchange: Starting**  
*backup type backup of object name from server server name completed successfully. bytes bytes sent in seconds seconds.*  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log when a backup completes successfully.  
**System action:** None  
**User response:** None Centrally logged

**ACN3502E**  
**Data Protection for Exchange: backup type backup of object name from server server name failed, rc = return code.*  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log when a backup fails.  
**System action:** None  
**User response:** None Centrally logged

**ACN3503I**  
**Data Protection for Exchange: backup type backup of storage group name from server server name was cancelled by the user.*  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log when a storage group backup was cancelled by the user.  
**System action:** None  
**User response:** None Centrally logged

**ACN3504I**  
**Data Protection for Exchange: Starting**  
*restore for server servername.*  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the start of a restore.  
**System action:** None  
**User response:** None Centrally logged

**ACN3505I**  
**Data Protection for Exchange: Restore from server servername to servername is complete. Total backups restored: Total bytes transferred: Elapsed processing time: Secs Throughput rate: Kb/Sec**  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the end of a restore.  
**System action:** None  
**User response:** None Centrally logged

**ACN3506I**  
**Data Protection for Exchange: Starting**  
*backup type restore of storage group storage group name to server server name.*  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the start of a storage group restore.  
**System action:** None  
**User response:** None Centrally logged

**ACN3507E**  
**Data Protection for Exchange: backup type restore of storage group storage group name to server server name completed successfully.**  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log when a storage group restore completes successfully.  
**System action:** None  
**User response:** None Centrally logged

**ACN3508E**  
**Data Protection for Exchange: backup type restore of storage group storage group name to server server name failed, rc = return code.*  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log when a storage group restore fails.  
**System action:** None  
**User response:** None Centrally logged

**ACN3509I**  
**Data Protection for Exchange: backup type restore of storage group storage group name to server server name was cancelled by the user.*  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log when a storage group restore was cancelled by the user.  
**System action:** None  
**User response:** None Centrally logged

**ACN3510I**  
**Data Protection for Exchange:**  
*Attempting to inactivate the object: filespace - [filespace name], hl - [high level], ll - [low level]*  
**Explanation:** This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the start of an inactivation process.
log indicating the attempt to inactivate an object.
System action: None
User response: None. Centrally logged

<table>
<thead>
<tr>
<th>ACN3511I</th>
<th>Data Protection for Exchange: Inactivation of the previous objects succeeded.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the success of the inactivation of objects.</td>
<td></td>
</tr>
<tr>
<td>System action: None</td>
<td></td>
</tr>
<tr>
<td>User response: None. Centrally logged</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN3512E</th>
<th>Data Protection for Exchange: Inactivation of the previous objects failed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the failure of the inactivation of objects.</td>
<td></td>
</tr>
<tr>
<td>System action: None</td>
<td></td>
</tr>
<tr>
<td>User response: None. Centrally logged</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN3513E</th>
<th>Data Protection for Exchange: Inactivation of the previous objects was canceled.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the failure of the inactivation of objects because the task was canceled by the user.</td>
<td></td>
</tr>
<tr>
<td>System action: None</td>
<td></td>
</tr>
<tr>
<td>User response: None. Centrally logged</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN3514I</th>
<th>Data Protection for Exchange: Starting backup for server servername.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the start of a backup.</td>
<td></td>
</tr>
<tr>
<td>System action: None</td>
<td></td>
</tr>
<tr>
<td>User response: None. Centrally logged</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN3516I</th>
<th>Data Protection for Exchange: Backup of server servername is complete. Total storage groups backed up: Total bytes transferred: Elapsed processing time: Secs Throughput rate: Kb/S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the end of a backup request.</td>
<td></td>
</tr>
<tr>
<td>System action: None</td>
<td></td>
</tr>
<tr>
<td>User response: None. Centrally logged</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN3517E</th>
<th>Data Protection for Exchange: Backup of server servername failed, rc = returncode.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the failure of a backup request.</td>
<td></td>
</tr>
<tr>
<td>System action: None</td>
<td></td>
</tr>
<tr>
<td>User response: None. Centrally logged</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN3518I</th>
<th>Data Protection for Exchange: Backup of server servername failed. The request was canceled by the user.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: This is an informational message that is written to the Tivoli Storage Manager Server activity log indicating the failure of a backup request. The user canceled the backup.</td>
<td></td>
</tr>
<tr>
<td>System action: None</td>
<td></td>
</tr>
<tr>
<td>User response: None. Centrally logged</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN5050I</th>
<th>A new configuration file has been created.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: The /configfile value specified a file name that does not exist. A new file has been created.</td>
<td></td>
</tr>
<tr>
<td>System action: Processing continues.</td>
<td></td>
</tr>
<tr>
<td>User response: None.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN5051W</th>
<th>The configuration file cannot be found, using default settings.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: The /configfile value specified a file that cannot be found. Default settings will be used.</td>
<td></td>
</tr>
<tr>
<td>System action: Processing continues using default settings.</td>
<td></td>
</tr>
<tr>
<td>User response: Ensure that the configuration file exists, and enter the command again.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN5052E</th>
<th>An error occurred trying to set the preference preference.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: An error occurred while writing to the preferences file.</td>
<td></td>
</tr>
<tr>
<td>System action: Processing ends.</td>
<td></td>
</tr>
<tr>
<td>User response: View any other messages that were displayed. Fix any of the problems indicated and enter the command again.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN5053E</th>
<th>The value for the preference preference is not valid. See the TDPEXCC HELP SET output or the User's Guide for valid SET command parameters.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: The preference being set is not valid.</td>
<td></td>
</tr>
<tr>
<td>System action: Processing ends.</td>
<td></td>
</tr>
<tr>
<td>User response: Run the &quot;tdpexcc help set&quot; command or see the User’s Guide for valid SET command parameters.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN5054I</th>
<th>The preference has been set successfully.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: The preference was set successfully.</td>
<td></td>
</tr>
<tr>
<td>System action: Processing ends.</td>
<td></td>
</tr>
<tr>
<td>User response: None</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACN5055E</th>
<th>The Microsoft Exchange API could not be loaded.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation: If running on Microsoft Exchange 5.5, the dll that is attempting to load is edbbcli.dll. If running on a later version of Microsoft Exchange, the dll that is attempting to load is esebcli2.dll.</td>
<td></td>
</tr>
</tbody>
</table>

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System action:  Processing ends.
User response:  Ensure that the Microsoft Exchange Server has been correctly installed.

---

**ACN5056I**  The log file log file could not be pruned.
Processing will continue.
Explanation:  An attempt to prune the log was unsuccessful.
System action:  Processing continues.
User response:  Ensure that the log file name is valid and that the log file exists. If a valid log file name was specified, view the log for indications of what the problem may be.

---

**ACN5057I**  The log file log file has been pruned successfully.
Explanation:  The specified log file was pruned successfully.
System action:  Processing continues.
User response:  None.

---

**ACN5058W**  The length of the log file name is greater than the maximum allowed.
Processing will continue using a log file name of log file in the current directory.
Explanation:  The log file name entered was not fully qualified. When the fully qualified log file name was created, it was longer than the maximum allowed length for a log file name.
System action:  Processing continues creating and using a log file in the current directory.
User response:  Update the log file name using a fully qualified path.

---

**ACN5059W**  The log file log file cannot be opened for writing. There will be no logging of events.
Explanation:  The specified log file could not be opened for append and logging of events will not occur. The log file may be read-only or the log file name is not valid.
System action:  Processing continues without logging.
User response:  Determine why the log could not be opened. You may need to ensure that the log file is not read-only, or ensure that a valid drive or partition is specified in the log file name.

---

**ACN5060E**  A Tivoli Storage Manager API error has occurred.
Explanation:  A Tivoli Storage Manager API error has occurred.
System action:  Processing ends.
User response:  Try the operation again. If the error persists, contact your service representative.

---

**ACN5061E**  A Microsoft Exchange api error has occurred.
Explanation:  A Microsoft Exchange api error has occurred.
System action:  Processing ends.
User response:  Try the operation again. If the error persists, contact your service representative.

---

**ACN5062E**  The version of Microsoft Exchange that is running is not a supported version for IBM Tivoli Storage Manager for Mail.
Explanation:  IBM Tivoli Storage Manager for Mail has detected a version of Microsoft Exchange Server that is not supported.
System action:  Processing ends.
User response:  Refer to the software requirements section of the product documentation to view a list of the supported versions of Microsoft Exchange Server. If the version of Microsoft Exchange Server running is a supported version, try the operation again. If the error persists, contact your service representative.

---

**ACN5063E**  An error occurred trying to get the Microsoft Exchange version information.
It could be a problem with the registry.
Or, a Microsoft Exchange Server is not installed on this machine.
Explanation:  An attempt was made to read the registry to determine the level of Microsoft Exchange that is currently running. This attempt failed.
System action:  Processing ends.
User response:  Determine if the registry has been corrupted. Also, ensure that the Microsoft Exchange Server is installed on this machine.

---

**ACN5064W**  The service cannot be started when doing a restore.
Explanation:  A request was made to restore the listed database. However, the service associated with this database has already started. The service needs to be stopped in order to do this restore.
System action:  Processing ends.
User response:  Stop the associated service and enter the restore command again.

---

**ACN5065E**  All of the services associated with this restore are running.
Explanation:  A request was made to restore several databases. However, all of the services associated with these databases are running. The services need to be stopped in order to do this restore.
System action:  Processing ends.
User response:  Stop the associated services and enter the restore command again.
ACN5066W The storage group <storagegroup> does not exist.
Explanation: The storage group that was entered that does not exist on the server specified.
System action: Processing ends.
User response: Enter the command specifying a storage group that exists.

ACN5067E None of the storage groups or databases entered exist. Or, if they do exist, and you are using Exchange 2000 or Exchange 2003, the databases have not been dismounted.
Explanation: The storage groups that were entered either do not exist on the Microsoft Exchange Server or the databases within the storage groups have not been dismounted.
System action: Processing ends.
User response: Verify that the storage groups or databases exist and that the databases have been dismounted before starting the restore.

ACN5068W The database <basename> does not exist in the storage group <storagegroup>.
Explanation: The database that was entered does not exist in the storage group that was entered.
System action: Processing ends.
User response: Enter the command again specifying a valid database name that exists in a valid storage group.

ACN5069W The database <database> in the storage group <storagegroup> is not dismounted.
Explanation: While examining the list of databases to restore, it was determined that not all of the databases within the specified storage groups were dismounted.
System action: Processing continues skipping over the listed databases and storage groups.
User response: Ensure that the databases are dismounted and enter the command again.

ACN5070W The Directory Service is not running. The Directory will not be backed up.
Explanation: A request was made to backup the Directory service. However, the Directory service needs to be running in order to do the backup.
System action: Processing ends.
User response: Start the Directory service and enter the backup command again.

ACN5071W The Information Store is not running. The Information Store will not be backed up.
Explanation: A request was made to backup the Information Store. However, the Information Store needs to be running in order to do the backup.
System action: Processing ends.
User response: Start the Information Store and enter the backup command again.

ACN5072W Databases in storage group <storagegroup> are dismounted -- skipping.
Explanation: A request was made to backup a set of storage groups. However, some databases in this storage group are not mounted. All of the databases need to be mounted in order to backup this storage group.
System action: Processing continues, but dismounted databases are skipped.
User response: Ensure that all of the databases are mounted in the storage group and start the backup for the storage group again.

ACN5073E None of the storage groups entered are in a state to be backed up.
Explanation: A request was made to backup a set of storage groups. However, each of the storage groups entered has at least one database that is dismounted.
System action: Processing ends.
User response: Ensure that all of the databases are mounted in the storage groups and start the backup for the storage groups again.

ACN5074E None of the databases or storage groups entered exist.
Explanation: A request was made to backup a set of storage groups or databases that do not. The storage group and database names might not have been entered using the correct casing.
System action: Processing ends.
User response: Ensure that the correct casing is used when entering the list of databases or storage groups to be backed up. Enter the backup command again.

ACN5076W Unable to inactivate all previous backup objects.
Explanation: A request to inactivate some previous backup objects failed.
System action: Processing ends.
User response: When the next full backup of the database is run, another attempt will be made to inactivate the failed objects.

ACN5083I All of the storage groups entered have been excluded.
Explanation: An attempt was made to do a backup. However, the storage groups or databases entered have been excluded by an exclude statement in the options file.
System action: Processing ends.
User response: If you want these storage groups or databases backed up, modify the exclude statements in your options file.
ACN5084W  IS was not input as one of the parts to restore. The partial option will be ignored.
Explanation: A request was made to restore either the private or public part of the Information Store. However, the IS was not input as one of the parts to restore.
System action: Processing continues ignoring the partial option.
User response: To restore either the public or private part of the Information Store, enter IS as an input.

ACN5086W  None of the storage groups entered exist. Or, if doing a DBCOPY backup, the database entered does not exist.
Explanation: A storage group was entered that does not exist on the server specified. Or, if a DBCOPY backup was entered, the dbname specified does not exist on the Microsoft Exchange Server.
System action: Processing ends.
User response: Enter the command specifying a storage group or dbname that exists.

ACN5087E  PASSWORDACCESS is Generate. Either the stored password is incorrect or there is no stored password. If you do not have a stored password, use of the -TSMPassword=xxx option will set and store your password.
Explanation: The client options file has the PASSWORDACCESS option set to generate. Currently, there is no password that has been stored. An initial password needs to be stored.
System action: Processing ends.
User response: Invoke the command again using the -TSMPassword option. Any subsequent commands should then complete without specifying a password.

ACN5140I  Storage Group <storagegroup> does not exist - skipping.
Explanation: The storage group that was specified by the user is not found on this Exchange server.
System action: This storage group is skipped.
User response: Ensure that the storage group name is spelled correctly and enter the command again.

ACN5141I  Database <database>, Storage Group <storagegroup> does not exist - skipping.
Explanation: This combination of storage group and database name that was specified is not found on this Microsoft Exchange server.
System action: The storage group and database are skipped.
User response: Ensure that the storage group name and database name are spelled correctly and enter the command again.

ACN5142E  No storage group was found that matches the request.
Explanation: The storage groups or databases could not be found on this Microsoft Exchange server.
System action: Processing ends.
User response: Ensure that the storage group or database names are spelled correctly and enter the command again.

ACN5209I  There are no backups matching the server name servername and the following filespecs filespecs.
Explanation: There are no database backups on the Tivoli Storage Manager server for the specified server name.
System action: Processing ends.
User response: None

ACN5228I  Data Protection for Exchange is not configured for VSS operations.
Explanation: Data Protection for Exchange has not been configured to perform VSS operations.
System action: None.
User response: In order to perform VSS operations, the Tivoli Storage Manager for Copy Services - Microsoft Exchange VSS Integration Module must be installed and the Data Protection for Exchange LOCALDSMAGENTNODE preference must be set correctly. Refer to the Data Protection for Exchange User’s Guide for details on configuring the client for VSS operations.

ACN5229E  Error obtaining VSS information from Local DSMAgent Node: ‘localdsmagentnode’.
Explanation: Data Protection for Exchange attempted to obtain VSS information through the specified LOCALDSMAGENTNODE but failed. The error message encountered is also displayed.
System action: VSS information is not displayed.
User response: Refer to the error message displayed along with this message.

ACN5237E  Unable to communicate with the Microsoft Exchange Server.
Explanation: An attempt was made to communicate with the Microsoft Exchange Server that was entered. This attempt failed.
System action: Processing ends.
User response: Ensure that the name of the Microsoft Exchange server that was entered is valid. Also, ensure that the Microsoft Exchange server is running.
| ACN5238E | Unable to retrieve the domain information for the Microsoft Exchange Server. |
| Explanation: | An attempt was made to retrieve the domain information for the Microsoft Exchange Server. This attempt failed. |
| System action: | Processing ends. |
| User response: | Ensure that the Microsoft Exchange server is running. |

| ACN5239E | Unable to retrieve the storage group information. |
| Explanation: | An attempt was made to retrieve the storage group information for the Microsoft Exchange Server. This attempt failed. |
| System action: | Processing ends. |
| User response: | Ensure that the Microsoft Exchange Server is running properly. |

| ACN5240E | Unable to retrieve the database information. |
| Explanation: | An attempt was made to retrieve the database information for the storage group of the Microsoft Exchange Server. This attempt failed. |
| System action: | Processing ends. |
| User response: | Ensure that the Microsoft Exchange Server is running properly. |

| ACN5241E | The Microsoft Exchange Information Store is currently not running. |
| Explanation: | An attempt was made to retrieve the Microsoft Exchange Server information. This attempt failed. |
| System action: | Processing ends. |
| User response: | In order to retrieve the Microsoft Exchange Server information, the Microsoft Exchange Information Store needs to be running. Start this service to get the requested information. |

| ACN5301E | Unable to get the value for the Organization from the registry. |
| Explanation: | An attempt was made to read the registry to determine the organization for the Microsoft Exchange Server. This attempt failed. |
| System action: | Processing ends. |
| User response: | Determine if there is a problem with the registry or ensure that the Microsoft Exchange Server is installed properly. |

| ACN5302E | Unable to get the value for the Site from the registry. |
| Explanation: | An attempt was made to read the registry to determine the site for the Microsoft Exchange Server. This attempt failed. |
| System action: | Processing ends. |
| User response: | Determine if there is a problem with the registry or ensure that the Microsoft Exchange Server is installed properly. |

| ACN5303E | Unable to get the value for Circular Logging from the registry. |
| Explanation: | An attempt was made to read the registry to determine the Circular Logging setting for either the IS or the DIR of the Microsoft Exchange Server. This attempt failed. |
| System action: | Processing ends. |
| User response: | Determine if there is a problem with the registry or ensure that the Microsoft Exchange Server is installed properly. |

| ACN5304E | Unable to open service to determine if running or not. |
| Explanation: | An attempt to open a service failed. |
| System action: | Processing ends. |
| User response: | Determine if there is a problem with the Microsoft Exchange server. |

| ACN5305E | Unable to query service information. |
| Explanation: | An attempt to query specific service information failed. |
| System action: | Processing ends. |
| User response: | Determine if there is a problem with the Microsoft Exchange server. |

| ACN5350E | An unknown Exchange API error has occurred. |
| Explanation: | An Exchange API error has occurred but the associated error message could not be found. The Windows NT event log may contain more information. |
| System action: | Processing ends. |
| User response: | If the Windows NT event log does not help resolve the problem, verify the Exchange Server installation and retry the operation. If the error persists, contact your service representative. |

| ACN5351E | The Exchange server application is not registered for backup. |
| Explanation: | The Exchange server application must be registered for backup with the Windows Server. The Windows NT event log may contain more information. |
| System action: | Processing ends. |
| User response: | If the Windows NT event log does not help resolve the problem, verify the Exchange Server installation and retry the operation. If the error persists, contact your service representative. |

| ACN5352E | The Exchange server application is not registered for offline restore. |
| Explanation: | The Exchange server application must be registered for offline restore with the Windows Server. The Windows NT event log may contain more information. |
| System action: | Processing ends. |
| User response: | If the Windows NT event log does not help resolve the problem, verify the Exchange Server installation and retry the operation. If the error persists, contact your service representative. |
ACN5353E  The Exchange server application is not registered for online restore.
Explanation: The Exchange server application must be registered for online restore with the Windows Server. The Windows NT event log may contain more information.
System action: Processing ends.
User response: If the Windows NT event log does not help resolve the problem, verify the Exchange Server installation and retry the operation. If the error persists, contact your service representative.

ACN5354E  The storage group was not found.
Explanation: The specified storage group name was not found.
System action: Processing ends.
User response: Verify the command input and retry the operation. If the error persists, contact your service representative.

ACN5355E  The database was not found.
Explanation: The specified database name was not found.
System action: Processing ends.
User response: Verify the command input and retry the operation. If the error persists, contact your service representative.

ACN5356E  The database file name is undefined.
Explanation: Every Microsoft Exchange database must specify a database file name.
System action: Processing ends.
User response: Verify the database properties and retry the operation. If the error persists, contact your service representative.

ACN5357W  The truncation of the transaction log failed.
Explanation: The truncation of the transaction log failed.
System action: Processing continues.
User response: Refer to other messages that are displayed to determine the problem.

ACN5358E  A Microsoft Exchange API protocol error has occurred.
Explanation: An uncorrectable Microsoft Exchange API protocol error has occurred.
System action: Processing ends.
User response: Contact your service representative.

ACN5359E  An attempt was made to get the TEMP environment variable. This attempt failed.
Explanation: The TEMPLOGRESTOREPATH option was not set for the restore. Therefore, an attempt was made to get the TEMP environment variable for the machine. This attempt failed.
System action: Processing ends.
User response: Ensure that the TEMP environment variable is set for this machine. You can also use the TEMPLOGRESTOREPATH option with the restore.

ACN5360E  The /ERASEexistingdata option is not allowed during a partial restore.
Explanation: A partial storage group restore was requested with the /ERASEexistingdata option. The /ERASEexistingdata option is not allowed during a partial restore.
System action: Processing ends.
User response: Enter the command to restore the entire storage group or enter the command without the /ERASEexistingdata option.

ACN5361E  It is invalid to have an "*" within a storage group name.
Explanation: An attempt was made to backup a storage group that contains an "*". It is invalid to have an "*" in a storage group name.
System action: Processing continues, but this storage group will not be backed up.
User response: Rename the storage group, otherwise this storage group cannot be backed up.

ACN5362W  The filespace <filespace> in an invalid filesystem name.
Explanation: The filespace displayed in the message exists, but is an invalid filesystem.
System action: Processing continues, but this filespace will not be used.
User response: Ensure that the storage group name does not contain invalid characters. Refer to the Microsoft Exchange documentation for the list of invalid characters.

ACN5500E  The MultiByteToWideChar() function failed.
Explanation: An internal error occurred.
System action: Processing ends.
User response: Retry the operation. If this error persists, contact your service representative.

ACN5501E  The WideCharToMultiByte() function failed.
Explanation: An internal error occurred.
System action: Processing ends.
User response: Retry the operation. If this error persists, contact your service representative.

ACN5705W  An error was encountered with Tivoli Storage Manager API initialization, rc = returncode. Examine the dserror.log for more information or determine if the TSM API is installed properly.
Explanation: An attempt was made to run setup for
the Tivoli Storage Manager API. However, errors were encountered.  
**System action:** Processing continues.  
**User response:** Examine the dsierror.log file to determine the problem. If this file does not exist, it is possible that the TSM API is not installed properly. If this is the case, reinstall the TSM API and try running the command again.

<table>
<thead>
<tr>
<th>ACN5706I</th>
<th><strong>The log file did not need pruning.</strong>&lt;br&gt;The log file specified did not need to be pruned. &lt;br&gt;<strong>System action:</strong> Processing continues. &lt;br&gt;<strong>User response:</strong> The log file will automatically be pruned at a later date. If the log file is too large now, lower the number of days the log entries are retained.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ACN5707W</th>
<th><strong>The log file could not be opened for writing.</strong>&lt;br&gt;The log was not pruned and there will be no logging of events. &lt;br&gt;<strong>Explanation:</strong> The log could not be opened for append. Therefore, there will be no logging done and the request to prune was not done. &lt;br&gt;<strong>System action:</strong> Processing continues without logging and without pruning. &lt;br&gt;<strong>User response:</strong> Determine why the log could not be opened. You may need to ensure that the file is not read-only, or ensure that a valid drive or partition is specified with the log file name.</th>
</tr>
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</table>

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<tr>
<th>ACN5708W</th>
<th>At least one of the database’s services that is selected for restore is running. Do you want to stop the service(s)? &lt;br&gt;<strong>Explanation:</strong> A service that you are trying to restore is running. The service cannot be running in order to perform the restore. &lt;br&gt;<strong>System action:</strong> None &lt;br&gt;<strong>User response:</strong> Choose the desired response and continue.</th>
</tr>
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<tr>
<th>ACN5709W</th>
<th>At least one of the databases that is selected for restore is mounted. Do you want to dismount the database(s)? &lt;br&gt;<strong>Explanation:</strong> A database you are trying to restore is mounted. &lt;br&gt;<strong>System action:</strong> None &lt;br&gt;<strong>User response:</strong> Click ‘OK’ to dismount and continue, or cancel to stop.</th>
</tr>
</thead>
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<tr>
<th>ACN5710W</th>
<th>Unable to dismount database database in storage group storage group. Do you want to continue the restore process? &lt;br&gt;<strong>Explanation:</strong> An error occurred while trying to dismount a database. &lt;br&gt;<strong>System action:</strong> None &lt;br&gt;<strong>User response:</strong> Press OK to continue the restore or press cancel to stop.</th>
</tr>
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<tr>
<th>ACN5711W</th>
<th>MS Exchange API api name failed with HRESULT: api retcode - &lt;br&gt;<strong>Explanation:</strong> A Microsoft Exchange API error occurred during an operation. The specific API function that failed along with the HRESULT code of the failure and possible message associated with that error is displayed. &lt;br&gt;<strong>System action:</strong> Processing ends. &lt;br&gt;<strong>User response:</strong> If the Windows Event Log does not help resolve the problem, stop and restart the Exchange server and retry the operation. If the error persists, contact your service representative.</th>
</tr>
</thead>
</table>

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<tr>
<th>ACN5712W</th>
<th>Backup is corrupt. See log file for additional information. &lt;br&gt;<strong>Explanation:</strong> When attempting to process an Exchange backup on the Tivoli Storage Manager Server, not all required objects were present. The operation cannot proceed. The specific backup affected is logged. &lt;br&gt;<strong>System action:</strong> Processing ends. &lt;br&gt;<strong>User response:</strong> Retry the operation. If the error persists, contact your service representative.</th>
</tr>
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<tr>
<th>ACN5713W</th>
<th>No Storage Groups have been selected for backup. &lt;br&gt;<strong>Explanation:</strong> The Backup button was pressed but no Storage Groups have been selected in the list in the graphical user interface. &lt;br&gt;<strong>System action:</strong> Processing stops. &lt;br&gt;<strong>User response:</strong> Select a Storage Group and press the Backup button.</th>
</tr>
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<tr>
<th>ACN5714W</th>
<th>No Backups have been selected for restore. &lt;br&gt;<strong>Explanation:</strong> The Restore button was pressed but nothing was selected in the tree or list view. &lt;br&gt;<strong>System action:</strong> Processing stops. &lt;br&gt;<strong>User response:</strong> Make a selection in the tree or list view and press the Restore button again.</th>
</tr>
</thead>
</table>

| ACN5715W   | Restore failed. File already exists. <br>**Explanation:** The specified file already exists in the restore (/INTO) path. The RESTOREFILES command is designed not to overwrite existing files. <br>**System action:** The restore operation fails and processing ends. <br>**User response:** If you want to restore the specified |
file, you must first delete the file that exists in the restore (/INTO) path and retry the operation or specify a different restore (/INTO) path and retry the operation.

ACN5810E Restoring Legacy backups and VSS backups in the same restore operation is not supported. Retry the restores in separate operations.
Explanation: At least one VSS backup object and one Legacy backup object were selected for a restore in the same operation. This is not supported.
System action: The restore operation is canceled.
User response: Retry the restores specifying the Legacy backups and VSS backups in separate operations.

ACN5811E Invalid command. Data Protection for Exchange only supports VSS backup types of FULL and COPY.
Explanation: An invalid backup type was specified on the VSS backup request. Data Protection for Exchange supports backup types of FULL and COPY when using the VSS backup method.
System action: The backup operation is canceled.
User response: Retry the backup operation specifying a supported VSS backup type.

ACN5812E Invalid command. Data Protection for Exchange does not support OFFLOAD with the Legacy backup method.
Explanation: The OFFLOAD option was specified when using the Legacy backup method. Data Protection for Exchange does not support offload with the Legacy backup method. Data Protection for Exchange supports offload with the VSS backup method only.
System action: The backup operation is canceled.
User response: Retry the backup operation without specifying the offload option or by specifying the VSS backup method.

ACN5813E Invalid command. Data Protection for Exchange only supports Legacy backups with a backup destination of TSM.
Explanation: An invalid backup destination was specified with the Legacy backup method. Data Protection for Exchange only supports a backup destination of TSM when using the Legacy backup method.
System action: The backup operation is canceled.
User response: Retry the backup operation specifying a backup destination of TSM.

ACN5814E Invalid command. Data Protection for Exchange does not support OFFLOAD with the specified backup destination.
Explanation: The OFFLOAD option was specified with an unsupported backup destination. Data Protection for Exchange only supports offload with a backup destination of TSM.
System action: The backup operation is canceled.
User response: Retry the VSS offloaded backup operation specifying a backup destination of TSM.

ACN5815E The VSS operation failed with rc = returncode.
Explanation: There was a failure when Data Protection for Exchange performed the VSS operation.
System action: The VSS operation stops.
User response: Verify that the Client Acceptor Daemon (CAD) is installed, configured, and running properly on the machine. Retry the operation. If the error persists, contact your service representative.

ACN5816E Data Protection for Exchange is not able to run VSS operations. You must be running Exchange Server 2003 (or later) and have the Tivoli Storage Manager for Copy Services - Microsoft Exchange VSS Integration Module installed.
Explanation: In order to perform VSS operations, Data Protection for Exchange verifies that the Exchange Server level is at least Exchange Server 2003 and that the Tivoli Storage Manager for Copy Services - Microsoft Exchange VSS Integration Module is installed. If the Tivoli Storage Manager for Copy Services - Microsoft Exchange VSS Integration Module is installed, there will be a license file, acsexv lic, in the Data Protection for Exchange installation directory.
System action: The operation stops.
User response: Verify that the prerequisites identified above are met and retry the operation. If the error persists, contact your service representative.

ACN5817E Missing, blank, or invalid Local DSMAGENT Node Name is not allowed.
Explanation: In order to run VSS operations, Data Protection for Exchange verifies that the Local DSMAGENT Node Name is specified and valid. This error indicates that the Local DSMAGENT Node Name is missing, blank, or invalid.
System action: The operation stops.
User response: Set the Local DSMAGENT Node Name to a valid value and retry the operation.

ACN5818E Invalid command. Data Protection for Exchange only supports restoring VSS backup types of FULL and COPY.
Explanation: An invalid backup type was specified on the VSS restore request. Data Protection for Exchange
supports restoring backups of type FULL and COPY.

**System action:** The restore operation is canceled.

**User response:** Retry the restore operation specifying a supported VSS backup type.

---

**ACN5819E** Multiple backup objects were found for the specified storage group(s) and backup destination. Use the OBJECT= and BACKUPDESTINATION= options to identify which specific backup object to restore.

**Explanation:** The backup object specified for the VSS restore operation was not specific enough to be unique. More information is required in order to restore the correct backup object.

**System action:** The restore operation is canceled.

**User response:** Retry the restore operation specifying the /OBJECT= and /BACKUPDESTINATION parameters.

---

**ACN5820E** There were no Exchange backups found on the Tivoli Storage Manager server matching the specified criteria.

**Explanation:** A query was issued to the Tivoli Storage Manager server to find the Data Protection for Exchange backups that match the specified search criteria. There were no backups found.

**System action:** None.

**User response:** None.
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Glossary

The terms in this glossary are defined as they pertain to the Tivoli Storage Manager library. If you do not find a term you are looking for, you can refer to the IBM Dictionary of Computing at URL: www.ibm.com/networking/nsg/nsgmain.htm

This glossary may include terms and definitions from:
• The Information Technology Vocabulary, developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC2/SC1).

A

active policy set. The policy set within a policy domain that contains the most recently activated policy. This policy set is used by all client nodes assigned to the current policy domain. See policy set.

active version. The most recent backup copy of a file stored in Tivoli Storage Manager storage for a file that currently exists on a file server or workstation. An active version remains active and exempt from deletion until:
• Replaced by a new backup version.
• Tivoli Storage Manager detects, during an incremental backup, that the user has deleted the original file from a file server or workstation.

administrative client. A program that runs on a file server, workstation, or mainframe. This program lets administrators monitor and control Tivoli Storage Manager servers using Tivoli Storage Manager administrator commands. Contrast with backup-archive client.

administrator. A user who is registered to the server as an administrator. Administrators may possess one or more privilege classes. Administrators can use the administrative client to enter Tivoli Storage Manager server commands and queries according to their privileges.

application program interface (API). A set of functions that applications running on a client platform can call to store, query, and retrieve objects from Tivoli Storage Manager storage.

archive. A function permitting users to copy one or more files to a long-term storage device. Archive copies can:
• Accompany descriptive information
• Imply data compression software usage
• Be retrieved by archive date, file name, or description
Contrast with retrieve.

archive copy. A file or group of files residing in an archive storage pool in Tivoli Storage Manager storage.

archive copy group. A policy object containing attributes that control the generation, destination, and expiration of archived files. The archive copy group belongs to a management class.

archive retention grace period. The number of days Tivoli Storage Manager retains an archived copy when the server is unable to rebind the file to an appropriate management class.

authentication. The process of checking and authorizing a user’s password before permitting user access to the Tivoli Storage Manager server. An administrator with system privilege can enable or disable authentication.

authorization rule. A specification permitting another user to either restore or retrieve a user’s files from Tivoli Storage Manager storage.
B

backup. A function permitting users to copy one or more files to a storage pool to protect against data loss. Contrast with restore.

backup-archive client. A program that runs on a file server, PC, or workstation and provides a means for Tivoli Storage Manager users to back up, archive, restore, and retrieve files. Contrast with administrative client.

backup copy group. A policy object containing attributes that control the generation, destination, and expiration of backup files. A backup copy group belongs to a management class.

backup version. A backed up file, directory, or file space that resides in a backup storage pool in Tivoli Storage Manager storage. The active version is the most recent backup version. See active version and inactive version.

C

client. A program running on a file server, PC, workstation, or terminal that requests services of another program called the server. There are two types of Tivoli Storage Manager clients: administrative and backup-archive. See administrative client and backup-archive client.

client domain. The set of drives, file systems, or volumes selected by a user for processing during a backup or archive operation.

client node. A file server or workstation registered with the server on which the backup-archive client program is installed.

client options file. A file that a client can edit, containing a default set of processing options that identify the server, communication method, backup and archive options, space management options, and scheduling options.

client/server. A communications network architecture in which one or more programs (clients) request computing or data services from another program (the server).

closed registration. A registration process in which an Tivoli Storage Manager administrator must register workstations as client nodes with the server. Contrast with open registration.

command line interface. A type of user interface where commands are specified on the command line. Contrast with graphical user interface.

commit. To make changes permanent in the databases files. Changes made to the database files are not permanent until they are committed.

communication method. The method by which a client and server exchange information.

communication protocol. A set of defined interfaces that permits computers to communicate with each other.

compression. The process of saving storage space by eliminating empty fields or unnecessary data to shorten the length of the file. In Tivoli Storage Manager, compression can occur at a workstation before files are backed up or archived to server storage. On some types of tape drives, hardware compression can be used.

copy backup. A copy backup is similar to a full backup except that transaction log files are not cleared after the backup. A backup copy can be used to make a full backup of the Exchange Server database without disrupting any backup procedures that use incremental or differential backups.

copy group. An Tivoli Storage Manager policy object that determines how Tivoli Storage Manager backs up or archives files. Copy groups belong to management classes. There are two copy groups:
• Backup copy group—determines how Tivoli Storage Manager backs up or archives files.
• Archive copy group—determines how Tivoli Storage Manager archives files.
D

default management class. A management class assigned to a policy set. This class is used to govern backed up or archived files when a user does not explicitly associate a file with a specific management class through the include-exclude list.

differential backup. A differential backup backs up only transaction logs, but does not clear them. If you perform a full backup and then perform only differential backups, the last full backup plus the latest differential backup has all data needed to bring the database back to the most recent state. This type of backup is also called a cumulative incremental backup.

domain. See policy domain or client domain.

dsm.opt file. See options file. Also called client options file.

E

error log. A text file written on disk that contains Tivoli Storage Manager processing error messages. These errors are detected and saved by the Tivoli Storage Manager server.

exclude. The process of identifying files in an include-exclude list. This process prevents the files from being backed up or migrated whenever a user or schedule enters an incremental or selective backup operation.

expiration. The process in which files are identified for deletion because their expiration date or retention period has passed. Backed up or archived files are marked for deletion based on the criteria defined in the backup or archive copy group.

F

file server. A dedicated computer and its peripheral storage devices connected to a local area network that stores both programs and files shared by users on the network.

file space. A logical space on the Tivoli Storage Manager server that contains a group of files. In Tivoli Storage Manager, users can restore, retrieve, or delete file spaces from Tivoli Storage Manager storage.

full backup. A full backup backs up the specified database as well as its associated transaction logs. After the database and logs are backed up, the log files are deleted.

G

generate password. Processing that stores a new password in an encrypted password file when the old password expires. Automatic generation of a password prevents password prompting. Password generation can be set in the options file (passwordaccess option). See options file.

graphical user interface (GUI). A type of user interface that takes advantage of a high-resolution monitor, includes a combination of graphics, the object-action paradigm, and the use of pointing devices, menu bars, overlapping windows, and icons. Contrast with command line interface.

GUI. Graphical user interface.

I

inactive version. A copy of a backup file in Tivoli Storage Manager storage that either is not the most recent version, or the corresponding original file was deleted from the client file system. Inactive backup versions are eligible for expiration according to the management class assigned to the file.

include-exclude file. A file containing statements to determine the files to back up and the associated management classes to use for backup or archive. See include-exclude list.
include-exclude list. A list of include and exclude options that include or exclude selected files for backup. An exclude option identifies files that should not be backed up. An include option identifies files that are exempt from the exclusion rules or assigns a management class to a file or a group of files for backup or archive services. The include-exclude list is defined in one or more include-exclude files or in the client options file. The include-exclude list may contain entries from any or all of the following sources: the client options file, separate include-exclude files, or the Tivoli Storage Manager server. See options file.

incremental backup. An incremental backup only backs up the transaction logs and then clears them. Restoration of an Exchange Server database from an incremental backup requires a:
- Restore of the last full backup.
- Restore of any other incremental backups performed between the full backup and this incremental backup.
- Restore of this incremental backup.

L

LAN. Local area network.

legacy backup. A specialized API backup that functions with the Exchange server storage engine.

legacy restore. A specialized API restore that functions with the Exchange server storage engine to restore legacy backups (Exchange database files and log files) from Tivoli Storage Manager server storage to their original location.

local. In a Data Protection for Exchange VSS environment, local refers to data that is stored on shadow volumes localized to a disk storage subsystem.

Local Area Network (LAN). A variable-sized communications network placed in one location. LAN connects servers, PCs, workstations, a network operating system, access methods, and communications software and links.

M

management class. A Tivoli Storage Manager policy object that is a named collection of copy groups. A management class is associated with a file to specify how the server should manage backup versions or archive copies of workstation files.

N

node. See client node.

node name. A unique name used to identify a workstation, file server, or PC to the server.

O

open registration. A registration process in which users can register their own workstations or PCs as client nodes with the server. Contrast with closed registration.

options file. A file that contains processing options. Identifies Tivoli Storage Manager servers, specifies communication methods, defines scheduling options, selects backup, archive, restore, and retrieve options. Also called the client options file.

P

policy domain. A Tivoli Storage Manager policy object that lets Tivoli Storage Manager group client nodes by the policies that govern their files and by the administrator who manages the policies. The policy domain contains one or more policy sets.

policy set. A Tivoli Storage Manager policy object that specifies the management classes that are available to groups of users. More than one policy set can exist. However, only one policy set at a time can be active.

progress indicator. A control used to inform a user about the progress of a process.
R

recovery log. A log of updates that are about to be written to the databases. The log can be used to recover from system and media failures.

registration. The process of identifying a client node or administrator to the server by specifying a user ID, password, and contact information. For client nodes, a policy domain, compression status, and deletion privileges are also specified.

registry. A central database in Windows that contains information about hardware, applications, and operating system settings for each machine on the network. Provides security and control over system, security, and account settings.

restore. A function that permits users to copy a version of a backup file from the storage pool to a workstation or file server. The backup copy in the storage pool is not affected. Contrast with backup.

retention. The amount of time, in days, that inactive backed up or archived files are retained in the storage pool before they are deleted. The following copy group attributes define retention: retain extra versions, retain only version, retain version.

retrieve. A function permitting users to copy an archived file from the storage pool to the workstation or file server. The archive copy in the storage pool is not affected. Contrast with archive.

S

scheduling. A function permitting an administrator to schedule backup and archive operations from a central location. Operations can be scheduled on a periodic basis or on an explicit date.

scheduling mode. The type of scheduling operation for the client-server node. Tivoli Storage Manager supports two scheduling modes: client-polling and server-prompted.

scroll. Move through a list of items in a window by operating the scrollbars with the mouse cursor.

select. Choose an item from a list or group of items.

selective backup. A function permitting users to back up files from a client domain. These files are not excluded in the include-exclude list and meet the requirement for serialization in the backup copy group of the management class assigned to each file. Contrast with incremental backup.

server. A program running on a mainframe, workstation, or file server that provides shared services such as backup and archive to other various (often remote) programs (called clients).

server-prompted scheduling. A client-server communication technique where the server contacts the client node when tasks need to be done.

session. A period of time in which a user can communicate with a server to perform backup, archive, restore, or retrieve requests.

space management. The process of keeping sufficient free storage space available on a local file system for new data and making the most efficient and economical use of distributed storage resources.

Tivoli Storage Manager. A client/server program that provides storage management to customers in a multivendor computer environment.

storage pool. A named set of storage volumes used as the destination of backup, archive, or migrated copies.

T


timeout. A time event involving:
• An event that happens at the end of a predetermined period of time that began at the happening of another specified event.
• A time interval allotted for certain operations to happen. For example, response to polling or addressing before system operation is interrupted and must be restarted.
• A terminal feature that logs off a user if an entry is not made within a specified period of time.

**Transmission Control Protocol/Internet Protocol (TCP/IP)**. A set of communication protocols that support peer-to-peer connectivity functions for both local and wide area networks.

**V**

**version**. Storage management policy may allow back-level copies of backed up objects to be kept at the server whenever an object is newly backed up. The most recent backed up copy is called the “active” version. Earlier copies are “inactive” versions. The following backup copy group attributes define version criteria: versions data exists, and versions data deleted.

**VSS Backup**. A backup that uses Microsoft Volume Shadow Copy Service technology to produce an online snapshot (point-in-time consistent copy) of Exchange data that can be stored on local shadow volumes or on Tivoli Storage Manager server storage.

**VSS Fast Restore**. A function that uses a VSS software provider to restore VSS Backups (Exchange database files and log files) that reside on local shadow volumes.

**VSS Instant Restore**. A volume-level hardware-assisted copy where target volumes (that contain the snapshot) are copied back to the original source volumes.

**VSS Off-loaded backup**. A backup that uses a VSS hardware provider (installed on an alternate machine) to move Exchange data to the Tivoli Storage Manager server. This type of backup shifts the backup load from the production machine to another machine.

**VSS Restore**. A function that uses a VSS software provider to restore VSS Backups (Exchange database files and log files) that reside on Tivoli Storage Manager server storage to their original location.

**W**

**wildcard character**. An asterisk (*) or question mark (?) character used to represent multiple (*) or single (?) characters when searching for various combinations of characters in alphanumeric and symbolic names.

**workstation**. A programmable high-level workstation (usually on a network) with its own processing hardware such as a high-performance personal computer. In a local area network, a personal computer that acts as a single user or client. A workstation can also be used as a server.
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